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Our decision to reprint an article on the Chipko (Embrace-the-Tree) movement in this issue grew out of a conversation between Don St. John and J. Bandyopadhyay in Bangalore, India, last July. Don was participating in a Fulbright-Hays summer seminar which focused on Indian social change. This provided him with an opportunity to travel throughout most of India, meet with leading figures from all sectors of Indian life and visit several grassroots projects sponsored by Gandhian organizations. In addition, Don used the trip as a way of meeting with Indian environmentalists and learning about the state of the Indian environment. We hope to present a summary of the Indian situation in a later issue.

Large-scale exploitation such as that discussed in this issue of Ecospirit does not have to be examined very deeply before a pattern emerges. The outline and sequence of events in the exploitation senario described in the following article form a classic case of what can be called the "Exploitation Syndrome." Social groups in which resources are held in common seem particularily vulnerable to this syndrome. Such groups devise social contracts that both control exploitation by individual members of the group and ensure productivity. Perhaps such social organizations prove vulnerable to the exploitation syndrome because their social contracts depend upon tradition and close personal contact. Both can be easily broken by any process of social disruption.

The first stage of the syndrome is the imposition of the idea of private property on the residents by outside forces. Colonialization has been a major contributor to this throughout the globe. Private property then encourages increased domestic need -- greater consumption rather than less -- and fosters a non-local commercialism. For example, because the 18th century English wanted sugar, indigenous people in the Carribean were enslaved and their land impoverished. The second stage in the exploitation syndrome is the foundation of government bureaucracies which condone and "legalize" commercial use because they depend upon the revenue derived from commercialism. The Bureau of Indian Affairs and the Department of the Army are two agencies involved in taking the American Indian's land for commercial use. That battle is still continuing.

I have identified at least six factors that can intervene to arrest the exploitation syndrome, though I suspect there are more. Not all of them are found in the article that follows. However, there is no better example of the first type of intervention -- persistent local resistance -- than Indian passive resistance. Brazil furnishes examples of two types of intervention -- loss of economic value and natural forces. For example, when it became possible to produce rubber that was both cheaper and of better quality than that from Brazil, the Brazilian rubber trade was abandoned. Natural forces may well prove that massive daming of the Amazon is impractical because of a generally adverse environment. Applied science can also reverse the decay of local conditions. Agricultural innovation in Africa was a cause of some recent optimism. Ecological legislation is sometimes powerful as well. U.S. commercial whaling was dismantled through Congressional action. A sixth type of intervention is adoption of an alternative worldview. The editors of Ecospirit are proud to join with others throughout the world who are nurturing this new worldview rooted in the sacred vitality of nature.

--Paul Larson

THE EVOLUTION, STRUCTURE, AND IMPACT OF THE CHIPKO MOVEMENT

by Vandana Shiva and J. Bandyopadhyay

Conflicts over forest resources in India are mainly a product of the opposing demands on these resources. They are generated by the requirements of conservation and the need to satisfy the basic living requirements of the marginalized majority, on the one hand, and the demands of commerce and industry, on the other. During the past century, there has been a progressive encroachment by the State on the rights and privileges of the people to forest resources. The people have resisted this encroachment in various parts of India mainly through the Gandhian non-cooperation method of protest, well-known as "Forest Satyagraha". In the forest areas of the Garhwal Himalaya this style of protest was revived in independent India as the "Chipko" or "Embrace-the-Tree" movement to protect trees marked for felling. Although Chipko was first practiced in the Garhwal Himalaya, it has now spread to most of the country, especially the hilly regions.

This paper will examine the philosophical and organizational continuity of the Chipko Movement with the Indian tradition of resolving conflicts through non-violent non-cooperation, a political strategy revived by Mahatma Gandhi and adopted by the Gandhian workers in all parts of the country. The Chipko Movement, however, is unique in a fundamental way. Although it had its roots in a movement based on the politics of the distribution of the benefits of resources, it soon became an ecological movement rooted in the politics of the distribution of ecological costs. Further, though the visible leaders of the movement are men, the strength of the movement lies in the support from women.

The paper will analyse the subjective and objective factors that account for the rapid spread of the movement. Finally, an assessment of its impact at the national and global levels will be made. Chipko, as a model for the resolution of conflicts over natural resources in general, will be examined.

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Colonial Roots of Conflict

The conflicts and tension from which the famous Chipko Movement has emerged can be traced historically to the drastic changes in forest management and utilization introduced into India during the colonial period. Forests, like other vital resources, were managed traditionally as common resources with strict, though informal, social mechanisms for controlling their exploitation to ensure sustained productivity. In addition to the large tracts of natural forests that were maintained through this careful husbanding, village forests and woodlots were also developed and maintained through the deliberate selection of appropriate tree species. Remnants of commonly managed natural forests and village commons still exist in pockets and these provide insights into the scientific basis underlying traditional land management.

Colonial impact on forest management undermined these conservation strategies in two ways. First, changes in land tenure, such as the introduction of the zamindari system, transformed common village resources into the private property of newly created landlords and this led to their destruction. The pressure of domestic needs, no longer satisfied by village forests and grasslands, were, therefore, diverted to natural forests. Second, large-scale fellings in natural forests to satisfy non-local commercial needs, such as shipbuilding for the British Royal Navy and sleepers (railroad ties) for the expanding railway network in India, created an extraordinary force for destruction. After about half a century of uncontrolled exploitation the need for control slowly became apparent. The formation of the forest bureaucracy and the reservation of forest areas was the colonial response to ensure control of commercial forest exploitation as a means to maintain revenues. Forest conservancy was directed at the conservation of forest revenues and not at the forests themselves. This narrow interpretation of conservation generated severe conflicts at two levels. At the level of utilization, the new management system catered only to commercial demands and ignored local basic needs. People were denied their traditional rights which, in some cases, were re-introduced as

concessions and privileges after prolonged struggles At the conservation level, since the new forest management was only concerned with stable forest revenues and not with the stability of forest ecosystems, ecologically unsound silviculture practices were introduced. This undermined biological productivity of forest areas and transformed renewable resources into non-renewable ones.

The reservation of forests and the denial of the villagers' right of access led to the creation of resistance movements in all parts of the country. The Forest Act of 1927 intensified the conflicts and the 1930s witnessed widespread Forest Satyagrahas as a mode of non-violent resistance to the new forest laws and policies.

Satyagraha and Conflict Resolution

Satyagraha, in the Gandhian view, was the use of non-violent resistance as a political weapon in place of the force of arms. Unlike many other well-known political philosophies, Gandhian philosophy has never been claimed to be strictly materialist. In the absence of such overt categorization, Gandhian philosophy usually has been assumed to be based on subjective, idealist, or moral forces, rather than objective or materialist ones. Accordingly, the most important political weapon used in the Gandhian movements, the satyagraha, has always been mystified as an emotional force without any materialist base. A closer socio-historical evaluation is needed to demystify the image of Gandhian satyagrahas and to establish the materialist basis of Gandhian movements such as Chipko.

The power of satyagraha, in the form of non-cooperation, has been a traditional mode of protest against exploitative authority in India. In Hind Swaraj, Gandhiji wrote that through satyagraha he was merely carrying forward an ancient tradition: "In India the nation at large had generally used passive resistance in all departments of life. We cease to cooperate with our rulers when they displease us."

The dominance of the use of moral force was not, however, an indicator of the non-material objectives of these movements. The strong material basis of the Gandhian movements becomes visible after a detailed analysis of the concrete issues and contradictions for the settlement of which the satyagrahas were taken up. Satyagrahas were used by Gandhiji against systems of material exploitation which were the main tools for profit making of the British, and in which was rooted the material underdevelopment of the Indian masses. It was used in Champaran to save Indian peasants from the compulsory cultivation of indigo in place of foodcrops. It was used in Dandi and in other parts of the country to protest against the exploitative Salt Law. It was used to safeguard the interests of the Indian weavers who were pauperized by the unequal competition with mill-made cloth from Europe. It was used by forest movements to resist the denial of traditional rights. Unfortunately, in spite of the fact that Gandhian satyagrahas were used to oppose the economic system that created material poverty and underdevelopment, usually they have been described and understood as non-material and spiritual transformations without any materialist base. This common perception of Gandhian movements as unrelated to the material contradictions in society is completely fallacious. The subjective and spiritual nature of the force of satyagraha has systematically been confused with the material and objective contradictions in society against which the force was used.

The classical view of the contradiction between the working class and the capitalists has dominated the attempts at analysing the class relations in contemporary Indian society. The deeper and more severe contradiction that touch upon the lives of the vast number of people, based on the contradiction between the economics of sustainable development and capitalist production for profit-making and economic growth, is hardly perceived or recognized. Gandhiji had focused his attention on these more fundamental and severe material contradictions in Indian society since he understood the problem of the invisible and marginalized majority in India. The material basis for survival of this marginalized majority was threatened by the resource demands of the capitalist production system introduced into India by the British. In this manner, without making any claims about being materialistic, Gandhiji politicized the most severe material contradictions of his time.

Forest Satyagraha to Chipko

The years 1930-31 witnessed the spread of forest Satyagrahas throughout India as a protest against the reservation of forests for exclusive exploitation by British commercial interests and its concomitant transformation of a common resource into a commodity. Villagers ceremonially removed forest products from the reserved forests to assert their right to satisfy their basic needs. The forest satyagrahas were especially successful in regions where survival of the local population was intimately linked with access to the forests, as in the Himalaya, the Western Ghats, and the Central Indian hills. These non-violent protests were suppressed by the British rulers. In Central India, Gond tribals were gunned down for participating in the satyagraha. On 30 May 1930 dozens of unarmed villagers were killed and hundreds injured in Tilari village, Tehri Garhwal, when they gathered to protest the Forest Laws of the rulers.

After enormous loss of life, the satyagrahas were successful in reviving some of the traditional rights of the village communities to various forest products.

This, however, did not mean that satisfaction of the basic requirements of the people, or the ecological role of the forests, replaced the revenue maximizing objectives as the guiding principle of British forest management in India. Furthermore, the objective of growth in financial terms continues to direct contemporary forest management in post-Independence India with even greater ruthlessness, since it is now carried out in the name of "national interest" and "economic growth." The cost of achieving this growth has been the destruction of forest ecosystems and huge losses through floods and droughts. In ecologically sensitive regions, such as the Himalaya, this destruction has threatened the survival of the forest-dwelling communities. The people's response to this deepening crisis has emerged as non-violent Gandhian resistance: the Chipko Movement. Beginning in the early 1970s in the Garhwal region of Uttar Pradesh, the methodology and philosophy of Chipko has now spread to Himachal Pradesh in the north, to Karnataka in the south, to Rajasthan in the west, to Bihar in the east, and to the Vindhyas in Central India.

Forest Movements in Garhwal Himalaya

Forest resources are the critical ecological elements in the vulnerable Himalayan ecosystem. The natural broad-leaved and mixed forest have been central in maintaining water and soil stability under conditions of heavy seasonal rainfall. They have also provided the most significant input for sustainable agriculture and animal husbandry in the hills. Undoubtedly, the forests provide the material basis for the whole agro-pastoral economy of the hill villages.

Green leaves and grass satisfy the fodder requirement of the farm animals whose dung provides the only source of nutrients for food crops. Dry twigs and branches are the only source of domestic cooking fuel. Agricultural implements and house frames require forest timber. The forests also provide large amounts of fruit, edible nuts, fibres, and herbs for local consumption.

During the nineteenth century a third demand was put on these forest resources of Garhwal. In 1850 an Englishman, Mr. Wilson, obtained a lease to exploit all the forests of the Kingdom of Tehri-Garhwal for the small annual rental of 400 rupees. Under his axe several valuable Deodar and Chir forests were clear-felled and completely destroyed. In 1864, inspired by Mr. Wilson's flouishing timber business, the British rulers of the northwestern provinces took a lease for 20 years and engaged Wilson to exploit the forests for them. European settlements, such as Mussoorie, created new pressures for the cultivation of food crops, leading to large-scale felling of oak forests. Conservation of the forests was not considered. In his report on the forests of the state, E. A. Courthope, IFS, remarked: "It seems possible that it was not mainly with the idea of preserving the forests that government entered into this contract." In 1895 the Tehri State took the management of forests in its own hands when they realized their great economic importance from the example of Mr. Wilson and the government. Between 1897 and 1899 forest areas were reserved and restrictions were placed on village use. These restrictions were much disliked and utterly disregarded by the villagers, and led to cases of organized resistance against authority. On 31 March 1905 a Durbar circular (No. 11) from the Tehri King

announced modifications to these restrictions in response to the resistance.

The modifications, however, failed to diffuse the tension. Small struggles took place throughout the kingdom, but the most significant resistance occurred in 1907 when a forest officer, Sadanand Gairola, was manhandled in Khandogi. When King Kirti Shah heard about the revolt he rushed to the spot to pacify the citizens.

The contradictions between the people's basic needs and the State's revenue requirements remained unresolved and in due course they intensified. In 1930 the people of Garhwal began the non-cooperation movement mainly around the issue of forest resources. Satyagraha to resist the new oppressive forest laws was most intense in the Rawain region. The King of Tehri was in Europe at the time. His Dewan, Chakradhar Jayal, crushed the peaceful satyagraha with armed force. A large number of unarmed Satyagrahis were killed and wounded, while many others lost their lives in a desperate attempt to cross the rapids of the Yamuna River. While the right of access to forest resources remained a burning issue in the Garhwal Kingdom, the anti-imperialist freedom movement in India invigorated the Garhwali people's movement for democracy. The Saklana, Badiyargarh, Karakot, Kirtinagar, and other regions revolted against the King's rule in 1947 and declared themselves independent panchayats. Finally on 1 August 1949 the Kingdom of Tehri was liberated from feudal rule and became an integral part of the Union of India and the State of Uttar Pradesh.

The heritage of political struggle for social justice and ecological stability in Garhwal was strengthened in post-Independence India with the influence of eminent Gandhians, such as Mira Behn and Sarala Behn.

The Chipko Movement is, historically, philosophically, and organizationally, an extension of traditional Gandhian Satyagraha. Its special significance is that it is taking place in post-Independence India. The continuity between the pre-Independence and post-Independence forms of this satyagraha has been provided by Gandhians, such as Sri Dev Suman, Mira Behn, and Sarala Behn. Sri Dev Suman was initiated into Gandhian Satyagraha at the time of the Salt Satyagraha. He died as a martyr for the cause of the Garhwali people's rights to survive with dignity and freedom. Both Mira Behn and Sarala Behn were close associates of Gandhiji. After his death, they both moved to the interior of Himalaya and established ashrams. Sarala Behn settled in Kumaun and Mira Behn lived in Garhwal until her departure for Vienna due to ill health. Equipped with the Gandhian world-view of development based upon justice and ecological stability, they contributed silently to the growth of women-power and ecological consciousness in the hill areas of Uttar Pradesh. Sunderlal Bahuguna is prominent among the new generation of workers deeply inspired by these Gandhians. Influenced by Sri Dev Suman, he joined the Independence movement at the age of 13. Now, at nearly 60, he is busy strengthening the philosophical base of the Chipko Movement from the Gandhian view of nature. The rapid spread of resistance, based on the Movement, in the hills of Uttar Pradesh and its success in enforcing changes in forest management was largely due to the awareness created by folk poets, such as Chanshyam Raturi, and grass-roots organizational efforts of a number of activists, such as Chandi Prasad Bhatt in Chamoli and Dhoom Singh Negi in Tehri Garhwal.

The Gandhian movement in Garhwal in the post-Independence period had organized itself around three central issues: (1) organization of women power; (2) struggle against the liquor menace; and (3) the forest problem. The organizational platform for the Chipko Movement was ready, therefore, when in the 1960s destruction of Himalayan forests through commercial exploitation became the major cause of ecological instability in the Himalaya. Since forest exploitation was carried out by private contractors, the Movement, in its initial stages, attempted to stop the auctioning of forests for felling by contractors. Auctions were held up by protesters in Nainital, Dehradun, Narendranagar, Tehri, and Uttarkashi. Songs by the folk poet Ghanashyam Raturi were central to the mobilization of support for these protests. The songs reminded the hill people of their forest-based culture and created an environment within which the hill people became more aware of the need for forest protection. In particular, one

popular folk-song by Raturi, written in 1973, identifies embracing the trees as a method of saving them from the axe-men. It is this cultural and political climate and heritage which marks the birth of the now famous Chipko Movement.

There has been a lot of confusion in the search for the originator of the Chipko Movement. However, the Movement is not the conceptual creation of any one individual. It is the expression of an old social consciousness in a new context. Chipko, like the earlier forest satyagrahas and movements in Garhwal, is aimed jointly at protecting forests, preserving a culture, and maintaining livelihoods. It is the response of a whole culture to the central problems related to the survival of the hill people. Today, the women of Garhwal are the main bearers of this culture.

This is the primary reason why the contemporary struggle to save the survival base in the Himalaya is led by the women. The first Chipko action took place spontaneously in April 1973, when the villagers demonstrated against felling of ash trees in Mandal forest. Again, in March 1974, 27 women under the leadership of Goura Devi saved a large number of trees from a contractor's axe. After this, the government stopped the contract system of felling and formed the Uttar Pradesh Forest Corporation. During the next five years Chipko resistance to felling took place in various parts of Garhwal Himalaya. In May 1977 Chipko activists in Henwal Valley organized themselves for future action. In June 1977 Sarala Behn planned a meeting of all activists in the hill areas of Uttar Pradesh State which further strengthened the movement and consolidated the resistance to commercial fellings as well as excessive tapping of resin from the Chir pine trees. In Gotars forest in the Tehri range the forest ranger was transferred because of his inability to control illegal over-tapping of resin. Consciousness was so high that, in the Jogidanda area of Saklana range, the public sector agency, Garhwal Mandal Vikas Nigam, was asked to regulate its resin-tapping activity.

Among the numerous instances of Chipko successes throughout the Garhwal Himalaya in the years to follow, the instances in Adwani, Amarsar, and Badiargarh merit special mention. The auction of Adwani forests took place in October 1977 in Narendernagar, the district headquarters. Bahuguna undertook a fast against the auction and appealed to the forest contractor and the district authorities to refrain from auctioning the forests. The auction was undertaken despite the expression of popular discontent. In the first week of December 1977, the Adwani forests were scheduled to be felled. Large groups of women led by Bachhni Devi came forward to save the forests. Interestingly, Bachhni Devi was the wife of the local village head, who was himself a contractor. Dhoom Singh Negi supported the women's struggle by undertaking a fast in the forest itself. The women tied sacred threads to the trees as a token of a vow of protection. Between 13 and 20 December large numbers of women from 15 villages guarded the forests while discourses on the role of forests in Indian life from ancient texts went on non-stop. It was here in Advani that the ecological slogan "What do the forests bear? soil, water, and pure air" was born.

The axe-men withdrew only to return on 1 February 1978 with two truckloads of the armed police. The plan was to encircle the forests with the help of the police in order to keep people away during the felling operation. Even before the police reached the area the volunteers of the Movement entered the forest and explained their case to the forest labourers who had been brought in from far distant places. By the time the contractors arrived with the policemen each tree was being guarded by three embracing volunteers. The police, having been defeated in their own plan and seeing the awareness among the people, hastily withdrew before nightfall.

In March 1978 a new auction was planned in Narendranagar. A large popular demonstration took place against it and the police arrested 23 Chipko volunteers, including women. In December 1978 a large felling was planned by the public sector U.P. Forest Development Corporation in the Badiyargarh area. The local people instantly informed Bahuguna who started a fast unto death at the felling site. On the eleventh day of his fast Bahuguna was arrested in the middle of the night and taken to jail. This act only served to further steel the commitment of the people. Folk poet Ghanashyam Raturi and priest Khima

Shastri led the movement as thousands of men and women from all the villages around joined them in the Badiyargarh forests. The people remained in the forests and guarded the trees for eleven days, when the contractors withdrew.

The cumulative impact of the sustained grass-roots struggles to protect the forests was a re-thinking of the forest management strategy in the hill areas. The Chipko demand for declaration of Himalayan forests as protection forests instead of production forests for commercial exploitation was recognized at the highest policy-making level. The late Prime Minister, Indira Gandhi, after meeting with Bahuguna, issued a directive for a 15-year ban on commercial green felling in the Himalayan forests of Uttar Pradesh.

Ecological Foundation of Chipko

Both the earlier forest satyagrahas and their contemporary form, the Chipko Movement, have arisen from conflicts over forest resources and are similar cultural responses to forest destruction. What differentiates Chipko from the earlier struggle is its ecological basis. The new concern to save and protect forests through Chipko Satyagraha did not arise from a resentment against further encroachment on the people's access to forest resources. It arose from the alarming signals of rapid ecological destabilization in the hills. Villages that were self-sufficient in food had to resort to food imports as a result of declining food productivity. This, in turn, was related to the reduction of soil fertility in the forests. Water sources began to dry up as the forests disappeared. The so-called "natural disasters," such as floods and landslides, began to occur in river systems which had hitherto been stable. The Alaknanda disaster of July 1970 inundated 1,000 km of land in the hills and washed away many bridges and roads. In 1977 the Tawaghat tragedy took an even heavier toll. In 1978 the Bagirathi blockade above Uttarkashi resulted in massive floods across the entire Gangetic plains.

The over-exploitation of forest resources and the resulting threat to communities living in the forests have thus evolved from concerns for distribution of material benefits to concerns for distribution of ecologically-generated material costs. At the first stage, the growth of commercial interests resulted in efforts to exclude competing demands. The commercial exploitation of India's forest resources thus created the need for a forest legislation which denied village communities' access to forest resources. The Forest Satyagrahas of the 1930s were the result of the Forest Act of 1927 which denied the people access to biomass for survival while increasing biomass production for industrial and commercial growth. The growth imperative, however, drove production for commercial purposes into the second stage of conflict which is at the ecological level. Scientific and technical knowledge of forestry generated in the existing model of forest management is limited to viewing forests only as sources of commercial timber. This gives rise to prescriptions for forest management which are manipulations to maximize immediate growth of commercial wood. This is achieved initially by the destruction of other biomass forms that have lower commercial value but may be very important to the people, or have great ecological significance. The silvicultural system of modern forestry embraces prescriptions for destruction of non-commercial biomass forms to ensure the increased production of commercial forms. The encouragement given to the replacement of ecologically valuable oak forests by commercially valuable conifers is an indicator of this shift. Ultimately, this increase in production may be described as mining of the ecological capital of the forest ecosystems which have evolved through thousands of years.

The contemporary Chipko Movement, which has become a national campaign, is the result of these multi-dimensional conflicts over forest resources at the scientific, technical, economic, and especially the ecological levels. It is not a narrow conflict over the local or non-local distribution of forest resources, such as timber and resin. The Chipko demand is not for a bigger share for the local people in the immediate commercial benefits of an ecologically destructive pattern of forest resource exploitation. Since the Chipko Movement is based upon the perception of forests in their ecological context, it exposes the social and ecological costs of growth-oriented forest management. This is clearly seen in the slogan of the Chipko

Movement which claims that the main products of the forests are not timber or resin, but soil and water. Basic biomass needs of food, fuel, fodder, small timber, and fertilizer can, in the Chipko vision and the Garhwal practice, be satisfied as positive externalities of biomass production primarily aimed at soil and water conservation to stabilize the local agro-pastoral economy.

The Chipko Movement has been successful in forcing a fifteen-year ban on commercial green felling in the hills of Uttar Pradesh, in stopping clear-felling in the Western Ghats and the Vindhyas, and in generating pressure for a national forest policy which is more sensitive to the people's needs and to the ecological requirements of the country. Unfortunately, the Chipko Movements has often been naively presented by vested interests as a reflection of a conflict between "development" and "ecological concern," implying that "development" relates to material and objective bases of life while "ecology" is concerned with non-material and subjective factors, such as scenic beauty. The deliberate introduction of this false and dangerous dichotomy between "development" and "ecology" disguises the real dichotomy between ecologically sound development and unsustainable and ecologically destructive economic growth. The latter is always achieved through destruction of life-support systems and material deprivation of marginal communities. Genuine development can only be based on ecological stability which ensures sustainable supplies of vital resources. Gandhi and later his disciples, Mira Behn and Sarala Behn, clearly described how and why development is not necessarily contradictory to ecological stability. Conflict between exploitative economic growth and ecological development implies that, by questioning the destructive process of growth, ecological movements like Chipko are never an obstacle to the process of development. On the contrary, by constantly keeping ecological stability in focus, they provide the best guarantee for ensuring a stable material basis for life.

Ecological Development or Eco-Development?

The philosophical confusion created by taking sectoral growth as synonymous with development, however, has permeated movements such as Chipko. There is a growing tension between two streams of the Chipko Movement; one, guided by the ecological world-view of Sunderial Bahuguna, and the other, represented by the eco-development model of Chandi Prasad Bhatt.

The Bahuguna philosophy is based on the ecological thesis that protection of livelihood and economic productivity is directly dependent on the maintenance of the life-support systems. The contemporary economic crises can be solved only by directly addressing the ecological crises symptomized by the destablization of the hydrological system and the disruption of nutrient cycles. Ecological rehabilitation of the hill areas is the primary task, and this involves a temporary moratorium on green-felling for commercial objectives, both local and non-local, to facilitate regeneration. Economic development in this perspective can only be based on minimizing the ecological costs of growth while maximizing the sustainable productivity of nature for the satisfaction of primary human needs.

The eco-development model of Bhatt is based on the acceptance of present modes of resource utilization with a new emphasis on the location of manufacturing activities in the hill areas and strengthening of their raw material base. This model explains poverty as the absence of processing industries and not in the impoverishment of the environment. Poverty is seen by Bhatt as having a technological solution, in contrast to Bahuguna who sees the solution to poverty in the ecological rebuilding of nature's productivity. For Bahuguna, material benefits arise from lowering ecological costs due to resource destruction and increasing productivity of natural and man-made systems. For Bhatt, material benefits are not seen in the perspective of essential ecological processes. The instruments of production do not include nature and its ecological processes, and productivity is defined through the technological productivity of labour alone. In this respect Bhatt's model is subsumed by the dominant development paradigm which equates economic growth with social and economic development. The development prescription is that with the help of modern scientific knowledge the instruments of production are improved and the standard of

living is raised. Co-operative felling and the use of trees by the local people can provide employment and thus regenerate the hill economy. There is no consideration of ecological limits to commercial exploitation of natural resources in order to sustain the productivity of nature; water, for instance, whose economic significance is immense, is ignored in modern economic analysis.

The absence of an ecological perspective in the eco-development model results in the neglect of special strategies to regenerate and stablize vital soil and water resources. It also leads to failure to assess the impact of other economic activities, including afforestation programmes, on the essential processes of soil and water conservation. The political economy of eco-development is based upon a new distribution of the goods produced by the existing resource-intensive and resource-wasteful technologies. In contrast, the political economy of ecological development is based on the distribution of both the benefits and the costs created through ecological disruption. It involves a development shift to resource-prudent and resource-conserving technologies which are more productive at the systems level.

In the ecological view, the old restricted notion of productivity as an increase of labour productivity is counter-productive at two levels. At the resource level, it consumes more resources to produce less useful goods. At the human level, it displaces labour in a labour-surplus context and thus destroys livelihoods instead of creating them. Gandhi critically articulated the fallacy of increasing labour productivity independent of the social and material context. Gandhi's followers in the Chipko Movement continue to critically evaluate restricted notions of productivity. It is this concern with resources and human needs that is captured in Bahuguna's well-known slogan that "ecology is permanent economy."

Growth for its own sake has been the overriding concern in resource use in India in the past. The threat to survival from ecological distruption is becoming the major concern in resource use for the future. And human survival in sensitive ecosystems, such as the Himalaya, is more severely threatened than elsewhere. The urgency to establish a new economy of permanence based on ecological principles is created with each environmental disaster in the Himalayan region which spells destruction throughout the Ganges basin. Chipko's search for a strategy for survival has global implications. What Chipko is trying to conserve is not merely local forest resources but the entire life-support system, and with it the option for human survival. Gandhi's mobilization for a new society, where neither man nor nature is exploited and destroyed, was the beginning of this civilizational response to a threat to human survival. Chipko's agenda is the carrying forward of that vision against the heavier odds of contemporary crises. Its contemporary relevance, and its significance for the future world, is clearly indicated in the rapid spread of the ecological world-view throughout the whole Himalaya, following the historical 5,000-km trans-Himalaya Chipko foot-march led by Bahuguna, and subsequently through other vulnerable mountain systems such as the Western Ghats, Central India, and Aravalli.

Since the ecological crises threaten survival irrespective of the industrial status of societies, the philosophical significance of re-directing development onto an ecologically sustainable path relates to the industrialized North as much as to countries of the South. This is why the ecological strategy of Chipko finds new application in the people's movement in European countries such as Switzerland, Germany, and Holland. The spread of the message of an alternate world-view is crucial to the creation of a sustainable world, particularly in the context of a highly integrated global economic system. The ecological world-view of Chipko provides a strategy for survival not only for tiny villages in the Garhwal Himalaya, but for all human societies threatened by environmental disasters.

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