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# PAPERS on Economics & Evolution



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# 0518

## **Vicarious Learning And Socio-Economic Transformation In Indian Trans-Himalaya**

**by**

**K. Chandrasekhar  
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**VICARIOUS LEARNING AND SOCIO-ECONOMIC TRANSFORMATION IN  
INDIAN TRANS-HIMALAYA:**

**An evolutionary tale of economic development and policy making**

K. Chandrasekhar\* and Saradindu Bhaduri:#@

***Abstract:***

Recently, it has been suggested that the process of economic development should ideally be viewed as a socio-economic transformation. Such a view requires a comprehensive understanding of how agents learn and change their behaviour. However, these aspects have only been inadequately addressed in development theory. This paper argues that social-cognitive vicarious learning theories can become a useful methodological tool by incorporating a triadic interaction between personal factors (beliefs, values), behaviour and environment. Our analysis is based on a survey of the Indian trans-Himalayan regions. The development trajectory of these regions suggests that a proper understanding of the vicarious learning mechanism provides crucial insight into the speed of socio-economic transformations. It also helps to identify appropriate change agents within a society and, in turn, underscores the need for a comprehensive, yet flexible, development policy framework.

**Key Words: development, socio-economic transformation, vicarious learning, evolution, traditional societies.**

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“But the circle to which our analysis has led us may perhaps lay claim to a privileged place ... as it alone places the difficulties of development back where all difficulties of human action begin and belong: *the mind*”  
–Albert O. Hirschman (1958; p.11: our emphasis)

About half a century ago, Albert Hirschman (1958) detected that economic development involves a change in the minds of people and their behaviour. However, notwithstanding such an early acknowledgement of the importance of human cognition, the central debate in development theory has largely revolved around the efficient allocation of resources through privatization and economic liberalization. The Prebisch lecture by Joseph Stiglitz (1998) marked a departure, which explicitly suggested approaching the issue of development as “transformation of a society from traditional relations, traditional ways of thinking...to more modern ways” rather than as privatization and trade liberalization (see also Stiglitz 2002). This view (as in Stiglitz 1998, 2002) justifies the often-raised point that looking at the process of economic development as one of merely resource allocation is insufficient and underscores the need for a more careful analysis of behavioural change and learning in the process of economic development (Norgaard 1994, Adelman 2002) .

Indeed, in the world portrayed by Harold Demsetz (1967), where behaviour changes instantaneously in response to incentives provided by new technologies and relative price change, formulating a developmental policy would be a rather easy task. However, as shown by Norgaard (1994) and Leys (1996), new technologies introduced from outside have often failed to achieve the projected impact on development. Rogers (1995) presents empirical evidence that external forces often fail to transform existing behaviour of a community, irrespective of the merit of the force. Stiglitz (2002) claims that externally *imposed* policies do not succeed because they do not provide adequate incentive to people “to develop their own

capacities...using their own intelligence". Hirschman (1958) points out that an incentive oriented view of developmental trajectory leaves unexplained the issue of associated uncertainty. This corroborates findings from studies of institutional reforms that reveal changing institutions do not always stimulate a process of behavioural change in the desired directions (Rizzello and Turvani 2002). All these studies seem to point out the necessity of incorporating more detailed models of how agents learn and modify their behaviour.

In this context, social cognitive theories of *vicarious learning* (Bandura 1986, Bandura 1989) provide important insights into this matter by acknowledging a triangular, reciprocal interaction between (i) how agents behave, (ii) the environment in which they are situated and (iii) personal factors (e.g, their values & beliefs). In Bandura's framework, a change in behaviour depends crucially on how personal factors and the environment interact with each other and how they influence behaviour. In the orthodox view following Demsetz (1967), not only was the environment seen as the all powerful force of change, but the impact of environmental factors on personal factors and behaviour was, moreover, seen as automatic and unidirectional. In contrast, the social cognitive theory argues that interactions are neither one-way nor automatic. Rather, the strength of each dimension varies across individuals, activities and circumstances (see also Rizzello and Turvani 2000).

Vicarious learning has got only limited attention either in development theory or in learning theories of institutional change (as in Mantzavinos 2001).<sup>1</sup> To help overcome this lacuna, the present paper analyses how vicarious learning can prove to be important for explaining the speed of behavioural and institutional change crucial for socio-economic

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<sup>1</sup> Although World Bank (1996) mentions that social learning being effective means to achieve development, the use of the terms was rather loose and devoid of any cognitive underpinning.

transformation and development. Our analysis is based on the development trajectory of the Indian trans-Himalayan regions.

A proper understanding of cognitive factors influencing agents and the associated learning mechanisms, which change their behaviour, would also help in designing appropriate development policy tools. Recent years are marked by a trend towards homogenization of policy framework, where simple transfer of policies from a ‘functioning market economy’ to a ‘developing market economy’ is often recommended (Ensminger 1996). The analysis of this paper sheds important light on both the nature of policies as well as the appropriate sequence of their implementations. This question is of particular importance in the current juncture where withdrawal of governmental intervention is a favoured prescription for economic problems.

The paper is organised as follows. The next section develops the theoretical framework on social-cognitive vicarious learning and behavioural change, which is essential to understand the process of socio-economic transformation and economic development. In section 3 we briefly describe various facets of the traditional socio-economic system of the Indian trans-Himalayan region based on a survey carried out during 1997-2002 in two phases. Section 4 analyses the recent transformation of the trans-Himalayan regions towards market based economic activities and monetised trade as a social-cognitive learning process. Finally section 5 develops a broad policy framework for successful development.

## **II. Change and transformation in development theory**

It has been alleged that the conventional analysis of change and transformation in economic theory, as in Demsetz 1967, is based on a simplistic notion of relative price change

and external shocks (Tversky and Kahneman 1986), giving inadequate attention to the role of social-cognitive factors. Hirschman (1958) also points out that a theory of incentive-based behavioural change does not adequately address the issue of dealing with the uncertainties associated with such changes. There are also more recent studies arguing that human behaviour does not instantaneously react to a change in external conditions (World Bank 1996, Stahl 2000) and that economic costs are not the only cost to be reckoned with (Norgaard 1994). Stahl (2000) argues that historical and cultural factors play an important role in shaping subjective perceptions of costs and benefits, thus being important determinants of change. From the evolutionary perspective, Witt (2001) and Mokyry (2001) moreover argue that change in behaviour and socio-economic transformation depends crucially on how a preference for novelty emerges and diffuses in a population.

Among various studies critical of existing development theory, Norgaard (1994) made a pioneering attempt to analyse the process of modernization and economic change as a *coevolutionary* process of policy and value system. In biological sciences, ‘coevolution’ often refers to the dynamics of evolutionary change of two or more closely interacting species, where the fitness of genetic traits within one species depends crucially on the dominant genetic characteristics of the other (Norgaard 1994, p. 26). Murmann (2003) points out that two evolving populations *co-evolve* if, and only if, they both have a *causal* impact on each other’s ability to replicate, either by altering the selection criteria or only by changing the replicative capacity in a given selection environment (p. 24). He also emphasizes on the necessity of

having a ‘causal link’ between co-evolving entities (Murmann 2003, pp. 23-24).<sup>2</sup> In a nutshell, a coevolutionary process may be conceptualized as a feedback mechanism. However, its origin being in the biological sciences, such an explanation does not adequately account for factors such as human creativity, intentionality, learning and behavioural variety observed among human beings (Witt 2003a). One, therefore, must pay explicit attention to cultural and cognitive level factors. An understanding of “mental models”, “attitude to change”, and learning capacities are important in this regard (Adelman 2002).

The concept of mental models (Johnson-Laird 1983, Denzau and North 1994) helps us understand why and how humans do not react to an exogenous change in a uniform manner. It emphasizes that due to bounded rationality, humans are not capable of processing all sensory perceptions available to them from the environment. Rather, their mental models allow them to receive and process only a limited set of incoming information. The mental models are thus symbolic (subjective) representations of the environment, and are constructed through diverse experience, observation and (cognitively mediated) learning. More than the *actual* environment, therefore, agents’ behaviour is influenced by a *perceived* environment shaped by prior learning and experience. For the sake of this paper we only concentrate on vicarious observational learning, which constitutes a core of the social learning theory of Bandura (1986). Vicarious learning emphasises that individuals not only learn from their own experiences but also from observing others, more precisely, from role models. Mistakes, trial and error and search costs involved in learning may often be reduced when we take into account learning by observation, as non-rewarding actions or actions leading to failure will not

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<sup>2</sup> In his coevolutionary theory of the German dye industry and supporting institutions in the late 19<sup>th</sup> centuries, this function was served by University professors who were also appointed as industry consultants and policy advisers in the government. They accordingly were in a strategic position to influence the coevolution of these entities.



be repeated by the observer. According to Bandura (1986), observational learning can speed-up change in how agents think and act relative to the rate predicted by those theories in which learning is solely based on individual experiences with problem situations (as in Mantzavinos 2001). It should be emphasized that observational learning is not only limited to simple reproduction (imitation) of an observed behaviour, but it also influences judgment and values of an individual.

Observational learning consists of four different phases: attention; retention, reproduction, and motivation (Bandura 1986, ch. 2). First, attention regulates the “exploration and perception of modelled activities”. Secondly, retention refers to the conversion of transitory experiences into symbolic conceptions. These are used as internal models for response as well as standards for response correction. In the next stage, the reproduction process governs the organisation of constituent skills into a new response pattern. Finally, motivation determines whether the observed behaviour will finally be put to use (see Bandura 1986, p. 51). Motivation is a cognitive process, which guides the action of an individual, and is influenced by their subjective expectations. These expectations can be an unconscious mechanism that is influenced by past vicarious experiences (Bandura 1989).

In reality, a strictly linear description of the observational learning process is potentially problematic. Nevertheless, dividing the entire process such sub-groups helps us identify the reasons of learning failures more effectively as deficiencies in any of these sub-processes may result in such failure.

Importantly, one should also distinguish between the phases of acquisition and performance, since people “do not enact everything they learn” (Bandura 1986, p. 68). The performance of acquired behaviour crucially depends on the likely incentive associated with performance. The observed reward that is accrued to the model as well as those rewards of vicariously learned previous behaviour can both influence the expectations about likely outcomes and the incentives to perform. When fearing punishment, individuals may acquire and retain a new behaviour or judgement without ever performing (reproducing) it. In other words, a successful reproduction crucially depends not only on the reward associated with the observed behaviour and its frequency, but also on existing social norms and the status of the individuals whose behaviour is observed. For example, an individual with high status is often regarded as a role model, and becomes subject of intense attention by others. A new behaviour by such a model signals a change in the social norm if that individual also occupies a high authoritative position in a community. A new behaviour exhibited by these social role models therefore attracts faster diffusion without fearing social opposition. The speed of diffusion will be even faster if these models actively propagate a behavioural change. However, not all behaviours can be learned with equal ease; a high cognitive skill is required to *observe* more subtle specialized behaviour (Bandura 1986; p. 70).

What is the implication of these learning mechanisms for the development process and policy making? To reiterate, in this paper we argue that they explain the determinants and the mechanism behind behavioural change more effectively and, in turn, can prove to be important for better design of developmental policies by highlighting the triadic interaction between behaviour, personal factors (belief, attitude) and the environment. However, such reciprocal interactions are not simultaneous, and often there is a time gap between cause and effect.

Moreover, as mentioned earlier, the strength of these dimensions are far from being uniform and vary across individuals, activities and circumstances.

It is widely accepted that to be successful (and to spread), a policy-induced behaviour must be adopted by a critical minimum mass of people (Witt 2003b). Mantzavinos et. al. (2004) argue that such a phenomenon can be described as shared behavioural regularity or shared mental models.<sup>3</sup> As emphasised by Denzau and North (1994), the sharing of mental models requires intense communication between people (see also Mantzavinos 2001). Interestingly, however, analysis of learning in New Institutional Economics predominantly focuses on individual experiences with problem situations (See Mantzavinos 2001, pp. 22-33). Each individual develops his/her mental models by confronting a problem situation separately, which is then communicated within a community to build up the shared mental model. As a result, development of a “shared behavioural regularity” or “shared mental models” is believed to be rather slow (see Mantzavinos et al 2004). However, as emphasised above, a critical mass can be more easily convinced in the presence of observational vicarious learning, especially when such behaviours are promoted by individuals with high social status and acceptability. A high degree of social homogeneity further enhances the speed of diffusion.

### ***III. The trans-Himalayan Societies: A Survey***

#### ***III.1 Data and Sample:***

This study is based on a census of two villages in the Spiti district of Himachal Pradesh during the period 1997-2002. The district is situated along the northern Sino-Indian borders of

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<sup>3</sup> A behavioural regularity can be observed in a population of individuals if they are confronted with the same decision situation. See, for instance, Witt (1989).

India<sup>4</sup>. Its poor natural resource base and harsh climate were the main reasons why this region was not brought under British-India administration for a long time (the statute of 1873)<sup>5</sup>. Even after Independence, Spiti remained under a system of ‘local governance’ enjoying a special status under the Article 244, Schedule VI and VII of the Constitution until the year 1966, when it was incorporated into the state of Himachal Pradesh. Historically, the “*Nono*” or local landlords have had strong influence on administrative decision-making. They also enjoy high social acceptability among local people.<sup>6</sup> They continue to occupy a very special position in this regard and play a crucial role in deciding the suitability of a government policy and the means of its implementation. In fact, the feedback of these local landlords is taken into account in almost all forms of governmental interventions.

Surveys were carried out in two villages (Lidang and Demul) in the Spiti district through participatory rural appraisal (PRA) during 1997-2002. We adopted the census method of group discussions and interviews with *all* households (a total of 70 households) and government officials. These interviews were held with open-ended, semi-structured questionnaires. The villagers often feel more comfortable with informal discussions in social gatherings rather than time-bound formal interviews. The process of data collection in such situations is contingent upon intense social interaction with the community. Obviously what we perhaps do not get is precise data required for smooth statistical analysis. But such interactions helped win confidence which enables us to gain invaluable insight into the socio-economic dynamics of these communities. Specifically, information was collected on land and livestock

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<sup>4</sup> The climate of Spiti is arid with most precipitation being in the form of snow. Temperatures range between zero to 30° C in summer (May-October) and -30° to 3° C in winter (November-April). The region is characterized by low precipitation, and short growing season (only in the summer)

<sup>5</sup> See Rahul (1968) for detail.

<sup>6</sup> It must be emphasised that our case may contrast with many other traditional societies, where land lords are rather well known for their misappropriation of power rather than benevolence.

holdings, cropping patterns, land use (meadows/pastures), relative area under different crops or crop combination, income generation opportunities and socio-cultural attributes.

### ***III.2 Barley and the traditional links between production, exchange and healthcare***

Like many other traditional societies, a prime characteristic of the Himalayan societies is an interlinked system of agriculture and live stock management. Being an agro-pastoral society, local people paid equal importance to agriculture and live stock management. As opposed to a purely pastoral society, the value of livestock was not only measured by the production of milk or meat, but by multiple uses, ranging from ploughing field to organic fertiliser used for farming.<sup>7</sup> A very short agricultural season (ranging from 3 to 4 months during summer) often restricts them to cultivating only one major crop: barley. The cultivation of barley is a classic example of the social embeddedness of economic behaviours in a traditional society (Polanyi 1944). It is not only meant to satisfy the demand for food or fodder but has also been essential in maintaining various forms of social connections and networks, both within and between communities.<sup>8</sup> One such important social tie-up has been with the *Changpa communities* (Shuttleworth 1934). *Changpas* are the inhabitants of the *Changthang* region of *Ladakh*, where harsh environmental conditions do not permit cultivation of food crop (Crook and Osmaston, 1994). Our sample villagers exchange barley with these communities for wool. These wools are of high quality and help sustain villagers with their wintertime occupation of weaving.<sup>9</sup> Within these communities, barley is *traded* for various fodders as well

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<sup>7</sup> It must be emphasised that they do not use chemical fertilisers at all.

<sup>8</sup> A significant proportion of barley is also allotted to the production of beer, used for social entertainments. See also Asboe (1937).

<sup>9</sup> There are similar historical evidences of long standing exchange relationship between other tribal communities located in Tibet and Turkestan and the people of this area. See for instance Shuttleworth (1934)

as for accessing community-owned grazing lands. These activities are often characterised as reciprocity-based social contracts (Binmore 1998), and occupy a central position in their way of living. The reason behind the prevalence of such ‘reciprocity-based social contracts’ may be found in harsh ecological climatic conditions, which have taught local people to respect the strength of unity and reciprocity.<sup>10</sup>

It may also be highlighted that property rights of arable lands are privately owned, while that of grazing lands are *commonly* held by village communities.<sup>11</sup> But, contrary to orthodox economic understanding, common property rights have not led to over exploitation of resources.<sup>12</sup> Moreover, the local people also do not assess the cost of policing common property to be very high, as suspected by Demsetz (1967). In contrast, it seems to confirm the observation made by Barzel (1989) that transaction costs of specifying private property rights can be very high, especially in traditional pre-market societies operating with a high degree of community feelings, since such arrangements (private property rights) contradicts the existing value system favouring community wellbeing more than exclusive persuasion of private interests.<sup>13</sup>

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<sup>10</sup> Binmore (1998) finds similar instances of reciprocity bound social contracts among the hunter gatherers, who can also survive only through mutual interdependence and reciprocity based altruism. Rodriguez and Pascual (2004) have found similar instances of high prevalence of ‘communal organization’ and collective resource management among the mountainous Andean communities in Peru. One should also note that contract here does not mean any binding law. As argued by Hagen (1962) reciprocity in such societies can in fact be bound by factors like scruples and faith.

<sup>11</sup> This is a typical feature of an open field system as summarised in Dahlman (1980).

<sup>12</sup> Some estimates find presence of 87 species and estimates the annual net primary productivity (ANPP) utilisation to be near 52%. Note that an ANPP over 50% is considered sustainable. See McNaughton (1993) for details.

<sup>13</sup> Dahlman (1980), however, seems to argue that such forms of common grazing lands existed because the cost of fencing and policing under private property rights could not outweigh the gains of grazing in privately owned lands.

Importantly, there has been a close linkage between healthcare and production (cropping pattern). Barley, once again, occupied the central position. Besides providing high protein and energy, it also has substantial folk medicinal value. It seems to provide cure for a range of diseases like bronchitis, cough, debility, diarrhoea, cholera, dyspepsia, and heart disease (Duke and Wain 1981). Indeed, it is known as the "heart medicine" in Middle-Eastern countries because of its cholesterol reducing capacity. Duke and Wain (1981) also found the effectiveness of barley in treating uro-genital ailments and, more importantly, preventing cancers. Thus, cultivation of barley as the staple food may, arguably, have evolved out of the need to build up a self-sustained healthcare system in the absence of modern medicine. Indeed, our interviews did not find any instances of major epidemic in the regions.<sup>14</sup>

To sum up, the cultivation of barley was not only important for food, but also was an integral part of healthcare, livestock maintenance, barter exchange relationship with other tribal communities, and various reciprocal exchanges within the local communities. These networks and the need for reciprocity based socially embedded exchanges often constrained the pursuit of individualistic economic gains.

#### **IV. THE SOCIO-ECONOMIC TRANSFORMATION: AN ANALYSIS**

##### **IV.1 Exogenous shocks and other explanations:**

During the last decade, the trans-Himalayan regions have begun undergoing tremendous socio-economic transformations from barter economy to agricultural commercialization and monetized trade (see Mishra 1997, 2000, Saxena et al 2005). Our survey findings suggest that the transformation from barley to the green-pea cash crop has been

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<sup>14</sup> Historical sources (for instance, Francke 1907) also do not discuss any major diseases or health hazards affecting these mountainous regions, notwithstanding the continuous fight against harsh climatic condition.

quite rapid. Over 30% of cultivated land during our survey period 1997- 2002 was transformed in such a manner.<sup>15</sup> The most common explanation of such a rapid transformation has been based on changes in relative prices and market expansion (Pingali 2001). Indeed, two major exogenous shocks can be identified as important driving forces behind the commercialization of agriculture in this region. These forces are (a) prohibition of (agricultural) production and distribution subsidies under WTO, which compelled the government to encourage the cultivation of commercially viable crops and (b) the emergence of demand for organic foods.<sup>16</sup> The fact that green pea fetches a very high economic reward (see Saxena et al 2005) seems to justify such an explanation.

However, the traditional food crop, barley, had occupied a pivotal role in shaping the communal and social systems of these regions for ages (Asboe 1933). It is rather difficult to imagine a smooth, albeit drastic, diminution of the importance of barley only due to a singular, external pressure of market expansion and relative price change. It has also been suggested that an explanation solely based on incentive based change in behaviour, as in Demsetz (1967), often ignores more primitive and deeper reasons for such changes, lying within the system (Witt 1987).

In fact, identifying indigenous forces behind transformations of ‘pre-modern’ traditional societies have always been a subject of close scrutiny and intense examinations by social scientists (Polanyi 1944, Hagen 1962, Salisbury 1970, Wrigley 1987, Norgaard 1994, among others). Salisbury (1970), finds that the indigenous innovativeness of these societies plays a crucial role in such transformations. Hagen (1962), on the other hand, characterizes

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<sup>15</sup> Personal communications suggest a near complete replacement of barley by green peas in these villages in next two years. But, no concrete data could be obtained.

<sup>16</sup> See Rogers 1995, chapter 11 for the detailed account of emergence of demand for organic food.



traditional societies by near-complete absence of innovative ideas; changes are rather brought about by internal conflicts arising out of perceived loss of status. However, the trans-Himalayan societies are characterized by ‘orderly behaviour’ (Harcourt 1870-71, Paske 1879) with little or no major instances of internal conflicts, and as ‘lazy to profit from new ideas’ (Harcourt 1870-71, Asboe 1937).

The pressure of population growth has also been identified as an important factor driving change in property rights and other institutions (see, for instance, Wrigley 1987). Interestingly, however, the region’s population has been rather stable due to the practice of primogenitary inheritance, leading to a stable form of property rights (Mishra 2000, Mishra et al 2003).<sup>17</sup> Thus, none of the explanations mentioned above can be said to have played much important role behind the on going transformation. Being a closed system, these societies developed strong complementarities between various facets of their community life including strong interdependence between agriculture-livestock rearing, exchange, and healthcare needs. A basic characteristic of market economies, the primacy of individual pursuits of economic gains, is not commonly observed in traditional societies (Polanyi 1944).<sup>18</sup> A rapid change, in such a situation, purely guided by external forces (incentives or shocks), tends to come in conflict with prevailing informal institutions (North 1990 and Rogers 1995) due to ‘persistent habits’, ‘mental attitude’, and ‘point of view’, much highlighted by Veblen (1899).<sup>19</sup> In this

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<sup>17</sup> According to primogenitary inheritance only the eldest son inherits the whole property, other sons accede to the lamahood. Lamas are the religious priests. Traditionally they also have been the backbone of the cultural developmental process of these regions. See Francke (1907) for a classic exposition of the role of Lamas in these societies.

<sup>18</sup> As we have mentioned above several observers have, indeed, found these societies as lazy to profit from new ideas. However, see Granovetter (1985) for the debate on over and under (social) embeddedness in the theory of social science.

<sup>19</sup> In one interesting exposition Witt (1987) argues that reason for choosing more restrictive property rights by Montagnais Indian was gradual increase in population and resultant food scarcity, and not, at least exclusively, the opening of fur trade opportunity as visualised by Demsetz (1967).

context paying a close attention to indigenous forces is crucial for a deeper understanding of the socio-economic transformation process in this region.

#### **IV. 2 Social cognitive learning: the main driving force**

Barley cultivation was of central importance to the community not only because it provided food, but also because it helped them maintain the closed agro-pastoral system and interaction with other similar societies. The green peas, on the other hand, are primarily produced for market in big cities and metropolis, and are devoid of links between consumption, production, livestock rearing and exchange. A successful replacement of barley by green peas, therefore, depended crucially on breaking these links.

The initiation of this change can be traced back to early 1960s, and has been motivated by historical incidents. The Chinese occupation of Tibet, and the subsequent war between India and China on territorial disputes, expedited the need for road construction for better communication between mainland Indian and border areas (Rahul 1968). Better connectivity was not only meant to ensure smoother information flow, which was essential for security reasons, but also important to raise the prospect of better integration of local people with mainland India through better governance and developmental work. This was of paramount importance given that these regions were neglected during the British regime. This road construction work provided an opportunity of generating rural employment. Earlier, insufficient income from agriculture had resulted in a social division of labour along the size-class of farm holding. Large landholders often concentrated on agricultural activities, while small landholders supplemented their low agricultural yield by taking up the toiling job of

cattle grazing (known as *Doksa*) for large farmers. As described above in the agro-pastoral system (as opposed to a purely pastoral one) the livestock utility was not only limited to production of milk or meat. Rather, livestock was also needed for ploughing fields, transportation, and fertiliser (through manure) for agriculture. In the changed situation, farmers with a small size of land holdings who, hitherto, had to take up the toiling job of cattle grazers in remote altitudes, found easier employment alternatives and participated in road construction activities in large numbers.

Rogers (1995) provides strong evidence that external agents often face opposition from local individuals in bringing about socio-economic changes. In this light, one may suspect the acceptability of the government among the local people, particularly in the face of a long absence of any kind of governmental control and interventions in the region. However, local landlords (*Nono*) were popular figures in these regions, and, importantly, these landlords and large farmers were awarded contracts for road construction (see also Rahul 1968, 1969). This move reduced social opposition for small farmers who switched jobs in the event of job-switch from cattle grazing to road construction. Conceivably, large farmers and local landlords directly motivated the small farmers to participate in the new activities. In line with social cognitive theories, therefore, we have a case where role models directly propagated for change in behaviour reinforcing vicarious learning among local individuals.

The construction of roadways changed the local belief system about the efficacy of governmental interventions, not only by raising employment opportunities in particular, but also by raising hopes of good governance by the civil authority in general. The active involvement of individuals with high social prestige in such economically rewarding activities

also heralded a change in value judgement, which legitimised the pursuit of profit-centric behaviour among local people, not essentially embedded in social exchange requirement.

Better roadways also gradually helped to strengthen contacts with neighbouring regions and big cities. This led to more diverse patterns of ‘observational learning’, to form better economic aspirations towards a higher standard of living through the demonstration effects of urban food habits and life-styles. Note that the road construction activities were largely carried out under the “food for work” programme. At times, however, such activities had monetary rewards as well. Money, therefore, started to flow into these economies during this period weakening the (barter) link between social needs and economic activities. This initial success of raising employment opportunities made the governmental initiative more trustworthy to local people, and led to a replication of such forms of policy interventions by initiating a positive feedback loop. The local landlords provided the crucial co-evolutionary link between the government and the local people by conveying the needs and aspirations of local people to policy makers. It must be noted that many such landlords gradually occupied positions of power in various layers of governmental bureaucracy and civil authority. Importantly, they have also been enthusiastic about development related activities. Clearly, these landlords were instrumental in shaping the feedback mechanism between the government and the local people, thereby fostering the adoption of suitable policy measures and alteration of local preference and value systems over time.

From the late seventies the frequency of developmental projects increased.<sup>20</sup> These policies opened up many new avenues of employment to local people, and reinforced the

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<sup>20</sup> See Ministry of Environment and Forest (2001), for documentation of various such policy measures.

legitimacy of pursuing economic aspirations over traditional, socially-embedded activities. The introduction of a public distribution system (PDS) of foodgrains and the system of setting up Primary Health Centres (PHCs) are particularly noteworthy in this regard (the Fifth Plan Document, Government of India). While the Public Distribution System of food (PDS) was undertaken to provide rice and wheat at subsidized (or zero) prices, primary health centres (PHC) promoted government aided modern curative healthcare facilities in remote areas.

Both these forces (PDS and PHC) propagated for altering food habits and reduced the reliance on barley. Food habits started shifting towards rice and wheat, largely due to high status associated with the consumption of these commodities (mainly rice). It may be noted that while rice (and wheat) are the staple foods in large parts of India, harsh physical conditions and insufficient rainfall prevent cultivations of rice in this trans-Himalayan region. As a result, traditionally, only the rich had access to rice. Dishes made with rice were considered prestigious at social occasions. In a nutshell, rice was a symbol of social prestige (Bourdieu 1984), mainly due to its scarcity. However, while the so-called status good characteristics may explain the initial switch from barley to rice they do not explain the *sustained* consumption of rice once the access to rice was economised through governmental supply mechanisms. Our discussions with local people helped identify two crucial factors in sustaining the consumption of rice. First, it reduced cooking time since rice was available without husks, which, in the case of barley, had to be removed manually. Secondly, rice primarily replaced barley only at the level of ‘ingredients’ and not at the level of the final dish. The same final traditional dishes with almost similar tastes (adding similar flavour) could be prepared (e.g. *Thukpa*) with rice as well, but now with less time and less hassles of removing husks. The similarity in tastes, flavour material and cooking methods meant less cognitive and cultural effort to replace barley

with rice as a food item. Indeed, anthropological studies seem to point out that tastes, flavour and method of preparations are primary reasons for the inertia of food habits (Farb and Armelagos 1980, Ruprecht 2005).

However, the health implication of the replacement of barley with rice is questionable. Rice has considerably less amount of protein, energy content, and folk medicinal values compared to barley. As mentioned in Gopalan et al (1985) the protein content in barley is 11.5% compared to a highest of 7.5 % (generally around 5%) in rice. The energy content of rice (1.75cal/gm.) is less than half of that in barley (around 3.36cal/gm) One can, in this context, claim that green pea consumption can compensate for the loss of protein since green pea is also known as a rich source of protein. But, interestingly, the protein level of barley-wheat combination can only be compared with that of dry green peas (19.7%). The local people of Spiti, however, have access only to fresh green peas since the predominant portion of the green peas are exported (sold to big cities) immediately after the harvesting. The amount of protein in fresh green peas is significantly lower (7.2%). The energy content of green peas is also considerably less (0.93cal/gm). All this signals a rather gloomy picture of the disease preventive aspects of the local people's diet. However, an easy access to subsidized curative healthcare may have mitigated some of these costs. As a result, the preventive aspects of healthcare attached with the consumption of barley became less important. This reinforced the change in food habits by reducing the risk of health hazards related to loss of disease preventive capacity, at least in the short run. One must also emphasise that high protein-energy diets are crucially important for survival in harsh climatic conditions. Due to the bias in favour of immediate rewards, a vicariously learned new behaviour can, therefore, lead to undesirable

consequences in the longer run.<sup>21</sup> We discuss the policy implications under such circumstances in the next section.

Since the main demand for barley was internal, changing food habits meant less demand for barley and less incentives for barley cultivation. The introduction of healthcare facilities reinforced this process by weakening the link between barley cultivation and healthcare need. Such policies also increasingly legitimized the pursuit of individual economic motives, and reduced dependence on social exchange processes. It may also be noted that tourism increased in this region since the early 1990s. The increasing interaction with tourists as well as urban people led to a higher motivation amongst local people for better standards of living. The local people had, however, continued to produce barley in order to maintain the barter relationships with other tribal communities. The reduction of social need for barley with increased flow of money through various governmental projects paved the way for pursuing individualistic economic motives through higher specialization in production.

Due to adverse geographical conditions, this region of Himachal Pradesh is not ecologically suited for fruit cultivation.<sup>22</sup> The enhancement of economic aspirations stemming from greater access to money and more knowledge about material wellbeing inflicted a sense of relative deprivation among local farmers, and, in turn, intensified the motivation to search for more profitable income generation opportunities. It was, perhaps, easier for government

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<sup>21</sup> Indeed, when asked to compare the “working capacity” after a barley meal with that after a rice meal, the local people report longer working hours after the barley meal. However, more intense examination is required to substantiate such a claim.

<sup>22</sup> It may not be out of place to emphasise that fruit cultivation is a major profitable occupation in Himachal Pradesh. In fact, an intense focus on the cultivation of good quality apple has earned it the name ‘the Apple State of India’.

officials and *Nonos* to convince local farmers to adopt green pea cultivation in this situation, where motivations for economic profit were high and barley had lost much of its importance.

Our survey also reveals a very proactive role of women behind the transformation. One should note that the trans-Himalayan communities traditionally confer high(er) status and freedom to women and are characterized by a high rate of women participation in social decision-making<sup>23</sup>. Traditionally, there have been instances of a gender-based division of labour, where male members of a family engaged in trading (although barter) activities, leaving the burden of agricultural including domestic work largely on females (Asboe 1937). As developmental projects were initiated in large numbers, the overall income and the wage rate increased. A higher wage rate, in some cases, also led to a backward bending supply curve, where male members preferred to spend more leisure time, and indulged in excessive consumption of liquor made from barley. Such activities resulted in an even greater shift of family burden on women and enhanced associated family and social conflicts. The prospect of green pea cultivation as a profitable alternative to barley acted in favour of their disliking, and replacement of barley by green peas got a social sanction from the women in these societies. A high social prestige of women in general enabled them to act as role models, which contributed significantly to enhance the speed of the transformation.

To summarise, even though green pea cultivation started in late 1990s, policy measures of the last three decades and the consequent learning prepared the ground for a fast and

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<sup>23</sup> As an illustration, one may note that Spitian societies take a very liberal view regarding extra-marital and pre-marital sexual interaction. Also, the decision of the female partners is considered supreme in any paternity related disputes in such cases. This is in sharp contrast with the societal dynamics of adjacent Indian states where women are often marginalized in decision-making processes. See National Family Health Survey, Himachal Pradesh, India (1998-99) for detailed documentation.



successful agricultural transformation by repeatedly rewarding individualistic economic profit centric activities over socially embedded ones. While the trans-Himalayan societies demonstrated significant amounts of lethargy and inertia towards novel ideas in the past (Shuttleworth 1934), the history of the last fifty years is characterized by the gradual acceptance of modernity and change. The initial success of the governmental policy of road construction enhanced the scope of employment in these areas. This success resulted in a positive feedback loop, possibly unintended, where more such policies were demanded and undertaken. The governmental interventions were frequent, consistent and more importantly, supported and mediated by local people. The involvement of local individuals with high social status (*Nonos, big land holders*), and high social acceptability (women), in the developmental process led to a fast acceptance of new behavioural regularities through vicarious learning. Their involvement in economic profit generating activities (dis-embedded from social needs) helped legitimizing such activities in the community, and encouraged common people to participate in developmental projects in large number without fearing social sanctions and opposition. Such a preference for a new value system also spilled over to the domains of preference for food and healthcare, which supported the diffusion of rice as a food item and of modern curative healthcare practices. These replacements led to the severing of links between consumption and production, and, in turn, reduced the cost of introducing novelty in the production system without apprehending its spillover on consumption. An intense communication with tourists and people living in large cities also augmented local aspirations for an improved standard of living. The injection of money into the economy helped local people sustain these changes in their lifestyle. The use of money also obliterated the need for social barter exchanges and sowed the seed for increasingly specialized exchanges and pursuit

of individualistic economic goals by local inhabitants. A high degree of communication and cohesion within society and, especially, within the family with a high rate of women's participation in decision making helped to rapidly develop a shared mental model on the efficacy of developmental policies. Finally, traditional mental models, which were developed through various ancient barter-*trading* activities with other trans-Himalayan communities, also provide a crucial explanation for the smooth shift towards commercialisation of agriculture, once the pursuit of individualistic economic profit became the overriding objective. For the local community what changed was, possibly, only the basket of commodities and trading partners.

Thus, vicarious learning, by highlighting the reciprocal interaction between beliefs, values, behaviour and environment, can provide deeper understanding of the process of development once we agree to view development as a “transformations from traditional thinking and ways of living to more modern ones” (Stiglitz 2002).

## **V. A POLICY FRAMEWORK FOR SUCCESSFUL DEVELOPMENT**

In the spirit of Adelman (2002) our empirical study brings out that a more complex understanding of social systems, associated behavioural regularity and their social cognitive underpinnings are important for effective formulation of development policies. In this respect, not only the nature, but also the sequence of policies proves to be crucial for successful development. In order for any incentive-based policy to be successful, it has to be preceded by policies geared towards changing indigenous values and preferences since the efficacy of incentive based policy depends on the existence of a compatible preference pattern and value

system. It is important to explicitly acknowledge that these psycho-social factors, besides incentives, have an important bearing for behavioural changes.

The acknowledgement of a triadic interaction between personal factors (belief, value), behaviour and the environment also broadens the dimensions of policy intervention. In the case of externally imposed, incentive based policy interventions, minor alterations are often preferred over drastic changes. As a result, policies show strong path dependence with gradual changes over time. If perception of the environment is largely mediated by mental models-as necessarily is the case for boundedly rational agents - such a gradual change in environment can be justified since it reduces the amount of friction between mental models supporting the existing behaviour and the new one. Policies calling for a minimal change in mental models would not only diffuse quickly but the cost of implementing those policies would also be low due to a low *convincing cost*. We, however, argue that the path dependency of policies would heavily depend on the speed with which agent's mental models can change. The theory of social cognitive vicarious learning by Bandura (1986) provides an effective roadmap to this effect. The speed can indeed be enhanced by identifying appropriate role models within a society or group, who have high social acceptability and can garner the change in the desired direction. They can do so by either directly propagating the change or by demonstrating the benefits of change by their own behaviour. If such policies consistently produce desired results, people will quickly learn to adopt those new behavioural regularities, a la Witt (1989). As a result, the required critical minimum mass would be converted faster than if everybody was solely guided by his/her own experience, as understood in the New Institutional Economics literature. The obstacle arising out of a conflict between the existing and new mental models would be less and short-lived (Witt 2003b) when vicarious learning is recognised.

The paper also illustrates that social transformations cannot be viewed as outcomes of any clearly defined means-end framework (Rizzello and Turvani 2002, Witt 2003b). Building up of trust and confidence on policy goals among local people, surely, proves to be more important than any hasty implementation of economic incentives. Historically indeed, a failure to build up trust on governmental intervention and the inability to propagate changes through appropriate role models have been responsible for violent opposition to agricultural commercialisation, either in the form of indigo in British-India, or in the form of rubber in the Indian state of Kerala after independence. In our case, policies that have enhanced social capability like employment opportunity and, thereby, built up trust in policy intervention have achieved better results.

Finally, the differences between the nature of trade before and after the transformation also have serious policy implications, especially with respect to the role of government in developing countries. Although we have argued that the familiarity with exchange and trade has positively influenced the speed of the transformation, the source of competitive advantage is very different before and after the transformation. While the traditional competitive advantage in static commodity baskets had mainly depended on natural factors, the source of competitive advantage in modern-world trade rests, predominantly, on the cognitive capacity to continuously create novelty, either in terms of new products, new processes or new ways of doing trade.<sup>24</sup> While pre-modern societies often get tempted by the observed diverse and opulent consumption patterns of urban metropolises, they are, largely, ignorant about the

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<sup>24</sup> One must remember that every small producer (location) of homogenous products such as cash crops faces a highly price elastic demand curve, limiting the possibility of gains beyond a normal profit. Profits from homogenous products are also vulnerable to market uncertainties. Leys (1996) assigns the reason for the African debacle in the 1980s to their over dependence on production and trade of homogenous commodities. It is therefore imperative to diversify into trade and production of specialized products with increased value addition.

underlying importance of investing in the creativity and novelty, required to maintain such a pattern of consumption.<sup>25</sup> Indeed, as argued by Carstensen (2000), such a drive towards increasing variety and creativity is often associated with a belief structure where technological change is viewed as a positive-sum game. This is in contrast with the view of technological progress, at best, as a zero-sum game in many traditional societies (Hirschman 1958, Hagen 1962).<sup>26</sup> Following Bandura (1986; p. 53), as we have argued in section II, the cognitive skills to identify such a difference would, in all possibility, be low for a society new to the modern way of thinking. All this can have an adverse impact on investment behaviour by prohibiting investment on risky, uncertain ventures of creating novelty. The lessons from transition economies indeed reveal that growth of private financial institutions and private entrepreneurship are slower than consumption growth, at least during the initial years of privatisation and economic liberalisation (Stern 1997). The United Nations (2005) also finds that an absence of adequate financial institutions and preference for short term investments over long term ones are prime characteristics of developing countries, which further hinders the process of economic development in these countries.

There is, therefore, a clear need to build up the cognitive capacity in agents to promote risk-taking attitudes and entrepreneurship, through education, training and other means of human capital formation. Stiglitz (2002), in this context, prescribes a more participatory way of planning, formulating and implementing developmental programmes involving people, public authority and other social groups. Besides encouraging people to develop on their own

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<sup>25</sup> Tocqueville (2003) perhaps hints at the same problem when he remarked that they (Indians) acquired “the taste, but not the means” to sustain modern civilization, chapter 10, Vol.1.

<sup>26</sup> Moreover, even in the absence of technological progress, a mere expansion of market based trade requires interaction with heterogeneous agents, exposing these communities to higher risks of cheating and opportunism.

intellectual capacities, such a framework also enhances the flexibility of policies. It is therefore compatible with the assumption that even policymakers are boundedly rational agents who need to learn during the implementation process.

It must, however, be recognised that policy makers have to be cautious when prescribing a change in existing behaviour, even if it is supported by the local people. When a demonstration effect is sufficiently strong, very often local people tend to replace traditional behaviour, being ignorant about the long term costs of its replacement. In our case, the local people opted for a change in food habit without giving adequate attention to the issue of nutritional content of their existing food and preventive aspects of their healthcare. In such situations, the proper comprehension of existing behaviours by the civil authority can bring about a more judicious course of behavioural change towards social and economic development. Indeed, any fatal impact of a policy induced change in behaviour can lead to a loss of trust in governmental interventions, jeopardising the whole process of transformation and development.

To conclude, a comprehensive developmental policy should address the issue of changing preferences and behavioural pattern among agents, preferably through identifying suitable role models within a society. The building-up of trust in policy intervention through a deeper understanding of the reasons behind the existing behaviour, and strict evaluation of the costs of changing them are also important for smooth development these societies, rather than, often suggested, simple withdrawal of governmental intervention.

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