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**COLLECTIVE ACTION IN THE MANAGEMENT OF COMMON-  
POOL RESOURCES: IS THERE AN ALTERNATIVE TO THE  
RATIONAL CHOICE MODEL?**

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**A PLAN B PAPER**

Submitted to  
Michigan State University  
in partial fulfillment of the requirements  
for the degree of

**MASTER OF SCIENCE**

Department of Agricultural Economics

2005

## **ABSTRACT**

### **COLLECTIVE ACTION IN THE MANAGEMENT OF COMMON-POOL RESOURCES: IS THERE AN ALTERNATIVE TO THE RATIONAL CHOICE MODEL?**

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The literature on community based natural resource management largely focuses on developing conditions that enable self-organized groups of resource users to collectively manage common pool resources. The analytical approach in most economic analyses is that of methodological individualism, where hypotheses are based on the representative, rational and self-interested individual who maximizes utility and on the basis of observed attributes of several successful case studies, the theory focuses on creating incentives for collective action through institutional design. This paper argues that an incentive based approach following the rational-choice model of human behavior is not sufficient to explain the success of voluntary groups in overcoming the free rider problem and seeks explanations from social and behavioral theories for a better understanding of the outcome of collective action efforts. Based on illustrations from experiences in the Joint Forest Management program in India, the paper suggests a direction for survey research to that would enable us to identify some relevant behavioral regularities, such as endowment effects, loss aversion and framing, among the group of resource users that can be helpful in explaining the outcome of collective action efforts and can inform policy makers to design the policy in a way that is more likely to reinforce desired behavior.

## **ACKNOWLEDGMENTS**

I am deeply indebted to Dr. Allan Schmid, my major professor and mentor, who has been a great source of inspiration and guided me through every stage of this work – from the formation of an idea to its fruition. Besides being an extraordinary academician, he is among the most wonderful human beings I've known and it has been a marvelous experience learning from him. I am extremely grateful to Dr. John Kerr who was always full of enthusiasm and interest in my work. Without his valuable advice, patient and painstaking efforts and his encouragement at every stage of this work, I would not have been able to achieve my objective. I would like to thank Dr. Satish Joshi who was a source of positive energy and encouragement during the writing process. Last, but not least, I owe a lot to my family and friends who have stood by me and supported me throughout my program.

## TABLE OF CONTENTS

<b>1. INTRODUCTION.....</b>	<b>3</b>
<b>2. THE JOINT-FOREST MANAGEMENT PROGRAM IN INDIA: EVOLUTION, FEATURES AND PERFORMANCE.....</b>	<b>7</b>
2.1.Origin of the Joint Forest Management Program.....	8
2.1.1. The Chipko movement.....	8
2.1.2. The Arabari Experiment.....	9
2.2.Features of the JFM Program.....	10
2.2.1. Forest Protection Committees.....	10
2.2.2. Benefit and cost sharing arrangements.....	10
2.2.3. Monitoring and conflict resolution.....	11
2.2.4. Role of women.....	12
2.3.Performance.....	12
<b>3. ANALYSIS OF SUCCESSFUL COLLECTIVE ACTION IN NATURAL RESOURCE MANAGEMENT.....</b>	<b>14</b>
3.1.Characteristics of the Resource.....	15
3.2.Characteristics of the Users.....	18
3.3.Institutional Attributes for Successful Collective Action.....	22
<b>4. EXPLANATIONS FROM SOCIAL AND BEHAVIORAL THEORIES AND THE ROLE OF LEARNING.....</b>	<b>26</b>
4.1.Social Theory.....	26
4.1.1. Relative Deprivation theory.....	26
4.1.2. Social Identity.....	28
4.1.3. Communicative Rationality.....	29
4.2.The role of Behavioral Theories.....	30
4.2.1. Heterogeneous preferences.....	31
4.2.2. The Role of Emotions.....	32
4.2.3. Behavioral Regularities.....	34
4.2.3.1.Availability Heuristic.....	35
4.2.3.2.Endowment Effect.....	36
4.2.3.3.Loss Aversion.....	37
4.2.3.4.Framing Effects.....	38
4.3.The Role of Learning.....	40
4.3.1. ‘Cues’ and ‘Fits’: Model of Pattern Recognition (Margolis, 1987.....	41
4.3.2. Stimulus-Response Behaviorism: Role of positive reinforcements.....	43
(Skinner, 1971)	
<b>5. CONCLUSION.....</b>	<b>48</b>

# **CHAPTER 1**

## **INTRODUCTION**

Collective action in the management of common-pool natural resources is an issue that has been studied extensively by social scientists in the past two decades. A common-pool resource is defined as “a natural or manmade resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use” (Ostrom, 1990: pp30). Under a market structure, the high exclusion cost characteristic of common-pool resources enables free riders who would like to benefit from the conservation efforts undertaken by other users without cutting down their own levels of consumption. Centralized administrative management of common-pool natural resources through quantitative restrictions on the level of extraction was seen as the solution to this market failure but high information, monitoring and enforcement costs reduce the effectiveness of an administrative structure. The ineffectiveness of market and administrative structures in managing large natural resources has led to an interest in the role of local communities in the management of natural resources. Devolution of rights and responsibilities to local user groups is now being advocated in many countries but the success of participatory management depends on the ability of the group to work collectively and overcome the free rider problem.

The Joint Forest Management (JFM) program in India is an endeavor to conserve the forest resources through joint efforts of local fringe villages and the Forest Department. Forests in India are state owned, common pool natural resources. Until the end of the 19th century, at least 80 percent of India’s natural resources were held under common

property regimes. The amount of forest area under state control increased progressively since the British colonial period. The severe and rapid degradation of forests in the first three decades after independence caused great concern and once again, since the 1980s, there has been a slow shift towards the concept of community management and joint forest management (JFM) programs, though in the current arrangement the state retains ownership of those lands. Currently it is estimated that 17.33 million ha of forestland is being managed through JFM efforts. There are around 84,672 JFM communities spread over 27 states. The performance of the JFM program, however, varies significantly across states and also between different villages in a state and this has motivated a lot of research to analyze the causes for difference in outcome.

The problem of collective action is to overcome the prisoners' dilemma type situation where individual action choices, in the aggregate, lead to an outcome that is not preferred by anyone in the group. Empirical evidence from a number of successful efforts of collective natural resource management has led to research on developing conditions that enable self-organized groups of resource users to overcome the problem of free riding and collectively manage common pool resources. The analytical approach followed by most works on collective action is that of methodological individualism. Hypotheses are based on the rational-choice model under which the representative self-interested individual, after a rational benefit-cost calculation, acts in a way that maximizes utility. Works by Ostrom (1990), Wade (1988) and Baland and Platteau (1996) are among the most significant contributions towards developing institutional conditions for successful collective action. These institutional "design principles" have served as guidelines in

many initiatives, like the JFM program in India, to promote community based resource management programs in developing countries. However, the varying rates of success in many such initiatives suggests that these principles cannot be taken as a blueprint for successful collective action and that there may be other factors that influence people's choices, which need to be considered in analyzing the success or failure of collective action in managing common-pool resources.

This paper argues that an incentive based approach following the rational-choice model of human behavior is not sufficient to explain the success of voluntary groups in overcoming the free rider problem and seeks explanations from social and behavioral theories for a better understanding of the outcome of collective action efforts. Works in cognitive and social psychology provide evidence that human beings do not always satisfy the *homo economicus* assumptions on which neoclassical economics rests and therefore behavior can be guided by forces other than self-interest, such as notions of fairness, commitment or altruism. This does not imply that people are not motivated by self-interest. It only emphasizes that everyone at all times does not act out of purely selfish motives.

Further, behavior may not always be the outcome of a calculated choice. Emotions play an important role in behavior. On one hand, emotions may influence people's preferences and their evaluation of costs and benefits but they can also be a cause for people to stop their cost-benefit calculation and affect their choice of action (Elster, 1998). Margolis (1987) suggests that behavior is an outcome of pattern recognition. A cue from the



environment gets associated with a pattern that fits the cue and in turn leads to an action that is associated with the pattern. Learning is seen as a process of identifying new patterns and making new connections. Stimulus-response behaviorism is a perspective in social psychological research that suggests that people respond to a stimulus, and operant conditioning works on the behavioral response and either reinforces it or reduces the behavior. Learning occurs through reinforcement and replication of the behavior (Skinner, 1971). The process of learning may happen at a subconscious level and it may not be possible to identify the process that generates a certain response to a stimulus from the environment. However, insights from behavioral concepts can be helpful in understanding the beliefs and preferences of the group of resource users that influence their response to a policy stimulus.

This paper aims at suggesting a direction for survey research to elicit information on the behavioral characteristics of a group of resource users that would enable us to identify some of the factors other than rational benefit-cost calculus that could influence behavior. This information could be useful in furthering the analysis of collective action. It could also be helpful in informing policy makers about possible cues that might stimulate desired behavior in particular contexts. Further, it could be helpful for a preliminary analysis before similar policies that involve grassroots level work are introduced.

Chapter 2 presents a summary of the evolution, main features and performance of the Joint Forest Management program in India. Chapter 3 discusses the literature on the analysis of conditions that enable successful collective action and the arguments that

underlie the rationale for collective action in the common-pool resource management. Chapter 4 then presents some alternative explanations for collective action from social and psychological theories and focuses on the role of learning in understanding behavior. An alternative approach to survey research that elicits information about people's attitudes and behavioral patterns is suggested. Chapter 5 presents some key conclusions and suggestions for further research.

## **CHAPTER 2**

### **THE JOINT-FOREST MANAGEMENT PROGRAM IN INDIA: EVOLUTION, FEATURES AND PERFORMANCE**

India is a large country having a total forest cover of 67.55 million ha, which constitutes 20% of its geographical area. This is composed of 41.68 million ha (12.68%) of dense forest and 25.87 million ha (7.8%) of open forest. There are 4.73 million ha of scrub forest (FSI, 2003; Ravindranath and Sudha, 2004). Forests are common pool natural resources that have high exclusion costs to a certain degree. Until the end of the 19th century, at least 80 percent of India's natural resources were held under common property regimes. The amount of forest area under state control increased progressively since the British colonial period. The first Forest Policy of India, in 1952 when the country's main priority was industrialization, focused on revenue generation as the primary objective and encouraged the plantation of high-value commercial species such as teak and eucalyptus, which have relatively low exclusion costs. The emphasis on income generation highlights path dependence and the influence of colonial management regime on the forest policies in the first three decades after independence in 1947. Towards the 1980s social movements sprung up in many parts of the country to protest against the indiscriminate destruction of forests due to the thrust on revenue generation, which severely affected the livelihood of local communities in the forest fringe villages that depended on the forest to meet their demand for fuel wood and other non-timber forest products. The rapid destruction of forests to meet commercial demand from the timber industry and the conflicting interest between local and commercial users of the resource caused great concern about the management of the resource base. The National Forest Policy in 1988

marked a significant shift in focus from commercial forestry and centralized management regime to a greater emphasis on community and local participation in the management of forests through the Joint Forest Management (JFM) programs, though in the current arrangement the state retains ownership of those lands. The JFM program is aimed at a co-management scheme where fringe forest user groups and the Forest department jointly define roles and responsibilities with regard to forest protection and development and share the costs and benefits of forest conservation. The driving force for the program has been the linking of socio-economic incentives for forest fringe communities and the development and conservation of the forest. The origin of the JFM concept can be traced to the success of participatory management efforts like the Arabari experiment in West Bengal in the 1970s. Currently it is estimated that 17.33 million ha of forestland is being managed through JFM efforts. There are around 84,672 JFM communities spread over 27 states.

## **2.1 ORIGIN OF THE JOINT FOREST MANAGEMENT PROGRAM**

The JFM program was an outcome of several struggles and social movements that were initiated at the grassroots by local users of the forest who depended on the forest products for their livelihoods. Among the most notable movements are the Chipko movement in Uttar Pradesh in the 1970s and the Arabari program in West Bengal in the 1980s.

### **2.1.1 The Chipko Movement**

The Chipko movement is one of the most successful movements, which originated with localized efforts in Uttar Pradesh in the early 1970s to prevent the destruction of Indian

forests by unsustainable logging. The movement developed into a regional movement with thousands of supporters, particularly women, and succeeded in achieving bans on clear felling and influenced the forest policy in its move towards participatory management. The movement got its name “Chipko”, which in Hindi literally means “to stick”, from the medium of protest that was adopted by the villagers. Following the Gandhian path of non-violence, the women in the Himalayan villages in Uttarkhand physically hugged the trees to save them from being cut. This peaceful struggle achieved great success and the movement spread throughout the country. There were poems written on this form of protest and the Chipko movement became a part of the culture and tradition of peaceful retaliation in the villages (Shiva, 1991: Chapter 4).

### **2.1.2 The Arabari Experiment**

The Arabari experiment in the early 1980s in West Bengal is seen as a trendsetter and a forerunner of the formal JFM program. The ‘Arabari Experiment’ was initiated by Dr. Ajit Banerjee who was then the District Forest Officer (DFO) in the Arabari range in the district of Midnapur. He had started a silviculture project that was severely hindered by the villagers who were cutting down the young trees to meet their fuel wood needs. The exclusion costs were high since there were only a few forest guards who were in charge of monitoring large areas of forests. He realized that he needed the cooperation of the villagers in his project and so, he entered into an informal agreement with the villagers to give them user rights to NTFPs and a small share in the profits from sale of timber and also employment opportunity in exchange for the protection of the silviculture plots (Joshi, 1999). Similar informal arrangements emerged in other areas as well. The success

of such initiatives led to the change in formal institutions from administrative to JFM regime. The Communist party, which came to power in 1972 with a pro-workers ideology, acted as a catalyst in the process.

## **2.2 FEATURES OF THE JFM PROGRAM**

The JFM program is a co-management scheme where fringe forest user groups and the Forest department jointly define roles and responsibilities towards forest protection and development and share the costs and benefits of forest conservation. The implementation of the program is flexible and the rules and provision vary across states and even between villages in the same state. However, we can identify some broad characteristics of the program that apply in general to all JFM communities.

### **2.2.1 Forest Protection Committees**

Local participation in the management of forests takes place through the formation of Forest Protection Committees (FPC) composed of the members of the villages in the forest region who are responsible for the protection of forestland. Membership conditions, rules and norms vary across states but in general at least one representative of every household in the village is registered as a member of the FPC. The boundaries of the forest area under each FPC are determined by the Forest Department. There is an Executive Committee that has representatives from the Forest Department as well as the local village members. The Forest Department however has the power to disband a badly functioning committee, cancel membership, and nominate NGOs for membership,

thereby making the power relationship between the Forest Department and the FPCs unequal.

### **2.2.2 Benefit and cost sharing arrangements**

The FPC members are given rights to non timber forest products (NTFP) including firewood, grass, fruits, flowers, leaves and seeds without having to pay any royalty. The use of NTFP is a high exclusion cost good because it would be difficult to monitor and enforce a restriction. They are also given a share in the proceeds from timber after the final harvest. The JFM policy tries to address the interdependencies due to the HEC nature of the resource system through something like a tie-in sales by making the usufruct rights and share in profits from sale of timber contingent upon the FPC's meeting a certain goal specified in terms of the level of increased forest cover and protection of the forest from illegal logging. The extent of share in the net proceeds from timber harvest varies across states and ranges from 25% to 100%. The FPCs and the Forest Department also share the costs of forest conservation and development activities. A portion of the share of village benefits from the sale of commercial crops is usually deposited in a Village Development Fund. The FD also makes a contribution to the fund from its share of proceeds from the sale of harvested timber. JFM also relies heavily on external funding from international agencies like the World Bank.

### **2.2.3 Monitoring and Conflict Resolution**

The FPCs organize themselves in designing the everyday rules regarding the distribution of work and how the forest rehabilitation objective is to be achieved without any external

pressure. Once the desired objective is agreed upon between the Forest Department and the FPC, the manner in which the goal is met is left to the FPC. The Executive Committee, which has representatives from the forest department and the village panchayats, provide for conflict resolution rules. The penalties for defection and violation of rules are community sanctions and vary from village to village. Social sanctions are common and are effective in reducing the rate of defection since the FPCs are small and most people living in the village know one another well (Hill, 2000).

#### **2.2.4 Role of Women**

In most villages in India the occupational structure is such that the men engage in agriculture and the work of collecting fuel wood and other forest related products is undertaken by the women in the village. It has been estimated that women spend three times as much time in the collection of NTFP than men and the processing of these forest products is undertaken entirely by women (Hill, 2000). The greater dependence of women on forest resources has led to efforts to increase the involvement of women in the forest management activities. The Forest Protection Committees in many states have mandated the participation of women in the Executive Committees. Further, some FPCs, with the help of NGOs, are trying to start a women's cell/group to focus on the activities undertaken by women and to provide a platform for women to express their opinions and suggestions about the availability and use of forest produce and create employment opportunities. Field studies suggest that the participation of women in the decision making process of JFM activities in many FPCs is still minimal and inadequate.



### **2.3 PERFORMANCE**

The JFM program has received a lot of support from the central and state governments as well as external donor agencies like the World Bank. The performance of the program has, however, varied significantly across states and even across villages within the same state and it would be difficult to assess whether the program has been an overall success or failure. A study by Ravindranath et al (2004) based on the perspective of the JFMC presidents and management committee members conducted in 6 states – Andhra Pradesh, Gujarat, Karnataka, Rajasthan, Tripura and West Bengal - indicates that “29% of the JFMCs responded that the overall performance was good, 49% rated it as moderate, while the remaining 22% could not definitely say, or did not, perceive any change compared to the pre-JFM times” (Sudha and Ravindranath, 2004: pp 322). Studies have shown that the program has been very successful in the state of West Bengal, where it was first introduced. The yield of non-timber forest produce (NTFP) increased and the conflicts between forest department officials and villagers and the cases of offence or illegal logging also reduced. As reported by Aruradha Joshi (1999), satellite surveys show that the forest cover in west Bengal increased by 4.5% between 1988 and 1991. Studies have also reported that the program has been successful in states like Andhra Pradesh, Karnataka and Gujarat (Ravindranath et al, 2004). The positive outcome of the JFM efforts include increased forest cover, increased trust between local users and the forest department, increase in income of local villagers from the share in the proceeds from the commercial sale of timber, increased participation and empowerment of women and increased employment. However, these positive impacts have not reached several villages in which the JFM program has been introduced. Among the key challenges that

are faced by many villages are the decline in the performance of JFM efforts after external funding is withdrawn, inadequate participation by the local community and a top-down approach with most of the decision making being undertaken by the FD, a lack of awareness about the program and inadequate legal backing for the FPCs (Ravindranath et al, 2004 pp 324-329).

## **CHAPTER 3**

### **ANALYSIS OF SUCCESSFUL COLLECTIVE ACTION IN NATURAL RESOURCE MANAGEMENT**

A large part of the literature on common-pool resource management focuses on developing conditions that enable self-organized groups of resource users to collectively manage common pool resources. The ineffectiveness of market and administrative structures in managing large natural resources has led to an interest in the role of local communities in the management of natural resources. Devolution or transfer of rights and responsibilities to local user groups is advocated for several reasons. Firstly, it is argued that local communities have an incentive to preserve the resource because they are critically dependent on the resource for livelihood. They therefore have an interest in the use and maintenance of the resource over a long period of time. Further, the limited effectiveness of the state in managing natural resources effectively at the local level, bounds on the financial capacity of developing countries to adequately monitor the use of large natural resources such as forests and the demand for democratization of the decision making process in the management of natural resources by increased participation of people most affected by the program and social empowerment of local user groups are other important factors that have led to the focus on community participation in resource management (Knox and Meinzen-Dick, 2001). These were the arguments that motivated participatory management programs like the JFM in India and many other countries.

Works by Ostrom (1990), Wade (1988) and Baland and Platteau (1996) are among the most significant analyses that develop conditions for successful collective action based

on a large number of case studies. The analytical approach in most of the economics literature on collective action is that of methodological individualism. Hypotheses are based on the representative, rational and self-interested individual who maximizes utility and on the basis of observed attributes of several successful case studies, the theory focuses on creating incentives for collective action through institutional design. Institutions are the structure of property rights and rules that govern human interaction and the centrality of property relations arises not because property relations connect people to land and other resources, but rather because such relations connect people to each other with respect to the land and related natural resources (Bromley, 2001; Schmid, 2004). The factors that condition the choice of the institutional structure and the outcome of collective action have broadly been classified into three categories – physical and technical characteristics of the resource, characteristics of the group users and attributes of the institutions that govern the interaction between the different users of the resource (Tang 1992; Uphoff 1986). The inherent characteristics of a good create interdependencies and associated with these interdependencies we can think of alternative institutional structures and corresponding hypotheses of substantive performance in terms of production and who gains and who loses (Schmid, 2004).

### **3.1 CHARACTERISTICS OF THE RESOURCE**

The two most important characteristics of common-pool resources that have been emphasized in the literature are the high exclusion cost nature of the resource system and subtractability of the resource units. However, there are other interdependencies in the

case of forests that would be useful to consider in the analysis of the performance of collective management institutions.

### **3.1.1 The Resource System as a High Exclusion Cost Good**

An inherent feature of the forest resource system makes it difficult to exclude people who live in the fringe villages from the benefits of the resource base. The resource system is both a high exclusion cost good and a non-rival good to a certain extent because the benefits, such as carbon sequestration, reduction of soil erosion and siltation etc., from increased forest cover to one user do not diminish the availability of the benefits to another user. The HEC nature of the resource creates incentives for free riders who would like to benefit from the conservation measures undertaken by other users without cutting down one their own consumption and “unwitting riders”, who do not cooperate because they feel their action will not make a difference (Schmid, 2004 pp: 95). This can be seen as a multi-person prisoners’ dilemma where everyone would be better off if the resource system is maintained but the dominant strategy for every player is to default or not cooperate since the individual’s payoff is greater regardless of the choices of other players. The effect of an individual’s effort is insignificant unless a certain critical threshold of cooperators is reached (Schelling, 1978).

### **3.1.2 Resource Units as Incompatible Use Goods (IUG)**

Ostrom (1990) emphasizes the importance of the distinction between the “*resource system*” and the individual “*resource units*”, which in the case of forests includes timber and other non-timber forest produce (NTFP) like twigs, leaves, fodder, firewood etc.

While the resource system is a HEC good, the resource units or the forest products are incompatible use goods (IUG) because the units extracted by one person are not available for the others. Subtractability of the resource has two effects – Firstly, a user of the CPR subtracts a flow of benefits available to others. Secondly, cumulative use of the resource by many users will eventually subtract from the total yield. (Shekhar, 1998).

### **3.1.3 Efficiency in preserving the resource base as a CPR rather than individual portions**

Another feature of common pool resources is that the benefits from preserving the resource pool are greater than the benefits from improvements on a part of the resource. As in the case of pastures where it is more efficient to allow cows to graze together across the entire pasture rather than to keep each owner's cows within a fenced portion of the pasture (Schmid, 2004 pp: 99), it would also be beneficial to users of a forest resource to use and maintain a larger area of the forest where by they can use different types of forest products and species of trees rather than allocate specific plots to individuals. Privatization of individual forest plots was seen as a solution to the problem of degradation of the CPR. However, when there are multiple users of the resource, especially for the NTFPs, it would be efficient for the user groups to preserve a larger forest base with a variety of tree species that could provide diverse products, such as leaves, medicinal herbs, twigs, bamboo etc., rather than allot small portions of the forest area to individual users.

### **3.1.4 Quality of the Resource**

The quality of the resource could also affect the potential for collective action in the management of the resource. Though the resource system is a non-rival good as discussed above, in the case of common-pool resources like forests that have multiple uses there may still be conflicting interests between users of the resource regarding the quality or composition of the resource system or the type of trees to be grown. In order to increase the commercial value, the timber industry would prefer to grow tall sal trees whereas the villagers who rely on the forests for their daily livelihoods would prefer to grow shorter trees with a larger spread that provide easy access to leaves and other NTFPs. Similarly, the paper and pulp industry prefer the plantation of eucalyptus trees but it draws a lot of moisture and makes the soil dry, thereby hindering the cultivation of other trees and also reducing the availability of water for irrigation. The quality/composition of the resource system is a preemptive choice that decides the nature of the non-rival good and therefore reflects whose interests count.

## **3.2 CHARACTERISTICS OF THE USERS**

The characteristics of the group of users that influence the outcome of collective action include the users' demand for, dependence on and knowledge of the resource, the size of the group, homogeneity of the group, level of trust and social capital, past experience and leadership.

### **3.2.1 Dependence on the resource**

It has been noted that the extent to which local users depend on the resource for their livelihoods also has serious impact on the level of cooperation that can be expected in the

management of the resource since local users who are critically dependent on the resource have an economic incentive to protect the resource (Uphoff, Wickramasinghe and Wijayarathna 1990; Wade 1988; Rasmussen and Meinzen-Dick, 1995). In many villages in India it has been observed that the forests have been degraded to such an extent that many villagers are now moving to the nearby cities for employment opportunities. The reduction in the level of dependence on the resource for their daily sustenance along with the fact that they have to travel several hours each day to the workplace in the city leaves many of the villagers with neither the incentive nor the time to participate in the JFM activities. While the economic incentive is an important part of the explanation, it may not be sufficient because it suggests that the availability of better opportunities elsewhere would reduce interest in conserving the resource. It could however be argued that close association with the resource in everyday activities can create a sense of belonging and responsibility towards the resource, which may contribute to the success of collective management efforts.

### **3.2.2 Group Size**

The group size has also been identified as an important factor that would affect the outcome of collective action. A general hypothesis is that with an increasing number of participants, the possibility of voluntary organization will decrease (Olson, 1965; Wade, 1998; Bardhan 1993). This hypothesis is based on the argument that the smaller the group, each member of the group would get a substantial share in the benefits from the resource, which may exceed their marginal costs of contribution and therefore, the possibility of free riding is reduced. While these arguments are valid, it remains an



empirical question to determine how small the group should be in order to ensure cooperation (Hoffman and Spitzer, 1985). Further, empirical case studies show evidence of successful collective action in many large groups (Ostrom, 1990).

### **3.2.3 Heterogeneity**

Baland and Platteau (2001) point out that the effects of heterogeneity on collective action are ambiguous because inequality is not unilateral. Different dimensions of inequality may have opposing effects on collective action and therefore when such dimensions are combined, the effect on collective action cannot be determined clearly. The effect of inequality also depends on the type of action that is being considered. The outcome may be quite different when the action involves a group of members lobbying for or against certain regulations as opposed to contributing towards the construction of collective infrastructure. Besides economic inequality, heterogeneity may also be in terms of the uses of the resource. In this case, the resource is an incompatible use good among the different users, which leads to a different type of interdependency compared to high exclusion cost characteristic of the resource system. It has been pointed out by many authors that the role of heterogeneity is not captured when the policy alternatives are seen as being management by *the* 'community' versus command and control (Agarwal and Gibson, 1999). In the case of conflicting interests among resource users, whose interests count depend on the power structure and the bargaining capacities of the different parties.

### **3.2.4 Trust**

The role of social capital and trust, both between the local user group and the state and among the members of the group, has been emphasized in the literature. Schmid (2002) defines trust as the willingness to risk potential gains to opportunistic behavior and argues that caring and sympathy for others motivate trust. But the next question is - how do people develop feelings of care and sympathy for others? Trust and caring would be influenced by a reciprocity motive and person's belief about others might be affected by their recent experiences. Economic analysis of trust has been modeled as a dynamic game and it is argued that repeated interaction creates an incentive to signal trustworthiness (Bowles, 2004 pp: 241-247). One explanation may be found in the level of communication and mutual interdependence among the members of the group. If the trust is reciprocated then the feeling gets reinforced and increases the level of trust and we could argue that the reinforcement gets stronger with the number of interactions. A similar argument can be developed for the case when trust is not reciprocated and may act as a negative reinforcement and reduce the level of cooperative behavior.

### **3.2.5 Bounded Rationality**

The concept of bounded rationality, introduced by Herbert Simon (1955), emphasizes the fact that the human brain has limited information processing capacity and therefore, people cannot take into account every possible alternative while making their choices as assumed by the standard neoclassical theory. People necessarily simplify, form habits and resort to standard operating procedures in making their choices. There is not much disagreement about the concept of bounded rationality, and the economic argument is

that individuals maximize utility within the constraints of information availability and processing capacity. The classic tragedy of the commons has been modeled as a Prisoners' dilemma game where each individual acting in her or his own individual interest collectively lead to an outcome that makes the group collectively worse off (Baland & Platteau, 1996 Chapter 5). The standard game theory argument to overcome this dilemma has been the case of an infinitely repeated game. It has also been argued that the uncertainty concerning the number of plays that players will face can motivate a cooperative outcome can be achieved. However, empirical evidence shows a number of situations where people have succeeded in overcoming the dilemma even in a one shot game and we could argue that this could be because they do not make strictly calculative decisions based on their payoffs.

### **3.3 INSTITUTIONAL ATTRIBUTES FOR SUCCESSFUL COLLECTIVE ACTION**

Institutional arrangements for the use and management of common pool resources have been classified under three categories - Operational rules, collective choice rules and constitutional rules (Ostrom, 1990, Rasmussen and Meinzen-Dick, 1995). Operational rules directly affect the use of the resource and include boundary and access rules, allocation rules, penalty rules, input rules and conflict resolution rules. Various authors have stressed the importance of clearly defined operational rules, which are simple and flexible in order to achieve collective action. (Baland & Pleatteau, 1996; Ostrom, 1990) Collective choice rules give guidelines for formulating, changing and enforcing operational rules. These rules for making rules define who is eligible and how the future

operational rules will be made (Ostrom 1990: 141-142). Constitutional rules provide the broader framework within which collective and operational rules work. It includes property rights protected by public regulation, level of delegation of decision making, environmental and natural resource regulation, rights of reorganization and the market arrangements. Agarwal (2001) synthesizes some of the main conditions for successful collective action in managing common-pool resources identified by the major works of Ostrom (1990), Wade (1988) and Baland and Platteau (1996). Table 1 shows the list of conditions for successful collective action identified on the basis of a large number of case studies. Agarwal (2001) starts by pointing out that the list of variables that have been identified in the literature is long and difficult to apply to all cases. However, he adds more conditions to this list of variables that affect the success of collective action and suggests that there is a need to focus on causal relations between different factors and the institutions that connect them.

A list of the institutional characteristics of successful efforts is seen as the first step towards the development of a theory of collective action. However, it is quite difficult to find cases where all the conditions are applicable. While the importance of these conditions for successful collective action listed by various researches after empirical observation of a large number of case studies cannot be undermined, it cannot be ignored that there is a possibility of a selection bias in the case studies undertaken. Cases of success with strong local organizations are far more likely to be written about than the failure stories and therefore the list approach falls short of giving a complete picture. Arguments towards of a theory of collective action are developed on the basis of the observed institutional attributes of successful cases using the model of rational choice

where individuals choose from the set of possible alternatives, the action that will maximize their net benefits.

Table 1: Synthesis of facilitating features identified by Wade, Ostrom, Baland and Platteau

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1.	<i>Resource system characteristics</i>
(i)	Small Size (RW)
(ii)	Well defined boundaries (RW, EO)
2.	<i>Group characteristics</i>
(i)	Small size (RW, B&P)
(ii)	Clearly defined boundaries (RW, EO)
(iii)	Shared norms (B&P)
(iv)	Past successful experiences – social capital (RW, B&P)
(v)	Appropriate leadership – young, familiar with changing external environments, connected to local tradition elite (B&P)
(vi)	Interdependence among group members (RW, B&P)
(vii)	Heterogeneity of endowments, homogeneity of identity and interests (B&P)
1. & 2.	<i>Relationship between resource system characteristics and group characteristics</i>
(i)	Overlap between user group residential location and resource location (RW, B&P)
(ii)	High levels of dependence by group members on the resource system (RW)
(iii)	Fairness in allocation of benefits from common resources (B&P)
3.	<i>Institutional arrangements</i>
(i)	Rules are easy and simple to understand (B&P)
(ii)	Locally devised access and management rules (RW, EO, B&P)
(iii)	Ease in enforcement of rules (RW, EO, B&P)
(iv)	Graduated sanctions (RW, EO)
(v)	Availability of low cost adjudication (EO)
(vi)	Accountability of monitors and other officials to users (EO, B&P)
1. & 3.	<i>Relationship between resource system and institutional arrangements</i>
(i)	Match restrictions on harvest to regeneration of resources (RW, EO)
4.	<i>External environment</i>
(i)	Technology: Low cost exclusion technology (RW)
(ii)	State:
	(a) Central governments should not undermine local authority (RW, EO)
	(b) Supportive external sanctioning institutions (B&P)
	(c) Appropriate levels of external aid to compensate local users for conservation activities (B&P)
	(d) Nested levels of appropriation, provision, enforcement, governance (EO)

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Source: Agarwal, 2001

The conditions for successful collective action suggest that the establishment of the right institutions can create incentives that would make cooperation the rational choice. It has however been observed that, while these conditions are common to many successful collective action efforts, attempts to implant the institutional “design principles” on communities have failed to achieve the desired results. This implies that there may be other factors that influence the behavior of people. The next question that policy makers are faced with is how communities that do not already have the institutional attributes for successful collective action can be motivated to change in a way that may increase the likelihood of collective action. Insights from social and behavioral theories may be useful in strengthening the analysis. Alternative explanations that are not based on the rational-choice model may be useful in understanding the outcome of collective action.

The Joint Forest Management program was introduced, following the success of participatory management efforts in some parts of India, with a view of designing institutions that would provide local villages an incentive to protect the forests. The significant differences in outcome across states and even between villages in the same state called for an investigation into the structure of the program. Most of the analyses on the JFM program have focused on conflicting interests of the Forest Department and the local users, the lack of proper incentives for cooperation and the imbalanced power relations. Explanations from social and psychological theories may enrich the arguments and could lead to policy suggestions to improve performance.

## **CHAPTER 4**

### **EXPLANATIONS FROM SOCIAL AND BEHAVIORAL THEORIES AND THE ROLE OF LEARNING IN THE ANALYSIS OF COLLECTIVE ACTION**

#### **4.1 SOCIAL THEORY**

Collective action is an area of research in several disciplines including economics, sociology, anthropology and geography. Sociologists have devoted a lot of energy in trying to understand social factors that motivate collective behavior. Most of the sociological work on collective behavior has focused on social movements, revolutions, and other forms of political violence, but some of the explanations for the motivation of collective action could be applicable to the case of managing common-pool resources.

##### **4.1.1 Relative Deprivation Theory**

One explanation for the motivation for collective action is based on the theory of 'relative deprivation'. Relative deprivation is defined as, "a perceived discrepancy between men's value expectations and their value capabilities" (Gurr 1970: 13) and it is argued that social conditions that increase expectations without increasing capabilities to realize them create discontent, which is the basic motivation for participants in collective violence (Marx and Wood, 1975). In the case of collective action in the management of common-pool resources, we could enquire whether this explanation for collective violence would also be applicable in the case where a group of resource users, who may feel deprived of opportunities to use the resource over a long term due to their lack of economic power, might act collectively towards achieving a change in the structure of property rights. The increase in expectation and therefore discontent may be due to the knowledge about the

rights of similar groups in other regions. Discontent may also arise due to expectations of local people regarding the responsibilities of the government towards the protection of the forest and their needs. The important factor is the general belief of the members of the group about their relative position in comparison to other groups of users of the resource.

In the case of forests in India we could inquire whether the members of local forest fringe villages feel that the Forest Department is meeting their expectations about its responsibility towards forest conservation measures and towards ensuring that the subsistence needs of the local users for fuel wood and other NTFPs are not ignored. A discontent with the functioning of the forest department could be a factor that affects the actions of the local communities in different ways. Firstly, it could be an explanation for the social forestry measures undertaken by village groups in the early 1980s and their efforts to lobby for increased participation of local user groups in the management of the forest resource, which itself is a high exclusion cost good. The Joint Forest Management program in the 1990s was an outcome of such struggles that emerged in the 1980 through out the country. Alternatively, in some villages where voluntary action did not emerge, discontent regarding the forest department's concern about the needs of the villagers could be a cause for resentment and anger and could lead to the lack of cooperation of the village with the JFM efforts of the FD. Further, it may also lead to resignation and despair rather than collective action. To understand which alternative evolves it will be necessary to undertake a deeper study of the specific social and historical context.



### **4.1.2 Social Identity**

Recent work by Simpson and Macy (2004) focuses on the role of social structures and social identity in collective action. Drawing from Tajfel's distinction between personal and social identity, social identity is defined as "that part of an individual's self-concept which derives from his knowledge of his membership in a social group together with the value and emotional significance attached to that membership" (Tajfel 1981: pp225). Using an experimental game setting, they argue that social structure affects collective action in two ways. Firstly, the motivation for collective action depends on the social structure and the relative positions of different groups of actors or the different opportunity sets of actors that affect their relative bargaining power. This argument is consistent with the explanation for social movements based on 'relative deprivation theory'. Secondly, they argue that the success of collective action, which rests on solving the free-rider problem, depends on the social identities that are also created by social relations. It is argued that social identity reduces the distinction between individual and group interest and therefore helps overcome the free rider problem in collective action. Through social identity, "the meaning of self-interest is transformed to the group level and group welfare becomes a part of the rational calculus by which an individual evaluates the costs and benefits of intended actions and potential outcomes" (Brewer and Silver, 2000: pp160). The role of trust and community bonding in the success of collective action has been acknowledged by most researchers but it would be worth investigating whether social identity makes people refine their cost-benefit calculus or if it invokes a sense of commitment and thereby leads to decision making that is not based on a calculation of costs and benefits. Social identity can also explain why people

might be willing to incur costs to punish those who defect from social norms even though the effect of social sanctions is a high exclusion cost good.

In the context of managing forest resources, we would want to enquire whether or not people in a particular Forest Protection Committee identify with one another as members of a group and then whether such a feeling of social bonding or identity contributes to the success or failure of collective efforts in managing the common-pool resource. To elicit information on social identity we could survey the members of a group and ask if a better opportunity available in the city or in another village (say, a village that has been successful in collective management of forest area) would motivate them to move from their village and whether they thought they would feel that they are a part of the new community. Further, we could ask whom they would expect help from in the event of a crisis - crop failure or a calamity in the family - and what percent of the village population would they expect to give the same answer. Similar studies have been done to measure social capital and to understand the effect of poverty on the ability for groups to self-organize to solve common problems faced by a community (Krishna, 2004; Schmid et al, (unpublished)). We would also want to enquire whether they would help other members of the group, financially or physically, if they faced a crisis and whether actually they thought about why they were offering help at the time at which they choose to act.

### **4.1.3 Communicative Action**

The fact that the success of collective action efforts varies between groups and places has stimulated an interest among geographers as well. It is now well understood that collective identity formation and place-specific social relations are crucial in the achievement of collective action. Drawing from Herberman's work on "The theory of communicative action" (1984), Miller (1992) argues that an explanation for cooperative behavior can be in terms of communicative action. He notes that communicative action is distinguished from communication in general in that it "emphasizes the interaction in which two or more subjects seek to reach an understanding concerning their shared situation" (Miller, 1992: pp26). Communicative action is based on communicative rationality, which involves raising validity claims between two or more subjects, and a speaker can rationally motivate a hearer to accept his statement by providing convincing ground that would stand up to the hearer's criticism of the validity claim. Herberman's work emphasizes the central role of communicative action in the reproduction and transformation of cultural traditions, values, cultural identities and social values. This highlights the decentralized nature of analysis. What a reasonable argument is, which would enable an understanding between the subjects, depends on the cultural background that they share in common. Once communication with the purpose of reaching an understanding between the subjects is differentiated from general communication, it becomes hard to measure. The frequency of social interaction in the form of informal meetings, dinners etc. is not sufficient though it does provide a starting point.

In the context of forest management in India, information about the communication networks in the village can be useful in understanding interdependencies among the users of the resource and can help in the decision of boundaries of the forest area that is managed by each group. Information about the level of attendance and participation in village board meetings can be used to infer the extent of awareness about the program. NGOs play an important role in information dissemination and records of communication between representatives of the NGO and local people would be useful to get a sense of the general understanding of the issues and the policies in the village. Further, it would be useful to study the correlation between the level of communication and social bonding in the community.

## **4.2 THE ROLE OF BEHAVIORAL THEORIES**

Traditional economic analysis rests on the assumption of *rational, self-interested* individuals who have *stable preferences* and make calculated choices in a way that maximizes their utility. These assumptions have guided the analyses of most researchers who have sought to develop institutional conditions for successful collective action. However, if people's actions may be motivated by forces other than self interest and preferences may change over time, there is a need to reconsider the incentive based argument.

### **4.2.1 Heterogeneous Preferences**

Works in cognitive and social psychology provide evidence that human beings do not always satisfy the *homo economicus* assumptions on which neoclassical economics rests.

Experimental and empirical studies suggest that human beings do not always display self-interested preferences (Ledyard, 1995). There are many instances of what Samuel Bowles calls, “other regarding preferences”, where people make choices depending not only on the effect of their action on themselves but also the well being of others (Bowles, 2004: pp98). It is now well acknowledged that preferences may not always be based on purely selfish motives. Altruism, spite, social prestige, fairness etc. may also be driving forces for behavior. Economists have tried to incorporate these factors into the rational-choice model as additional arguments in the utility function of the individual, thereby retaining the utility maximization principle of rational choice.

### *Fairness*

Behavior is often motivated by notions of fairness and reciprocity. The observation of a mean split of around 40 to 50% in the Ultimator and dictator games<sup>1</sup> provide classic examples of behavior that is guided by notions of fairness and not pure self interest. Equal split in shares has been observed in settings other than experimental ones. Sharecropping is a prevalent arrangement in many developing countries and the division of gains between landowners and tenants has tended towards the 50% split in many parts of the world (Hayami and Otsuka, 1993). Fairness and reciprocity can provide motivation for collective action efforts. This argument is consistent with the ‘relative deprivation’ explanation for collective action since the perceived expectations that lead to discontent could be based on a notion of fairness. People’s beliefs about fairness can also help

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<sup>1</sup> In the ultimatum game two people are asked to split \$10 between them. The first mover makes an offer that the other person can accept or reject. If the offer is accepted both players get the agreed share but if the offer is rejected neither player gets anything. Rational choice theory predicts an unequal split, say \$9 and \$1, favoring the first mover because the second player who is faced with the choice of accepting the \$1 or getting nothing should rationally accept the offer.

overcome the second order problem of monitoring behavior within the group, and people may be willing to incur costs in order to punish those who violate norms.

In analyzing the performance of the JFM program, information about whether or not the members of the FPC felt that the JFM program was giving them a fair deal would be helpful in order to understand the influence of notions of fairness on the level of cooperation among members of a village. It has also been noted that social sanctions are commonly practiced in many villages in India are found to be quite effective in reducing the level of illegal logging of forests (Hill, 2000).

#### **4.2.2 The Role of Emotions**

Emotions play an important role in decision-making. Anger can motivate people to incur costs to protest or retaliate against unjust treatment. Guilt and shame can act as deterrents to violations of social norms and make social sanctions effective. Anger or spite against a disloyal neighbor may lead to non-cooperative behavior by an individual even if such behavior is not in one's own self-interest. Emotions could therefore influence people's preferences and behavior. Emotions may also be a cause for people to stop considering the costs and benefits of their action. Elster (1998) refers to the "dual nature of emotions" where, on one hand, emotions can be a reason for behavior by influencing the arguments that enter an individual's utility function and the evaluation of the outcome, but on the other hand, emotions may make people stop their benefit-cost calculation when making their action choice. Anger, guilt, shame or happiness could be reasons for people to stop the benefit-cost calculus and jump directly to an action. In trying to explain the outcome

of JFM efforts we would want to enquire if members of a village that has failed to achieve the desired performance feel enraged by a feeling of the Forest Department's apathy towards their concerns, which could be an explanation for the failure of cooperation with the forest officials towards forest management. We would also want to know whether their retaliation to government policy was the outcome of a deliberated choice. Positive emotions like a sense of recognition, satisfaction or pride in contributing towards a common good can also be a reason for the success of collective action.

#### *Observations from Neuroeconomics*

The new field of neuroeconomics tries to connect economic decision making to the biological substrate of the brain. A study by Sanfey et al (2003) on "The neural basis of Decision-Making in the Ultimatum Game" used functional neuro-imaging techniques to investigate the relative contributions of cognitive and emotional processes to human decision-making. They found that unfair offers stimulate activity in the parts of the brain that are related to both emotion (anterior insula) and cognition (dorsolateral prefrontal cortex) but higher activity in the anterior insula for rejecting unfair offers suggests that emotions play an important role in decision making. Recent work by Dominique J.-F. de Quervain et al (2004) also confirms that there is a 'neural basis for altruistic punishment'. A study by scientists at the Emory University in Atlanta, on the neural activity in young women when playing the Prisoners' Dilemma game suggests that choosing cooperation over defection increased their satisfaction or happiness. The study used magnetic resonance imaging to take portraits of the brain. Contrary to the expectation that the largest response would occur in cases where the cooperator might feel that she was being

treated unjustly by the other person, the study found that the brightest signals arose in cooperative alliances and in those neighborhoods of the brain already known to respond to desserts, pictures of pretty faces, money, cocaine and many other delights. (Relling et al, 2002)

These arguments do not imply that people are not motivated by self-interest. If that were the case and people always preferred to cooperate, the problem of collective action would not have arisen. It is only to emphasize that everyone at all times does not act out of purely selfish motives. People are heterogeneous and have different preferences and the problem in making collective action towards a common goal work, as Bowles says, "...is not to find a way to induce a homogenous population of self regarding individuals to implement a socially desirable outcome. Rather it is to devise rules such that in cases in which cooperation is socially desirable, individuals with other regarding preferences will have opportunities to express their pro-sociality in ways that induce all or most to cooperate" (Bowles, 2004: pp499).

### **4.2.3 Behavioral Regularities**

Studies by experimental psychologists have revealed certain behavioral regularities that may be influential in economic decision making by individuals. These observed regularities indicate that, given the limited information processing capacity of the human brain, there are some habits and patterns of thought that play an important role in people's action choices. In the context of collective action and the cooperation of villages



with the JFM program we could explore some of the behavioral heuristics that may offer an explanation for the success or failure of the program in different areas.

#### **4.2.3.1 Availability Heuristic**

In making judgments, people tend to rely on information that they can recall most easily rather than consider all the information that could be available. Tversky and Kahneman (1973) call this the “availability heuristic” and through an experimental study show that this is a heuristic that is commonly used in judging frequency or likelihood of events. People’s expectations and therefore actions would be influenced by their most recent experiences and experiences that have had a deep impact on them, which would therefore be easily recalled when faced with similar situations. In the context of collective action, we can argue that the basis for peoples’ beliefs about the level of cooperation they would expect from the other members of the group may depend on their recent experiences with efforts to work together. The success of collective action is therefore “path dependent”. This is related to the availability heuristic though it may not be an exact application of the concept. It may be expected that in a village where people have acted collectively in tackling other issues in the recent past are more likely to succeed in collectively managing the forest. Furthermore, in the case of the JFM program, the level of cooperation from a village may also depend on the experience that the people in the given village have had with the forest department officers in the past. Experiences that have had a bitter impact and left an impression of distrust about the motives of the forest department may influence the action the people even if the suggested policy may in fact be beneficial to them. It has been noted by many authors that the success of collective

action depends on past experiences and the level of social capital that is built over the years. However, past experiences that have a deep impact may not only influence people's expectations in the future but could also be a reason for people to stop calculating possible future outcomes and jump to conclusions about the outcome of a joint management effort. In analyzing the outcome of JFM efforts information could be gathered about past collective action experiences in the village, which may not necessarily be related to resource conservation efforts. Information about the villagers' experiences of interaction with Forest Department officers in the past and their beliefs about the FD representative's concern for the needs of local villagers can be helpful in analyzing the effect of past experience on the level of cooperation.

#### **4.2.3.2 Endowment Effect**

Experimental psychologists have observed that people demand more to give up an object than they would be willing to pay to acquire it (Thaler, 1980). Following the seminal work of Coase, economists have suggested that if transaction costs are sufficiently low private bargaining will lead to the efficient allocation of resources regardless of the initial assignment of property rights (Coase, 1960). It has been argued that even in a hypothetical, zero-transaction cost world, assignment of property rights matter because of the implications for income distribution. Further, the assignment of property rights also explains the observed divergence between willingness to pay and willingness to accept compensation measures of valuing natural resources since the WTP measure is limited by the income or the ability to pay of the individual whereas the WTAC measure is not (Schmid, 1987 pp: 219-223). An endowment effect on an individual's valuation also

offer an explanation for this observation and suggests that property rights matter even in a zero transactions costs world. Evidence from experimental studies suggests that human beings assess changes based on some reference point rather than an absolute magnitude and are more sensitive to marginal changes closer to their current state (Rabin, 1998). A simple example is that the same temperature feels colder in the fall season after we are used to warm weather in summer than in the spring season after we have adapted to a colder temperature in the winter. People's action also depends on the *status quo* or reference point and beliefs about the *status quo* rights over the forest resource may be an important factor affecting the choice of cooperation in the JFM program. If the people of a village believe that they have the right over forest resources, they may not be willing to enter into a bargain with the forest department which makes their right to use of forest products contingent upon the achievement of a certain targeted level of forest conservation.

#### **4.2.3.3 Loss Aversion**

People have asymmetric valuations of losses and gains and it has been observed that people value loss more than an equivalent gain (Kahneman and Tversky, 1979). Experimental studies on common-pool resources also show that the level of cooperation is greater in an appropriation game than in a provision game. An explanation for such an observation could be that people see cooperation (reducing the level of resource extraction) in the appropriation game as a reduction in potential gain and the contribution towards the provision of a common-pool good may be seen as a loss in reference to the *status quo*. This concept is also related to the idea of *status quo* reference point and it is

important to bear in mind the initial reference level in this explanation. The initial wealth of the individual participating in the appropriation or provision problem could have a significant influence on the outcome.

In the case of collective management of forests we would want to investigate whether people in a given village or FPC view the effect of the policy introduced under the JFM program as a potential gain or a cost to gain access to forest resources. In order to elicit this information we could enquire whether the members of the FPCs view the recognition of their role in forest protection as an entitlement that increased their opportunities or if their forest protection services were viewed as a cost to maintain their traditional access rights to forest products on which they depended heavily. Further, we could ask whether the people felt that they worked *with* the Forest Department (FD) or *for* the FD.

#### **4.2.3.4 Framing Effects**

The manner in which the problem is framed also affects the behavior of the actors. Tversky and Kahneman (1986) show that different descriptions of the same problem can lead to different preferences. This suggests that it could be possible to change preferences and behavior by changing the manner in which a policy is presented. In keeping with the concept of loss aversion it has been noticed that players react differently when the problem is framed as a potential loss or a potential gain even if the expected value is identical in both cases. The status quo or a reference point also provides a frame that affects decision-making. Bowles (1998) suggests that institutions frame the situation under which transactions take place and peoples' choice may vary depending on whether

the set of feasible choices was generated through a market like structure or not. The literature on community based natural resource management also suggests that growing market integration has an adverse impact on the management of common-pool resources. The main arguments are that the growth of markets will increase the demand for forest related products and an exposure to increased cash exchanges creates an incentive for local users to increase their levels of extraction (Agarwal, 2001). An alternative explanation could be that the inherent nature of a market structure stimulates profit-maximizing behavior, which when combined with the HEC nature of the resource leads to over exploitation. One of the characteristics of market structures is that it alienates the participants and thereby makes self-interest the prevailing preference. A market structure also immediately brings about an evaluation of benefits and costs of possible bargains. Framing the problem of collective action in a way that invokes notions of responsibility and commitment towards the resource may lead to higher levels of cooperation. Even under a market like setting, the perception of members of the group as sellers or buyers in the bargain will frame their behavior.

In the case of the Joint Forest Management Program, the bargain may be communicated in a way that the village communities feel that in order to avail any benefits from the forest resources, they need to offer their services in protecting the forest cover. They need to pay a price and would want to recover benefits to cover the cost. Alternatively, if the program is communicated as an offer a share in the proceeds from the sale of the timber that is harvested in return for the services of the community it could be construed as an additional benefit in addition to retaining all the customary rights that the villagers held

thus far. To understand the impact of framing effects, we would have to elicit information about the manner in which the policy proposal was framed in villages where different outcomes were observed. It would also be useful to investigate whether framing a policy under a market-like structure leads to a different behavior as compared to an administrative setting or a setting that invokes mutual care among the members of the group and a sense of duty or commitment towards the community's resource. Some accounts of successful case studies note the important role of the Forest Department Officer's role in gaining the trust of local people through invoking a sense of belonging for the resource by pointing out that the FD officials are only temporarily appointed in the area and have no personal interest in the forest resource and it is the villagers who are going to be associated with the forest and its resources over a long period of time (Faust, 1998; Joshi, 1999).

The person who interacts with the members of the village can also frame their response towards the JFM program. Communication of the new policy through a FD representative, who has developed a good understanding with the local people in the past, is more likely to lead to cooperation. The entry of a new representative replacing an officer with whom the community has had several clashes and unpleasant experiences in the past may also increase the possibility of cooperation. The role of leadership in the success of collective action has been emphasized in the literature (Baland and Platteau, 1996). Leaders and people who are highly respected in the village also frame the situation and play an important role in influencing people's behavior. We could try to study the effect of the same argument made by the leader of the village and by any other member

of the village on the behavior of people in the village. A difference in response, either in kind or in degree, would suggest that the frame of leadership goes beyond a rational analysis of the argument.

### **4.3 THE ROLE OF LEARNING**

The essence of this argument is that people learn. The learning process may be an outcome of conscious and deliberate effort or may happen at a subconscious level. The standard model of rational self-interest maximization would not hold once we relax the assumption of stable, time-invariant preferences. Preferences are endogenous and depend on institutions and people learn and update their beliefs and preferences. This form of learning is conscious and could be the outcome of communicative action. New preferences may be an additional argument in the utility function as analyzed by some economic models. However, learning and adaptive behavior could also be the result of a sub-conscious process and not a deliberated choice. Such learning models may also be useful in understanding the success or failure of collective action in the context of managing common pool resources.

#### **4.3.1 'Cues' and 'fits'**

Margolis (1987) suggests that cognition is a process of pattern recognition. A cue leads to a pattern that suggests a certain meaning and/or action as a response. He argues that people do not necessarily calculate the costs and benefits in making a choice. Rather any given problem is a cue, which is associated with a pattern that fits the cue and in turn leads to an action that is associated with the pattern, and the action then feeds back into

the environment in the form of another cue. The process of learning involves identifying new patterns using the existing stock of patterns that the brain has stored or making new connection of cues with existing patterns. According to this model, behavior is a result of pattern recognition and a cue leads to an action as a response to a pattern that just “fits” the cue. Experimental studies suggest that assigning individuals to arbitrary groups, which may be transient, increases the level of cooperative behavior (Cook and Karp, 1994). It would be difficult to explain such behavior on the basis of rational calculation. We could, however, argue that being recognized as a member of a group, even if the group is arbitrary and transient, is a cue to which the response of cooperating within the group just ‘fits’. Any new policy is a cue, and in order to increase the level of cooperation in achieving a common goal, the cue must lead to a pattern to which cooperation is the response that fits.

For the success of collective action, it is necessary that the cue given by the new policy suggestion gets associated with patterns that are generalized among the group of members. This would therefore depend on commonly held beliefs and norms that are historically formed. In many parts of India there are 30 to 40 villages that come together for religious discourses and other social events. However, when an NGO in Rajasthan, tried to use this institutional arrangement as a platform to encourage discussions on how the forests and other resources could be commonly managed, the village chiefs’ did not think it would work. Though the availability of a meeting point where common issues could be discussed seems conducive for successful collective action, the idea of



discussing the management of common resources that are shared by many of the villages in a religious meeting just did not 'fit'.

A lot of research in social psychology has focused on the effects of priming on an individual's impressions of others. "Priming refers to the incidental activation of knowledge structures, such as trait concepts and stereotypes, by the current situational context" (Bargh, Chen and Burrows, 1996). Psychological studies have shown that the recent use of a trait construct or stereotype can exert an unintended passive influence on the interpretation of behavior. Bargh, Chen and Burrows (1996) argue that behavioral attitudes and reactions can be triggered automatically, without conscious intention or awareness, by the mere presence of relevant objects and events. They conducted an experiment where participants were asked to play a game that tests their language ability. They were presented 30 sets of 5 scrambled words with which they had to construct grammatically correct 4 word sentences. Three versions of the game were constructed – one that primed the construct *rude*, another the construct *polite* and the third was intended to prime neither trait. At the end of the game the participants were asked to go to the experimenter who would direct them to the next short experimental task. The study found that after playing the game, subjects who had been exposed to the rude construct quickly interrupted the experimenter who was in a conversation whereas subjects who were exposed to the polite construct took longer to interrupt the experimenter to get further instructions. However, at the end of the experiment when the participants were de-briefed they were not aware that their behavior was influenced by the exposure to words they saw on the computer screen.

In the case of participatory management, the manner in which the policy is proposed and the person who initiates the process also could be a cue that automatically gets associated with certain patterned responses. The language used to communicate the objective of the program and the choice of words in presenting the new policy to the members of a village frames this cue. If there have been several clashes between the forest department officers and the village people in the past, a new policy proposed by the forest department could automatically prompt a negative response from the village people. Most of the psychological studies have been done using controlled experiments. It would be far more difficult to conduct a social experiment that could identify similar behavioral responses in the villages. However, information from past records about various communications and interactions between the forest department and the local people and the observed responses may help identify some patterns that could influence the level of cooperative behavior.

#### **4.3.2 Stimulus-Response-Behavior (SRB) Model**

Stimulus-response behaviorism is an important perspective in social psychological research that suggests that people respond to stimulus and operant conditioning. Operant conditioning works on the behavioral response and either reinforces it or reduces the behavior. A stimulus leads to a corresponding behavior, which creates a feedback into the environment. This feedback may reinforce the behavior and may lead to increased adoption of the behavior. Learning occurs through reinforcement and replication of the behavior. A reward for desired behavior is called approach conditioning and is likely to

induce more of the observed behavior. A punishment for undesirable behavior is called avoidance conditioning and is intended to reduce such behavior (Slawski, 1981). This model is based on “seeing that” rather than the “reasoning why” concept that underlies most incentive based approaches to induce a change in behavior. Skinner (1971) observed that positive reinforcers are more likely to replicate the desired behavior as compared to punishments or negative reinforcers. He argues that people try to find way to avoid punishment without altering their own behavior whereas a positive reinforcement of desired behavior can motivate increased adoption of that behavior. Positive reinforcements strengthen the connection between a stimulus and response and the connection is retained in the memory of the individual. This then gets replicated in similar situations leading what Skinner calls ‘stimulus generalization’.

The introduction of the JFM policy in 1989, following the success of the Arabari experiment can be seen as a positive reinforcement using Skinner’s classification. The formal security of land tenure, share in profits, and user rights to NFTP act as rewards for desired behavior rather than a punishing illegal logging under the state control regime and could encourage increased conservation efforts by the people. However, when we are considering social behavior, the same stimulus can act as a negative or a positive reinforcer depending on the existing beliefs and attitudes of the people. In the case of the village of Kojon ka Guda in Rajasthan, it was observed that the introduction of the JFM program led to serious conflicts between FPCs regarding the area of forest covered under each FPC. The boundaries of forest area under each Forest Protection Committee were decided by the Forest Department. The nature of the resource is such that there are

multiple users and uses. The boundaries that were drawn kept some villages that were traditionally using a given part of the forest outside the collective. Even though the village was assigned another part of the forest area, the long established customary rights and beliefs were hard to change. The legal assignment of rights is not sufficient when peoples' beliefs and perceptions of their rights over the resource conflict with the formal institutions (Kashwan, 2004). A market-based argument however would be that once the two villages were assigned rights to specific parts of the forest area, they can engage in mutually beneficial trade of the forest produce. This argument breaks down when people's beliefs about their rights are in conflict because if people consider themselves the owner of an opportunity they would not be willing to buy what they think is already theirs. Similarly, in Pakhi, a village in the state of Uttar Pradesh, where village boards (Van Panchayats) were very successful in managing the local forests, the introduction of the JFM program with a view of achieving uniformity in the forest policy across states resulted in the disempowerment of women and the poorer groups who were actively participating in the management process under the Van Panchayat. The top-down manner of planning and implementation of the participatory program resulted in clashes and eventually the collapse of a well functioning process (Sarin, 2001). The same policy, which was seen as a positive reinforcer in the Arabari case may not act as a positive reinforcer in the village in Rajasthan since the demarcation of formal boundaries by the Forest Department conflicts with the customary beliefs of the people and may be viewed as a negative reinforcer. Similarly, in the village of Pakhi the introduction of a formal participatory policy acted as a negative reinforcer and led to the reduction in cooperative behavior.

### *Gender related aspects*

In India women undertake most of the work related to the collection of fuel wood and other non-timber forest products and women are also engaged in the activities of making products like baskets, plates, brooms etc. from the forest products that are sold in the markets in cities. The engagement of women in most forest related activities has led to the establishment of rules requiring the recruitment of women to the executive board of the FPC in many states in order to increase the participation of women in the decision making process. This could also be a positive reinforcement, which by enhancing the role of women in social issues, could lead to increased involvement and initiative by women's groups in other related issues. The development of seed banks and other cooperatives in many villages in India that have led to empowerment of women suggests that the formal recognition of the role of women in the participatory management efforts can act as a positive reinforcer. However, it has also been observed that in many villages the women members of the executive committee do not actively participate in the decision making process and are often not present at the executive committee meetings. Some studies indicate this is due to the lack of attention to their opinion in the decisions of the committee. The feeling that their representation on the executive committee is not recognized during the decision making process could act as a negative reinforcer and would lead to reduced participation of women.

The SBR model and the model of pattern recognition offer an explanation for the success or failure of JFM efforts using an approach documenting reinforcement in the past rather than the forward reasoning approach followed by many previous studies. Identifying

generalized patterns and stimuli can inform policy makers about possible cues and reinforcers that could lead to increased cooperation. It is not an easy exercise to identify general patterns in each village but information about past responses to policies, records of Panchayat board meetings and information about people's attitudes towards the Forest Department can provide a starting point. The arguments presented above illustrate that the factors that influence behavior are very context specific. Designing a survey to elicit information about behavioral patterns is a challenging task, particularly because the manner in which questions are asked is also likely to frame the responses. Further, it is important to note that there could still be a gap between people's beliefs and attitudes and their behavior. However, an understanding of some of the psychological factors that may influence behavior may enable policy makers to design policies in a manner that is more likely to achieve the desired behavior.

## CHAPTER 5

### TOWARDS AN ALTERNATIVE CHOICE MODEL

This paper argues that the rational-choice model based on the representative, self-interested individual who maximizes utility after a benefit-cost evaluation of alternative options is insufficient in explaining collective action. The *homo economicus* assumption on which traditional economic analysis rests has been challenged by works in social psychology and it is now acknowledged that behavior may not always be guided by self-interest. Economic analyses have tried to incorporate notions of fairness, altruism, and sympathy as additional arguments in the utility function, thereby retaining the model of utility maximization. This paper takes the analysis one step further and argues that people may not always make a conscious, calculated decision and therefore there is a need to reconsider the universal applicability of the rational-choice model. The model of pattern recognition and stimulus-response behaviorism may be useful in furthering the analysis. Margolis (1987) suggests that behavior is the outcome of pattern recognition. Cues from the environment get associated with patterns that fit a certain behavior response. It may not be possible to explain how this 'fit' takes place. However, a better understanding of generally observed patterns of behavior may suggest cues in which we can expect similar behavioral responses. The arguments presented in this paper suggest that the analysis of collective action needs to be very context specific. The examples of the village of Pakhi in Uttar Pradesh and Midnapur in West Bengal show that the same policy or cue can lead to contrasting outcomes. The formal recognition of local participation in through the JFM program was a positive reinforcer in West Bengal but acted as a negative reinforcer in Uttar Pradesh, where the well functioning van panchayat system collapsed after the

formal introduction of JFM program. These arguments do not imply that the rational-choice model never holds but suggest that the conventional model may not always be applicable. It is not a suggestion that there is a need to replace existing theory with an alternative, universally applicable theory. Rather, the point of this paper is that there may not be any universally applicable theory of human behavior and there is a need to step outside the domain of the rational choice theory and look for other possible explanations.

Insights from behavioral theories can further the analysis of collective action in two ways. Firstly, identifying and understanding relevant behavioral regularities, such as endowment effects, loss aversion and framing, among the group of resource users can be helpful in explaining the outcome of collective action efforts. Secondly, people learn new preferences and new connections between cues and responses. Behavior is influenced by framing effects and an understanding of how a group responds to different policy frames can inform policy makers to design and present the policy in a way that is more likely to reinforce desired behavior. Institutions frame the situation under which people act and preferences can also be endogenous to the institutional structure. A market-like structure may frame the policy cue in a way that leads to self-interest maximizing behavior whereas an institutional structure that is framed in a way that invokes a sense of belonging and responsibility to the resource may lead to higher levels of cooperation. Therefore, the analysis can be taken a step ahead from identifying conditions for successful collective action to designing policies in a manner that could lead to the establishment of the institutional attributes in groups that do not already have them. This does not suggest that it is always possible to design community based natural resource



management programs that would be successful. However, information about behavioral patterns and attitudes of the group can compliment institutional design principles.

Identifying behavioral patterns is not easy and requires further research. A first step in this direction is suggested here. Survey research could be directed towards gathering information on the attitudes and feelings of the group of resource users rather than focus only on objective performance outcomes. Emotions may be a reason for people to stop their benefit-cost calculation and jump directly to the action. Interviews with the members of FPCs can be helpful in understanding whether non-cooperation with the forest department is an outcome of anger and a feeling of unfair treatment or discontent regarding the forest department's concern towards the interests of the local users of the forest. Inquiry into the beliefs of people regarding their right over the forest resource can explain whether endowment effects and loss aversion are relevant in the performance outcome. To elicit such information interviewers could ask members of FPCs if the recognition of their role in forest management under the JFM program was viewed as an entitlement that increased their opportunities or as a cost to maintain their traditional access rights and whether they felt they were working *with* the Forest Department (FD) or *for* the FD. Framing effects can significantly influence behavior and some of the frames that could be considered are whether the policy was proposed under a market-like setting. Even under a market structure, the perception of the members of the FPC as sellers or buyers of an opportunity will frame their behavior. The person who communicates the policy can also influence the actions of members of the village. It would be worth

investigating the responses under different frames and reviewing records of how the JFM policy was framed in different states could help explain the performance better.

The next step towards explaining collective action in natural resource management would be to include a behavioral study as part of the diagnostic action research, which is aimed at understanding the context specific characteristics of the resource and the resource users before the introduction of any new policy. Designing a survey to elicit information about behavioral aspects discussed above is not easy and requires further research. It is important to note that the manner in which the questions are framed also influence responses, which makes this task challenging.

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