Institutional Analysis of Swidden: The Case of Swiddners in Orissa

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INTRODUCTION

Right from Neolithic period swidden has been a widespread form of land use that varies in character (Conklin, 1961). It embraces different topography, demographic feature, ethnic and ecological diversities and varies in terms of cropping pattern, frequency of land use, tools and methods of practice. It is argued that the institutions governing swidden are static in nature and do not adapt to the changing ecological and social needs (Jarsoz, 1993; WRI, 1996). Therefore, it is necessary to understand what characterise institutions in a traditional swiddening society, and hence, changes in the institutional characteristics to appreciate whether swidden is a static form of agriculture or not. The institutional aspects of swidden include, land-use choices vis-à-vis property-rights and labour sharing arrangements, market integration, and technology. Customs and norms are also a few of the analytically complex changes. Our prior concern is therefore to understand and analyse various institutional faces of this farming system and over all behavioural pattern of the swiddeners. To understand these factors, we chose Orissa for empirical evidences.

EXTENT AND NATURE OF SWIDDEN IN ORISSA

Orissa is one of the largest tracts of shifting cultivation (swidden) in India. The Task Force Estimation (1983) shows that out of total swidden area in India, Orissa alone constitutes 60.8 per cent of the area under cultivation at one time or other, whereas, annual cultivated area is about 53.2 per cent (Ninan, 1990, Dwivedi, 1993). The investigation of Anthropological Survey of India suggests that swidden is spread over 49 blocks[a], which includes 7 in the north, 36 in central, and 6 blocks in the southern part of Orissa (Bose, 1991; see Map 1).

Characteristics of swidden in Orissa can be broadly divided into topography (slope and altitude), climate (rainfall, soil type and vegetation cover), population density, land use and cropping pattern, communities involved, and ownership of land. The average annual rainfall of the whole region varies from 1170 mm. to 2508 mm. The usual swidden areas lie between 300 to 900 meters of altitude and 30-60 per cent slope category. Population density varies from 25 to 450 persons per km^2 across the swiddening regions of Orissa. It appears from land use study at community level that the whole area under swidden in Orissa can be divided into two regions, namely, paddy and oilseed zone of the north and millet and pulses zone of the central and southern parts of Orissa. Topography and climatic conditions largely influence the land use and cropping pattern. Besides, the social structures of the communities also govern the method of swidden.

The common term used for swidden in Orissa is '*Podu'* and is largely practiced by the tribal communities. The tribal communities practising swidden include *Bonda*, *Didyai*, *Dongria Kondh, Koya, Gadaba, Paraja, Parenga, Soura, Lanjia Soura*, *Juang* and *Pauri Bhuyan*. Varied conditions of land tenures are observed among different tribal communities. According to customary rights of the *Juang* and *Pauri Bhuiyan* of Keonjhar district, the land under swidden in a village is the communal property. In Koraput and Ganjam districts *podu* land has become a private property that can be owned and inherited by customary rights. However, in practice, households of the village combine together to select the site for cultivation in adjacent plots to avoid the risk of guarding the field alone. Among the *Bonda* community, sell and mortgage of plots under swidden was found (Mohapatra and Debi, 1973). Among the *Dongria Kondh* the traditional village headman known as *Jani* assigns plots of swidden land for cultivation to a newcomer to the village. Swiddeners of Orissa also perform various other land-use along with swidden. There are at least five such types of land-use for agriculture identifiable among these swiddeners. These include, (i) Home garden (ii) low paddy land (iii) horticulture (iv) land under fallow system and (v)

terrace. There is a finer appreciation of land use among the swiddening communities of Orissa, which varies according to topography.

DATABASE

We considered five swiddening villages from Southern Orissa for our study. These Villages are from Raigada and Gajapati districts. It is evident from table-1 that availability of plain land in all the five villages is very low. Therefore, most of the agricultural practice depends on the higher slopes. Land-use practices in these villages vary in terms of shifting cycles, cropping pattern, mode of production, topography and complimentary land-use systems. These villages also differ in terms of community identity, institutional setups, proximity and linkages with market. Swidden is performed in the land termed as 'wasteland' in the village revenue records and there is no rights issued to the households for cultivating these lands. However, the communities have *de facto* claims over these lands.

Insert Table 1.

FACTORS INFLUENCING DECISION-MAKING

An investigation into the institutional interlinkages in swiddening system requires the understanding of complex decision-making processes. Swiddeners in Orissa as in our study villages depend on array of farming practices. Therefore, the decision-making processes in organising cropping system are distributed across different land use practices. A household with different types of land balances its crops to meet family needs and minimises its risk at the same time. For example, a household without paddy land emphasises on other cereals in upland fields, or grows cash crops and exchanges (or purchases) cereal (with the money).

The ecological system is a precondition, which largely shapes the social system of decision-making in land use and cropping pattern. Given the uncertainties associated with weather conditions, and given set of landholding, labour availability and technology, farmers plan their cropping system to minimise the risk factors. Planting of two varieties of same crop (early and late) in the swidden field shows the finer knowledge of the swiddeners on crop choice. In all study villages this practice is observed. Usually productivity of late variety crop is high. However, it requires more water compared to the early variety. In less rainfall scenario, yield of late variety crop is less. But, early variety crop substantiates much of the deficit in production. This way, the household production is optimised against uncertainty of weather conditions. Similarly, the household prioritise the crops it values most. If food requirement is the priority, swiddeners prefer more of cereal variety crops. If cash requirement is high, oilseeds and pulses are preferred. Decisions on cropping pattern are also influenced by financial requirements and availability of market for the chosen crops. Customs and norms work as the regulating forces for property rights on land, participation of labour, and use of technology. We discuss some of these issues in the following sections.

INSTITUTIONS IN CHOICE OF LAND USE

In the land use and institutional nexus, property-rights issues are important among the swiddening communities of Orissa. We find variations in property-rights structure and labour sharing arrangement according to the type of land-use. In long fallow systems, users-rights are weak, as the same households do not cultivate same plots of land after completion of the shifting cycle. Arrangements in cultivation are made according to locational convenience of the plots. This is observed in Sakota and Gandli, where shifting cycles are relatively longer. Here, strong parametric norms are followed in labour sharing, where all the households in the village represent for clearing, cutting and harvesting of the crops. In other villages, where shifting cycles are shorter, user-rights on the land become stronger, as same households usually cultivate same plots of land. Here, parametric

norms of labour sharing are weak. In the case of plain land cultivation where the property-rights on land is well defined, the individual owner of land has the choice of hiring labour at socially defined wage rate. This is also true for other permanently cultivated or perennial fields.

Insert Table 2.

The institutions organised for swidden and other traditional forms of agriculture are such that the dependency on external sources for inputs, finance and other requirements is minimal. On the other hand, the new forms of agriculture like terracing and perennial crops depend highly on external sources for inputs and financial requirements. We observed that, terracing requires a high investment both in terms of levelling the land and putting the stone bonding. Similar amount of labour is also required for cutting and clearing activities of swidden fields. However, prevalence of different forms of institutions in different farming practices makes one institution more sustainable than the other do. For example, swiddening activities can be sustained with the locally available resources and reciprocal labour use without any external funding. But, terracing activities are developed in a different institutional form, where contour bunding activities require high amount of labour, who are paid in an institutionally defined wage rates. This makes the terrace cultivators more dependent on external sources of finance for carrying out their agricultural activities.

FORMS OF INTEGRATION WITH MARKET INSTITUTIONS

Empirically, the main forms of integration in the economy are reciprocity, redistribution, and exchange (Polanyi, 1977). Polanyi identifies that different patterns of integration assume different institutional support. Exchange, among these, requires the support of a system of price-making markets. In this context, we observed prominent involvement of the swiddeners as sellers, in labour

and product market. Land and credit market are also present in these villages, though households infrequently interact in these markets.

As we have observed, reciprocity is one of the dominant forms of labour sharing in swidden, whereas it is not so in other land-uses for agricultural purpose. Such institutional arrangements might have evolved to ensure participation of scarce labour in such economies. Though, redistribution is grossly absent in its comprehensive form, it is observed only in case of joint families where land is not divided among the family members. In such cases, joint production prevails specifically on swidden land and the harvest is redistributed among the various component-families of the joint structure.

Exchange as a form of integration largely exists in the case of product market. Broadly the characteristic of the product market structures can be put in five different categories. These are (i) price sensitive monopsony, (ii) non-responsive monopsony, (iii) leasing at a set rate, (iv) leasing at a bargained rate, (v) co-operative bargained rate.

A few crops like *kandual* (a pulse), niger, mustard (oilseeds) ragi (cereal) are sold to fix buyers (local traders) at a set rate gives rise to a monopsony type of market. In the case of 'Price Sensitive Monopsony' it was observed that the price of the agricultural product is low at the time of harvesting and gradually increases over months. But, in 'Non-responsive Monopsony' case, market prices are not influenced by the demand and supply situations outside the locality. In another instance, it was observed that a few agricultural products are leased out to the petty traders at a set rate before harvesting. Such exchange is considered as 'Leasing at a Set Rate' where the moneylender leases the harvest of the land or specific fruit-bearing tree at a predetermined rate independent of quantity and value of the output. Sometimes, this market is interlocked with the credit market. The case of 'Leasing at a Bargained Rate' arises due to shortage of labour in the family to perform harvesting activities or

due to the hectic processes involved in transporting and marketing. 'Co-operative Bargained Rate' prevails in two study villages where villagers formed co-operatives through the micro-credit societies.

Insert Table 3.

Among the existing forms, 'exchange at bargained rate' can alone assume comprehensive institution of market integration. However, prevalence of market distresses in various forms shows the economy is largely governed by other institutions. We also identified that not only the integration in product market is distorted; the dependency on market for day-to-day consumption need, is also low. While observing the consumption dependency on market (table 4), the degree of monetisation[b] for consumption needs is found to be low. To make an observation, the economy among the swidden communities has not entered into the fold of commodification and hence, the resultant change in the division of labour and specialisation. The economy is substantive, where production is based on needs, constrained by ecological feasibility and has tendency towards non-monetised economy.

Insert Table 4.

TECHNOLOGY AS AN INSTITUTION

Technology serves the dynamics in the production system associated with complex institutional structures. Technology in swidden agrosystem describes the particular land-use and implements that are organised in time-space coordinate. Uses of implements are limited and simple in this farming system. Tools and implements change along with the advancement of agricultural land-use. However, not all kind of technological changes are linked to changes in particular agricultural system Boserup (1965). A swiddener may have the option to use stone axe, crude iron axe made by the village blacksmith or a

factory made steel axe. This implies that there may be narrow range of choices for kinds of tools for a particular agricultural system, but the possibility of wide range of choices as between more or less efficient makes of tool prevail. This distinction between the 'kind' and the 'make' of tool leads us to consider four basic types of agricultural changes.

1. No change in the 'make' and 'kind' of tools.
2. Change from one 'kind' of tool to another, but continuation of primitive 'makes' of tools.
3. Change to better 'make' without changing 'kind' of tools.
4. Change not only from one 'kind' of tool to another, but also gradual change from homemade to artisans or factory made tools.

Such analyses of tools entail the mobility pattern and its wider implication in the social dynamics. In Sakota and Gandli, it was observed that both 'kind' as well as 'make' of tools were relatively primitive. The economy here is predominantly based on swidden and forests. The 'make of tools' are also confined to the local blacksmith. In Brahmarjodi, 'make of tools' are advanced and traditional tools are now replaced by the one made in factory. The role of local blacksmith is now confined to repairing of the tools. In Kalinga and Badamasingh, it was observed that these make of tools and kind of tools are advanced. We observed, villages have organised their farming practices with the tools of different stages of development and identified a strong association of it with communities practicing swidden. Even, within one village simultaneous existence of various forms of technology is observed in different farming practices.

SUMMING UP

Swiddeners in the study region have multiple land-use practices that depends on different institutional structures. We discussed about the institutions that shape the property-rights and labour management in land-use decision-making processes. Besides, market integration by the swidden

communities and adoption of technology in different land use systems were discussed as major institutional forms. We found the prevalence and changes in these institutions in multiple ways in time-space coordinate. Property right structure and labour sharing arrangement change over different forms of land use. Changes are also observed in customs, norms and labour relations. The swiddeners participate in the product market. But only in a few cases they could exchange at a bargained rate, whereas, in most of the cases markets are distressed. Changes in technology were observed both in terms of the kind of tools used and the specialisation in making of the tools. With these set of observations one can at least say that swidden cannot be generalised as a uniform practice and hence cannot generally be attributed as institutionally stagnated. Presence of ill-defined property rights, flexible strategic norms due to weakening of parametric norms, distorted market and multi-directional technological change, varied land and topographic conditions, differential financial incentives, labour availability and labour relations show the plurality involved in swidden as a production system. Grossly one can say that swidden system has adapted to changes and hence survived for so long. However, it would be difficult to locate a single vector of the mode of production due to varying institutional scenario.

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Table 1. Village-wise Indicators

Village	Brhamarjodi	Sakota	Gandli	Badamasingh	Kalinga
1. Community	Paroja	*Dongria Kondh*	*Dongria Kondh*	*Saura*	*Saura*
2. Total Households	29	21	26	32	17
3. Population	136	84	116	148	77
4. Total Geographical Area (in acres)	420.84	560.07	866.49	358.275	234.41
5. Plain Land (in acres)	58.5	66.92	15.06	11.4425	20.155
6. Wasteland (in acres)	333.75	470.07	825.01	268.2425	107
7. 5 as percent of 4	13.90	11.95	1.74	3.19	8.60
8. 6 as percent of 4	79.31	83.93	95.21	74.87	45.65
9. Shifting cycle (in years)	8	10	7	6	6
10. Land Use Intensity 'R'*	25.00	20.00	28.57	33.33	33.33

Note: *'R' value is the land use intensity as described by Ruthenberg i.e**. R = (t′/t″) x 100,** where, **t′** is the final year of cropping; and **t″** is the final year of fallow of the crop-fallow cycle (Ruthenberg, 1976).

Source: Based on the Land Records of each Village from the Revenue Department and primary survey

Table 2. Property Rights and Labour use in different Types of Land Use

TYPE OF LAND USE		PROPERTY RIGHT STRUCTURE	LABOUR USE	PRESENT IN VILLAGES
Old Growth Forest		Open access Use and Extract up to the Need	Family Labour	All study Villages
Long Fallow Swiddening	**During Cultivation**	Weak Users Right	Sharing of Labour for Cultivation (Strong Parametric Norms)	Sakota, Gandli
	During Fallow	Open access Use to the Need Extraction is Restricted	Not Applicable	All study Villages
Short Fallow Swiddening	**During Cultivation**	Strong Users Right	Sharing of Labour for Cultivation (Weak Parametric Norms)	Brahmarjodi, Badamasingh, Kalinga
	During Fallow	Open access Use up to the Need Extraction is Restricted	Not Applicable	All the Villages
Perennial		Strong Users Right In a few Cases Ownership Right	Conditional Mutual Sharing Exchange at Socially Acceptable Value and as per Requirement	Gandli
Sedentary		Strong Users Right In Cases Ownership Right	Conditional Mutual Sharing Exchange at Socially acceptable Value and as per Requirement	All study Villages

Note: This table is based on the generalised pattern observed in the study villages.

Table 3. Typology of Markets existing in the Study Villages

Typology of Markets	Present in Village	Products
Price Sensitive Monopsony	All	Agricultural products, specifically oil seed and pulses
	Sakota	Firewood
	Gandli	Pineapple, plantains
Non-responsive Monopsony	Sakota and Gandli	Jackfruit, Pineapple, Plantain and Non-Timber Forest produces
Leasing at a Set Rate	Sakota	Turmeric, Ginger
	Gandli	Turmeric, Ginger, Jackfruit, Pineapple
	Kalinga	Tamarind
Leasing at a Bargained Rate	Sakota	Turmeric, Ginger
	Gandli	Turmeric, Ginger, Jackfruit, Pineapple
	Kalinga	Tamarind
Co-operative Bargained Rate	Kalinga	Broom, Rope
	Badamasingh	Broom, Rope, Turmeric, Tamarind

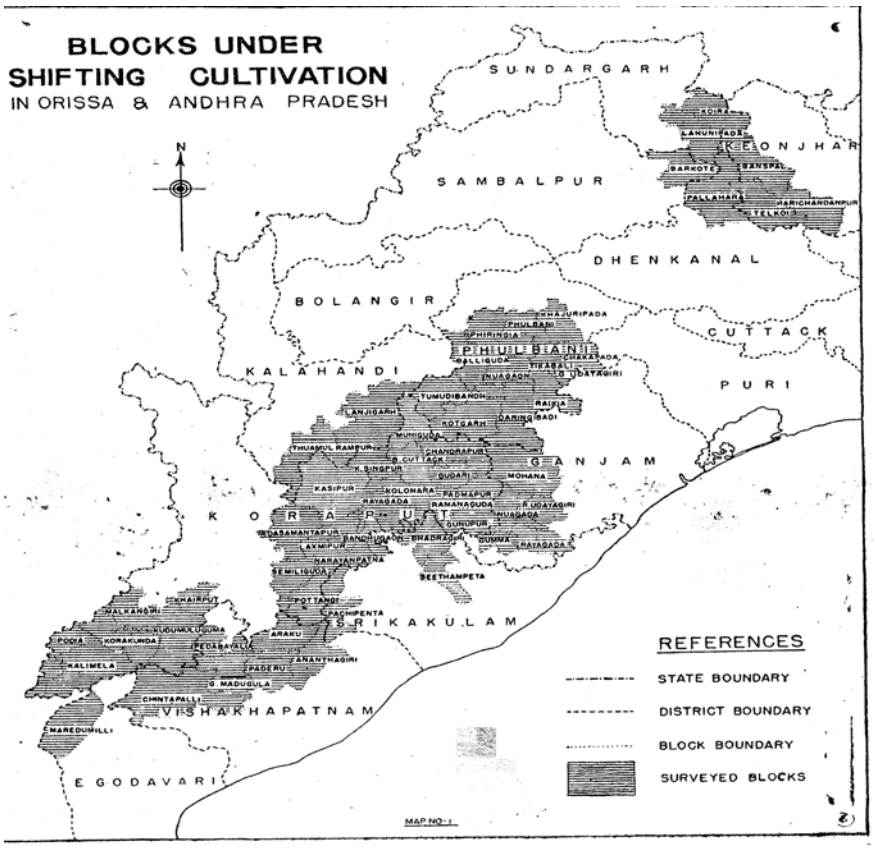
Note: This table is based on the generalised pattern observed in the study villages.

Table 4. Consumption Characteristics of the Villages *(in Rupees)*

Villages	***Consumption Expenditure***	***Monetised Expenditure***	***Degree of Monetisation (in percent)***
Brhamarjodi	469791.5	69084.5	14.7
Per Household	26734.8	4063.8	
Gandli	311071.25	81895	26.3
Per Household	11964.3	3149.8	
Badamasingh	431521.5	128955	29.88
Per Household	13485	4029.8	
Sakota	269278.75	70175	26.06
Per Household	12822.8	3341.7	
Kalinga	209418.75	60215	28.75
Per Household	12318.8	3542.1	

Source: Computed from the primary household survey data

Map 1: Extent of Swidden in Orissa



Source: Bose (1991)

NOTES

[a]In the federal system of India, provinces (States) are further divided into districts where each district is constituted of several blocks.

[b] Degree of monetisation is measured as the proportion of dependency on market out of the total consumption of the household.