

A7

INSTITUTIONAL DESIGN AND OCCUPATIONAL ‘OPPORTUNITY’

The case of shifting cultivators in Nagaland, northeast India

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Introduction

Occupational opportunities are important for reducing poverty, not only by generating income, but also by raising the capability of people to choose appropriate living conditions. The prevalence of poverty and unemployment has often been attributed to physical factors such as infrastructural bottlenecks, lack of opportunities, social constraints like social divisions of labour, or individual constraints like a lack of education and human capital. Shifting cultivators in the northeast Indian state of Nagaland (known locally as *jhumias*, from the word *jhum* for shifting cultivation) make an interesting case in point. Although they have demonstrated high levels of adaptive and innovative capacity by sustaining and enriching what is possibly the oldest form of agricultural practice, their ability to adapt and conform to the requirements of alternative employment opportunities provided by various government schemes has been less than optimum (Darlong, 2004). In fact, it is now common knowledge that employment opportunities provided by the government to replace *jhum* have met with only limited success. This chapter takes the case of one such alternative employment opportunity in the form of terrace cultivation. It explores the reasons for the limited success of this governmental attempt to provide employment to (erstwhile) shifting cultivators in a large part of Nagaland. In particular, we argue that the reason for the failure of this scheme is the divergence between the institutional structure that informs the policies, and that which has sustained *jhum* in this region for centuries. Further, we argue that the difference between these two divergent institutional structures makes it quite burdensome for local people to adjust to the

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norms and values of the policies promoted by the government, because doing so demands a reorientation of their cognitive processes regarding identification and recognition of the new employment opportunity. Note that conventionally, shifting cultivation is practised as subsistence farming under a collective system of property rights. Alternative employment schemes, on the other hand, often require individual efforts geared towards a market-based economy. We argue that the success of these schemes depends on how successfully people can adjust to these differences in institutional requirements, which are culturally and cognitively expressed.

The evolutionary and institutional branches of economics have recently sought to understand the cognitive and institutional dimensions of economic behaviour. Scholars point out that ‘opportunities’ are not objectively given, but are rather constructed or identified by individuals through complex cognitively shaped institutional mechanisms. We draw upon the literature on cognitive and cultural underpinnings of institution to explain the diverse and unsatisfactory responses of *jhumia* families in Nagaland to some of the employment schemes offered by the government. We take the specific government scheme of proposing terrace cultivation as an alternative livelihood to motivate people to move away from shifting cultivation. Importantly, our study is a field-based analysis, incorporating village surveys in the Mokokchung, Mon, Wokha and Zunheboto districts of Nagaland (Figure A7-1). After a brief overview of the literature on institutional and cognitive processes in the next section, we discuss the principal characteristics of shifting cultivation in section 3. Section 4

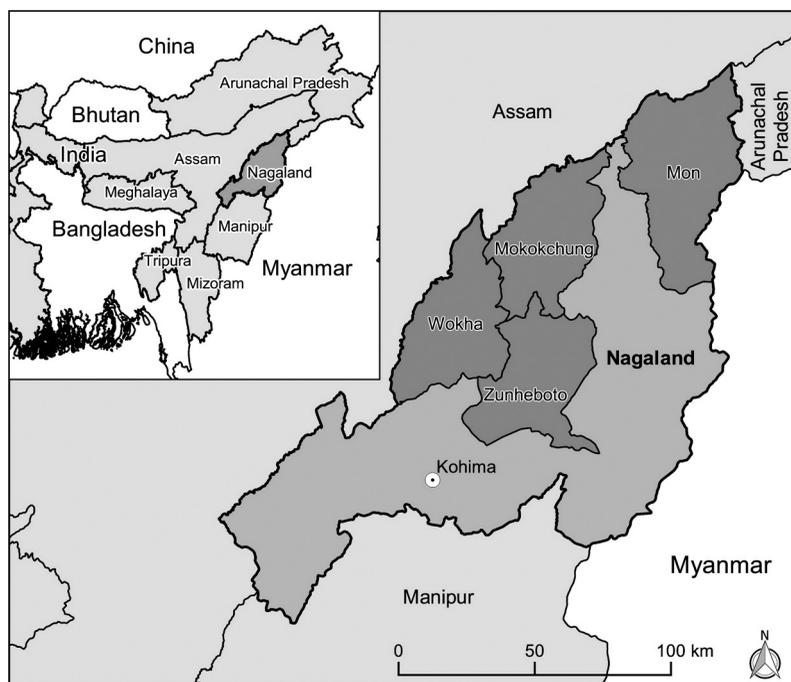


FIGURE A7-1: The state of Nagaland in northeast India, showing the districts involved in field studies for this chapter.

examines the alternative pursuit of terrace cultivation, and points out the differences between, and the similarities with, the principal institutional–cognitive features of this scheme and those of shifting cultivation. Section 5 draws broad policy implications.

Conceptual framework

In economics, the concept 'institution' is perhaps most commonly understood as 'humanly devised constraints that shape human behaviour' (North, 1990). North also distinguishes between formal and informal institutions, equating the former with official rules and the latter with social values and customs. Further, he points out that the rigidities in informal institutions offer stability in the overall institutional framework, by controlling the pace at which formal institutions can be changed.

Overall, institutions define the broad range of human activities while, at the same time, they impose a form upon these activities. In other words, institutions define 'the world of use and want', within which we imperfectly accommodate our lives (see Hamilton, 1932). According to Parsons (1940), institutions define the normative patterns of what constitutes a proper, legitimate or expected mode of action or social relationship.

While all of these definitions locate the permanency of human behaviour in social factors (constraints), there are also other ways of attempting to understand the cognitive underpinning of stability and permanency provided by institutions. After all, institutions are also, as Veblen (1919) put it, 'settled *habits* of thought common to the generality of man' (emphasis added).

Schotter (1981), for instance, defines institutions as organisers of information. It is now well established that human beings are cognitively constrained in their calculative ability and explorations of alternatives and exercise a form of bounded rationality (see Simon, 1956). In this context, an institution can serve as a framework to reduce uncertainties in human interaction and decision-making, both by shaping expectations about the environment and reducing the amount of information that individuals have to use to solve a problem (see Sjostrand, 1993). Indeed, Ostrom (1986) argues that the more an institution encodes expectations, the more it reduces uncertainty and problems arising out of bounded rationality.¹

Under the assumption of bounded rationality, past experience influences activities like goal formulation, opportunity identification and interpretation of environment. All of these things are dependent on the existing knowledge and experience of the decision-maker.

Recent research in cognitive science and social psychology has explained these processes in detail. It is emphasized that human cognitive capacity is limited in so far as responses to incoming sensory experiences and information are concerned. As a result, human memory pays attention to new incoming information only in a discriminatory manner. In this process, pieces of incoming information that can be associated with a pattern already existing in the memory are favoured over the rest. Thus, incoming information can be ignored when some similar pattern cannot be

identified in the memory of the recipient. This complex system of cognitive patterns is called cognitive frame (Anderson, 1990). Therefore, associative cognitive cues are important in helping to enrich long-term memories. These associative cognitive cues play a central role in restricting or guiding the memory structure to interpret new information and, therefore, the environment. In this sense, a cognitive frame is a schematic representation of an individual's perception of the environment built through prior learning and adaptation (Witt, 2000).

These schemas represent categorical knowledge pertaining to an object or event, according to a 'slot' structure (Anderson, 1990, p155). Values in these slots or attributes are often assigned on the basis of past experience with the event. Since prior learning and adaptation is a social process, these schemas or frames can be assumed to function as socially shaped filters (Witt, 2000).²

Subjectivity in perceiving and making sense of environment explains why past experience has a significant influence on learning, decision-making and economic behaviour. Cognitive frames are, therefore, central to understanding why individuals might stick to a particular mode of perceiving the environment and often find themselves unable to switch into another mode, even in the medium term. Further, cognitive frames can be said to determine the regularity of human behaviour by designing appropriate institutional mechanisms. Mantzavinos et al. (2004) use the concept of 'shared mental models' (Denzau and North, 1994) to emphasize this point. Shared mental models are developed through interpersonal communications and cognitive learning. It is argued that shared mental models are the internal representations of values and norms, while institutions are their external representations. Thus, institutions derive their importance in assuring 'behavioural regularity' from the exercise of various social and cognitive factors. These social factors shape the 'moral and ethical' aspects of individual behaviour while cognitive factors shape expectations and define the range of alternatives that human beings can deal with.³ Both of these factors are crucial for institutions to effectively manifest 'behavioural regularity' in a population of individuals confronting the same decision situations (Witt, 1989).

In this analysis, we focus particularly on three sets of institutions: 1. property; 2. labour relations; and 3. money and markets.

Property

The concept of property and the discourse related to it is often argued to have colonial origins, and to be linked with the emergence of capitalism (Peters, 1998). According to Peters (1998), it may be misleading to discuss the complex, non-exclusive patterns of access and use characteristic of pre-capitalist land tenure in terms of property relations. One therefore needs to introduce the component of social relations while studying property under a dominant 'folk' view, such as generally persisted in primitive or collectivist societies. This way, property relations in collectivist societies can be regarded not as relations between persons and things, but as social relations

between persons with respect to things (see Peters, 1998; Hann, 1998). These social relations could be a 'bundle of rights', as outlined by Henry Maine in *Ancient Law* (1861), where a basic distinction is made between 'rights in things and the rights in persons that people held by virtue of belonging to specific social groups and political communities'.⁴ These rights were further emphasized by Gluckmann (1965) in understanding the mode of delegation in a political hierarchy, while working on land-tenure systems in Africa. According to Gluckmann (1965), the typical African king delegated rights to regional chiefs, who in turn delegated these rights to village headmen, who allotted plots to households for settlement. Gluckmann referred to this as 'estates of production', while the colonial (capitalist) discourse understood it, by contrast, as 'estates of administration'.

An important contribution towards devising a general analytical framework for understanding property regimes is that of Franz and Keebet von Benda-Beckmann (1999). They apply the notion of 'layer', not to the social structure of particular societies, as is done by Gluckmann, but to social organisation. The uppermost, overarching layer is designed by the norms of cultural tradition (or 'ideology'). This first layer is called the 'cultural-ideological' layer. The second layer consists of political and legal regulations, which may exist in a plurality of ways and specify, for example, the form in which objects are to be held and whether or not they can be alienated. This is called the 'legal-institutional' layer. Layer three consists of the 'social relations' of property. It includes, for example, particular land-use or inheritance patterns and the way they may be tied to particular forms of kinship. This layer also determines whether and how these uses and patterns will be more or less egalitarian. Finally, at the layer of 'practices', the actors may reinforce the patterns of the other layers or they may initiate changes. Emphasis is placed on the complexity and systemic embeddedness of property, which must be analysed in all four of these layers. Changes may proceed at differential rates in the different layers. Thus, it might be difficult or even impossible to reach a precise date or time period of a 'global transformation of the property regime'.

As is well known, a primitive or traditional society is often based on the philosophy of commons. Sustenance in these societies is based upon a common pool resource system. This refers to natural or man-made resource systems that are large enough to fulfil the needs of these societies. Using these resources is based on a complex set of calculations of discount rates (Ostrom, 2001). These calculations are often affected by general norms about honouring present commitments at a future date that are shared by the members of a particular society or a local community. Thus, a collectivist society may have different norms of behaviour than a society that respects individual property rights. In the former, behaviour is more *de facto* in nature, while in the latter society it may be *de jure*. Kiser and Ostrom (1982) point out that property rules are nested and embedded in social norms and individual cognitive factors, making it difficult to change them.

Changing the rules at any level will increase the uncertainty faced by individuals. As we have already argued, rules provide stability of expectations, and efforts to

change them rapidly can erode that stability. According to our discussion of cognitive factors, sudden and abrupt changes disturb the shared mental models or schema of individuals about the objectives and mechanisms of these rules.

Labour relations

Karl Marx analysed the role of labour in the context of capitalism, where it is treated as a marketable commodity. Capitalism organizes labour through the relationship of wage payments. However, the wage relationship is only one of the ways in which labour can be organized in a productive way. Eric Wolf (1999) argues that there are three main means of organizing labour to extract value from those who produce it by their work: kinship, tribute, and capitalism. While the kinship system mainly involves family labour, the tributary system organizes labour by force (see Durrenberger, 2005). Each of these processes defines a characteristic mode of production with its own characteristic forms of distribution and social relations. These ways of organizing labour also have their own beliefs, values and practices that might make them appear inevitable and self-perpetuating. The schemas, or shared mental models they create are, therefore, quite rigid. This is evident from the attempt made by Durrenberger (2005) to locate these practices and understandings in culture. As discussed, a kinship system is formed by acts of engendering and sharing blood, living together and eating common food. This system is often more resilient than a capitalist system in surviving 'bad periods' (say, bad harvests), since the level of effort is not necessarily determined by expected profits (Doeringer et al., 1986). The concept of wages is not common in these societies, because community members themselves participate as the labour force in the agricultural fields. The profit motive is perceived in these societies as social capital, which helps in developing good relationships among community members.

Money and markets

Both markets and money operate on an economic base, and the basis of an economy is the social and material space that a community, or association of people, makes in the world (Gudeman, 2005). Comprising shared material interests, an economy connects the members of a group to one another (Gudeman, 2005). Quite often, the term 'economy' is made synonymous with the existence of markets. However, ethnographers have argued extensively and demonstrated that, historically, economy includes more than markets, or the market-like exchanges of goods and services. This is not only true for pre-industrial societies, but also for industrialised modern societies (Patterson, 2005). From an anthropological perspective, economy covers the acquisition, production, transfer and use of things and services. For example, material things are produced and processed outside formal markets, and many transfers take place through practices such as social allotment and apportionment, inheritance, dowry, bride wealth, blood wealth, indenture and reciprocity, with

each of these modes having a variety of expressions (Strathern and Stewart, 2005; Yan, 2005). According to Gudeman (2001), economy contains two realms: one is community and the other market or impersonal trade. Both of these realms are found in all economies. However, their form varies across time and space. These two faces of economy are also intertwined, often making it difficult to identify the border that separates them (Achian and Demsetz, 1973). Communities may be embedded in one another, or they may overlap and differ in interests and internal structure. Nevertheless, communities are held together by shared interests that constitute their bases and networks of relationships. These networks can comprise thick or thin sets of ties that vary in strength and importance.⁵ Things are appropriated, created and possessed through such community connections and this maintains the relationships. However, while communities are more or less linked to economic processes, not all of their performances are economic in nature.

In contrast, markets may involve impersonal trade or exchanges. These exchanges may be mixed with communal ties, as in the case of choosing trade partners or opting for open-ended contracts with people belonging to the same ethnic group. But, in principle, the relations in market trade between people, and between people and things, are contractual. The form and nature of contracts often vary according to the size of a market. Trades taking place within a local market are surrounded by rules that may be tacit or customary, where agreement is often sealed by a simple handshake. But, when markets are large and involve anonymous participants, the rules are usually more explicit and agreements are specified and written.

This brings us to the use of money in traditional societies. Many such societies have 'money stuff', rather than general-purpose money that serves as a uniform standard of exchange and use in market economics.⁶ This is because the economy (or what we may call a 'pre-capitalist economy') in these societies is multicentric, or has two or more 'spheres of exchange'. In contrast, capitalist (market) economies are by definition unicentric, because everything, even the factors of production, circulates in an economy unified by the market principle and the universal solvent: general-purpose money. According to Durkheim (1965), a traditional society has two circuits of social life. One – the everyday – is short-term, individuated and materialistic. The other – the social circuit – is long-term, collective and idealized, even spiritual. Durkheim (1965) argues that market transactions fall into the first category and all societies seek to subordinate this sphere to the conditions of their own production, which is the realm of the second category (Polanyi, 1944). However, in Western societies, the importance of money has risen to give it the distinction of a social force all of its own. The rest of the world apparently retains the ability to keep it in a secondary place (Hart, 2005).

To put this briefly, the discussion above introduces the concept of institutions helping to develop stable patterns of behaviour by shaping moral and ethical aspects while guiding people's expectations and judgements about situations in which decisions must be made. We also see that institutions related to property rights, labour relations and markets can be identified as some of the key aspects of human behaviour.

In the next section we argue that differences in these three institutions have played a principal role in shaping people's response patterns to various government schemes in Nagaland that were proposed as substitutes for *jhum* cultivation.

***Jhum* cultivation and associated institutional arrangements**

An overview of issues and structure

Shifting cultivation is the dominant land-use system and mainstay of the economy of upland dwellers in South and Southeast Asia, including India's northeastern region (Darlong, 2004). This method of cultivation has different names in different countries or states (Borthakur, 2002). In northeast India, it is known as *jhum*, meaning 'cultivation of hill slopes by using a hoe'. Often elsewhere known as slash-and-burn agriculture, it has been a traditional practice for many generations and is widely prevalent in all states of the region (Dev Varman, 1971). Although the exact extent of land used for *jhum* and other related practices is not known, broad estimates indicate that of northeast India's total area of 25.5 million hectares of cultivable land, about 3 million are under settled agriculture and about 2.7 million are under *jhum*. However, at any given time, only about one-sixth of the total *jhum* area is under current cultivation (Figure A7-2). The rest is in various stages of fallow or forest regeneration. The main practitioners of shifting cultivation are tribal people, comprising 80% or more of the total population in the states of Arunachal Pradesh, Manipur, Mizoram and Nagaland (Darlong 2004).



FIGURE A7-2: Mountainside *jhums* in Nagaland, showing a typical mosaic of active cultivation and regenerating forest.

The basic principle of *jhum* cultivation is the alternation of short cropping phases (usually one or two years of cropping) with phases of natural (or slightly modified) regrowth of fallow vegetation. It is argued that such systems can be regarded as 'temporally separated agroforestry systems', where mixed cropping occurs during the cropping phase and perennial shrubs and trees are confined to the fallow phase of forest regeneration. The duration of the fallow phase has an important bearing on the sustainability of the system. Tiwari (2005) divides *jhum* into four categories: (1) traditional *jhum*; (2) distorted *jhum* (having a shorter fallow phase); (3) improvised *jhum* (cash cropping); and (4) modified *jhum*. The latter category refers mainly to the Nagaland Environment Protection and Economic Development Project (NEPED), which has focused on planting commercial tree species interspersed with diverse food crops in order to check soil erosion and improve the productivity of shifting cultivation lands (Phuntsho et al., 2017). While these classifications are extremely useful, they fail to throw adequate light on the innovative and adaptive behaviour of indigenous communities. Indeed, the fascinating diversity in the methods of *jhum* cultivation observed across India's northeastern states reflects the fact that *jhum* cultivation has not remained static over time, but has responded to the changing needs of economy and environment through various adaptive and innovative changes (See Ramakrishnan, 2001; Tiwari 2003).⁷

Nagaland is a mountainous state that is home to 16 tribes and subtribes. The members of each can easily be distinguished by their colourful and intricately designed costumes, jewellery and beads. Article 371A of the Constitution of India has special provisions for Nagaland. This Article prohibits the application of all Acts of the Indian Parliament dealing with 'religious or social practices of the Nagas; Naga customary law and procedure; administration of civil and criminal justice involving decisions according to Naga customary law; [and] ownership and transfer of land and its resources, unless approved by the state legislature'. Nagaland has the largest number of *jhumia* families in India. About 72% of the state's population depend on agriculture. *Jhum* land covers about 37% of the state's total geographical area and shifting cultivation is practised by about 85% of Nagaland's farming families (Government of Nagaland, 2004).

Jhum has evolved over many generations and its practice is rooted in customs, beliefs and folklore. It influences the cultural ethos and social fabric of these agrarian societies. Besides, it is an agricultural system of considerable complexity that is well adapted to certain conditions and requires exhaustive comprehension of the environment to succeed. Briefly, it is a time-tested cultivation system that draws upon traditional knowledge and indigenous practices (NEPED and IIRR, 1999). Some salient features of *jhum* cultivation can be summarized as follows:

- *Jhum* lands are commonly owned and are allocated to farming families by Village Councils for temporary occupation during the cultivation of crops. Agricultural lands, therefore, are neither privately owned nor meant to be permanently held.

- Unlike permanent or terrace cultivation, *jhum* cultivation is almost entirely dependent on human labour. Numerous cooperative arrangements exist to enable farmers to benefit from labour resources outside their families.
- Due to a dependence on family labour, the size of *jhum* fields depends mainly on the number of able-bodied members in a *jhumia* family. Marriage is an important means of procuring more working hands. Among the *jhumias*, marriage requires the groom to stay with his in-laws for a period of three to five years. This is an important source of labour.
- The land is fertilized by natural processes and is boosted by the ash derived from burning slashed vegetation.
- Shifting cultivation is characterized by the social division of labour, the oldest form of labour division (Polanyi, 1944). Men take part in cutting the vegetation and clearing the *jhum* fields. Women are responsible for sowing, watching over the crops and harvesting, all of which takes a larger part of the year.
- The economy of shifting cultivators is mostly one of self-sufficiency. There is usually little marketable surplus in shifting cultivation. Their marketing facilities are limited and the extent of monetization is restricted. Surplus produce is exchanged for traditional goods such as brass bells, beads and in some cases salt, utensils, dried fish and clothing.

In a nutshell, the practice of *jhum* can be regarded as the science of long-resident peoples, which differs considerably from group to group depending on locale, where knowledge has been built up through generations of living in close contact with the land (see Berkes, 1993). As Ramakrishnan (1992) puts it, 'It is culturally bonded with ethos, which represents a hard epistemological core, reflecting upon a unique mix of practices, methods, beliefs, and the institutional framework of communities, which defend and protect the scientific temper associated with the practice'.

Policies towards *jhum*

Ironically, ever since the British period, policy-makers in India have regarded *jhum* as a primitive and destructive practice whose cost in lost forests far outweighs its productive benefits. Despite its deep-rooted history and association with local knowledge and customary values, the qualities embedded within shifting cultivation have often been underestimated in the policy framework of India since the days of the British Raj. In the words of Baden Powell, a British policy-maker (in 1883) '..... this [*jhum*] cultivation is so wasteful that somehow or the other it must be put to a stop, just like any great evil. It consists of destroying a large and valuable capital [forest cover and environment] to produce a miserable and temporary return' (see Peel, 1983). Such observations finally led to a strong advocacy towards abolition of *jhum*, which later found a place in the National Forest Policy of 1894, with the statement: 'The system of shifting cultivation ... costs more to the community than it is worth and can only be permitted under due regulation'. Following the colonial legacy,

post-independence India tried to maintain policies that were stereotyped and often based on hard-core reductionist science. Policy-makers, governments and analysts often assumed that *jhum* cultivation was universally unsustainable and destructive of forests and wildlife. The overriding principle and spirit of policy intervention on *jhum* cultivation has thus been to wean *jhumias* away to settled agriculture and to gradually reduce the areas under *jhum*.

There were timely efforts to open up a humanist approach to *jhum* by official advisors such as Verrier Elwin,⁸ and some scholars of the 1950s:

The notion widely held that shifting cultivation is responsible in the main for large-scale soil erosion needs to be effectively dispelled. The correct approach to the problem lies in accepting it not as a necessary evil, but recognising it as a way of life (Chaturvedi and Uppal, 1953).

It is a mistake to assume that shifting cultivation in itself is unscientific land use ... In most of the interior areas where communication is not developed and sufficient land suitable for terracing is not available, shifting cultivation alone can be done for the present and as such every effort should be made to improve the fertility of such land (Sivaraman, 1953, cited in Maithani, 2005, p10).

The advice had little effect. Rather, it opened up a path for alternative models that could replace *jhum*. The National Forest Policy, 1988, is one such document. It emphasized alternative avenues of income, suitably harmonized with the right land-use practices. It was devised to discourage *jhum* where efforts had been made for propagating 'improved' agricultural practices like social forestry and energy plantations. Over time, what has changed in the policy arena is perhaps an increased attempt to make this replacement 'participatory' in nature. When we compare the perspectives of policy-makers with those of farmers it becomes clear that factors like deforestation and *jhum* are clearly not perceived by the latter as problems justifying any concern (see for instance Jodha, 1997).

Studies by Jodha (1997) and Maithani (2005) have pointed out various reasons for the failure of certain employment schemes designed to meet the requirements of tribal communities. Although factors like 'trust' and 'psychology' appear in their reasoning, the main emphases of these studies remain on physical factors, along with the most commonly observed reason for any policy failure: 'bad implementation'. It seems to be constantly difficult to establish the meaning of 'good implementation'. Although some of these studies mention the role of socio-cultural factors in the failure of these policies, the use of the expression 'socio-cultural' is often vague and devoid of any clear theoretical underpinning. Recent literature suggests that culture is not a rigid framework, but rather a loosely organized schematic structure rooted in the cognitive belief systems of individuals. Thus, the genesis of cultural change may also be assumed to lie in the way human cognitive systems unfold and work (Di Maggio, 1997). We intend to posit our findings in this context in an effort to understand how various cognitively shaped institutional factors have led to the failure

of these policies. We will also examine the ways in which such cognitive dimensions change, and explore the implications for acceptance of these policies. To examine these arguments, our study involved field surveys in 12 villages in four districts of Nagaland: Mokokchung, Mon, Wokha and Zunheboto. The results were thoroughly analysed.

Shifting cultivation and terrace cultivation: similarities and differences in 'shared occupational frame'

Table A7-1 highlights some of the key differences between the cognitively mediated institutional designs of shifting cultivation and terrace cultivation. In line with schema theory, these differences are structured in terms of a few important factors, which, in our view, constitute the shared 'occupational frame' or mental models of shifting cultivators.

We frame our discussion around the following aspects: (a) whether the knowledge required to carry out terrace cultivation is locally developed, and whether local people can undertake the necessary innovative or adaptive steps; and (b) whether the practice is embedded in local institutional norms and the social framework, particularly with respect to property rights, labour relations and market orientation. We discuss each of these aspects.

Scope for local creativity

Joseph Stiglitz (2002) emphasized the belief that people do not accept those policies that fail to incorporate the intelligence and creativity of local people. In a farming

TABLE A7-1: Shifting cultivation compared with terrace cultivation.

<i>Factor</i>	<i>Shifting cultivation</i>	<i>Terrace cultivation</i>	
Nature of knowledge	Locally developed	Brought from outside	
Type of land use	Temporary	Permanent	
Nature of cropping	Many crops at a time	One or a few crops at a time	
Role of technology	Minimal, mostly human labour	Use of livestock and some mechanization.	
Labour arrangement/management	Family labour	Wage labour	
Decision-making	Land allocation	Village council	
	Labour arrangement	Village council	Individual
	Nature of crops	Village council	Individual
Property rights of land	Community owned	Individual rights	
Gender specific division of labour	Present	Absent	
Links with social events	Present	Absent	
Primary objective	Consumption/social exchange	Consumption/sale	

community, one of the basic ways to manifest such creativity is through local selection of seeds and use of tools. In shifting cultivation, seed varieties and tools are locally generated, often using local traditional knowledge and skills handed down by ancestors. More importantly, farmers first use any new seed variety on a small scale, to verify its suitability for local conditions, before applying it in large quantities. This reduces the risk of vulnerability in the case of inappropriate selection. In writing about diffusion, Rogers (2003) points out that the ‘trial ability’ of an innovation enhances its scope for diffusion. In the case of terrace cultivation, the seeds are brought from outside, as farmers do not have adequate local knowledge about them. The scope for ‘trial ability’ is also much less, if not absent, in terrace fields (Figure A7-3). In this monocrop farming practice, farmers generally have to use one kind of seed in large-scale planting, thereby reducing the scope for trial ability and increasing their vulnerability to crop failure.

Similar problems arise with tools, because the tools used for terrace cultivation differ significantly from those used in *jhum*. In *jhum* the main tools are a hand hoe to clear soil debris when sowing seeds; a sickle for harvesting; a machete for cutting shrubs and trees; dibbling sticks for sowing seeds; and a rake for mixing ash into the soil. All of these tools have been made and modified time after time by the local blacksmiths, using local knowledge. In contrast, only a sickle and a spade can be used in terrace cultivation, and the spade must be imported. Other tools have no function.

Thus, terrace cultivation severely limits the ability of local farmers to apply their creativity and intelligence to improve or develop the practice.



FIGURE A7-3: Terraced hillsides being used for wet-rice cultivation in Nagaland.

Institutional norms of property, labour and market

In *jhum* cultivation, local communities hold customary property rights over the land. Depending on the structure of local governance, there are some variations in this system. For instance, in communities of the Ao tribal group, the village council is the owner of *jhum* land, and the council distributes it among members of the village. Among the Konyaks, on the other hand, local kings (*Angh*) own the land, and it is 'redistributed' among community members. Upon completion of farming in a *jhum* plot, ownership reverts to the community and, after it has been kept fallow for some years, the plot may once again be selected for shifting cultivation. While plots are under cultivation, their overall maintenance is performed by community members, including the clearing of common paths and arrangements to protect the land against pests, birds, animals, and so on. In contrast, terrace cultivation requires individual ownership of the land; it is not relinquished after one year of cultivation. In fact, when a *jhum* family finishes one or perhaps two years of cultivation, it moves on to a new plot. However, a family undertaking terrace cultivation has to continue to grow new crops on the same land. This creates problems and conflicts with regard to ownership and labour. Obviously, a family practising terrace cultivation will not get the help of community labour, and as a result if family labour proves to be insufficient, they will have to hire wage labour. This creates a conflict with the kinship system of labour common to shifting cultivation. Moreover, villagers embarking on terrace cultivation often have to rely on migrant labour, because local people do not have much knowledge about terrace cultivation. The result is that common concerns about the risks inherent in subsistence agriculture are compounded by fears among farming families that they are diluting their own culture.

Terrace cultivation is also a monocropping practice, whereas *jhum* is a multicropping system in which various crops and vegetables are grown at the same time. Therefore, *jhum* allows a family to be self-sufficient in food and vegetables. As a result, markets for vegetables do not exist in these villages. If *jhum* harvests fall short of family needs, they can borrow food grains from other families, and this is returned whenever the borrowing family has a good crop. Kinship arrangements for labour and reciprocal exchanges of food grains go hand in hand to strengthen the livelihood system of non-market collectivist societies. Practising monocropping in terrace cultivation, on the other hand, makes farmers dependent on markets, both for labour and for selling the final product. We have already made the point that markets work according to principles of impersonal exchange and contract. Markets also promote individual entrepreneurial aspirations, reinforcing the need for individual land ownership so that decisions about products or use of the land as mortgage collateral can be taken without interference from the community. Terrace cultivation also requires the use of livestock as draught animals to prepare the land, and Naga communities are not familiar with the use of livestock to assist agricultural production.

Conclusion and broad policy implications

We have shown that the inability of upland people to accept new forms of employment or occupations may lie in the difference between the institutional framework of their traditional pursuits and the alternative being proposed. The difference is manifest in the ability – or lack of ability – of local people to use both their traditional knowledge and their own intelligence to undertake the proposed alternative and make a success of it. The institutions of property rights, labour relations and use of money and markets require that local people make major adjustments in order to successfully adopt the alternative occupation. Indeed, one area where terrace cultivation has been successful is that dominated by the Angami tribal group, generally to the south of the study districts. It is argued that the people in these areas have historically had a system of private property rights and economic behaviour (see von Fürer-Haimendorf, 2004, p88; George and Yhome, 2008). We further argue that this difference is cognitively shaped. One may thus argue that the success of these employment opportunities is shaped by the ability to forge connections between various norms associated with both the new occupation and the old one. This mechanism can provide interesting insights to assist in understanding of why people selectively accept 'changes' in the process of economic adjustment. It also shows that radical changes in policy should be preceded by steps to bring compatible institutional arrangements into place, and this would seem to be a slow process. Indeed, social norms and values are not completely rigid. In fact, their cognitive underpinning also suggests a mechanism for change in these social values. However, such changes must be slow and gradual. In the case of the Naga communities, some acceptability of these alternative-occupation schemes has been led by a modern education system sponsored by the state and the Christian church. This system has, over time, propagated a taste for modernity and has very subtly cultivated individualistic aspirations in the people. Young Naga people are increasingly showing apathy for staying back in their villages, taking part in community services and undertaking shifting cultivation. Their education begins at an early age, and influences the way in which new incoming information and sensory experiences are handled by their brains. Education, therefore, plays an important role in shaping human perceptions about their environment. In terms of cognitive processes, what education teaches them is to process information and to interpret an environmental problem differently. They thus develop a shared frame or mental model about the choice of institutions and paths towards economic emancipation.

To conclude, therefore, we argue that short-term policies are more successful when they call for minimal change among people in the way they perceive their 'environment'. In the long term, however, individuals can be encouraged to change their perception of an environment through mechanisms that alter the way they handle information and develop connections in their cognitive system.

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References

- Achian, A. A. and Demsetz, H. (1973) 'The property rights paradigm', *Journal of Economic History* 23, pp16-27
- Anderson, J. R. (1990) *Cognitive Psychology and Its Implications*, W. H. Freeman, New York
- Bandura, A. (1986) *Social Foundation of Thought and Action: A Social Cognitive Theory*, Prentice Hall, Englewood Cliffs, NJ
- Berkes, F. (1993) 'Traditional ecological knowledge in perspective', in J. T. Inglis (ed.) *Traditional Ecological Knowledge: Concepts and Cases*, International Development Research Centre, Ottawa, pp1-9
- Borthakur, D. N. (2002) 'Shifting cultivation in north-east India: An approach towards control', in Bimal J. Deb (ed.) *Development Priorities in North East India*, Concept Publishing Company, New Delhi
- Chaturvedi, M. D. and Uppal, B. N. (1953) *A Study in Shifting Cultivation in Assam*, Indian Council of Agricultural Research, New Delhi
- Darlong, V. T. (2004) *To Jhum or Not To Jhum - Policy Perspectives on Shifting Cultivation*, The Missing Link - Society for Environment and Communication, Guwahati, Assam
- Denzau, A. T. and North, D. C. (1994) 'Shared mental models, ideologies and institutions', *Kyklos* 47, pp1-31
- Dev Varman, S. B. K. (1971) *A Study over the Jhum and Jhumia Rehabilitation in the Union Territory of Tripura*, Directorate of Research, Government of Tripura, Agartala, Tripura
- Di Maggio, P. (1997) 'Culture and cognition', *American Review of Sociology* 23, pp263-287
- Doeringer, P. B., Moss, P. I. and Terkla, D. G. (1986) *The New England Fishing Economy: Jobs, Income, and Kinship*, University of Massachusetts Press, Amherst, MA
- Durkheim, E. (1965) *The Elementary Forms of the Religious Life*, Free Press, Glencoe, IL
- Durrenberger, E. P. (2005) 'Labour', in J. G. Carrier (ed.) *A Handbook of Economic Anthropology*, Edward Elgar, Cheltenham, UK
- George, J. and Yhome, K. (2008) 'Community forest management: A case study of Nagaland, India', paper presented at the 12th Biennial Conference of the International Association for the Study of Commons, *Governing Shared Resources: Connecting Local Experience to Global Challenges*, 14-18 July 2008, Cheltenham, UK
- Gluckmann, M. (1965) *The Ideas in Barotse Juris Prudence*, Yale University Press, New Haven, CT
- Government of Nagaland (2004) *Nagaland State Human Development Report 2004*, Government of Nagaland, Kohima
- Granovetter, M. S. (1973) 'The strength of weak ties', *American Journal of Sociology* 78, pp1360-1380
- Gudeman, S. (2001) *The Anthropology of Economy*, Blackwell, Oxford, UK
- Gudeman, S. (2005) 'Community and economy: Economy's base', in J. G. Carrier (ed.) *A Handbook of Economic Anthropology*, Edward Elgar, Cheltenham, UK
- Hamilton, W. (1932) 'Institution', in E. Seligman and A. Johnson (eds.) *Encyclopaedia of the Social Sciences*, Macmillan, New York
- Hann, C. M. (ed.) (1998) *Property Relations: Renewing the Anthropological Tradition*, Cambridge University Press, Cambridge, UK
- Hart, K. (2005) 'Money: One anthropologist's view', in J. G. Carrier (ed.) *A Handbook of Economic Anthropology*, Edward Elgar, Cheltenham, UK
- Jodha, N. S. (1997) 'Mountain Agriculture', in B. Messerli and J. D. Ives (eds) *Mountains of the World: A Global Priority*, Parthenon, London, pp313-335
- Kiser, L. L. and Ostrom, E. (1982) 'The three works of action: A metatheoretical synthesis of institutional approaches', in E. Ostrom (ed.) *Strategies of Political Inquiry*, Sage, Thousand Oaks, CA, pp179-222

- Maine, H. (1861) *Ancient Law*, Allen and Unwin, London
- Maithani, B. P. (2005) *Shifting Cultivation in North-East India: Policy Issues and Options*, Mittal Publications, New Delhi
- Mantzavinos, C., North, D. C. and Shariq, S. (2004) 'Learning, institutions and economic performance', *Perspectives on Politics* 2(1), pp75-84
- Mauss, M. (1990 [1925]) *The Gift: The Form and Reason for Exchange in Archaic Societies*, Routledge, London
- NEPED and IIRR (1999) *Building upon Traditional Agriculture in Nagaland, India*, Nagaland Environment Protection and Economic Development Project and International Institute of Rural Reconstruction, Cavite, Philippines
- North, D. C. (1990) *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge, UK
- Ostrom, E. (1986) 'An agenda for the study of institutions', *Public Choice* 48, pp3-25
- Ostrom, E. (2001) 'An institutional approach to the study of self-organization and self-governance in CPR situations', in U. Sankar (ed.) *Environmental Economics*, Oxford University Press, New Delhi
- Parsons, T. (1940) 'Motivation of economic activities', *Canadian Journal of Economics and Political Science* 6, pp187-203
- Patterson, T. C. (2005) 'Distribution and redistribution', in J. G. Carrier (ed.) *A Handbook of Economic Anthropology*, Edward Elgar, Cheltenham, UK
- Peel, S. E. (1983) 'The necessity of jhuming', *IF* 9, p224
- Peters, P. E. (1998) 'The erosion of commons and the emergence of property: Problems for social analysis', in R. C. Hunt and A. Gilman (eds.) *Property in Economic Context*, University Press of America, Lanham, MD
- Phuntsho, K., Rawat, G. S., Rastul, G. and Ning, W. (2017) 'Policies on shifting cultivation in the countries of the eastern Himalayas', in M. F. Cairns (ed.) *Shifting Cultivation Policies: Balancing Environmental and Social Sustainability*, CABI, UK, pp310-343
- Polanyi, K. (1944) *The Great Transformation: The Political and Economic Origins of our Time*, Holt, Rinehart and Winston, New York
- Ramakrishnan, P. S. (1992) 'Tropical forest: Exploitation, conservation and management', *Impact of Science on Society* 42(166), pp149-162
- Ramakrishnan, P. S. (2001) *Ecology and Sustainable Development*, National Book Trust of India, New Delhi
- Rogers, E. (2003) *Diffusion of Innovations* (fifth edition), Cambridge University Press, New York
- Schotter, A. (1981) *The Economic Theory of Social Institutions*, Cambridge University Press, Cambridge, UK
- Simon, H.A. (1956) 'Rational choice and the structure of the environment', *Psychological Review* 63, pp129-138
- Sjostrand, S. E. (1993) 'Institutions and infrastructures of human interaction', in S. E. Sjostrand (ed.) *Institutional Change: Theory and Empirical Findings*, Sharpe, New York
- Stiglitz, J. E. (2002) *Globalisation and its Discontents*, W.W. Norton and Company, New York
- Strathern, A. and Stewart, P. J. (2005) 'Ceremonial exchange', in J. G. Carrier (ed.) *A Handbook of Economic Anthropology*, Edward Elgar, Cheltenham, UK
- Tiwari, B. K. (2003) 'Innovations in shifting cultivation, land use and land cover change in higher elevations of Meghalaya, India', in P. S. Ramakrishnan, K. G. Saxena, S. Patnaik and S. Singh (eds) *Methodological Issues In Mountain Research: A Socio-ecological Systems Approach*, UNESCO and Oxford & IBH Publishing, New Delhi
- Tiwari, B. K. (2005) 'Shifting agriculture in North-eastern India: Some insights in spatiotemporal patterns and processes', paper presented at a workshop on Shifting Agriculture, Environmental Conservation and Sustainable Livelihoods of Marginal Mountain Societies, 6-10 October 2005, National Institute of Rural Development, Guwahati, Assam
- Veblen, T. (1919) *The Place of Science in Modern Civilization and Other Essays*, Huebsch, New York
- von Benda-Beckmann, F. and von Benda-Beckmann, K. (1999) 'A functional analysis of property rights, with special reference to Indonesia', in T. van Meijil and F. von Benda-Beckmann (eds) *Property*

- Rights and Economic Development: Land and Natural Resources in Southeast Asia and Oceania*, Kegan Paul International, London
- Von Fürer-Haimendorf, C. (2004) *The Naked Nagas: Head-hunters of Assam in Peace and War*, Spectrum Publications, Guwahati, Assam
- Witt, U. (1989) 'The evolution of economic institutions as a propagation process', *Public Choice* 35, pp155-172
- Witt, U. (2000) 'Changing cognitive frames, changing organizational forms: An entrepreneurial theory of organizational development', *Industrial and Corporate Change* 9(4), pp733-755
- Wolf, E. R. (1999) *Envisioning Power*, University of California, Berkeley, CA
- Yan, Y. (2005) 'The gift and gift economy', in J. G. Carrier (ed.) *A Handbook of Economic Anthropology*, Edward Elgar, Cheltenham, UK

Notes

1. According to Ostrom (1986), 'institutions' can be defined as the sets of working rules that are used to determine who is eligible to make decisions in some arena, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided and what payoffs will be assigned to individuals dependent on their actions.
2. Cognitive learning can be of two types: learning through one's own experiences or vicarious learning by observing others. Our conceptualization of past experience encapsulates both these forms of learning. For details on vicarious learning see Bandura (1986).
3. This distinction, however, is artificial and is made primarily for analytical convenience. In reality, they interact with each other.
4. See Marcel Mauss's study *The Gift* (1990 [1925]), in which exchange was predicated upon transformations in the ways in which people related to each other through things – in other words, upon property.
5. Granovetter (1973) refers to networks as having strong and weak ties, and suggests that weak ties may lead to more rapid diffusion of information.
6. The word 'money' comes from Juno Moneta, whose temple in Rome was where coins were minted. Most European languages retain the word 'money' for coinage. Moneta was the goddess of memory and mother of the muses. Her name was derived from the Latin verb *monere*, whose first meaning is 'to remind, bring to one's recollection'. For the Romans, money, like the arts, was an instrument of collective memory that needed divine protection. As such, it was both a memento of the past and a sign of the future (Hart, 2005).
7. In a practice called *alda* in Nagaland, tribal farmers cut, but do not burn when opening new fields for shifting cultivation. Thus, the cut plants and undergrowth regrow very quickly in the following year, helping to prevent soil erosion and preserve soil fertility. In many areas of Nagaland, tree trunks are laid across slopes so as to impede the downward flow of run-off water. In some areas where the slopes are covered with grass and bamboo groves, pegs, bamboo pieces and grass are fixed across the slope to prevent soil erosion. As soil is washed down against these barriers of tree-trunks or bamboo and grass, rudimentary terraces develop over the course of time.
8. Verrier Elwin, an expert in anthropology, was appointed by independent India's first Prime Minister, Jawaharlal Nehru, as an advisor for tribal affairs in the North Eastern Frontier Agency (present day Arunachal Pradesh) in the early 1950s. Elwin emphasized the importance of local knowledge and tribal customs that were entrenched in *jhum*.