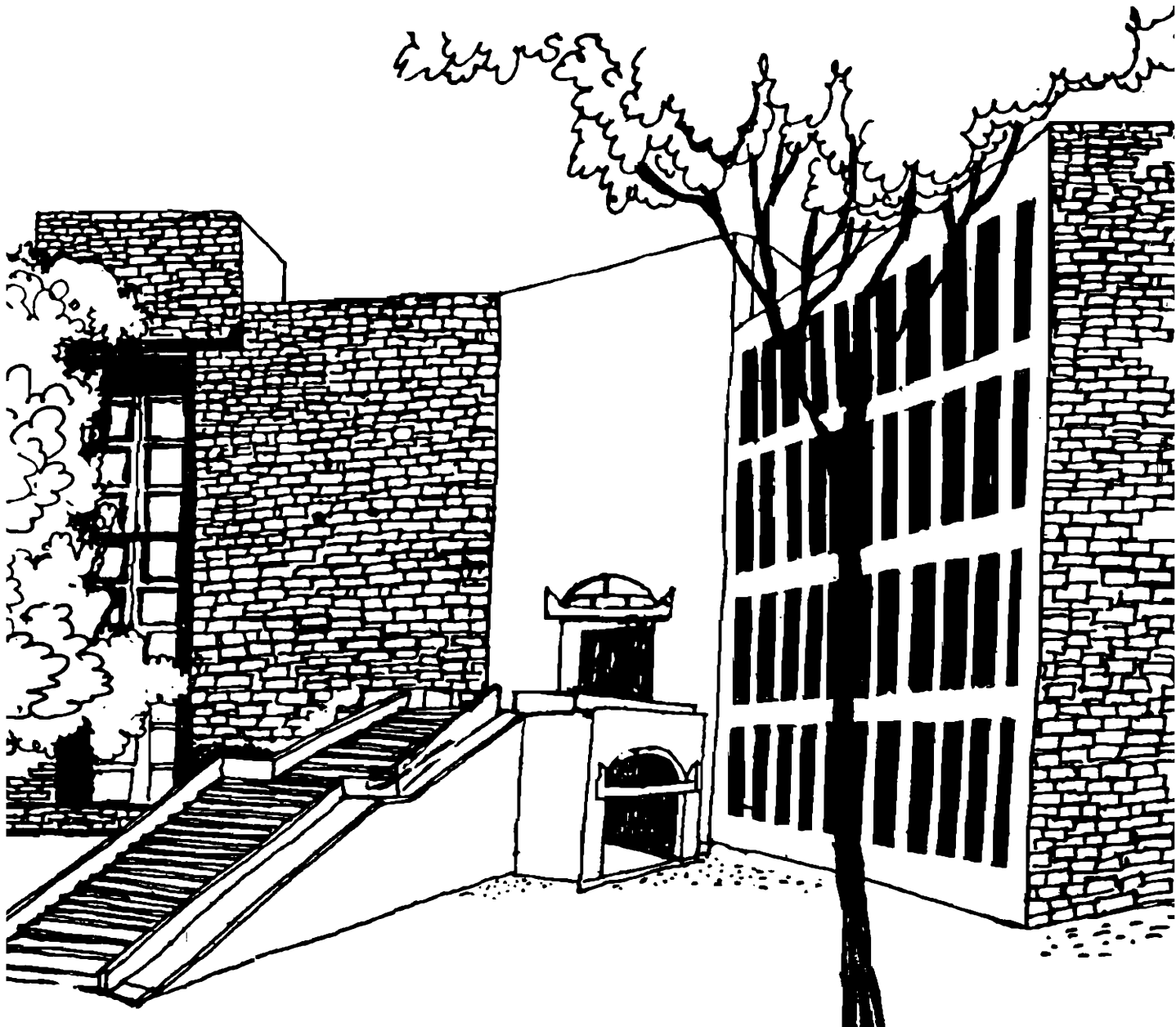




Working Paper




**Empowerment for Sustainable Development:
Building Upon Local Creativity and Entrepreneurship
in Vulnerable Environments**

by

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**Empowerment for Sustainable Development:
Building upon local creativity and entrepreneurship
in vulnerable environments¹**

If we can understand the process by which a poor person -- man, woman, child or old -- feels empowered, we can explore the ways in which sustainable options for poverty alleviation can be identified. A story we heard recently may help clarify this point.

There was a street performer who used to earn his living by entertaining people with the help of an able disciple. They performed very skillful acrobatics. The joy people got on seeing their performance was not just because the performers were very skilled. It was largely because they were involved, as spectators, in the act. The onlookers were made part of the performance.

One day a thief was passing by. He saw the performance and was greatly impressed with the skills of the performers, particularly the disciple's. The disciple's body was very supple and he could endure a lot of pain. The thief thought that if he could lure the disciple and make him an accomplice, he could break into big houses, jump over big walls and amass lot of wealth. After observing the performance a few times, he approached the disciple and asked him to join him. The thief promised the disciple an attractive share in the loot. The disciple agreed.

One day after a lot of planning, both of them went to loot a big mansion with tall walls. The idea was that the disciple would climb the wall, jump into the compound and then open the gate from inside so that thief could come in. They thought this way they could perhaps carry away a large amount of loot without making much noise and attracting attention.

1. This is a revised draft of the paper presented in the International Workshop on Empowerment for Sustainable Development organized by International Institute for Sustainable Development, Winnipeg, Canada, November 1-2, 1993 at Toronto. It is also being brought out as SRISTI monograph No. 1.

On the appointed day, both of them went to the mansion which was to be looted. The disciple started losing his nerve. The thief exhorted him to climb because he had performed much harder tasks in the past. After a lot of goading, the disciple climbed the wall. The thief asked him to jump down. But the disciple would just not do it. The thief implored him, tried to shame him, pestered him, but to no avail. The disciple finally asked him to clap if he wanted him to jump. After all had his master not made the spectators clap whenever he had had to perform a difficult act?

The disciple was empowered by the claps of the spectators. He did not realize that the power was within him and not in the hands of spectators. But so had he been trained. This is the crux of the matter. How do we ensure that poor people do not become more dependent in the process of development, rather than becoming autonomous? How do we avoid their performance becoming contingent upon 'external clappers'? If an endogenous and sustainable development process has to ensue, it is necessary that we realize the paradox of dependent development. Since we define the problem, we also define a role for *ourselves* as problem solvers. Ironically, this notion of participation implies participation of spectators', i.e., outsiders' participation being institutionalized. But not vice versa.

People cannot be just the clappers. When to clap and when not to, is as important as the question of whether to clap at all. The nature of participation of outsiders in people's plans, thus, will determine how empowering the development process is likely to be (Gupta, 1992).

A transition towards sustainable development requires recognition of the fundamental contradiction between the strategies which build upon what people do not know or have and the ones which take people's knowledge systems as the basic building block. It is the latter process of building upon

people's own creativity that will bring about a liberating alternative².

This paper is organized into four parts. In Part One, the concept of empowerment through the linkage between two-way communication and two-way power is discussed. Since the process of empowerment will vary in different situations of vulnerability, the nature of risk and strategies for coping with risk are discussed in Part Two.

The framework for understanding sustainability through empowerment, poverty alleviation through value addition in local innovations and networking among innovators is discussed in Part Three. The lessons -- ethical and organizational -- for overhaul of the global developmental strategy of sustainable development are elicited in the conclusion.

Part One: Empowerment through recognition of and respect for rights of local knowledge to resources.

Development (see Fig:1) has been defined as a process of widening the decision-making choices and extending the time frame of the households (Gupta 1981). Most sustainable technologies require a longer time frame to be viable. In the shorter time-frame, a higher discount rate would exclude most technologies that generate small returns but with lower externalities.

2. This is precisely the goal of SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions) set up as a global network of grassroots level innovators.

Fig : 1

Development Models

	Time Frame		
	Short	Long	
Range of Choices	Narrow	Non-sustainable	Vulnerable
	Wide	Oppurtu- nistic non-sustainable	Sustainable

Source:Gupta, 1981

The matrix helps us see the goal of development as a movement from non-sustainable or opportunistic options to sustainable options.

Access to resources, skills and technologies, institutions and cultural networks makes a considerable difference to achieving sustainable outcomes. The communication between the people and the professionals or the managers of development projects and programmes influences the range of choices that different social groups can exercise. The ability of people to extract information, provide feedback or influence the design of the dialogue depends upon the respective power that the two ends of the communication channel have.

The interplay between communication and power at the grassroots level is illustrated in Figure two. On one axis we have one-way, two-way and no-way power, and on the other axis we have the same dimensions, but of the communication process (Gupta 1980). Power is defined as the ability to change the other's behaviour or response in accordance with one's own preference.

Fig : 2

		Power		
		One Way	Two Way	No Way
Communi- cation	One Way	Authori- tarian	Impossible	Street Singer or Tom Tom beater
	Two Way	Farmer training Centre	<u>Empowerment</u>	Collegial learning
	No Way	Power of Silence	Impossible	Indifference

Source: Gupta, 1980, 1988

One-way communication -- one-way power exists in an authoritarian arrangement. It is obvious that any exchange³ in this framework cannot be sustainable. A large number of top-down projects or programmes suffer from this limitation. Since there is no feed back, poor people often either ignore, or become indifferent or sometimes rebel against the oppressive structures. In the last case, one-way power is accompanied by two-way communication -- protest being the way of communication from the side of the disadvantaged people.

One-way communication -- two-way power is impossible because those who have power are unlikely to restrain the exercise of the same indefinitely.

One-way communication with no power either way is a case of street singers or tom tom beaters. These people perform their roles with almost zero ability to change the context or message. The

3. The exchange here refers to the authoritarian message from one end and the compliance from another. One may argue that with one-way power and one-way communication, there is no exchange but only one way flow of information or resource. In that case, the relationship of this kind is non-sustainable.

providers or originators of the message may have power but not the ones who broadcast it. The latter can neither change the content nor its frequency. Street singers may acquire power some times through incorporation of powerful myths or metaphors into their narration. In that case, it becomes an example of one-way communication and one-way weak power. But generally, such a system survives either as entertainment or as a simple information-diffusion system.

Two-way communication with one-way power is reflected in the usual farmers' training centres or officially designed development programmes. While people can give their feedback, they have no ability or power to ensure action on it. Such a system sooner or later becomes unresponsive to the needs and aspirations of the people at the grassroots. The communication flow from the people slows down and eventually stops completely. The system then evolves into one-way communication -- one-way power. Learning is impaired.

Two-way communication and two-way power is the most viable and sustainable institutional arrangement. This is an arrangement which Gandhi articulated as "Gram Swarajya" or Village Republic and Mao Tse Tung called as the Mass Line approach. It is true that both failed to achieve it on durable basis. Yet, the merit of the arrangement remains. The two-way communication system may not prevent mistakes altogether but certainly avoids blunders. The power both ways ensures learning and mid-course correction. It also generates mutual accountability and authenticity in transactions. Both the ethical and institutional responsibilities are shouldered in a shared manner. People are truly empowered in this case. People can not only communicate their expectations and feedback to the planners and policy makers, but also exercise power to shape the content of policies and programmes. The initiative remains at both ends and mutual support and learning are emphasised. People's initiatives and innovations can become the basis of public policy just as people can support some of the desirable initiatives of the external agencies or actors. Given the quality of communication and play of power at both ends, the system can be highly sustainable.

Two-way communication with no power either way is the system of lateral or collegial learning. Farmer to farmer learning takes place informally. This is a very powerful medium of knowledge

buildup though it can also be demoralising sometimes. This happens when the dominant peer group reinforces despondency and cynicism rather than hope and experimentation.

No-way communication with one-way power: In general, one can assume that power cannot exist without articulation. However, when poor people decide to exercise the power of silence, for some time, a situation of one-way power with no-way communication can indeed arise. The case of no-way communication and no-way power is an alarming situation when indifference and cynicism become pervasive at all levels.

Empowerment is thus a process of conceding to disadvantaged communities the right to question and communicate alternative opinions. The only limitation of this definition is that it presupposes that those who have power will willingly share it with others. This definition also masks our -- the external resource provider's -- powerlessness in understanding and uncovering the creativity and entrepreneurship of knowledge-rich and economically-poor people. The latent power of the creative people can manifest through institutions that permit two-way communication and two-way power. However, the process of such an empowerment will vary in regions with varying vulnerabilities.

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Part Two: Coping creatively:

Institutional and Technological Risk adjustments in varying Vulnerable Environments

Rural households have to diversify their strategies of resource use to survive not just individually but also collectively in any high-risk environment such as deserts or hills. The pattern of diversification is closely linked to (a) the nature of initial endowments of the family, (b) access to factor markets like land, labour, capital and product markets including technological choices, (c) historical process through which the portfolio or combination of various resource-use strategies has evolved in a given ecological region and among different classes, (d) cultural and institutional mechanisms (kinship, caste, religious, ethnic or other interest groups) guiding individual as well as collective behaviour for economic and non-economic purposes, festivals, rituals and religious performances etc., and (e) the nature of the state and its delivery systems. Analytically, the relationship between the pattern of diversification in a given ecological context and the social exchange relations has to be established in a manner that the effect of changes in one on the other can be measured.

The nature of risk:

The drought and flood prone regions, hill areas and forest regions are inhabited by people who use diversified resource strategies to deal with risks. The sources of the risks can be environmental, institutional, social, cultural and even political; not to mention market weakness or failure. Some of these risks can only be appreciated: there is little one can do in the short run. Some can be influenced. In other cases the risk-inducing factors can be manipulated. It is obvious that the same risk may have some components which can be influenced, appreciated or manipulated (Smith et al., 1980). The strategies for risk adjustment at the household level can be strengthened or weakened by public policies as well as various organizational or market interventions.

Portfolio Diversification and Vulnerability

The variability in social interactions will also depend upon the extent of ecological variabilities as evident from the portfolio characteristics of the households. The households could have four kinds of portfolios of economic activities. If we take average income on one dimension of the matrix and

variance in the income on the other, the four possibilities can be represented as follows (Fig 3):

Fig-3: Risk/ Variance and Return/ Mean Matrix

		Mean or Average Income	
		High	Low
Variance	High	HM-HV	LM-HV (most vulnerable)
	Low	HM-LV	LM-LV (subsistence)

Source: Gupta, 1981, 1988

We can see four kinds of portfolios viz. High Mean - High Variance (HM-HV), High Mean - Low Variance (HM-LV), Low Mean - High Variance (LM-HV) and Low Mean - Low Variance (LM-LV).

HM-HV portfolios imply that households have such enterprises which generate very high income but also have high fluctuations. If households prefer such enterprises, they should then be able to reduce the variance by controlling fluctuations or insuring against the same. Their access to institutions should ensure their ability to meet the expected high input requirement of such portfolios and their control over resources to reduce the fluctuations should imply their stronger power over institutions. The nature of networks such households would have among themselves and with other social groups as well as institutions (private as well as public) will be characteristically different from the networks of other groups as we will see below. The incentives for bringing such people together would be different from those that bring together people with other kinds of portfolios.

HM-LV portfolios would comprise enterprises that give high income with low fluctuation. Households with such portfolios would obviously have very high control over resources and institutions and also accumulate maximum surplus among all the groups.

LM-LV portfolios characterize households having low technology or low input-intensive enterprises such as local varieties of crops, local breeds of livestock with low but stable demand. These

households are generally subsistence oriented and can break even with some difficulty. The culture and social ethos of such groups are bound to be governed by stable institutions, networks and cohesive leadership. There will be limited incentives for entrepreneurship and deviance.

LM-HV portfolios characterize the most vulnerable households. These households would have such varieties of crops which are vulnerable to environmental and market fluctuations leading to generation of very low surplus. The livestock breeds though are well adapted to the environment, suffer huge loss due to drought or disease epidemics. The fluctuations in the non-farm sector also similarly impair the capability of household adjustment. In fact most of the households with such portfolios would have deficits in their budget. Their dependence on other social groups and informal institutions like moneylenders or traders is enormous. Their vulnerability often acquires highly exploitative forms dividing them into different sub-groups of mutually conflicting identities. Collective action, for economic purposes, among such people is extremely difficult. For cultural and social purposes, they have perhaps one of the strongest indigenous institutional infrastructure. Their tacit knowledge base is rich and often includes confluence of self-abnegating images. There are, however, exceptions, particularly among artisans and pastoralists. Such groups may have a stronger self image and are also less vulnerable in regions where some demand for their products exists. The risks spread over space, sector and season or time also need to be appraised carefully to understand the evolution of institutional or individual solutions.

Spatial hazards are the area-specific contingencies. These are the risks which emerge due to presence or absence of certain endowments. Seasonal hazards refer to risks over time, mainly concerned with climate and location interactions. Sectoral hazards broadly refer to risks associated with economic activities. Transport, communication and agriculture sectors face greater incidence of sectoral hazards. Seasonal hazards consist of abnormal monsoon, flood, stormy wind, hailstorm etc. Spatial hazards would require identification of territories which suffer from region-specific hazards.

Low mean or low average return and high variance or fluctuations in the output characterize the most vulnerable portfolios. Such households diversify their resources options but at a very low level of subsistence. The first step towards ameliorating their impoverishment is to reduce the variance in their portfolios while simultaneously improving their average performance. If there is a trade off between achieving both the goals, it may be better to reduce the variance first and increase the average income subsequently. This implies priority to certain kinds of insurance of enterprises in the short run. In the absence of the insurances, the experience has been that poor disadvantaged groups have not been able to utilize the entrepreneurial options.

There is, however, one exception. It relates to a subset of disadvantaged communities which is extremely knowledgeable and continues to take risks and generate innovations regardless of the availability of insurance or external income-earning opportunities. It is to this creative subgroup that we turn to, in the next part.

Risk and Social Exchange Mechanisms:

In different ecological regions various kinds of constraints would become dominant and, therefore, there is a need for eco-specific mix of strategies and social structures. However, there are some patterns in the ways people come together and resolve conflicts in market-dominated versus nature-dominated regions. The former regions are the well endowed, irrigated, low risk, high population density pockets. Since there is a larger surplus available with people, the market forces are stronger and often provide support which otherwise would have to be derived from social institutions. The nature-dominated regions include drought, flood, forest or hill areas where people have to rely on rain or other natural resources for their livelihood. Some of the key contrasts are mentioned in Fig:4

Fig:4

	Market dominated	Nature dominated
1. Communication system	Digital	Analogical
2. Pooling of resources	Very low	Very high
3. Reliance on common properties	Low	Very high
4. Settling of books of account	Very short term	Long term
5. The proportion of women headed or managed households	Very low	Very high
6. Women participation rates	Very low	Very high
7. Reciprocities	Specific	Generalized
8. Empowerment	Material resource-based	Knowledge resource and culture-based

Source: Gupta, 1992

In high population density, market dominated regions the people can manage their needs (both expected and unexpected) especially by relying on markets or their individual reserves/inventories. If a guest comes unexpectedly, one can always get things from the market or immediate neighbourhood (where community structures exist). In nature-dominated regions such possibilities are limited. One has to rely on informal co-operation. Similarly, if it rains on one side of the village and not on the other, the pooling of bullocks and implements may become necessary so that scarce moisture is not lost.

The pooling of resources is a logical necessity in nature dominated regions because the cost of individual maintenance of inventories would be very high given the uncertainty in the environment. The institutions which generate expectation of co-operation and provide legitimacy for collective action have to evolve to make collective survival possible.

The communication systems involve metaphorical or analogical style in the nature-dominated regions largely because the ambiguity and ambivalence provide greater space for deriving personal meanings. Unlike digital communication which is in terms of yes or no, or other precise categories, the analogical communication requires messages to be coded in culture-specific metaphors. The compliance of collective decisions is much higher in analogic systems than the digital ones.

The reason for a very long timeframe in settling IOUs is the understanding that various exchanges are actually not settled but merely carried forward. Given variabilities in endowments, exchange in one resource market may be settled against another resource. Generalized reciprocities dominate over the specific ones in nature-dominated regions. It is very difficult to work out the equivalence between thatching of a hut by someone with ploughing of fields by another. It is for this reason that the book of accounts is settled in the long term and in generalized reciprocal form.

The proportion of women headed or managed households is invariably more in these regions because of the high male-migration from these regions to market-dominated regions. This has implications for the choice of technology, nature of social institutions and sustainability of any particular organisational design.

The empowerment process in nature-dependent communities in vulnerable regions is quite different from the market-dependent, low risk environments. In the former case, it is knowledge and culture-based while in the latter it is material resource-based empowerment that may work.

Eco Institutional Model : 4-A (Access, Assurance, Ability and Attitudes)

The relationship between the variables on X and Y axis in Fig:5 can be one to one. Or, each variable on one axis can be related to other variables on X and Y axis (Fig:2). If we know the parameters of two dimensions on X or Y axis we can speculate upon the parameters of the third dimension. For instance, if we know (a) what type of access condition exists vis-a-vis market resources in a given situation and (b) the distribution of skills and abilities among various groups, the type of assurances both vertical and horizontal required to generate sustainable resource use can be anticipated. The horizontal assurances refer to others' behaviour vis-a-vis one's own at a point of time and the vertical assurances refer to the future returns from present investments. The attitudes are both the result or the outcome of the experience with resource utilisation and also the causal influence on the response to institutions. The attitudes provide a cultural basis of institutional working.

Fig-5: Eco-Institutional Perspective

	Ecological resources / \ space Time Sector where when what	Institutions	Technology	Culture
Access	*****	***	**	*
Assurances	/Vertical * \Horizontal	*****	**	*
Ability	**	**	*****	**
Attitudes	***	*	**	*****

Source: Gupta 1987, 1989, 1991

All the four As i.e. access, assurance, abilities and attitudes, must be satisfied in a system level intervention for it to be sustainable. The advantage of the framework is if we know any two dimensions we can speculate about the third. And if we know three, we can speculate the fourth.

Let us take the case of a technology for plant protection. It is useful for me to use biological pest control, if I have some assurance about others' behaviour. But if I did not, I might spend more on chemical pesticides, and increase the cost of plant protection of others as well. Further it is not enough to have access to technology and skills or ability to use it, if assurances are not available. Likewise, the culture of collective survival vis-a-vis individual survival would also influence the sustainability of technology as well as institutional arrangement. Culture is the glue which holds the triangle of access, assurance and ability together. The empowerment of people cannot take place unless their access to resources, institutions, technology etc, assurances available to them from formal and informal institutions and skills to convert access into investments or outputs are synchronised in culturally adapted manner.

There are mechanisms developed to have other kinds of assurances. People in Andhra Pradesh villages receiving herdsman from Rajasthan have an informal arrangement for deciding whose fields should be penned this year by whose herd. An assembly of village elders negotiates with the scout party of the pastoralists about which herd will stay in whose field. The obligations of payment to a village common fund, herdsman or the farmers are also spelt out (Wade, 1980). Friendly relations among the visiting herdsman and the local settled populations cannot always be taken for granted. There have been many cases of violence against pastoralists around grazing in forests (with or without sanctuaries), private fallows, roadside fallows, at inter-state borders etc. There is a Supreme court judgment permitting unrestricted right of pastoralists to move from one state to another. However, weakening of assurances from state or host village communities obviously increases grazing pressure on more marginal uninhabited lands leading to ecological crisis (Gupta, 1982).

The improvement in access or assurances only will not help if the skills of the pastoralists to use available opportunities do not simultaneously improve. Most pastoralists can inject medicines or vaccinate their animals themselves. But there remains a vast range of traditional medicine systems or knowledge about combination of stress fodder and feeds during drought which remains to be properly documented, analyzed, screened and diffused.

The type of common property institutions which may emerge here may have both episodic and continuous or concurrent rules. The episodic rules refer to directions of behaviour which become important only in the times of crisis. These are actually mefa rules which provide guidelines for evolving rules in such institutions. The specific rules may of course vary from crisis to crisis. These rules are not even recalled many times in the normal times. The continuous or concurrent rules refer to the ongoing directions for behaviour. Even here the equivalence of returns and fairness of distribution may first be evaluated at the level of kinship or lineage group. Only later it may be evaluated across groups and resource markets. Cross compensation or subsidization may be practiced more on moral grounds than just on economic grounds. For instance, not letting anyone sleep hungry may implicitly be understood as a collective responsibility only at a small neighbourhood level.

Part Three:

Grassroots Technological and Institutional Innovations for Sustainable Development:

Building Upon Local Knowledge Systems

Erosion of knowledge is a much more serious problem than the erosion of natural resources. We can probably reverse the declining productivity of natural resources like soil through watershed projects or other resource conservation strategies. However, erosion and regeneration of knowledge and resources can not be easily reversed once lost. These have to be seen in a single-multiple generation framework.

Fig-6: Scope for Regeneration

Generational Time Framework

	Single	Multiple
Resources		
Eroded	1	2
Conserved	3	4
Knowledge		
Eroded	5	6
Conserved	7	8

Sustainability

Combination of cell of Regeneration:

a) Poor

1 and 5. This is so because with in one generation (as in our times) both the resources and the associated knowledge base get eroded. The knowledge may only be available in old book shops or waste paper markets, or pavement stores. The folk knowledge having been eroded may be almost impossible to reconstruct or rejuvenate. Erosion of knowledge was never so rapid as in our generation be-

cause of declining inter-generational communication. We have no time for our own elders or that of others.

b) Very poor

2 and 6. In this case the situation is even worse because the resources and the knowledge have been degraded for more than one generation. Only rare repositories of knowledge may exist among some bypassed communities.

c) Medium

1 and 7 if local knowledge is incorporated in strategies of regeneration. The knowledge will also be eroded if not used.

d) Sustainable

3 and 7, 4 and 8

e) Endangered

3 and 5 can happen when state-controlled conservation of "Im 2" resources through park or sanctuary is attempted, keeping people out of the resource. If knowledge is eroded, the erosion of resource can't be far behind.

f) Not easily possible

4 and 6. This is so because a resource can not be sustained over generations without drawing upon local knowledge at all. Under condition of no human intervention or access, certain resources like forests may be conserved over generations without incorporating local knowledge. But with increasing influence of man-made (or woman-made) factors on the survivability of forests through acid rains, global warming or erosion of upper catchments etc., and increasing population pressure, would it be possible to pursue such a possibility at all. We doubt.

g) Possible

2 and 8, if knowledge has been documented through efforts like Honey Bee and is available to people, regeneration of resources is possible within a long time frame.

Increased emphasis on providing short-term relief, employment and other means of subsistence in high-risk environments to alleviate poverty and stress erodes the self respect and dignity of disadvantaged communities. The latter's will to struggle and innovate gets subdued. Both the resource and the knowledge around this resource get eroded. It is to overcome this bias in development strategies that we initiated the Honey Bee network five years ago.

This network aims at identifying the innovators (individuals or groups) who have tried to break out of existing technological and institutional constraints through their own imagination and effort.

What is remarkable about these innovations is the fact that most of these require very low external inputs, are extremely eco-friendly and improve productivity at very low cost.

It is necessary to note here that organizations of creative people, which take of the form of networks or informal cooperatives or just loose associations, would generate a very different kind of pressure on society for sustainable development. The spirit of excellence, critical peer group appraisal, competitiveness and entrepreneurship so vital for self reliant development, may emerge only in the networks of local 'experts', innovators and experimenters. It is true that every farmer or artisan does experiment. But not every one is equally creative and not in the same resource-related fields. The transition of the developmental paradigm from a *victim's* perspective to that of the *victor's* is the answer.

The organizational principles which guide collective action in different regions would obviously have some common, but many uncommon dimensions.

The institution-building process involves simultaneous intervention in eight dimensions of organizational change, viz: Leadership⁴, Stake Building⁵, Value Reinforcement⁶, Clarifying Norms and rule making process⁷, Capacity Building⁸, Innovation and creativity, Self -Renewal⁹, and Networking. The Theory of Institution Building¹⁰ (IB) has to be significantly remodeled because of historical reasons. The IB processes were evolved to increase the capacity of third world organisations to receive funds/aid and use them efficiently and effectively. The problem was defined from an external perspective and was resolved or sought to be resolved accordingly. Such a perspective provided only limited insights for strengthening the capacities of organizations which have emerged autonomously at local level.

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4. The iterative, rotational and interactive leadership models are the only ones which sustain local community organizations. A study of Chenchu food gathering and hunting tribe in Andhra Pradesh (Gupta, 1983, 1987) revealed three principles of sustainable organizational sustenance; First) The leader and follower can iterate. The leader in honey collection sub-group has no particular skill in hunting group and becomes just a follower in that group. Second) The skills and not status determine the leadership(the person who knows the most critical functions in a task becomes the follower rather than the one who is chief of the tribe or his kin. Third) the pooling is independent of the redistribution. The honey, game, food, fish or fuel is shared in this tribe among all the members and not just the ones who went on the expedition.
 5. The original model of IB which emphasized on the intr-organizational changes is less useful now. The evolution of stakeholders' interest in the organization plays a vital role in the self reliance process.
 6. Some values are brought by the members of any organization along with them but some are acquired in the organizational life experience. It is these values which have to be so shaped that reliance on external instruments of control and supervision becomes less important.
 7. The rule making process is the one of the most crucial aspect of the IB in any organization. The fine tuning of rules, norms and belief system in accordance with the strategic future directions is not a function of just the leader. The group has to collectively evolve the norms and changes there in so as to ensure that collective spirit is maintained.
 8. One of the most inappropriate term in the developmental jargon is the 'unskilled' labour. There is practically no person who has no skill what so ever. The challenge is to provide space with in and outside the organizations for each member to grow. The learning systems at individual and collective levels are to be strengthened in such a manner that the errors are not masked and corrections are not delayed too much.
 9. The process of self renewal requires recalibrating the scales of measurement periodically. It is the ability to discriminate finer shades of the colour of life which in the normal course may be missed. The historical perspective helps just as does the urge to relate to larger social causes. One can not discover the immense source of energy to pursue any specific goal till one finds the broader dimension of growth.
 10. Several reviews exist elaborating the concerns in the matter but within the externally aided process of IB (Uphoff 1986; Ganesh, 1979, 1980; Laudu, 1972; Wildavsky, 1978; Pareikh, 1978; Eeman, 1972; etc.). Gupta, 1982 and Pastakia, 1992 discuss the IB process from with in.

The cases of resource Conserving and regenerating Institutions and Technologies:

1. Resource Conserving Institutions: Multi-functional institutions of restraint, reciprocity and respect, generating collective responsibility for nature

The role of culture, religion and other collective social institutions in modifying individual needs has not been adequately appreciated. There is a custom that people go to the forest together for collection of shingle wood in Bhutan on a particular day. There are several implications of this practice.

- a) While collecting wood on the steep slopes, if somebody falls down, there are people around to help in the emergency.
- b) Everybody monitors everybody else's collection of wood.
- c) Since collection of wood has to be done keeping in mind the age, health, and condition of the tree, corrective restraint helps in maintaining those conditions.
- d) Some people are either too old, handicapped, weak or their requirements are larger than they can manage on their own. Groups help in such cases and carry the extra burden.
- e) There are sites which might have suffered some damage due to rain, landslide or other reasons. The fact that such sites are observed together enables mobilization of the collective will for corrective action more easily.
- f) In addition to the utilitarian dimensions mentioned above, the group action is its own reward when there is music, fun and laughter around.

Thus, emphasis on only the economic part of a resource would not provide sufficient information or insights for building institutions that can help in managing resources sustainably. Development is possible only through creative institutions which constrain individual choices to some extent and yet provide scope for entrepreneurship.

2. Regenerating Institutions and Technologies:

Empowerment through Documentaion of Local Innovations, Value addition and Networking : The Case of Honey Bee

In most cases of conservation of natural resources, sufficient attention is not paid to local value addition so that higher share of incremental income is generated in the local economy. Empowerment through value addition is a concept that may help in generating sustainable market supported solutions. This is all the more important because regions of high biodiversity are also the regions of high poverty. Several factors have contributed to this linkage. A global initiative started by us, SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions) takes note of the following factors to generate viable options.

- (a) The regions where bio-diversity is high, (primarily due to diversity in soil, climate and other physical and social structures) are also the regions where poverty levels are very high;
- (b) The poverty is high because markets are often unable to generate demand for diverse colors, tastes, shapes and qualities of natural products. Products of mass consumption particularly when processed by machines have low variability because throughput by machines has to be of uniform quality.
- (c) The regions of high diversity also have very poor public infrastructure (just in tandem with weak private market forces) because the people have limited surplus to attract public servants, and they are less articulate and organized to create political pressure (except through insurgent movements as is becoming evident from different parts of the world).
- (d) The low demand for ecological and technological skills of these communities characterizes them as 'unskilled' labour pool fit for being a part of the urban slums, squatters or other similar work force. Once the knowledge system is devalued, the cultural and social decline follows. The tenuous relationship with the nature is ruptured. The ecological degradation spurred by various external resource extractors is aided and abetted by many poor as well as not so poor people for whom survival in short term seems possible only through eco-degrading strategies.

It is in this context that a global voluntary initiative was launched five years ago to network the people and the activists engaged in eco-restoration and reconstruction of knowledge about precious ecological, technological and institutional knowledge systems of people.

Global networking: Honey Bee

Honey bee - an informal newsletter started three years ago is an effort to make the 'Golden Bird sing again'. We had realized that much against the conventional understanding poor people were poor indeed, but not so poor that they could not even think. For them the experimentation and innovation was a matter of life and death given the uncertainties of nature expressed through droughts, floods and hail storms.

Honey Bee network newsletter is brought out in five languages in India (Hindi, Gujarati, Malayalam, Tamil, and Oriya) and Zonkha in Bhutan so that dialogue with the people takes place in their own language. The creative people of one place should be able to communicate with similar people elsewhere to trigger mutual imagination and fertilize respective recipes for sustainable natural resource management. The Honey Bee network is headquartered at SRISTI (c/o IIM-A) -- an autonomous NGO -- and supported by individual faculty at IIM-A.

We realize that the technological innovations cannot survive without institutional innovations and support structures. Hence we have been documenting the ecological institutions which have been evolved by the people to manage knowledge and resources as common property.

We insist in our work that two principles are followed without fail: one) whatever we learn from people must be shared with them in their language, and two) every innovation must be sourced to individuals/communities with name and address to protect the intellectual property rights of the people.

It is also possible to take the current global debate on biodiversity and peasant knowledge beyond rhetoric. Our network extends into 60 countries at present. Some of the colleagues have started similar documentation in their respective regions. Offers have been received for Nepali, Sri Lankan, Ugandan and Fulfuldi (Mali) version.

An experiment in People to people learning

We started the first issue of Honeybee with a note prepared by a scientist of Gujarat Agricultural University illustrating the lessons learnt by him and his colleagues from a careful study of farming innovations, traditional wisdom and localized experiments. This, we thought, would encourage the other scientists to make their tacit knowledge explicit. In any case nothing is gained by considering farmers as 'know alls' and scientists as 'ignoramuses'. Dialogue very seldom takes place amongst people with unequal respect for each other.

We also enclosed with the first issue a letter in Hindi from a developmental worker in Bihar cautioning us about the possible hazards of documenting local knowledge. His contention was that the poor had nothing else left with them. Do we want to drain them of this resource also? Will documentation and value addition not lead to a situation as in Assam where the people and workers who grow quality tea cannot afford to consume it. The best tea comes to London. Will the prospects of wider application of this technology reduce the local advantage and if not, how did we plan to avoid these dangers?

In the second issue we began with the discussion on the Gospel of Dirty Hand enunciated by Dr. K.M.Munshi in 1951-52 providing a framework for linking the soil, the toil of the field worker and the farmer with the soul of the learners and users of knowledge. Unfortunately he did not gain much ground in the bureaucracy or technocracy. We also referred to a Griffith Memorial lecture by Mazumdar in 1946 on the ancient Indian science of Botany in Calcutta. Two masters theses guided by Dr.Y.P.Singh, way back in 1965-67 on Indigenous Animal Husbandry provided perhaps the first acknowledgement of indigenous knowledge by formal scientists. Ashis Nandy planned a large

research project on ethno agriculture so that the science and culture behind farmers' wisdom could be systematically catalogued. He could never get through the labyrinth of bureaucracy because the 'Green Revolution' was serving us well in the late seventies. Shri Dharampal in a book on Indian Science and Technology in the eighteenth century (1971) brought together several travelogues written by Britishers who visited India 150 to 200 years ago testifying to the brilliance of Indian scientific genius.

These references were intended to persuade the readers that they should not develop a false pride in being involved in something very new or something very unique. The interest in learning from the peoples' knowledge has been there in every culture and practically in every era. It is just that the elite fails to build upon these enquiries and therefore societies get trapped in a downward spiral of decay, degeneration and strife.

Honeybee also appeals to fellow researchers, activists and planners in other developing countries to identify native wisdom both to inspire and also to provoke the young minds to explore. In every country a very strong oral tradition of knowledge generation, validation, scrutiny and diffusion exists. Honeybee strongly believes that boundaries between formal and informal knowledge systems may often be false. The informal system may have formal rules waiting to be discovered. The formal system may have informal beliefs, accidents, or conjectures providing impetus for further enquiry.

We have already collected more than twelve hundred innovative practices predominantly from dry regions to prove that disadvantaged people may lack financial and economic resources, but are very rich in knowledge resource. That is the reason we consider the term 'resource poor farmer' as one of the most inappropriate and demeaning contributions from the West. If knowledge is a resource and if some people are rich in this knowledge, why should they be called resource poor? At the same time, we realize that the market may not be pricing peoples' knowledge properly today. It should be remembered that out of 114 plant derived drugs, more than 70 per cent are used for

the same purpose for which the native people discovered their use (Farnsworth, 1988).

What does it prove?

It proves that basic research linking cause and effect had been done successfully by the people in majority of the cases. Modern science and technology could supplement the efforts of the people, improve the efficiency of the extraction of the active ingredient or synthesize analog of the same, thereby improving effectiveness.

The scope for linking scientific search by the scientists and the farmers is enormous. We are beginning to realize that peoples' knowledge system need not always be considered informal just because the rules of the formal system fail to explain innovations in another system. The soil classification system developed by the people is far more complex and comprehensive than the USDA classification systems. Likewise, the hazards of pesticides residues and associated adverse effects on the human as well as entire ecological system are well known. In the second issue of Honeybee out of ninety four practices thirty four dealt with indigenous low external input ways of plant protection. Some of these practices could extend the frontiers of science. For instance, some farmers cut thirty to forty days old sorghum plants or calotropis plants and put these in the irrigation channel so as to control or minimize termite attack in light dry soils. Perhaps hydrocyanide present in sorghum and similarly other toxic elements in calotropis contributed towards this effect. There are a large number of other plants of pesticidal importance found in arid and semi arid regions, hill areas and flood prone regions which can provide sustainable alternatives to highly toxic chemical pesticides. It is possible that private corporations may not have much interest in the development and diffusion of such alternatives which pass control of knowledge into the hands of people. However, an informed, educated and experimenting client always spurs better market innovations as is evident from the experience of computer industry. Therefore, we do not see that there is a basic contradiction between the knowledge systems of people and the evolution of market rules to strengthen and build upon it. However, such a model of market would be highly decentralized, competitive, open and participative.

Honeybee in that sense is an effort to mould markets of ideas and innovations but in favour of sustainable development of high risk environments. The key objectives of SRISTI thus are to strengthen the capacity of grassroots level innovators and inventors engaged in conserving biodiversity to (a) protect their intellectual property rights, (b) experiment to add value to their knowledge (c) evolve entrepreneurial ability to generate returns from this knowledge and (d) enrich their cultural and institutional basis of dealing with nature.

3. Biodiversity Contests: Building Long Term Stakes of Children and Adults

No long term change in the field of sustainable natural resource management can be achieved if children do not develop values and worldview which is in line with the sustainable life style. Children learn far better through competitive processes involving fun and pleasure. Accordingly, biodiversity contests have been organized for children of primary schools as well as the adults in different parts of the country.

On a given day, all these children -- boys and girls -- are asked to bring all the plants which they know about along with a list of their names and uses. A similar contest is organized among the adults. Prizes are given for the best performance in different age groups. For instance, in one of the first such contests organized in Madurai with the help of Mr.P.Vivekanandan, SAVE, a student of age twelve got first prize by identifying 116 plants with their uses. The adult who came first could identify 240 species.

The remarkable thing in this contest was that a child of twelve years of age had completed half the intellectual journey compared to the maximum of the local community. Unfortunately, there is no future for this child if he wants to grow as an ecologist or herbalist. He would have to unlearn all this knowledge and learn a for apple, b for boy or c for cat, etc. Any discussion on sustainability becomes meaningless when we cannot generate viable institutional choices for those who already know and have concern for local innovations and knowledge systems.

In a separate contest in Uttar Pradesh, a son of a brick-kiln owner came first with 98 species and two girls came second. The shepherd's son in the first case or brick layer's son in the second case pose a greater challenge to us for devising viable alternatives for sustainable development. It is well known that enrollment rates are very low and drop out rates are very high in the schools in disadvantaged regions. The irony is that eco-knowledge rich, but economically poor children from these backward regions have to become unskilled labourers and occupy the lowest income occupational niches in urban areas. Progressively, the disadvantaged regions are drained off not just the ecological resources, intellectual knowledge but also human resources in the form of young able-bodied people.

Part- Four: Becoming Accountable to people and nature:

Lessons and Issues

One of the fundamental problems of governance in general and natural resource-related systems in particular relates to the mutual accountability not only among followers and leaders but also among human and other species. Many of the traditional societies devised elaborate rituals of sacrifices to atone for intended or unintended injury to other life forms. Among the people, mechanisms of peer pressure have always existed, though their effectiveness has varied in different groups. Given the income inequalities, the incentives for weaker sections of people, dependent upon the affluent for their livelihood, to protest against injustice are limited. And yet it is not true that people in any village or community are against each other on all matters. For instance, there is an old convention in many of the Indian villages that a boy and girl from within a village are not supposed to marry. They have to leave the village if they do so. We are not suggesting that there is no adultery in the villages. It is just that the legitimacy of marriages within a village does not exist in large parts of the country. This convention is usually complied with by all the sections of a village society.

Similarly there is a convention that when somebody dies, everybody in the neighborhood joins together in the mourning. Even if there are celebrations planned, the same are subdued, postponed or shifted elsewhere. The point we are making is that there are issues on which people cooperate because of an implicit mutual accountability though the same people may be vigorously fighting on other issues.

The degree of conflict among different groups may also not be similar in different resource markets. For instance, a farmer who is dependent upon common land only to a very marginal degree may not have as much stake in its management as someone who is primarily dependent upon the same. However, in real life, the stakes of the resource independent person may be there because of other socio-political reasons. The accountability framework which is only resource centered (for instance, among irrigation water users, graziers on common land, users of a common forest, etc.) may not last very long. This is a counter intuitive insight which emanates from the study of some of the sustainable resource management institutions.

While primary accountability may remain restricted to a resource group, secondary accountability to a larger group on more basic values and processes may be equally important. A multi-market, multi-level framework of accountability (Gupta, 1985, Ostrom, Feeny and Picht, 1989) would help evolve sustainable institutions for collective resource management. The accountability towards next generation and those who don't vote (birds, animals, other living beings) needs to be generated through cultural means.

We have argued that the pooling of resources is a logical necessity in nature dominated regions because the cost of individual maintenance of inventories would be very high given the uncertainty in the environment. The institutions which generate expectation of co-operation and provide legitimacy for collective action have to evolve in a multi-market-multi level framework.

The compliance of collective decisions is much higher in analogic systems than the digital ones. Given variabilities in endowments, exchange in one resource market may be settled against another resource. The empowerment process in nature-dependent communities in vulnerable regions is quite different from the market-dependent, low risk environments. In the former case, it is expected to be knowledge and culture-based while in the latter it may be material resource-based.

Culture could also act like a glue which holds the triangle of access, assurance and ability of disadvantaged households together. The empowerment of people cannot take place unless their access to resources, assurances available to them from formal and informal institutions and skills to convert access into investments or outputs are synchronised in culturally adapted manner.

The question with which we began this paper still stands: How do we ensure that poor people do not become more dependent in the process of development, rather than becoming autonomous? How do we avoid their performance becoming contingent upon 'external clappers'?

We submit that far too much attention has been given to the role of external change agents and far too little to the endogenous trigger of change, creativity and innovation.

We defined development as a process of widening the decision-making choices and extending the time frame of the households. Since most sustainable technologies require a longer time frame to be viable. Empowerment is thus a process of conceding to disadvantaged communities the right to question and communicate alternative opinions . The only limitation of this definition is that it presupposes that those who have power will willingly share it with others. This definition also masks our -- the external resource provider's -- powerlessness in understanding and uncovering the creativity and entrepreneurship of knowledge-rich and economically-poor people. The latent power of the creative people can manifest through institutions that permit two-way communication and two-way power.

In most cases of conservation of natural resources, sufficient attention is not paid to local value addition so that higher share of incremental income is generated in the local economy. Empowerment through value addition is a concept that may help in generating sustainable market supported solutions. It is possible that private corporations may not have much interest in the development and diffusion of such alternatives which pass control of knowledge into the hands of people. However, an informed, educated and experimenting client always spurs better market innovations as is evident from the experience of computer industry. Therefore, we do not see that there is a basic contradiction between the knowledge systems of people and the evolution of market rules to strengthen and build upon it. However, such a model of market would be highly decentralized, competitive, open and participative. And this market will draw upon both the hidden and the visible hand. Empowerment through networking of innovative and creative knowledge rich people is possible in a sustainable manner provided outsiders assume a humble 'Honey Bee' function.

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