# **Path Dependence, Multiple Equilibria, and Adaptive** Efficiency in Forest Regimes **in India**

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Dear Dr. Ostrom:
You may like to give your
comments/suggestions on these
two papers.
With regards
Shashi Kant
26/1/1999.

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**Abstract:** The evolution of forest regimes in India has almost completed a full cycle from the community regime in the pre-British period through state regimes during the British colonial period and the first post-independence phase and finally back to community based regimes in the 1990s. During the British period that evolution may be characterized as discontinuous, in the standard (temporal) sense, but path-dependent in a geographical sense. Change resulted from the imposition of a new organizational structure with enough energy to dismantle the existing structure; its geographical path-dependency reflected the inertia of the British organizational structure developed in other countries. Regimes changes in the post-British period have been path-dependent (in the temporal sense) due to self-reinforcing mechanisms, among which organizational inertia has been the dominant one. In the post 1987 phase, external factors (outside the government and the forest department), such as non-governmental organizations and peoples initiatives at the local level have moved the process closer to one of adaptive efficiency. However, multiple forest regimes have been present at all times. An argument is made for development of a theory of evolution of resource regimes that incorporates interactions between formal institutions and the informal institutions of user groups of the state's forestry administration.

**Key Words:** Asia, India, Institutions, Institutional inertia, Organizational energy, and Organizational inertia.

# Path Dependence, Multiple Equilibria, and Adaptive Efficiency in Forest Regimes in India

## 1. Introduction

Forest resource use is determined by two aspects of a particular society - the available technology and the resource regime. The technological dimension has dominated-economic thinking and discussion of forests and other natural resources during the industrialisation phase in most developing countries. However, over the last decade or so there has been an increasing recognition of the importance of institutions as a determinant of economic performance in a wide variety of areas, including the use of natural resources. The set of institutions that serve to order the actions of those interested in forest resources is commonly termed the forest (resource) regime (Young 1982, p. 15). In India, forest regimes have passed through a range of distinctly different phases. An understanding of the dynamics of these Indian forest regimes can provide useful inputs in the design of optimal systems for sustainable forest management, not only in India but in many commonwealth countries which have undergone British colonial rule, and probably in other developing countries as well.

The study of institutional dynamics has attracted the attention of many economists over the years and two different streams, referred to as the Old Institutional Economics (OIE) and the New Institutional Economics (NIE), have emerged. The OIE, associated with authors such as Commons (1961), Ayres (1962), and Veblen (1975), uses a holistic approach based on the idea that individual behaviour and phenomena cannot be explained without taking account of the context; the functioning of a part depends on its relations with other parts of the whole. This holistic perspective leads to an emphasis on institutions over the activities and choices of individuals in the determination of economic outcomes (Setterfield 1993). The NIE, associated with authors such as Schotter (1981) and Williamson (1985), emphasises the importance of the self-interested behaviour of individuals, and posits that institutions arise during the

evolution of a market economy because they are valued positively by rational economic agents. Bromley (1989) argues that such positive evaluation may be related not only to allocative efficiency or to redistribution of income but also to profit-seeking unproductive activities, and accordingly offers a taxonomy of four kinds of institutional changes: (i) those that increase productive efficiency; (ii) those that redistribute income; (iii) those that reallocate economic opportunity; and (iv) those that redistribute economic advantage,

However, both these theories of institutional change have been criticised for being unidirectional - OIE for overlooking the impact of individual behaviour on institutions, and ME for overlooking the impact of institutions on individuals' behaviour. To overcome these short-comings, Setterfield (1993) has suggested a model of institutional hysteresis characterised by the short-term exogeneity and long-term endogeneity of institutions. In the short-term, due to a degree of inertia in institutions, the institutional environment guides economic activities. In the long-run, institutional changes are the result of the sequential, short-term patterns of economic activity which lay the groundwork for them--patterns of activity that are themselves influenced by the previously existing institutions. In other words, long-run institutional changes are path-dependent, Economic pressures for institutional change may arise continuously, but they are counterbalanced to some extent by forces of institutional inertia.

Another group of economists, including David (1985) and Arthur (1988), brought the idea of path-dependence to the discussion of the evolution of technology. This literature draws a number of parallels to the broader process of change, including, mostly implicitly, institutional change (North 1990, p.93). David's (1985) idea of path-dependency involved a set of accidental events. Arthur (1988) included positive feedbacks and increasing returns among the factors explaining technological change; the increasing returns economy is seen as characterised by multiple equilibria, possible inefficiencies, lock-in, and path dependence, while four generic sources of self-reinforcing mechanisms were identified: large set-up or fixed costs; learning effects; coordination effects; and adaptive expectations. The concept of path

dependence has been used to explain the choice of AC electricity (David and Bunn 1987), the selection of light-water nuclear reactors, and the gasoline engine (Arthur 1989), as well as the FORTRAN computer language and VHS videotape formats (Arthur 1991). In the context of institutional change, path dependency has been recognised by North (1990, p.92-104). He argues that increasing returns are an essential ingredient to technological as well as institutional change, but judges that the perceptions of actors play a more central role in institutional than in technological change. In the context of institutions, path dependence has been used to explain a wide range of processes from urban sprawl by Atkinson and Oleson (1996), to environmental decline by Goodstein (1995), investments in fossil fuel conservation by England (1994), and electric power in the city of Chicago (Throgmorton and Fisher 1993).

In this paper, we analyze the evolution of forest regimes in India. Such regimes are defined by sets of institutions that can be grouped roughly into the formal and the informal. Formal institutions involve formal rules that operate at a minimum of two different levels - rules for making the rules and operational rules. In the context of India, overall forest policy emerges as the first level of institutions and reflects the general political process; it provides the framework for the design of operational rules of forest management. Forest Acts such as the Indian Forest Act, government orders, and guidelines[1] by the central government to translate broad policy decisions into actions fall under the second level - operational rules. The follow up state government acts, orders, directions, constitute the first sub-level of operational rules, and the follow up orders and directions by the head of the forest department are the next sub-level. Many more sub-levels of operational rules may exist depending on the degree of hierarchization of the forestry organization. Informal institutions are sets of behavioral codes, norms, and customs of forest user groups. Here our focus is on the first level of formal institutions - changes in forest policy, and within that on the particular issue of inclusion/exclusion of local people in forest management and the change from one forest regime (community, where they are included) to another regime (where they are excluded). A real change in forest regimes will occur when a change at the first level is followed by appropriate changes in the lower

level institutions. In India changes at the first level have often been followed by nothing more than a hope or presumption that appropriate second-level changes would take care of themselves.

Indian forest regimes have almost completed a century and a half cycle from community control in the pre-Biitish period through state control and finally back to community based control in the 1990s. Four different goals have underlain the institutional arrangements of the different periods - fair distribution of returns during the pre-British period, redistribution of economic advantage in favor of the crown during the British period, production efficiency during the first phase of independent India[2]; and redistribution of economic opportunities during the present phase of India. The weight of these factors meant that the community regime was dominant during the pre-British period, the state regime had its heyday during the British period and first phase of independent India, with community regimes regaining precedence during the latter part of the independent India phase, though the factors which made them attractive were now somewhat different--the production inefficiencies and distributional inequities of state regimes and a changed social environment in which both community empowerment and the rights of poor and marginal people, including tribals, on forests receive greater weight in the social utility function. Other regimes than the dominant one existed during all periods.

The evolution of forest regimes during the British period may be characterized as discontinuous, in the standard (temporal) sense, but path-dependent in the geographical sense that the changes reflected the inertia of the British organizational structure developed in other countries. Regime changes in the post-British period have been path-dependent (in the temporal sense) due to self-reinforcing mechanisms such as adaptive expectations of the government of India from the existing organizational structure, increasing returns from the existing institutions and organization, organizational inertia, and to some extent institutional inertia.[4] In the Indian experience as a whole, organizational inertia plays a bigger role than does institutional inertia in the dynamics of institutions. However, in the most recent (post 1988) regime phase, external factors (to the government and the forest department), such as non-governmental

organizations and community initiatives, have been able to disrupt the inefficient path generated by self-reinforcing mechanisms and shift the process closer to one of adaptive efficiency. The next section of the paper reviews the forest regimes of each period, after which some lessons are drawn with respect to the dynamics of forest regimes.

## % Forest Regimes in the Pre-British Period

Civilisation in ancient India was closely associated with forests. Learning and culture were seen as being mainly the product of hermitage in the solitude of the forests (Mookerji 1950). Indian epics such as Vedas, Puranas, Ramayana, and Mahabharat placed a very high importance on forests. According to Puranas, trees not only give physical items such as timber and fruits, but also help ancestors to find a way to heaven (Dwivedi 1980, p.7). The forest dependence of people was institutionalised through a variety of cultural and religious mechanisms such as scared groves, temple gardens, and worship of some trees. For the people of these local economies destruction of forests meant the end not only of material benefits necessary for physical life but also of spiritual benefits necessary for eternal life. Accordingly, local communities developed indigenous systems of forest management to achieve a continuous flow of benefits from the forests. The welfare of subjects was a prominent motto of administration. As Chanakya (Kautilya's Arthasatra, translated by R. Shamasastry, 1929, p. 38), a revered teacher and the principal adviser to the king Chandra Gupta Maurya, opined:

> "In the happiness of his subject lies Ms (the long's) happiness; in their welfare Ms welfare; whatever pleases himself he shall not consider good, but whatever pleases Ms subjects he shall consider as good."

Chanakya elaborately discussed and suggested (in Arthashastra, written during 325-273 BC) how forest management could achieve the welfare of the subjects. He created three categories; (i) reserve forests, for the recreational use of the king and to meet the state's needs for construction timber and elephants for

defence purposes (Dwivedi 1980, p,9); (ii) forests donated to eminent brahmans for religious learning and for the performance of penance; and (iii) forests for the subsistence needs of the public. Though the classification does reflect the existing social hierarchy, it clearly recognised the needs of the public as well as those of the rulers and the elite. The dictums of Chanakya were followed by the Mauryan empire and continued in practice until at least the 8th century AD (Jha 1994, p.21). Most of the forests were under a community regime even though technically they were owned by the rulers. At this point, the territory of post-Independence India consisted of hundreds of relatively small kingdoms and principalities, a fact which implied a smaller distance between ruler and ruled than emerged later.

In medieval India (800 AD to 1526 AD) and, especially, the subsequent Mughal period (1526-1756), the priority attached to the welfare of subjects declined (Upadhyaya 1991). The former period saw a gradual trend towards centralisation in the sense that the kingdoms became on average larger (through a process of conquest). It also saw an increase in the share of rulers who were non-Indian. Many Sultans, their courtiers, and senior subordinates enjoyed an increasingly luxurious life at the expense of their subjects (Jha 1994, p.22) and, though the forest area remained adequate (Jha 1994, p,23), forests were not commercialised and the public was not excluded in principle, direct involvement of the rulers on behalf of the public was reduced. Still, Sultans such as Ala-ud-Din Khalji (1296-1316) did show concern for public welfare by taking up social amenities programs such as roadside plantations. The Mughal period (1526-1756) saw re-unification and integration of states (Upadhyaya 1991), and an increase in the importance of forest products due to urban development. There is no record of the Mughal rulers returning to classification-based forest management, but they did lay substantial emphasis on social amenities as well as on trade; large-scale roadside plantations and mulberry block plantations (for silk trade) were developed during this period, mainly for the benefit of the public. On the whole, the Mughal rulers took a serious attitude to the forests, with the result that a number of forest products were available to fulfil the needs both of rulers and of the public (Jha 1994, p. 27). But the now-greater centralisation of government in the

region again tended to distance the rulers from the ruled. In summary, forest management regimes in the medieval and Mughal periods can be described as explicitly or Implicitly community regimes in which the public's welfare had a considerable though declining weight

## 3. Forest regimes during the British Period

The British came to India with a specific history that conditioned their attitude towards forests. They were world leaders in deforestation, having devastated their own resources as well as those of Ireland, southern Africa, and the north-eastern United States to obtain timber for shipbuilding and iron smelting, and to get land for agriculture (Guha 1996). Their military history and their agricultural revolution often predisposed them to a negative view of forests. Troops and settlers in seventeenth-century Ireland had cleared forests to deny cover to Irish rebels (Rangarajan 1996, p. 16). Throughout the seventeenth and eighteenth centuries, forest dwellers in England were locked in struggles with Crown officials and landlords over control of forestlands (Thomas 1983, pp. 194-195). The agenda of "agrarian progress" led to the breaking-up of the common tenurial system in Ireland and the Scottish highlands (Bayly 1989, pp. 123-4). Soon after their arrival in India, the British rulers extended land under cultivation as a way of consolidating their control, and sought military advantage against their foes by denuding the countryside (Rangarajan 1996, p. 17). Extension of agriculture and strategic denudation were of course not new to India; the British only increased the pace of these activities, and the objective of forest conversion to agriculture land became revenue generation rather than the subsistence needs of the local people, as in ancient India. A very significant new pressure came from the strategic and commercial imperatives of the British empire (Rangarajan 1996, p. 19). The shortage of timber in Britain, and the isolation of Britain from the Baltic supply lines during the Revolutionary and Napoleonic wars between 1793 and 1815 forced the empire to look to alternate sources of wood for ship building. In the late eighteenth and early nineteenth centuries Indian forests were mainly used by the British to meet the requirements of the Royal Navy, on whom the

safety of empire depended (Smythies, 1925). In the middle of nineteenth century, after the Indian mutiny in 1857, the strategic priority of the empire became rapid troop movement. On the commercial front, expanding imperial trade was high on the agenda. To meet these strategic and commercial objectives the British began construction of a huge Indian Railways network, and the railway ties (sleepers) came from the Indian forests. Hence, in this first phase of British rule, forest regimes were aimed at securing economic, political, and strategic advantages for the empire. Though societal welfare was not a concern of the empire, the fact that forest resources were understood to be inexhaustible meant that local users were not in principle excluded and no direct and general conflict arose between the needs of local people and the empire. However, many traditional forest management systems were pushed back by the axe of forest contractors.

Private contractors, both Indian and European, led an unprecedented assault on the more accessible forests in the early years of railway expansion, with large-scale wastage through such reckless harvesting practices as the felling of thousands of trees which could never have been removed (Pearson 1869). This degradation eventually forced the colonial authorities to recognise that Indian forests were not inexhaustible. Scattered steps were taken early in the nineteenth century to ensure the timber supply for shipbuilding, but only in 1862 did the Governor General call for the establishment of a forest department to ensure the sustained satisfaction of the enormous demand for railway sleepers (Webber 1902). That department's establishment in 1864 signalled a new phase of forest regimes, characterised by state control and the exclusion of local people from forest use. The first Forest Act of 1865, empowered the state to declare any land covered with trees or brushwood as government forest and to set the rules for its management. At this point the government's right was still subject to the condition that it not abridge the existing rights of the local people. Mr. Dietrich Brandis, the first Inspector General of Forests, came from Germany, the leading European nation in forest management, and was sensitive to such existing refections of indigenous Indian forestry as the scared groves and the frequency of good management by the Indian

rulers. He argued for a parallel system of communal forests for village use in addition to state forests. But Mr. B.H.Baden-Powell (the British head of the revenue department) advocated total state control over all forest areas as the only check on individual self-interest and short-sightedness (Guha 1996). Baden-Powell's view prevailed over that of Brandis, leading to the 1878 Indian Forest Act, which put restrictions on the public's access to forest land and produce. Though the Act did countenance the provision of village forests, this option was exercised only in a few isolated cases (Guha 1996). The first general statement of forest policy by the British Government (in 1894) further weakened local rights, as reflected in a shift of terminology away from traditional "rights" to "rights and privileges"[5]. The policy emphasised the need for state control and use of forests to augment government revenue. The decrease in people's rights was accompanied by an increase in the reserve forest area at the expense of the area allocated to villagers' use (Guha and Gadgil 1989). Though the British defended their changes in terms of efficiency, arguing that well-defined property rights would increase production, in practice what they did was not a matter of defining rights but of abolishing those established by local people through conventions developed over long periods of time, and concentrating all in the hands of the empire. The new regime naturally led to welfare losses for the populace, but also had negative efficiency implications due to the high transaction costs involved in excluding local people.

The Indian Forest Act of 1927 incorporated the main features of the National Forest Policy of 1894, empowering the government to declare any piece of land to be state forest and recognising only the rights and privileges of persons--not of communities. The shift away from indigenous management systems to state control of forests has sometimes been identified as the first step towards forest conservation or scientific management. Though management plans (referred to as Working Plans') were written for many state forests, there is no evidence that the basic purpose of this regime change was either conservation or scientific management. But there is plentiful evidence of forest exploitation in the economic, political, and strategic interests of empire, especially during the two World Wars. In World War I approximately 1.7

million cubic meters (mostly teak) were exported annually and the indigenous resin industry proved to be a great boon at a time when American and French supplies were unavailable (Guha 1983). The Second World War saw an even more extreme "mining" of the Indian Forests; no management plans were followed, the only limit to harvesting was the supply of labour, and fellings were estimated to be six times annual yields (GOI 1948; Guha, 1983). There is similar evidence of profligacy with respect to hunting practices. The new laws restricted small-scale hunting by tribal peoples but continued to facilitate large-scale hunting by white people.[6]

To implement and manage its new forest regimes, the colonial government had created a large bureaucracy--the forest department Mr. Brandis, the first Inspector General of Forests, was responsible for its establishment, including the forest service, forest training, and research. This German botanist recommended the selection of Imperial Forest Service officers from Europe and their training there. He was of the view that:

> "Attention should particularly be paid to scientific requirements, especially in natural sciences, and they should be competent to survey a forest and to plan and construct forest roads. Although climate and vegetation in India are different, yet the fundamental principles of forest management are the same everywhere and persons, whose practical experience is supplemented by scientific education will be able to apply these principles in the forests of another country" (FRI 1961, p. 105).

Even Brandis, who did recognize some of the merits of community involvement, was apparently unable to fully appreciate the need to link forest management to the social, cultural, and economic background of local people; in any case he did not take advantage of those links either for his own direct objective of favouring Europeans in the Imperial Forest Service or for the broader interest of the empire. Possibly his vision of forest management was based only on its revenue generating function. While the officers were being trained in Europe, preparation of subordinate staff began in 1878 at the Central Forest School at Dehradun. In 1926, training of forest officers was started at the Indian Forest College, Dehradun; this and later Indian schools were headed and managed by European specialists. The main objective of the training

was to provide basic skills in engineering and natural sciences to fulfil the empire's demands from Indian forests; social science inputs were totally missing from the programs. This lacuna contributed to the isolation of forest officers from local communities, and also to a belief by these officers that local communities could not manage forest resources efficiently. The legacy to independent India of this colonial training system was a forest bureaucracy equipped with colonial thinking plus the technical tools to manage forests for revenue generation, but insensitive to local social and economic conditions,

A Forest Research Institute was created at Dehradun in 1906 to provide further support to the colonial forest regime. In the early twentieth century the major focus of research was the antiseptic treatment of inferior timber species for use as railway sleepers; it made the use of chir and blue pines possible on a commercial scale in 1912, and in the following year this led to the reserving of extensive pine forests (Guha 1983). Another research area was the industrial uses of Minor Forest Products (MFPs), for such products as resin and turpentine, kutha, myrobolans, and essential oils. India was the only source in the empire for these products, and their export contributed greatly to empire revenues (Guha 1983). During the Second World War, forest research was dedicated to finding new substitutes for valuable species that were no longer available, thus promoting the harvesting of those species still left in the forests.

The colonial forest regime influenced the attitude of those princely state rulers who had maintained their own identity under British rule and who administered about half of Indian territory. They observed the commercial benefits from forests enjoyed by the British, and started leasing forest tracts to the latter. Later some of them appointed their own forest officers, trained in colonial institutes together with the Imperial Forest Service officers, to manage their tracts. Revenue generation became the main objective of forest management in these states as well, and brought with it a similar exclusion of local people.

The progressive diminution of rights and the consequent loss of control over their forest resources evoked a sharp reaction from forest communities against both the British government and the local rulers, as witness the Rampa rebellion of 1879-80 in Andhra Pradesh, the 1918 militant revolt by Santhals in

Midnapur district of the Bengal Presidency, the 1916 and 1921 social movements in Uttar Pradesh Himalayas, and the 1940 revolt by the Gonds and Kolams tribes in the Adilabad district of Hyderabad, (Guha and Gadgil 1989). The milder rebellions were crushed by the British, but their response to some of the stronger and protracted ones was to yield to local demands, as in the Uttar Pradesh hills where, in the 1920s, the concept of Van Panchayat--a community based forest management system, was accepted and forest areas were identified for management by local people. Similarly, Forest Co-operatives were established in Himachal Pradesh. In some cases instead of handing over the forest to communities, arrangements were designed to provide land for agricultural crops by adopting agro-silvicultural systems such as Taungya,

In summary, the British rulers sought to and largely succeeded in displacing all prevailing concepts of societal rights to forest-based benefits with the objective of maximising the economic gains to the empire-industrial development in Britain and expansion of the colonial foundation in India, By the end of the colonial period the majority of forests were either under state control in the British ruled areas or under private regime in local rulers' areas. In some areas community regimes were recognised (e.g. Uttar Pradesh and Himachal Pradesh) and in some others traditional communal systems continued without being noticed by forest officers.

**4. Forest regimes in independent India**

The 1894 Colonial Forest Policy provided the basis for the first forest policy of independent India (that of 1952); the fundamental idea of the earlier policy that the state should administer the forests was presumed to hold good. Formally the new policy recognised the protective, ecological, and societal values of forests as sources of social welfare. However, this recognition at the forest policy level (top institutional level) was not followed up by the needed changes in the second level institutions (the Indian Forest Act and other down-the-ine operating rules), to take effective account of protective, social, and ecological values;

such changes should have included greater local participation in management Be facto, the perceived national interest was given priority over local village interests and the former was interpreted in a very narrow sense which gave little weight to avoiding the destruction of forests in relation to other developmental goals. In extinguishing local rights, the new Indian government Mowed the same path the British had, bringing more and more forests under state control. Under the 1952 policy, the parts of India previously ruled for the British by princely states (about half of the territory) were formally brought under Indian forest law. State control was extended to include the power to regulate the collection of grass and other forest products in village forests, to prescribe their management practices, and to take up direct management of private forests (Alcorn and Molnar 1996).

The major difference vis a vis the colonial period was that, whereas the British used the forests to promote the industrialisation of Britain (a goal which, **inter alia,** called for the construction of the Indian rail network), the states of independent India engaged in a sort of competition to provide raw material to forest based industries such as pulp and paper at the lowest prices in order to attract those industries to their area. The idea of forest production as a commercial activity gained ground. Although commercialisation and industry were only accorded secondary importance in the 1952 policy statement, in fact India's heavy emphasis on industrial development was a prime determinant of forest history over the next few decades. This contradiction between the policy, in which other goals were reasonably prominent, and operations at the forest management level, where they were not, reflects the fact that changes in the first level institutions (forest policy) did not trickle down to the operational rules.

In 1970, the Government of India appointed a National Commission on Agriculture (NCA) to examine and make recommendations for improvement and modernisation of agriculture. Since forestry was still lodged administratively in the Ministry of Agriculture in the 1970s, it was included in the mandate of this commission. The commission's terms of reference included a very general charge, together with a list of twenty-four specific items, of which one dealt with forestry (GOI 1976a). An accident of administrative

structure thus implied that forestry policy would be set by way of a report on agriculture. Though committees were constituted for each item and sub-item with experts in the respective fields, none of the NCA's Chairman, Secretary, or five full-time members was a forestry expert, and only one of ten part-time members was. Nonetheless, the NCA report resulted in a second round of major changes in the forest policy of independent India. It emphasised that production of industrial wood should be economically defensible in terms of cost and returns. This led to large-scale plantations of fast growing tree species, which replaced the existing slow-growing native (so-called inferior) species. Though the commission argued for economic efficiency, the resulting decisions focused only on technical efficiency; price efficiency was never a criterion for these new plantation activities, for example. In fact, numerous economic inefficiencies resulted from this state involvement, including supply of raw material to industries at subsidised prices, adoption of harvesting rotations based on purely silvicultural rather than economic criteria, etc. There may have been some gains in the production of industrial wood, but the conversion of natural forests to industrial plantations has been highly criticised for its environmental costs. The NCA recommended a new organizational structure to manage these commercial activities on business principles and to attract institutional finance (GOI 1976b). In response, Forest Development Corporations were set up in almost all states; they were, however, manned by forest officers rather than business managers. Although the NCA foresaw this problem and recommended the training of forest managers in business management skills, the establishment of an institute to impart these skills took almost two decades--a good example of organizational (bureaucratic) process inertia, and when the first batch of graduates emerged there were no openings for them in the forest corporations.

The NCA continued the British presumption that free access by local populations to forest products would lead to the destruction of the forests, and recommended instead a National Social Forestry Program to meet the fuel, fodder, and small timber requirements of rural people through plantations on non-forest lands (GOI 1976b). In the late seventies and eighties, social forestry programs were started in many states,

Gujarat and Uttar Pradesh being the pioneers. Foresters and donor agencies promoted fast-growing species for large and fast biomass production irrespective of their fuelwood or fodder qualities. Ironically, when the product was found wanting by the villagers, the output of the social forestry program wound up contributing raw material to industry. Though the Social Forestry Program was supposed to benefit poor and marginal people, foresters' initiative was lacking to shift it from a forest department program to a more people-oriented program; in many cases poor people were actually hurt by the closure of common lands for plantation purposes, the products thereof being auctioned to resource-rich people. A program of free distribution of seedlings benefited the big farmers and industrial units that took up plantation activities. Overall the main beneficiaries were large fanners and the pulp, paper, match and construction industries (Chowdhry 1989), and only marginal trickle-down effects benefited the poorer segments of the society so that distributional disparities probably increased rather than being reduced during this phase of "production forestry."

The United Nations Conference on the Human Environment held in Stockholm, June 1912, made a remarkable impact on thinking about forests and provided a useful outside impetus to push Indian forest policy in a more positive direction. Its message was quickly taken to the hill villages of the Himalayas by Swami Chidanandji, a spiritual leader. By December 1972 he had launched a movement for community forest rights in the Himalayan region, that was already full of the Sarvodaya Brotherhood spirit created by Sarala Behn, a disciple of Mahatma Gandhi; it later came to be known as the Chipko (hugging the trees) movement (Bahuguna 1987). In response to the long struggle of these hill villagers, Gandhian leaders like Jayaprakash Narayan, Kaka Kelekar, and ecologists like Salim Ali made an appeal to stop tree felling in the Himalayas (Bahuguna 1987). All the major political parties included protection of the environment in their 1980 election manifestos. In March of that year the World Conservation Strategy, an international outcome of the Stockholm conference, was launched in New Delhi under the leadership of Prime Minister Indira Gandhi. In April, 1980, Mrs Gandhi invited Chipko leaders for a discussion of their demands. As a

follow-up to these discussions and to the launching of the World Conservation Strategy, the Government of India brought in the Forest Conservation Act of 1980; it put strict legal restrictions on the conversion of forest land to non-forestry purposes and placed responsibility for decisions on such transfers under the direct control of the central government A Himalayan region ban on the felling of green trees for commercial purposes at altitudes above 1000 metres followed in April 1981. In 1982 the Centre for Science and Environment (CSE) published The State of India's Environment - 1982, which provided a national environmental blueprint dealing, inter alia, with the forests. In 1982, the Society for Promotion of Wasteland Development (SPWD), a national non-governmental organization, was established. After he replaced Ms mother on her death, Rajeev Gandhi in 1985 recognized the importance of forests by creating a separate Ministry of Environment and Forest, and the important role of non-government organizations in forestry by constituting the National Wasteland Development Board to bring the wasteland under production through a peoples program, The first chairperson of the latter board was Mrs, (Dr.) Kamala Choudhry, also the chairperson of the SPWD. The key role of NGOs was thereby formally recognized at the highest level, and they became part of the decision making process. In 1989, Mrs. Menaka Gandhi, an environmentalist, became the Minister of Forests and Environment and strengthened the role of NGOs in forest policy decision making.

During the 1980s, many community actions at the local level bore witness to the conflict between the formal institutions of forest management and the local informal institutions of user groups, and to the inefficiencies of the existing forest regimes. In the late 1970s and early 1980s, there was a sudden emergence of forest protection initiatives by thousands of villages all over the country (specifically Bihar, Orissa, Madhya Pradesh, and Gujarat) in response to growing forest product scarcities and threats of exploitation by outside groups. By the 1980s local communities were challenging the authority of forest officials and their management systems. Environmental groups and non-governmental organizations emerged as new power groups with strong bargaining positions, and used the polity and public awareness

to challenge the existing systems. Politicians, including the Prime Minister and the Forest Minister, supported the inclusion of NGOs and other pubic groups in policy making. These two forces coming from opposite directions -local communities and NGOs from the bottom and politicians from the top - provided sufficient energy to break through the organizational inertia of the forest bureaucracy. In isolated cases, innovative and risk-loving forest officers also supported the cause of local people by involving them in forest management, against the normal and legal practices of forest management With these inputs and under the above pressures the government finally accepted the failure of forest regimes based on the exclusion of local people, and produced the second (1988) forest policy of independent India. It is a clear departure from the earlier (1952) policy, especially in terms of the rights accorded to local poor people, specifically tribals and scheduled castes, which take priority over all other rights to forests such as those of industries looking for raw material. It emphasizes that customary rights and concession holders should be motivated to identify themselves with the protection and development of the forests from which they derive benefits. Following up on the 1988 Forest Policy the Government of India in June 1990 issued detailed directions to state governments for the design of forest management programs in collaboration with local people--now known as Joint Forest Management (JFM). For the first time in independent India, a new policy was followed by detailed guidelines to transform changes at the top institutional level into the appropriate changes at the second level institutions □ operational rules. By late 1998, 20 state governments had also issued enabling orders on JFM, the next lower level of operational rules, and around 21,000 Forest Protection Committees were managing about 2.5 million hectares of forests (Thomas 1998). Depending on the origin of these forest protection committees, some forest areas are under community regimes (though the ownership of land remains vested in the state)[7] while others are under joint regime. Forest communities and forest departments are now working in close collaboration to develop forest regimes based on the principle of partnership. Despite this trend back towards community based forest regimes, but joint and state regimes remain important, especially the latter which still accounts

for a majority of total forest area.

In the early phase of independent India's forest policy, the focus of training and research, like the overall policy orientation, remained essentially unchanged, though facilities were extended. The course curriculum used in the training of Indian Forest Service (and other) officers remained the same as in the British period. Though the nomenclature of positions was changed for Social Forestry projects, and some state level training institutions were set up to meet the staffing needs of those projects, the mode of training and curriculum were the same as in other training institutes. In 1985 Rajeev Gandhi intervened personally to initiate one-week refresher courses for members of All India Services, including the Forest Service. Courses for the latter group were aimed at providing exposure to aspects of forest management beyond the traditional technical inputs. Unfortunately, their impact was quite limited; they were provided only to officers of the Indian Forest Service and their brevity contributed to their frequently being viewed as short vacations at government expense. The pattern of forest research also continued essentially unchanged. Though many new research centres, including some focusing on social forestry, were started by the central and state governments the main focus of research continued to be silviculture and forest products.

By contrast, the new forest policy in 1988 together with the emergence of joint forest management initiatives, did bring some remarkable changes in training and forest research. In the JFM states, training of forest officers and subordinate staff in participatory management tools has been started with the support of NGOs. Some social science and management institutions have also initiated training courses for forest officers in different aspects of social and management sciences. Many research centres other than the traditional forest research institutes have begun to study a variety of matters related to joint forest management, such as ecological, economic, institutional, and gender issues. During the evolution of JFM, some funding agencies (especially the Ford Foundation), have played the role of catalyst by organizing national workshops for sharing the ideas and supporting the research and training initiatives. In 1993, the Ford Foundation supported the establishment of a National Support Group (NSG) for JFM. This group

co-ordinates the activities of four networks related to (i) ecological and economic research; (ii) institutional research; (iii) gender and equity; and (iv) training research (Thomas 1998).

In short, with the new forest policy a new era of forest regimes has begun (highlighted by the community based regimes), in which a sincere effort is being made to effect changes to the institutions at all levels as well as to organizations.

## 5, Analysis of forest regimes in India

With the above background, we torn to an analysis of the dynamics of forest regimes in India. In the pre-British period, forests were an integral part of human life, relevant not only to physical needs but also to spiritual and religious values. Even under India's caste society it was possible to develop a system of diverse ecological niches for the different co-existing endogamous groups based on bonds of kinship or reciprocity (Gadgil and Iyer 1989). These forest regimes were governed mainly by conventions reflecting a vision for forest resource use shared by all participants. The emphasis was on a fair distribution of returns to every section of society.* Under British rule the objective of forest policy changed from serving the needs of Indian society and its various strata to serving the needs of the empire. The exclusion of local population —by abrogation of their traditional access rights to forest, became a main feature of forest regimes. This exclusion basically reflected the absence of the Indian population from the government's social welfare function. Though the British defended their changes in terms of efficiency, arguing that well-defined property rights would increase production, in practice what they did was not a matter of defining rights but of abolishing those established by local people through conventions developed over long periods of time, and concentrating all in the hands of the empire. After independence, the social welfare function was redefined in favor of national groups and, at least rhetorically, in favor of the general population; both production efficiency and the distribution of returns figured prominently in two policy initiatives of the government of independent India (Forest Policy 1952 and NCA 1972). In terms of

results, there may have been some gains in the production of industrial wood but the conversion of natural forests to industrial plantations has been highly criticized for its environmental costs. Meanwhile, distributional disparities probably increased rather than being reduced during this phase of "production forestry", its main beneficiaries being large industrial units. Though a serious attempt was made to address distributional disparities through the social forestry program, institutional and organizational inertia (see below) and the preferences of donor agencies and forest departments for quickly visible payoffs led to unexpected results; once again the main beneficiaries were big farmers, and only marginal trickle-down effects benefited the poorer segments of the society. The real shift in forest regimes came in the 1988 Forest Policy, driven by the changing attitudes and preferences of society and some advance also in the attitude of forest managers. In this period both the rights of local people and participatory forest management entered the social utility function, The main objective of the new structure is reallocation of economic opportunities to various forest user groups, specifically poor and marginal groups including tribal and scheduled castes.

In summary, the main economic criteria behind the forest regimes of the different periods have been: fair distribution of returns to every section of society during the pre-British period; redistribution of economic advantage in favor of the empire during the British period; production efficiency and redistribution of returns to national interests during the early phase of Independent India; and redistribution of economic opportunities to the poorer, marginal people during the present phase. In addition to these differences in economic objectives, the main characteristics of the process of forest regime change are path dependence, multiple equilibria, and adaptive efficiency, to each of which we now turn briefly.

5.1 Path dependence of forest regimes. Forest regimes in India have for the most part changed incrementally; the striking exception was the discontinuous shift between the Mughal and the British periods. Normally the native rulers, such as those of the Muarayan empire and their successors, supported

the existing social structure by designing forest regimes consistent with the prevailing social conventions. The prior experience of the non-Indian rulers of the medieval and Mughal periods did not differ strongly from the traditional Muarayan pattern and did not involve over-exploilation. Hence, in spite of their somewhat different ideas and objectives vis a vis their predecessors, such disjuncture as resulted from their administrative inputs was not enough to dismantle the existing social structure or to separate forest regime structure from social structure. Institutional inertia due to the embeddedness of forest regimes in other social institutions contributed to the path-dependence of forest regimes in this period.

The British, in the first phase of their rule, tried to achieve their own economic interests without tearing down the existing forest regime. But their prior experience of forest destruction for military and agricultural purposes contributed an organizational energy sufficient to dismantle the existing structure and to impose a new one in the second phase of their rule. What constituted a discontinuous change of forest regime in India was part of a pattern of path-dependence of forest regimes across the British-ruled territories.

In spite of the natural redefinition of the social welfare function in favor of nationals, the first four decades of independent India (1947-88) saw only incremental changes in forest regimes due to the many self-reinforcing mechanisms of the existing system. These mechanisms can be distinguished according to which of two hierarchy levels they operated at—the policy level or the operational (Forest Department) level. At the first level, the main mechanism was the adaptive expectations of government decision-makers from the existing organization and beliefs, fuelled by the forest managers trained mainly in natural sciences such as forest botany, silviculture, and forest management.[9] In independent India, the function of forestry organizations was, supposedly, changed from "channelling goods and services to the empire" to "provision of goods and services to the population". But adaptive expectations impeded recognition of the irrelevance of the existing forestry organization to the new context. A second mechanism at this level was the expectation of large imminent payoffs from the existing forestry (institutions and organization) system.

During the last phase of British rule, at the same time that local populations were excluded from the forests, large investments were made in the design and establishment of the new forestry institutions (state system) and in forestry organization, in terms of notification of reserve forests, settlement of the rights of local people, training of forest managers, and forest research, The dismantling of the previous forest regimes and organizations and their replacements had involved significant costs, from which the Indian government expected a commensurate payoff. The third self-reinforcing mechanism was the continuation without significant alteration of the Indian Civil Service (now known as Indian Administrative Service), the powerful executive wing of the Indian government. It has demonstrated a powerful influence over policy formulation, in many cases overriding the wishes of local people represented through their elected representatives. The attitudinal inertia, generated through their experience under the British rule, of the members of this service resisted changes to the forest regimes designed under British rule.

At the operational (organizational) level, one source of self-reinforcement was the attitudinal inertia of the forest managers, trained to benefit the empire by excluding the local population. Since they were responsible for training new recruits, their views tended to be imparted to the latter, a tendency heightened by the typically military style of the training programs. Along with training in technical subjects came a heavy dose of organizational culture, within which it was inappropriate for a junior officer to disagree openly with a decision made by a senior, even if convinced that it was completely incorrect. New officers inherited not only the colonial thinking about forest regimes, but also a perceived self-interest in managing the forests for the state, not for the local communities. Having developed the rulers' habit of treating the public as serfs, they found the role of servant to society in an independent country a long stretch. These various mechanisms built up an organizational inertia in the forest department that resisted vehemently any departures from existing forest management practices.

During this post independence phase, organizational inertia was the dominant factor in the evolution of forest regimes, acting as an impediment to improvements in the efficiency of community institutions. By

the 1980s, however, the social energy generated by mass movements such as Chipko, and the emergence of non-government organizations at the national level forced the government and the forest department to explore alternate forest regimes. This process was further strengthened by support from the Prime Minister and some forest officers who were wiling to take risks by contravening the conventions of the forest department

5.2 Multiple equilibria. Another important feature of India's forestry history has been the presence of various types of regimes during all periods. In the pre-British period, community regimes dominated but private or state control existed for specific purposes such as meeting the spiritual needs of Brahamins, the hunting needs of rulers, and elephant upkeep for the army. During the British period, a general attempt was made to convert all forests to the state regime. But the half of India that was under princely states and hence not directly ruled by the British continued with community regimes for a long time, and the colonial government did recognize community regimes in some areas such as Van Panchyats, and Forest Cooperatives in Himachal Pradesh; in some areas local traditional management systems (community regimes) continued unnoticed by the empire. In the early phase of independent India, while the state regimes were extended to the principalities, community regimes that had been recognized by the British government as well as other informal community regimes that had survived that period continued. In the last (current) phase, the main emphasis has been on joint regimes, though the majority of the area is still under state regimes.

The existence of such a variety of regimes at any given time is not necessarily a reflection of the possibility of "multiple equilibria" in the sense that this term is used in the evolutionary economics literature, i.e. the idea that a set of alternative equilibria would all be possible outcomes in a given situation, in contrast to the core idea of "equilibrium economics" that there is one equilibrium which will be reached sooner or later regardless of the precise path the economy takes en route. The history of forest regimes in India

does, however, supports North's (1992, p. 95) argument that in the case of incomplete markets, fragmentary information, and significant transaction costs, the path of change will be shaped by the subjective models of actors--based on their historically derived perceptions modified by very imperfect feedback and by ideology. Divergent paths and poor performance are natural results. In the context of forest regimes in India, the choices made by the various actors, from rulers to forest officers to the public, were greatly influenced by their historical perceptions. In the pre-British period, specifically up to 800 AD, the central criteria of fair distribution of returns to every sector of society resulted in a mix of resource regimes. During the British period, mix of forest regimes resulted due to inability of the government to convert all community regimes to state regimes, an inability related to a combination of factors: the extent of the forests; the resources (such as trained managers) required; conflicts between the state and local people due to differing perceptions of what was appropriate; and the time-lag between the transition in areas controlled directly by the British and those of the princely states. In the early post independence period, path dependence contributed to a mix of forest regimes. In the present phase (starting from 1988), the slow growth of joint regimes and the related continuation of state regimes are due to organizational as well as institutional inertia, and to lack of the resources, such as trained manpower, required to facilitate this process. In addition to these factors, in the case of natural resources such as forests, the optimal resource regime (taking account of transformation as well as transaction efficiency) will vary with the socio-economic conditions of the user group (Kant et at. 1998). Hence, even if all the constraints to change in resource regimes are removed, a mix of resource regimes may be desirable from an efficiency perspective.

### 5.3 Adaptive Efficiency in Post 1988 Forest Regimes

The concept of adaptive efficiency has not attracted as much attention as path dependence or multiple equilibria, but Pelikan (1987) and North (1990) have argued that it plays a parallel role in evolutionary

economics to that of allocative efficiency in neo-classical economics. Adaptive efficiency involves the institutions that shape the way an economy evolves over time, and such associated issues as the willingness of a society to acquire knowledge and learning, to induce innovations, and to undertake risk and creative activities (North 1990, p.80). The idea of adaptive efficiency is also reflected in the argument that in a world of uncertainty, no one knows the correct answer to all problems faced, hence no one can maximize profits with certainty (Alchian 1950), and in the view that the society that permits the maximum generation of trials will be most likely able to solve its problems through time (Hayek 1960).

The 1988 Forest Policy encourages the shift from state regimes to either community or joint regimes. In the decade since then, the behaviour of both the forest department and the local communities indicates that a process of adaptive efficiency is underway. It rests on the willingness of the department and the communities to acquire knowledge and learning, to induce innovations, to undertake risks and creative activities of all sorts, as well as to resolve problems and bottlenecks as they emerge. The apparent origin of the new (joint) forest regime is the risky innovations adopted by some Divisional Forest Officers (DFOs) in the state of West Bengal—risky both in the sense that they were experimental and hence their effects could not be predicted and in the sense that the DFOs could have been reprimanded or punished for this deviation from standard departmental practice. In Purulia district in 1972 a new DFO faced immense pressure from illegal harvesting of the forests by local communities. Initially he worked with the state police officers to raid villages and local fuelwood market centres and to arrest fuelwood cutters, but this created considerable unrest in the area and tension between the forest officials on the one side and the local people and politicians on the other. He responded by suggesting to the communities that they take on protection responsibilities in return for a share of the fuelwood and minor forest products. In another area of south-west Bengal, Arabari, the local DFO[10] offered a 25% share of the sal timber and rights to all non-timber forest products including leaves, medicinal plants, fibre and fodder grasses, mushrooms and fruits in return for forest protection by communities (Poffenberger et al. 1996). These were daring moves by the

DFOs since they lacked legal authority to venture into such partnership programs. When it later came to formalisation of the new joint management regimes, the different states developed a variety of provisions defining the categories of forests to be covered, the participants from the community, the management unit, the representation of different sectors in the executive committee, the power of the committee, the benefit sharing arrangements, etc. For example, the management unit is a forest compartment in Orissa, a village in Gujarat and Rajasthan, and a forest beat in West Bengal. The forest departments and local communities have shown willingness to learn, change, and co-operate. It was felt that the reorientation and training of forest officers was perhaps the key to the attitudinal and institutional changes necessary to support JFM over the long-term. The forest departments have been very receptive to this idea. Forest officers at different levels are being trained by the local and national NGOs and other training institutions such as state Administrative Academies, the Indian Institute of Forest Management, the Tata Energy Research Institute, etc. Social learning and local innovations by community members and forest officials are also contributing to the adaptive efficiency of the new regimes. In 1994, consultations between the DFO of Harda Forest Division, Madhya Pradesh, and the local communities of Malpone village resulted in an innovative management plan that focused on nested silvicultural prescriptions (i.e. prescriptions consistent with the local socio-economic and cultural milieu), dividing the forest and its management both by species and by canopy tiers (Campbell and Rathore, 1995). In such exercises, community members and forest officials together develop ways of combining traditional knowledge and modern scientific methods of forest management Forest officers have learned a variety of "ethno-silvicultural" techniques such as seed sowing in Euphorbia bushes by drawing on the indigenous knowledge base (Campbell and Rathore, 1995). The local communities also search for answers to the various challenges confronting joint regimes, such as convincing other people to join and achieving an equitable distribution of benefits. When some herdmen in Badagorada village of Orissa let their cattle graze in nearby forests four school teachers and 150 students from the local school went to the village and lay prostrate in front of the herdmen's houses.

The latter apologised and promised not to repeat the offense (Kant et at. 1991). The village forest protection committee in Roriya, Madhya Pradesh, has been creative in devising a scheme for distributing resources among its members, and for reducing competition among non-timber forest product collectors. Each family has been assigned 2-4 Mahua trees, depending upon its size, from which to collect flowers, and group collection is promoted so no family's allocated resources will be infringed upon (Kant and Cooke, 1998).

Hence, the institutional environment created by the 1988 policy has not only started the change in forest regimes from state to community or joint regimes, but it has created an environment in which members of the forestry administration and local communities are looking for working knowledge. This will, at least in the long-term, also influence the adaptive efficiency of the forest department, as reflected in its internal governance structure and resulting flexibility. Hopefully, it will also help to eliminate the systematic organisational errors due to those ideologies of high-ranking officials that are not conducive to adaptive efficiency.

## 6.0 Final Comments

The history of forest policy and forest management practice in India conforms well to the evolutionary theory of economic change, with its emphasis on path dependence, multiple equilibria, and adaptive efficiency. Equilibrium ideas do not appear to help much in explaining that history. Some points are worthy of mention.

First, the nature of regime change associated with the new 1988 policy may be debated. From some perspectives it may appear as a sharp, discontinuous change. We are nevertheless inclined to describe it as incremental since: the idea of involving the communities in forest management is not new, community regimes having existed at least in isolated cases throughout India's forest history; the social forestry program was started in seventies; there was a modest de-facto shift towards community regime even

before the 1988 policy was enunciated; and, finally, the 1988 policy has of course not converted all state regimes into community regimes. Effects of the 1988 policy like the changing attitudes of some forest officers towards community involvement in forest management appear revolutionary, but have not been general and have not occurred overnight They are the outcome of a continuous process of criticism of forest officers by the general public, an increasing role of non-government organizations in bringing the forest department's anti-people attitude to the forefront, and the experimentation and learning of some daring and innovative forest officials. Hence, there are more elements of continuous incremental change rather than of revolutionary transformation.

Second, India appears to be typical of countries with a colonial history in that, as far as forest regimes are concerned, the process of "natural selection" envisaged by Alchain (1950) and Friedman (1953) was suppressed by the colonial rulers. After self-government arrived, the dependency effect (frequency with which a practice has been performed in the past) played a critical role in the process of "adverse selection" among forest regimes, i.e. in the survival of ineffective regimes.

Third, the importance of informal institutions tends to be downplayed in the theory of institutional change, relative to formal ones. North (1990, p.45) points out that "the informal constraints that are culturally derived will not change immediately in reaction to changes in the formal rules. As a result the tension between altered formal rules and the persisting informal constraints produces outcomes that have important implications for the way economies change ,. " In the case of resource regimes the understanding of informal institutions has been limited mainly to norms and behavioral codes of local user groups. In the case of forest resources in particular, the interaction of formal institutions with the informal institutions of local user groups occurs largely through forestry organizations. Though the concepts of organizational inertia and culture are well developed, they have not been reined to the extent needed for a more satisfactory theory of institutional change. North (1990) introduced an organization as a purposive entity designed by its creators to pursue wealth, income, or other objectives defined by the opportunities

implicit in the institutional structure of the society, and argued that in the pursuit of those objectives, economic organization shapes **institutional change** by: (i) the resultant derived demand for investment in knowledge of all kinds; (I) the ongoing interaction between organized economic activity, the stock of knowledge, and the institutional framework; and (iii) the incremental alteration of informal constraints as a by-product of the maximizing activities of organizations. These arguments are more relevant to economic organizations such as business firms than to the forestry organizations created by colonial regime and continued by the post-independence governments. Understanding the evolution of forest regimes in these countries needs a broader framework to encompass interactions between formal institutions, organizations, and user groups instead of simply those between formal institutions and user groups. It must include not only informal institutions of user group but also informal institutions of organizations that result in organizational energy or organizational inertia.

Fourth, the behavior of members of forest organizations supports Arthur's (1993) emphasis on elements of increasing returns in human learning that are not necessarily optimal, such as path dependence, self-reinforcement, and lock-in to actions. This insight is important in any theory of institutional change that incorporates organizations and their informal institutions. We feel that similar patterns of increasing returns may also be observed in the learning of local communities, and that they can definitely help in understanding observed changes in informal institutions and in developing a more comprehensive theory of forest resource regime change.

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[1] In this hierarchial categorization, the legal distinction between acts, orders, and guidelines is not our concern. In the court of law, a government order that is in contravention of the existing forest act may not be sustained. But, if the executive branch of government, which is presumably aware of the act, issues an order that contravenes it, this is likely to mean that it wants to change the existing law. This anomaly, and the possible conflict to which it may give rise, can occur when amending an act is a lengthy process. Eventually the government amends the act as per the new orders of the government.

[2] Though this was the central goal of policy, it was not achieved by this type of regime, for reasons discussed in GOI 1988.

[3] In evolutionary economics, the phenomenon whereby an increased prevalence of the market enhances belief in its continued prevalence is known as "adaptive expectations" (North 1990 p.94). Here this term is used in a similar sense, though the prevalence in question is not that of the market. Specifically, the adaptive expectations of the government of India involved its belief that the existing forestry organization established by the colonial government would provide the desired outcomes from forest management.

[4] As noted above, "institutions" refer to the rules, norms, codes etc., whether formal or informal, which define the rights, privileges and obligations of various groups in a regime. Institutions are vertically and horizontally integrated. Vertical integration exists between institutions at different levels but involving the same resources or issues, while horizontal integration exists between the institutions surrounding a given resource (like the forests) or area and those of other relevant areas such as general administration, tax administration, etc. This integration may make the costs and/or impediments associated with an institutional change in any given area prohibitively high; existing institutions may thus demonstrate strong inertial forces against change. These forces may originate from "frequency dependency effects", whereby the feasibility of a particular set of institutions depends upon the frequency with which they have previously held sway in the same society or in different societies. Complexity of institutions can also generate inertia against change. Forces against institutional change, generated by such features as integration, complexity, repetition etc. will be termed "institutional inertia".

In the literature on organization theory, inertial forces that resist organizational change are well documented. They have been mainly grouped into structural inertia and process inertia (Miller and Friesen 1980). In this paper, our focus is not on organizational change but on those features of organizations that resist institutional change, and we will refer to such forces as "organizational inertia".

Organizations are physical manifestations of institutions, designed by their creators to maximize well-defined objectives. However, members of organizations develop their own interests in addition to or even in conflict with the objectives of the creators. Conflicts between the interests of creators (such as shareholders) and managers are well documented in the management literature. In such situations their designers may be interested in changing the institutions, but the organization may resist this due

to the self-interest of the managers. Managers may also be characterized by "attitudinal inertia" whereby they are able to resist accepting the discrepancy between their own interests and those underlying the organization's creation; we refer to this as attitudinal inertia, a factor contributing to organizational inertia. Other sources of organizational inertia may lie in organizational structure and culture.

[5] Until this 1894 policy, there had been only one level of forest institutions in British India, represented by the forest acts. The 1894 forest policy statement added a second level, the top one in the terminology of this paper.

[6] One British planter killed four hundred elephants in the 1860s in the Nilgais (Guha and Gadgil 1989).

[7] For a detailed discussion of forest regimes in India see Kant 1996, and Kant et al. 1998.

8 The concept of "fairness" involves, inevitably, a degree of subjectivity. In this case the distribution of benefits was fair to the less advantaged groups in the sense that it did make provision for everyone's receiving certain benefits (in particular firewood and some other forest products), and in the sense that it was generally perceived as fair by the affected groups.

[9] Similar expectations of the government were also reflected in the continuation of such of such core components of the general administration as the Indian Civil Service and the Indian Police Service.

10, Dr. A. Banerjee, who was DFO in this area, graduated from the University of Toronto in 1969. The more open, less bureaucratic, and more innovative environment of a western university may have contributed to Dr. Banerjee's inclination to try something new when back in India.