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FROM HAND TOOLS TO MOBILE PHONES: The Lundayeh and Technology in Central Highland Borneo*

Daniel Chew and Jayl Langub

INTRODUCTION

This article sets out to explore how and why the Lun Dayeh¹ in sarawak and East Kalimantan, inhabiting a contiguous highland area in the heart of central northeast Borneo adapt to technology. Theories of modernisation, notably by Rostow (1960), depict a society moving through different levels of under-development and development from the agrarian stage to the modern, technological and mass consumption age. Our case study of the Lundayeh may at first sight appear to fit into such an explanatory framework although we will set out to show that this lineal depiction of the progressive stages of development does not necessarily apply. This article is a study of a community which handles the paradoxes of development, struggling to retain its unique *lati ba* (irrigated wet rice planting) form of agriculture and coming to terms with modernity and technology in the form of motorised transport and mobile phones.

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We propose to use a socio-cultural explanatory framework to analyse the resilience of *lati ba* in the wake of pressure to adopt modern methods of agriculture. The selective rejection and adaptation of technology by the Lundayeh may also have a rational economic and environmental basis in the case of wet rice planting.

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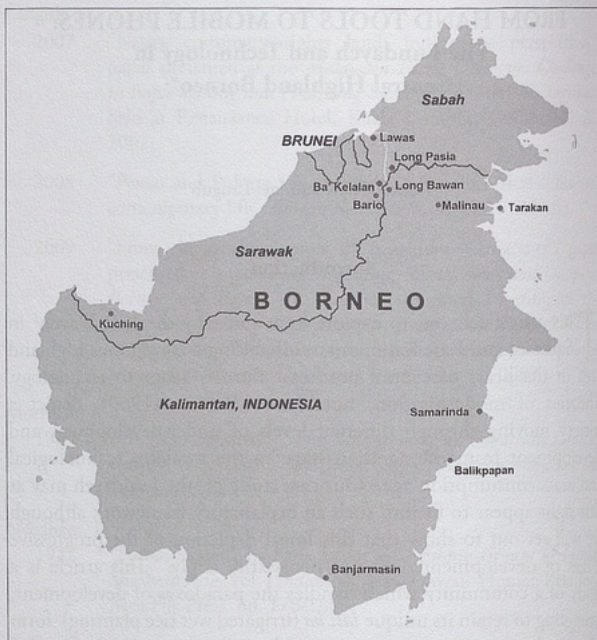


Fig. 1: Map of Borneo.

(Source: Google Maps)

Geographical and Human Setting

The study area is located in the mountains and valleys of northern Borneo, where the borders of Sarawak, Kalimantan and Sabah meet. It is an isolated highland region averaging 1000 metres in height with no navigable river systems linking the interior to the coast. Described as resilient and innovative (Padoch, 1981) and adaptive (Langub, 2003) the Lundayeh have established a unique irrigated wet rice cultivation system that is suited to and takes advantage of the topography of

mountain valleys for regular water supply and nutrients (Padoch, 1981). *Lati ba* is a sustainable agricultural system which supports the social structure and organisation of the Lundayeh. In farm work, families help each other by rotation (Langub, 1984) with both men and women sharing the work of planting, maintaining the rice bunds and fields, harvesting and milling the rice grains (Langub, 1984; Crain and Pearson-Rounds, 1996).

As the Lundayeh are basically the same people sharing a similar ethnicity and a similar culture, the political border dividing the Kelalan valley in Lawas district, Sarawak and the Krayan Induk district in the Bawan valley in East Kalimantan has not imposed constraints on the close trans-border social, cultural and economic relationships (Ardhana, Langub and Chew, 2004). In fact, the Lundayeh acknowledge their common origins and shared experiences as one people despite residing in different places and countries (Eghenter and Langub, 2008). Both communities on either side of the political border face similar development issues in coping with physical isolation and the impact of technological change.

Lati Ba

Lati ba has been documented by observers in the early 19th century (Pollard, 1933) as terraced wet rice fields depending on an ingenious network of terraces, bunds, and bamboo conduits fed with regular water supply from mountain streams. Being in an isolated mountainous region with little contact with lowland communities the Lundayeh used bamboo and sago palm tools for field work (Padoch, 1981; Langub, 2003). Later, from observing coastal farmers the Lundayeh learned to use buffaloes to trample on and fertilise the soil. *Lati ba* has remained largely intact over the years barring incremental changes and has not been transformed by agrotech and “Green Revolution” applications. High yielding rice species and double cropping with the help of chemical fertilisers were introduced to the highland farmers by government officials in neighbouring Long Semadoh in the early 1980s.

The farmers initially disagreed with the experimental trials as buffaloes were not used to work on and fertilise the soil, with insufficient time for soil re-juvenation. Nevertheless some farmers agreed to the experiments. The first season was successful. The subsequent seasons were failures even with the application of chemical fertilisers. The rice did not grow well and was attacked by pests. The short interval between one season and the next did not give the soil enough time to re-juvenate and allow buffaloes to work on the soil by trampling over it and releasing their faeces to fertilise the soil. The farmers were proven correct and the trials were abandoned. Moreover, the high costs of buying and transporting the chemical fertilisers was a disincentive. Today, *lati ba* is still practised although the use of pesticides and weedicides has surreptitiously crept in among some farmers despite the farmers' claims of sticking to traditional techniques and public awareness work by NGOs (non-governmental organisations).

We would like to proffer three explanations why *lati ba* is still preferred and these are kinship ties, economic value and environmental awareness. *Lati ba*, which does not depend on mechanization and chemical inputs relies on an adequate labour force during planting and harvesting. Kinship ties, which bind together the two communities in the Kelalan and Bawan valleys, supply the much needed labour for the rice fields. The Kelalan valley which experiences out-migration and is short of labour during the pre-planting, planting and harvesting seasons, depends on the Bawan valley, which has surplus labour. It may not be kin who would help out in the farms. Young men, including migrants from other parts of Indonesia who have moved to the Krayan Induk, are willing to work for wages in the Sarawak farms. Kin who help out are paid wages and so have a good reason to work in the Ba' Kelalan rice fields.

The second reason why the farmers prefer to maintain their traditional time tested methods of planting is the high economic value placed on the highland (*adan*) rice which is organic. The local highland rice varieties, marketed as "Bario rice" have a unique texture