



Forest ecology, riparian landscape and agriculture in European traveller accounts during the seventeenth century in India

Rayajuddin

Scholar, Department of History, Faculty of Social Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India

Abstract

The period from the late sixteenth to the early eighteenth century- in the light of archaeological, literary sources and newly translated material on Mughal India should be re-interrogated in the context of the issues like forest, fauna and flora, rivers, climate, plant or mineral wealth. The relationship between ecology and human beings emerged as one of the central questions in the contemporary world. Environmental historian in India has historically investigated this question. The fact, however, is that ecological history writing in India gave more focus to British India. Consequently, medieval India remained a further less explored domain so far as ecology is concerned. The proposed paper attempts to address this gap by focusing on the representation of ecological conditions of India by European travellers during the seventeenth century in India.

This paper's main focus is to explore how European travellers depicted the environmental conditions such as the nature of forest cover, riparian landscape, horticultural practices, and several animals and hunting practices at one level. Also, at another level, an attempt has been made to explore how European travellers depicted the relationship between human beings and ecologically sensitive resources. In short, an attempt would be made to retrieve the ecological narratives of European travellers in Mughal India. The main objective of this paper is to conceptualise the relationship between man and nature in medieval India in the light of European travel writings.

Keywords: forest; ecology; riverine; landscape; animal; hunting

Introduction

Environment history writing began first in Europe around the twentieth century. Italians launched micro-history. Britons developed an anthropological, social history. However, the most influential among them are French historians, who invented the famous *Annales* approach, drawing on all the social sciences to create what they sometimes called a full history. *However, Annales historians did not consider themselves environmental historians and did not use the phrase until 1974.* Nevertheless, the *Annales* School served as a great source of inspiration to the environment historians of the future (Chakrabarti 2007, p.20) ^[1].

Environment history, however, took real shaped in the United States, which grew out of the history of conservation and the environmental movement. That issue has to discuss by many U.S. environmental scholars broadly. John McNeill and Donald Worster are a few prominent among them. In the views of McNeill, he defined the importance of environmental history; he underscored environmental history is one of the historical study's most interdisciplinary fields, which is forcing the scholars to adopt the discipline techniques spanning the spectrum from archaeology zoology (McNeill 2003, p.9). In its initial stages, the study of environmental history seemed to be a project to raise public awareness of the ecological crisis defined by researchers engaged throughout various branches of environmental science and ecology. Nevertheless, it is increasingly recognised field now that the recent ecological crisis calls for the historians to play a new and independent role in developing a new paradigm for the future, including studies of human and environmental experiences and activities; man's vital role as both the creator and the un-maker of nature ^[2].

In the last thirty years, many historians have written about the changing patterns of cultural and intellectual ideals concerniideaslogy and the environment. Donald Worster's book *Natures Economy* has perceived as a remarkable work in the context of changing ideas of ecology over the past three centuries. He traces the roots of ecological study to eighteenth-century ideas about the natural world's value. "Two major traditions in ecology emerged in this period. The first was the "arcadian" stance advocating a simple life for a man with the aim of restoring him to peaceful coexistence with other organisms. The second and imperial tradition sought to establish man's dominion over nature through the exercise of reason and hard work ^[3]. These two competing views would form the foundation of Western thought concerning the natural world.

As scholarship on South Asian environment history writings is concerned, it emerged around the 1980sas separate from its somewhat different forms in Europe and North America. At first, their papers largely focused on forest policy, tracing the root of recent controversies back to the early colonial beginnings. No studies of forest ecology are reached back into the pre-British era, as other branches of Indian historiography have done before them; for instance the writings of B. Ribbentrop (*Forestry in British India*) and E.P. Stebbing (*The Forest of India*) are evidence of it.

Other historians have used the study of a different concept of population and agriculture to describe the ideas that have shaped human images of and relation to the environment in medieval India. Shireen Moosvi offers additional scholarship by investigating demography and settlement patterns under the Mughal reign but also the ecological change since 1600 that can be grasped by computing the extent of cultivation around that time and comparing it with figures of more recent times ^[4]. Ellen Arnold analyzes medieval environment history is a dynamic and growing field, while it may be rooted in ‘older question’ of medieval history, it take advantage of new and exciting sources and methods and explores themes such as climate and ecological history, the history of agriculture and water, landscape, and religious studies ^[5].

Richard Eaton in his articles and subsequently in his books asserted that so called “traditional pre-modern” societies or medieval ecologies were never static but marked by human adaptations to change. Small, often unnoticed innovation and changes gradually improved human life and productivity ^[6]. In the views of Madhav Gadgil and Ramchandra Guha, the pre-industrial or pre-colonial past may not have been as idyllic, harmonious or benevolent as some have argued, ^[7] ecological systems were transient, uncertain and constantly changing although all transmutations may not have been contributed by human beings, some modification in nature could have been sudden and cataclysmic ^[8].

Focusing on the specificities of geography and ecology Jos Gommans pointed out, it should necessarily be considered since India has a vast and a varied landscape. Apart from this, the features like the sea, high slopes or the desert were never barrier to human movement across times. This evidently recognize that the Indian subcontinent was neither sealed off from the world nor derived of human contact and therefore, as the scholar observes the human ecological impact on the subcontinent was not as mild as is assumed but probably enhanced by the contact with distant places and people. Further, attempt has been made by Simon Digby and Jos Gommans in their work entitled *The Supply of War-Horses and The Silent Frontier of South Asia, c 1100-1800* respectively discusses in the context of animals, war and conquest. By highlighting this issue they have pointed out that there was nothing fixed about the ‘forest line’ in Mughals period. However, any shifts in it had consequences not only for the people but also the animals.

Some studies provided voluble information on wild life history of Mughal India. The engagement of the Mughal emperors with fascinating hunting game has received much attention among the historians. Sudipt Mitra in his book *History and Heritage of Indian Game Hunting* provides graphical details on how the Mughals were engaged in hunting and domesticating various animals ^[9]. Valmiki Thapar work entitle *The Last Tiger* did show the way the Mughal emperors tried to maintain game reserves ^[10]. Divyabhanusinh, on the other hand, provides a pictorial and literary evidence to explain hunting during the Mughal period and reflect on changing human relations. But the fact is that these studies mainly confined the engagement of the Mughal state with game hunting and preservation of game reserves.

In fact the study of Irfan Habib entitled *Agrarian System of Mughal India* throws considerable light on the nature of state intervention in management of ecologically sensitive resources such as water, land, forest, wildlife, gardens etc ^[11]. In his recent publication of *Man and Environment*, provide fascinating details on ecological dimension of medieval India in general and the Mughal Empire in particular. It has been proposed by him that the Mughal State was seriously engaged in management of ecologically sensitive resources as those an important part of resources required for it ^[12]. In the very illuminating work entitled *Forest, Pastoralist and Agrarian Society in Mughal India* Chetan Singh made the fact that environment cannot be studies in isolation neither can be agriculture be seen exclusive of the other elements of environment, through it has long been assumed that the prosperity of the Mughal state depend on its agrarian base.

The explicit fact is that the historical studies on environmental history of Mughal India happen to be less in number. Moreover, such studies mainly confined to hunting and games sports of Mughal ruler. Hence the attitude and practice of Mughal state in harnessing of ecology remained further less explored. At the same time, the writings of European traveller have been used to study mainly the court culture of Mughal Empire. This study proposes that the engagement of the Mughal state and society with ecology is more complicated than the existing document. To document the ecological history of Mughal state and society we tried to use the writings of Mughal emperors, court historians in general and European traveller writings in particular. Careful attempt has been made to retrieve the information given by European traveller on the attitude and practices of Mughal state, society and culture towards ecologically sensitive resources such as forests, agriculture including soils fertility and fauna and flora.

Sources and the objectives of paper

This paper has been written based on whatever information could be obtained from Persian documents and European travel writings of the seventeenth century. Present studies have exclusively focused on the period of three an important reign of Mughal ruler, Jahangir, Shah-Jahan and Aurangzeb.

This paper has been structure in three parts. In the first part of present paper is concerned with the approach to forest ecology in the context of agriculture expansion and riparian landscape. The second part of the paper deals with agro-ecology. The paper ends with a concluding note to argue for a broader synthesis of forest ecology, riparian landscape and agriculture. The central idea of present paper is to retrieve notion of ecological history of Mughal India through the well documented of landscape of Indian subcontinent, in terms of the forest cover and their product, plants, animal, riverine and soils fertility by European traveller of the 17th century.

Forest Ecology

Before the Mughal period, the exact extent of forests on the country map cannot be established. Our knowledge of the geography of the forest cover during the seventeenth centuries has its main sources the statistical information on the extension of cultivation in the *Ain-i-Akbari* and subsequent documents ^[13]. The retreat of the forest in the face of the peasant's plough can also be established for different areas from directly contemporary evidence about forests where they no longer exists. Abul Fazl in his description of geography of the provinces of Akbar's Empire gives an account of the forests as well. Other Mughal historians often mention forest in their accounts of the geography of the regions where Mughal arms penetrated. On the other hand, traveller record has constituted an important for the study of the Mughal forest cover. Jean-Baptiste Tavernier was a 17th century French traveller mentioned dense forest cover in the north town of Gorakhpur *suba* in his account "Travels in India, 1640-67" ^[14] On the way to Awadh *Suba*, the 17th century British traveler Peter Munndy gave detailed description of forest cover of Jaunpur and Allahabad region in his account ^[15]. Focus on Agra region of Mughal *suba*, Dutch traveler Francisco Pelsaert, pointed out that the region was a great shortage of firewood, and tress were scarce because ground is salty and for this reason all fruits import from Kandhar or Kabul ^[16].

Information regarding to forest cover of Bihar, Bernier noticed a tract of forest to the north-east of three sarkar of Munger ^[17]. In 1622, Peter Mundy noticed large forests area between Sasaram, Sherpur and Makrain, the forest cover however, by the end of 17th century were transformed into agricultural land ^[18]. Tavernier further gave description of dense forest cover in Gorakhpur sarkar (East, U.P.) by mid of the seventeenth century and that region was continue known for its dense forest cover by the end of 18th century ^[19]. Evidence regarding to herds of wild elephants stretching from Bihar and Orissa to Malwa and further west to the borders of Gujarat, that areas has been designated by Irfan Habib as the 'Great Central India Forest' cover ^[20]. Thus wild animal possibly is significance to trace the tract of forest cover along with the encroachment of forest for making agriculture land.

The impact of this immense change in the extent of forest and grassland has naturally had far-reaching consequences for not only the economy but also degrading ecological balances. The much large extent of forest in Mughal times must have provided certain important products. First, there was a large supply of timber for construction and ship building, fire-wood, charcoal, gum lac, and tasar silk. Second, animals such as wild elephants were economically important when caught not only as war animals but also as beasts of burden. Cheetahs were caught and trained to hunt deer, and were much in demand from the Imperial Court and the aristocracy ^[21].

Biodiversity in European travel writings

▪ Faunal diversity

Though, there are two important sources where we get large quantum of references on the topic under study; the *Baburnama* and *Tuzuk-i-Jahangiri*. Both Babur and Jahangir have much affection with the flora and fauna and their memoir replete with information regarding them. Moreover, European accounts have made additional information in existing source regarding to wildlife history of the Mughal Empire along with the forest cover. However, hunting of the wild animal and birds was common narratives mainly that reflected in the most of European travel writings. Fransico Pelsaert mentioned the pleasures of the game of hunting thus "Hunting with leopard is a remarkable form of sport. He also refers to Jahangir's interest in lion hunting, and says that the Emperor, while young preferred shooting to all other forms of sport ^[22]. Niccolao Manucci was an Italian traveller and was given very fascinating details about the reign of Shahjahan. He recorded Shahjahan's tiger hunting with the help of buffaloes and elephants in his account "Storiado Mogor 1656-72" ^[23]. Aurangzeb also enjoyed hunting every much. Bernier refers to the Emperor's keen interest in the hunting of lion; cheetah, antelopes, blue bull or gray oxen and other wild animals, in the company of the high nobles and sometimes, even the commoners ^[24].

Thus, we can understand from above the statement that hunting of wild animals was predominating in Mughal era. Moreover, the fighting between animals of different varieties was other interesting information made by European traveller. Since the common man could not afford to maintain elephants, lions, leopards or tigers, he had to satisfy with the less expensive fighting of the goats, rams, cocks, stags, antelopes ^[25], dogs, birds, bears, buffaloes, bull and black buck fights, were also common.

▪ Plant diversity

India has been always been a land of natural plantation. The topography or the geographical condition and its climatic changes have been very favorable for the growth of the plants and trees which are great sources of herbs and medicines. On the other hand the soil, water resources, rain and other natural occurrences provided much stronger environment for the growth of natural plants in India. European traveller has discussed in great details

about different variety of plants, for instance, fruits plant, flower plant, medicinal plant and many others type of plants. Here, we began to discuss with the fruits as well as flower plants primarily, Manucci has recorded in his memoir *Storia do Mogor* that Jahangir was not only an enthusiastic planter but also a natural lover of fruits and flowers. It is said that he used to pluck and gather the fruits by his own hand. Shahjahan often used to go to the garden of fortress early in the morning to gather the fruits into company of his favorite nobles ^[26].

Describing the fertility of soils in Agra region, Pelsaert observes, trees and other plants are plentiful around the city, but very scarce in the open country, even four or five trees usually mark the site of a village. Fruit trees are still scarcer, because the ground is salty, and all fruits come from Kandahar or Kabul- no apples, pears, quinces, melons and filberts and many other kinds. Further, Pelsaert was mentioning about the emperors and their nobles and other 'great and wealthy people like merchants also planted fruits in their gardens with imported seed from Persia ^[27]. Pietro Dell Valle was another important Italian traveller of the 17th century, made an interesting fact in his account about Portuguese introduced other fruits plant like papaya and cashew-nut from Brazil or New Spain ^[28]. Portuguese who also started the grafting on mango tree on the western coast where Manucci noticed 'alfonso' mango on the coast of Goa ^[29].

Mughals had a great passion to planting flower plant in their garden and fortress. Jahangir has recorded plants like Champa, Jasmine, Rose and Anemones in *Tuzuk* were planted in the garden of Gujarat. Manucci informed the best quality of Jasmine flower was planted in the hill gardens Gwalior ^[30]. Though the main concern of planting the flower in the garden was to enhance the beauty of the garden and spreading the fragrance, the flowers of the gardens were used for making rose water and perfumes also. Manucci tells that three principal imperial abodes Delhi, Agra and Lahore of Mughal Empire were full of palaces with gardens, where there had always been flowers, according to the season, chiefly rose from which essence was distilled for royal household ^[31].

Climate and soil played a great role in plantation of fruits trees both in the gardens, native as well as imported. The main reason behind the abundance of fruit trees and other shady trees in the garden of Muqarrab Khan, from *wilayat* (Persian and Central Asia) like cypress and pistachio and indigenous like mangoes brought from Deccan and Gujarat, was its good climate (*khushab-o hawa*) and fertile soil (*shaistagizamin*) as told by the emperor Jahangir himself and later on by Shah Nawaz Khan ^[32].

RiparianL and scape

The term riparian landscapes denote the ecological systems of streamside and floodplain areas from the perspective of landscape ecology. Although riparian landscape is not vogue in medieval Indian context; however, it has significance to study river side landscape. Changes in landscape occur whether owing to geology, geomorphology or human activity ^[33]. While there is a need to study the changes in landscape, it is even more important to understand the impact of changing landscapes on history and one of the most effective ways of doing so it to examine the changes in river courses and their effects.

Bernier, which confirm that the shift in the course of rivers, their impact on the environment and physical geography that remained transformed to a large extent. Bernier describes the formation of numerous islands in the Gulf of Bengal at the mouth of the Ganga. The action of Island formation was facilitated by the Ganga, caring a great quantity of earth towards the sea. This pattern had rendered the Sundarban a vast alluvial plain, where the process of land making had remained continuous and ceaseless. It abounded in morasses and swamp's and was intersected by rivers and estuaries running from north to south. These rivers and estuaries were connected with each other by innumerable smaller channels so that the whole tract become a tangled network of Streams Rivers and water courses, enclosing a large number of islands of various shapes and size ^[34].

In 1658, during the reign of Aurangzeb the flow of the rivers Ganga and Yamuna was so intense at Allahabad (a town in the state of U.P.) that the entire city except the fortress of Allahabad was submerged under water, drowning several people. Referring to such disaster, Manucci, an Italian traveller, observes that disasters of this kind were a signal for impending wars, calamities, destruction and miseries for the people ^[35].

Agro-ecology: A Historical Studies

The Indian economy was predominantly agrarian in character back from the Indian history as it was during seventeenth century. Other occupations were also in prevalent but agriculture dominated amongst in all occupations which are confirmed by almost all European traveller and other contemporary sources also.

The output of agriculture production depends mainly on the fertility of soil anywhere. The fertility of Indian soil is very famous in the minds of the foreigners and they never missed the chance to tell this-fact about Indian soil. The fertility of Bengal ^[36], Deccan ^[37], and Sindh ^[38], and Surat, soil was recorded by almost all the travellers. The Deccan soil is fertile throughout, being watered by many rivers and streams ^[39]. The Malabar Coast is good country, fertile and sulubrians and supplies much wealth and commodities to Goa and other parts ^[40]. Exceptionally, the soil of Goa was found to be unproductive because of its geography. The fertility of Bengal also recorded during the reign of Shahjahan by Francois Bernier. This fertility was due to the climate which was found very good and healthy as the abundance India for cultivation.

The fertility of soil was the major factor that leads to the abundance of food grain throughout the period. This abundance was appreciated by almost every traveller. Due to abundance, the food grain was very cheap. Abbe Carre write about the cheapness of food at Madras, Surat, Goa, Bijapur, Golconda, and Bombay in 1672-74. He writes, "food is very cheap: five ponds of rice for 3 sales (3rd.) I Say, rice because it is the principal food of these people, as wheat is in Europe.

Thus, the fertility of soils was a major factor behind more agricultural production as depicted by the contemporary traveller. However, the fact is that agriculture was and continues to be the single most important means by which mankind has changed the land and ecosystems. ^[41] It represents a connecting point between the

human powers that organize agriculture and the changing natural environment and is a major element of ecological transformation in human history, for no occupation other than farming alters the land so much.

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