

THE CHALLENGES OF THE AGRARIAN TRANSITION  
IN SOUTHEAST ASIA

# ChATSEA

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**Agrarian Transitions in Sarawak:  
Intensification and Expansion Reconsidered**

by

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# AGRARIAN TRANSITIONS IN SARAWAK: INTENSIFICATION AND EXPANSION RECONSIDERED

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## Abstract

Sarawak, in Malaysian Borneo, has experienced the rapid conversion of forested land to large-scale plantation agriculture in the past two decades, suggesting that capitalist agricultural expansion has been the driving force in the agrarian transition taking place. This paper draws on the seminal work of Ester Boserup to re-examine the notions of agricultural intensification and expansion as they apply to agrarian change in a sparsely populated frontier territory such as Sarawak. By adopting a more detailed historical and geographical perspective, it is possible to discern three major agrarian transitions in Sarawak – the transition to shifting cultivation, the transition to smallholder cash crops, and the transition to large-scale plantation agriculture. These transitions are partly overlapping in time and space, resulting in a layering, not only of different land-use systems, but also of claims to tenure and territory, giving rise to a more highly contested and differentiated landscape than implied in a simple view of agricultural expansion. The paper concludes that expansionist agrarian policies that fail to acknowledge this complex historical and geographical layering invariably encounter the kinds of conflict, resistance, and losses experienced during the third agrarian transition in Sarawak.

## Keywords

Boserup, foraging, shifting cultivation, smallholder cash crops, plantations, land tenure, Dayaks, Chinese

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“We want population to turn our wasteland into shape and create bustle and industry ... [We want] to see the jungle falling left and right and people settled over what are now lonely wastes and turning them into cultivated lands.” (Charles Brooke, Second Rajah of Sarawak, 1867)<sup>1</sup>

“My vision for the next twenty years is to see modern agricultural development along the major trunk road with rows of plantations and villages well organised in centrally managed estates with a stake of their own in them.” (Abdul Taib Mahmud, Chief Minister of Sarawak, 1984)<sup>2</sup>

## Introduction

Among the central processes said to be involved in the agrarian transition in Southeast Asia are the apparently contrasting phenomena of agricultural intensification and territorial expansion (De Koninck 2005). Agricultural intensification is usually seen as increased productivity of existing croplands through use of high-yielding varieties of foodgrains, greater application of inputs (fertilisers, pesticides, and irrigation), and the employment of more labour (particularly through double cropping). This is typically associated with increased links with markets and growing inequality in access to land, employment, and income (Gibbons et al. 1980; Hart et al. 1989). The so-called green revolution in lowland rice production in Southeast Asia, typified by the massive Muda Irrigation Scheme in Peninsular Malaysia, is the paradigmatic case of such agricultural intensification (Scott 1985; Johnson 2000). Agricultural expansion, by contrast, is seen as involving the movement of populations into new territory, that is, land pioneering on the forest margin, pushing back the forests and converting them to permanent agricultural land (Pel-

zer 1948; De Koninck and McTaggart 1987; Angelsen 2007). Such land settlement is typically (though not necessarily) state-sponsored and centrally managed, and has often involved extensive planting of commercial tree crops such as rubber and oil palm. The Federal Land Development Authority (FELDA) schemes in Peninsular Malaysia are often cited as the prime example of this form of agricultural development (Sutton 1989).

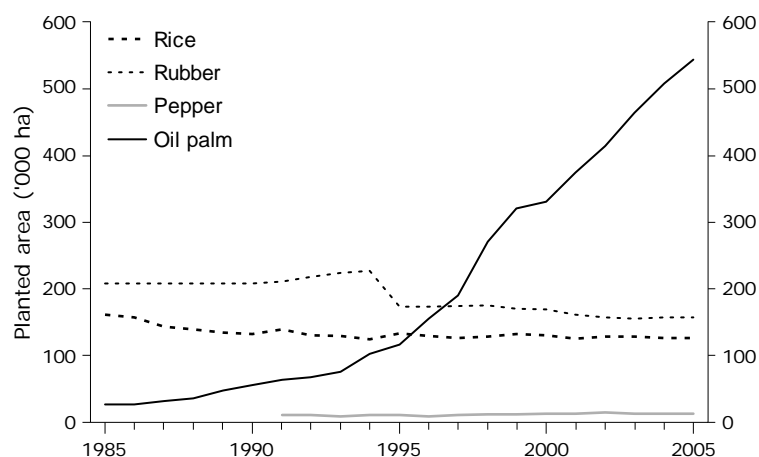
The apparent absence of any green revolution in rice cultivation in Sarawak and the speed and extent of the oil palm boom that has swept across the rural landscape lend credence to the notion that expansion of the agricultural frontier is the key process in Sarawak’s agrarian transition, converting forestland to modern plantation agriculture on an unprecedented scale. The area under oil palm has increased twenty-five fold over the past two and a half decades, from 23,000 ha in 1980, mostly in government schemes, to over 590,000 ha in 2006, mostly in private estates, closing in on an official target of one million hectares by 2010 (Fig. 1). Oil palm now accounts for about 57 per cent of the area under agricultural crops (Table 1). A concomitant of this perception that large-scale agricultural expansion is the driving force in Sarawak is the belief that “idle” or “waste” lands are being drawn into the development process, thus creating employment and income, reducing rural poverty, and bringing economically backward people into the “mainstream of modernisation”.

In this paper, I draw on the seminal work of Boserup (1965) to argue that the processes of agricultural intensification and expansion are, at least in the Sarawak context, much less distinct than might at first appear, with important implications for both an understanding of the agrarian transition and the formulation of agrarian policy. Rather than viewing agrarian change in Sarawak as a monotonically expanding (capitalist) plantation frontier, I argue for a closer, more fine-grained historical and geographical perspective that reveals successive waves of expansion and contraction, within which are found pockets of intensification and “disintensification”, involving a diverse array of actors in-

<sup>1</sup> Diary entry for 21 February 1867, “Extract from the Diary of Charles Brooke”, cited in Pringle (1970: 304n).

<sup>2</sup> Quoted in *Sarawak Tribune*, 9 September 1984.

**Figure 1.** Sarawak. Trends in planted area of major crops, 1985-2005



Source : Department of Agriculture, Sarawak (Robert A. Cramb & Marc Girard)

cluding independent, village-based, and “managed” smallholders, various government departments and agencies, donor organisations, and private agribusiness and timber firms. Moreover, this complex process of land-use change has been interwoven with successive and often competing claims to land and forest resources, resulting in an “institutional layering” of customary, statutory, and de facto property rights, ensuring that the agrarian transition in Sarawak is highly problematic and contested (Cramb and Wills 1990; Ngidang

**Table 1.** Sarawak: Agricultural land use, 2005

Crop	Area (ha)	Per cent
Rice	127,220	13.2
Rubber	156,839	16.3
Pepper	12,673	1.3
Sago	51,763	5.4
Coconut	24,593	2.6
Oil palm	54,3399	56.6
Cocoa	4,898	0.5
Fruit trees	34,210	3.6
Vegetables	3,112	0.3
Other	2,193	0.2
<b>Total</b>	<b>960,900</b>	<b>100</b>

Source: Department of Agriculture, Sarawak

1997; Majid-Cooke 2006; Cramb 2007).<sup>3</sup>

From this longer-term, spatial perspective it is possible, in fact, to discern three historic agrarian transitions in Sarawak – the transition to shifting cultivation, the transition to smallholder cash crops, and the transition to large-scale plantation agriculture – resulting in a series of partially overlapping and mutually determining (or “imbricated”) socio-ecological landscapes.<sup>4</sup> That is, not only has each agrarian transition led to the transformation of the preceding landscape (including the substratum of initial ecological conditions in Sarawak), but the characteristics of that landscape have strongly influenced the contours of succeeding landscapes.<sup>5</sup> These mutual influences are repeatedly illustrated in the three main sections of the paper, following an elaboration and extension of Boserup’s contribution to understanding these processes.

## Boserup in Borneo

The classical economists introduced the theoretical distinction between the intensive and extensive margins of cultivation that underlies the concepts of agricultural intensification and expansion (Barlowe 1986; Van Kooten 1993; Blaug 1997). They argued, first, that “as the price

<sup>3</sup> As background, it can be noted that Sarawak was a province of the Brunei Sultanate before 1841, the private colony of the Brooke rajahs from 1841 to 1941, occupied by the Japanese military from 1941 to 1945, a British crown colony from 1946 to 1963, and became a state in the Federation of Malaysia in 1963, though retaining control over land and forest resources.

<sup>4</sup> I am using “imbricated” here following Fernandes (2006), who uses it to describe the overlapping and mutually structuring nature of state and non-state legal institutions, as illustrated by the traditional landholding institutions (*comunidades*) of Goa. As well as institutional layering, however, I am using the term to include the layering of associated land-use systems.

<sup>5</sup> Much as Hoskins (1955) depicted the deep historical layering that gave rise to the English landscape.

of agricultural output rises, production will expand onto marginal land," resulting in "rent accruing at the extensive margin" (Van Kooten 1993: 22). By "marginal land" Ricardo meant land of lower inherent quality or fertility, while von Thunen emphasised increasing distance from a central market as the primary cause of the land's marginality (Barlowe 1986; Angelsen 2007). For both writers, land beyond the extensive margin was "waste" or "wilderness". At the same time, Ricardo (and also Marx) argued that rising prices induced the use of more labour and material inputs on *existing* croplands, thus increasing production and rent at the *intensive* margin (Barlowe 1986; Van Kooten 1993). As Black (1929) long ago pointed out, the two responses, though distinct, were seen as part and parcel of the same economic process of adjusting land use to market conditions. That is, a rise in the price of agricultural output due to increasing demand relative to supply would be expected to result simultaneously in both intensification and expansion of agricultural land use, whether at the farm or regional scale.

This neat distinction between the intensive and extensive margins was challenged by Ester Boserup (1965) in her influential essay on the economics of agrarian change under population pressure:

Why this approach is unsuitable for a general theory of agricultural development is most easily understood if it is remembered that many types of primitive agriculture make no use of permanent fields, but shift cultivation from plot to plot ... [It follows] ... that in primitive types of agriculture there is no sharp distinction between cultivated and uncultivated land, and that it is impossible, likewise, to distinguish clearly between the creation of new fields and the change of methods in existing fields (Boserup 1965: 12–3).

Consequently, in Boserup's analysis of agrarian change, "the very distinction between fields

and uncultivated land is discarded and instead emphasis is placed on the frequency with which the land is cropped" (Boserup 1965: 13). Cropping frequency thus becomes the principal indicator of land-use intensity. This gives rise to her well-known sequence of land-use intensification in response to increasing population pressure: from forest-fallow to bush-fallow to short-fallow to annual cropping to multi-cropping, with changes in the technology of cultivation along the way. Of course, to regard all these changes as "intensification" assumes the entire landscape has already been brought into cultivation (however extensive) at some point. In later contributions, Boserup (1976, 1981) includes "gathering" in the sequence of food production systems, involving no period of cultivation at all. Hence, so long as a forest landscape is occupied by bands of hunter-gatherers (as Borneo has been for millennia), the process of land-use change with population growth can be viewed as one of waves of intensification rather than expansion.<sup>6</sup>

Boserup is often criticised for positing an oversimplified, unilinear sequence of land-use change. However, she emphasises that cultivation systems of differing intensity may co-exist within a given territory, perhaps for centuries (Boserup 1965: 62–3). Other writers have invoked von Thunen to explain the "rings" of land use around a village centre in a developing economy where transportation is largely dependent on human effort (Chisholm 1979; Ruthenberg 1980: 75–9). Thus permanent agricultural plots may occur close to the centre of settlement while plots on the outer margins are still within a long-fallow system and/or used for foraging. Boserup (1965: 62–3) also explicitly allows for the "regression in agricultural techniques" that occurs during periods of declining population

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<sup>6</sup> In her 1965 essay Boserup leaves aside the question of the causes of population pressure, focusing only on the impacts. In a later paper she allows for recursiveness between food production technology and population growth but argues that "demographic trends in primitive populations are influenced not only by food technology but also by health, transport, and war technologies, and by the system of organisation, which could be called 'administrative technology'" (Boserup 1976: 22).

pressure. Thus intensive farmers who are relocated to regions of lower population density typically adopt more extensive food production systems (e.g., Javanese transmigrants in upland areas of South Kalimantan (Masyhuri and Cramb 1995)). Despite Boserup's use of pejorative terms like "primitive" and "regression", the thrust of her argument is that extensive systems of land use such as forest-fallow farming have an economic and ecological rationale and are not an indication of cultural backwardness or irrational resistance to change.

Boserup's (1965, 1976) theory explicitly minimises the significance of environmental constraints to intensification, a point debated at length by later writers (Brookfield 1972, 1984; Chin 1977; Tiffen and Mortimore 1994). Pingali and Binswanger (1987) have extended her analysis by taking into account the characteristics of different environments along a toposequence from uplands to lowlands. In addition, they allow for not only the growth of population but also migration between zones. Recognising the variability in what Brookfield (1972) terms environmental "elasticity" means that the full intensification sequence proposed by Boserup, with progressively longer cropping periods and shorter fallow periods, is not feasible in much of the uplands of Borneo without causing serious land degradation, increasing poverty, and outmigration (Chin 1977; Cramb 2005).

Raintree and Warner (1986) have also elaborated Boserup's theory of intensification, taking account of such environmental constraints. They outline a variety of "agroforestry" pathways that open up at different stages, such as enriched fallows in the forest-and bush-fallow stages and alley cropping in the short-fallow and annual cropping stages. In particular, they highlight that tree crops provide an alternative intensification pathway, even at relatively low population densities. Thus with population growth and the improvement of rural infrastructure, shifting cultivators in Borneo have frequently been motivated to incorporate tree crops such as rubber,

coffee, and cocoa in their farming systems rather than push shifting cultivation beyond what Blaikie and Brookfield (1987) term the "ecological margin". This necessarily means moving beyond largely subsistence production to at least partial engagement with local and global markets (Cramb 1988a; Dove 1993; Tiffen and Mortimore 1994).<sup>7</sup>

According to Barlow and Jayasuriya (1986), the development of smallholder tree crop cultivation has proceeded through three historical phases. The first is "emergence from subsistence" when subsistence production is supplemented by a plantation crop. Simple, labour-intensive, tree-crop technologies are rapidly adopted by smallholders, typically through diffusion from estates. This is followed by the stage of "agricultural transformation" when smallholder farming becomes largely commercialised and new high-yielding tree-crop technologies are progressively adopted. Finally, the phase of "extended structural change" is characterised by the increasing significance of the industry and service sectors in the economy, rendering smallholder tree crops less profitable due to the rising cost of land and labour. Tomich et al. (1995) identify a significant demographic turning point in this period of structural change, namely, when the absolute size of the agricultural workforce peaks and begins to fall. Barlow (1997) shows that the development of smallholder rubber in Malaysia has experienced all three phases, whereas in countries such as Indonesia rubber is in the (late) agricultural transformation stage.

Thus the incorporation of tree crops in shifting cultivation systems in Borneo, while seen as an "expansion" of the area under the crop in question, is in Boserup's terms an "intensification" of the land-use system within a given territory. The subsequent adoption of higher-yielding tree-crop technologies constitutes a further round of intensification. However, the phase of "extended structural change", involv-

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<sup>7</sup> Boserup (1975) also subsequently expanded her subsistence framework to allow for differences in such factors as rural infrastructure, opportunities to produce a surplus for trade, and labour migration.

ing the loss of labour from rural pursuits, if not from rural areas altogether, creates pressures for the “disintensification” of the entire land-use system, with both food and tree crop production scaled back. This relates to the so-called problem of “idle land” that emerged as a policy issue in Peninsular Malaysia in the 1980s and 1990s (Vincent and Mohamed Ali 1997; Angelsen 2007), until partly offset by the influx of impoverished Indonesian plantation labour.

A major strand in Boserup’s (1965) theory of agrarian change that has been less discussed is her emphasis on the link between land-use systems and land tenure. She argues that in forest-fallow systems households possess a general cultivation right to village lands, which translates into a temporary use right to any particular field the household clears. This use right reverts to the village or lineage when the field is fallowed. As land-use intensity increases and the fallow period is shortened, the specific use right becomes more valuable and permanent, while the general access right diminishes in importance. Binswanger and McIntire (1987) further theorise that the introduction of commercial crops, especially tree crops, accelerates the emergence of specific rights. As these become transferable within and beyond the village, land acquires a market value, and also a collateral value, inducing expansion in the supply of credit. These processes lead to inequality in landholdings and the emergence of landlessness and tenancy. Such outcomes are widely observable in the more open, economically differentiated villages of lowland Southeast Asia but can also occur in upland regions, particularly where migration and resettlement have undermined customary institutions of community control (Li 2002; Cramb and Culasero 2003).

Where community governance has been overlain or superseded by state control of land tenure, outcomes frequently differ from Boserup’s evolutionary model. Elson (1997) shows how indigenous and colonial states often intervened to maintain communal lands in accessible, densely populated villages in order to control the allocation of valuable cultivation rights,

while in less densely populated frontier settlements, removed from state control, individual household rights generally prevailed. In the post-colonial era, well-developed individual rights of upland farmers have been overridden in communist states such as Vietnam and Laos, while common property rights to village forest reserves have been undermined by land laws and policies in parts of Indonesia and Malaysia. Such interventions in customary tenure systems illustrate the use by modern states of territorial strategies to establish control over natural resources and the people who use them (Vandergest and Peluso 1995; Peluso and Vandergest 2001). This process of internal territorialisation is about “excluding or including people within particular geographic boundaries, and about controlling what people do and their access to natural resources within those boundaries” (Vandergest and Peluso 1995: 388).

Thus the concept of agricultural expansion at the extensive margin is not merely an economic concept but fundamentally a political one (Blaikie and Brookfield 1987; De Koninck 2000; Angelsen 2007).<sup>8</sup> If lands beyond the margin of permanent, commercial agriculture are viewed as “idle lands” or (in Rajah Charles Brooke’s phrase) “lonely wastes”, they are simultaneously rendered “state spaces”, available to be appropriated by state-sanctioned actors for purportedly more productive or beneficial uses, regardless of prior occupation and usage (Peluso 1995; De Koninck 1996; Scott 1998; Majid-Cooke 2006). Questions of who occupies the “wastelands” and what is the legitimacy of their claims to tenure are thus obscured. Even Boserup, in setting up her critique of the extensive margin, blurs the underlying politics: “The classical economists were writing at a time when the *almost empty lands* of the Western Hemisphere were gradually taken under cultivation by European settlers, and it was therefore natural that they should

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<sup>8</sup> Note De Koninck’s earlier contributions in French on this theme, e.g., “Enjeux et stratégies spatiales de l’État en Malaysia.” *Hérodote* 22 (1981): 84–115; “La paysannerie comme fer de lance territorial de l’État: le cas de la Malaysia,” *Cahiers des Sciences Humaines* 22, 3–4 (1986): 355–70.

stress the importance of the *reserves of virgin land ...*" (1965: 12; emphasis added). A similar "Ricardian slip" is evident in a recent news article justifying the controversial Murum Dam project in the interior of Sarawak, where the lands to be flooded are described as "virtually empty", thus rendering insignificant the presence of Penan settlements in that watershed. This obscuring of the crucial links between expansion, occupation, intensification, and exclusion is evident in the process of agrarian transition underway in Sarawak, as elsewhere in Borneo (Cleary and Eaton 1992; Padoch and Peluso 2003).

## The Transition to Shifting Cultivation

### Sago, rice and people

The first agrarian transition in Sarawak was from a foraging-cum-horticultural economy centred on the sago palm to one based on the shifting cultivation of rice. The earliest Austronesian occupants of Sarawak's rainforests were most likely small bands of hunter-gatherers who moved through extensive but defined territories utilising and managing a wide variety of naturally occurring plant and animal resources (King 1993).<sup>9</sup> Hill sago (*Eugeissona utilis* and other species) was harvested on a cyclical basis as a major source of subsistence, necessitating frequent movement

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<sup>9</sup> Evidence of pre-Austronesian habitation in Borneo goes back 40,000 years, though these original inhabitants probably remained in coastal environments and did not penetrate far into the interior rainforest. The Austronesians came from southern China via Taiwan and the Philippines, probably arriving in northern Borneo by about 2,500 BC (Bellwood 1992; 2007; Bellwood et al. 1995). Though they brought with them rice, millet, and other crops, it seems likely that rice cultivation was initially confined to scattered lowland environments, while those who moved into the interior developed a largely hunter-gatherer adaptation. Hence Hunt and Rushworth's (2005) evidence for rice cultivation in the Niah catchment in the first millennium BC or earlier is not necessarily inconsistent with the suggestion of Doherty et al. (2000) that rice farming was not widespread in Sarawak until medieval times.

between groves of sago to allow regeneration (Brosius 1986; Sellato 1994). Consequently, though food supplies were abundant, population densities were necessarily low. At some point swamp sago (*Metroxylon sagu*), originating in the Moluccas or New Guinea, was introduced to the lowlands of Borneo, permitting more intensive cultivation (Morris 1991; Ellen 2004). Barton and Denham (in press) argue that pre-rice agricultural systems in Borneo were largely based on "vegeculture" – the cultivation or husbanding of long-lived plants by vegetative propagation – including swamp and hill sago and also root crops such as taro (*Colocasia esculenta*). This is consistent with King's view that, in the first millennium AD, "horticulture was still the dominant form of agriculture in Borneo" and that "the widespread adoption of shifting cultivation of rice ... had to await the more general use and manufacture of iron tools in Borneo ... [which] made rainforest clearance less arduous" (1993: 99, 102). The development of iron-working and the widespread use of iron tools seem to have begun later in the millennium, first in coastal sites such as Santubong at the mouth of the Sarawak River, and spreading slowly into the interior (Cleary and Eaton 1992: 28–9; King 1993: 99–102).

Certainly by the middle of the second millennium AD, longhouse-dwelling Dayak tribes practising shifting cultivation of hill rice were on the move in Borneo. As populations took up shifting cultivation they found a need to expand into surrounding forest lands to support a long forest-fallow cycle and maintain access to abundant forest resources.<sup>10</sup> Though this necessarily involved "pioneering", in the sense of felling old-growth forest, in general it did not involve abandoning lands already farmed (Padoch

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<sup>10</sup> McKinley (1978) and Helliwell (1992) argue that Bornean hill farmers such as the Iban may have adopted hill rice cultivation rather than invest in lowland agriculture as much for political reasons as demographic, moving into the uplands to escape domination by coastal elites. McKinley points out that Malay outposts of the Melaka sultanate were being established at river mouths around Borneo at the same time as the Iban migrations out of the Kapuas began.

1982a, 1982b).<sup>11</sup> Rather, sub-groups would hive off and move away into new territory, leaving the original homelands still occupied.<sup>12</sup> The Bidayuh and Selakau of western Borneo expanded gradually north-eastwards across the mountains into south-west Sarawak, and now make up 5 per cent of Sarawak's population (Geddes 1954a; Schneider 1978). The more numerous and aggressive Iban (now 33 per cent of the population) spread from the Kapuas basin in a predominantly north-easterly direction into the hilly midlands of Sarawak, settling first in the Lupar and Saribas basins from about the sixteenth century (Sandin 1956, 1967; Pringle 1970). As Heppell et al. write: "On these migrations, the Iban displaced earlier settlers who were usually hunter/gatherers. The Iban occupied the forest through force of arms. Any groups occupying territory in their way were either annihilated or absorbed into Iban society as slaves" (2005: 18).

Some hunter-gatherer groups did resist the Iban advance for an extended period, particularly in the Krian (Sandin 1967; Pringle 1970). Nevertheless, by the early nineteenth century (before the advent of the Brookes) the north-

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<sup>11</sup> Conklin (1957) introduced the distinction between "pioneer" and "established" shifting cultivation, the former involving the expansion of shifting cultivation through the felling of primary forest and the latter the practice of rotational shifting cultivation in secondary forest. However, this distinction is also blurred in the Sarawak context; historically, the pioneer phase typically overlapped with the established phase from the outset, and the two coexisted for long periods, perhaps centuries, such that both primary and secondary forest were cleared until only islands (*pulau*) of primary forest remained as reserves and a full forest-fallow cycle was established throughout a given territory (Freeman 1970; Cramb 2007).

<sup>12</sup> A possible exception is the homeland of the Kenyah at the headwaters of the Iwan tributary of the Kayan River in what is now East Kalimantan. This is said to be degraded grassland of *Imperata cylindrica* due to the earlier pressure of a growing population and the adoption of shifting cultivation. Once conflict with the neighbouring Kayan had ceased, successive groups of Kenyah moved out the upper Iwan into new territory and abandoned their place of origin (Chin 1985). This is not true of the Iban and Bidayuh, representatives of whom still occupy their ancestral lands in West Kalimantan.

easterly expansion of the Iban had taken them into the Rejang watershed and beyond. This brought them into conflict, not only with foraging groups, but with other groups of shifting cultivators, notably the Kayan and Kenyah, who had been expanding in a generally south-westerly direction from their homeland in the Apo Kayan into the upper reaches of the Baram and Rejang (Baluy and Baleh) rivers – in the case of the Kayan, since the late eighteenth century (Pringle 1970; Rousseau 1974, 1978; Whittier 1978; Chin 1985; Ngo 2003).<sup>13</sup> The intervention of Charles Brooke in leading a punitive expedition of 15,000 Iban irregulars to the upper Rejang in the Great Kayan Expedition of 1863 helped decide this territorial contest in favour of the Iban (Pringle 1970: 130–4; Rousseau 1977).

The Iban and Kayan-Kenyah expansions into central and northern Sarawak cut a swathe through the territories of a pre-existing stratum of linguistically and culturally related groups who were still predominantly sago growers – from the Melanau along the central coast to other groups in the interior loosely classified as Kajang.<sup>14</sup> The Melanau-Kajang groups became separated from each other in what has been termed a "submerged complex" (King 1993).<sup>15</sup>

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<sup>13</sup> As with the Iban, "during a period of expansion, the Kayan either displaced or subjugated the populations of the areas they entered" (Ngo 2003: 172). The Kenyah expansion followed that of the Kayan, beginning in earnest around 1900 and continuing today. Guerreiro and Sellato (1984) provide an insightful analysis of the traditional process of migration, based on a contemporary account.

<sup>14</sup> Including the Kanowit, Kejaman, Sekapan, La'anan, Punan Bah, Berawan, and others, each now occupying no more than two or three longhouses interspersed among Iban, Kayan and Kenyah settlements. In the twentieth century the Iban reached the Limbang valley, partly displacing another group, the Bisaya, who cultivate mainly wet rice with the aid of buffaloes and are more closely related to Sabahan ethnic groups to the north (Blandoi 2004). The analysis of reasons for the limited spread of the buffalo (*Bubalis bubalis*) into Sarawak is another story.

<sup>15</sup> The current chief minister of Sarawak, a Melanau, is alleged to have commented on the eve of taking up his post in 1981: "Now we will get the land back from the Iban!" His subsequent policies lend some credence to this alleged remark, presumably alluding to a sense of historical dispossession.

The coastal Melanau (now 7 per cent of the population), though formerly longhouse-dwellers, mostly adopted a Malay-Muslim lifestyle, while retaining a distinctive emphasis on sago cultivation for both subsistence and export (Morris 1978, 1991), while the upriver Kajang aligned themselves with the dominant Kayan and Kenyah and increasingly adopted hill rice cultivation, though sago remained an important source of subsistence (Rousseau 1977; Nicolaisen 1986; Strickland 1986). The Kayan, Kenyah, Kajang, and other interior groups such as the Kelabit and Lun Bawang of the northern highlands, collectively labelled Orang Ulu, make up 8 per cent of the population.<sup>16</sup>

Notwithstanding the spread of hill rice cultivation, foraging in both primary and secondary forest continued to be important. This was true both for the shifting cultivators themselves and for smaller, specialist groups such as the nomadic Penan who were often linked economically and politically to the nearby longhouse societies. The Penan are linguistically and culturally related to the Kenyah. Rather than constituting a remnant group left behind by more advanced agriculturalists, they continued to occupy a productive niche in the forest interior. Like the Kenyah before them, most Penan have taken up shifting cultivation in the past 50-100 years, though hunting and gathering (especially of wild sago) remain important to their subsistence (Brosius 1986, 1988; Langub 1988; King 1993: 167–70).

It is important to note that, as well as practising shifting hill rice cultivation, the Iban, Bidayuh, Orang Ulu, and other groups also cultivated swamp rice where the environment was suitable – in small inland valleys and along river margins. As Pringle points out, “Iban agriculture was not traditionally restricted to the cultivation of hill rice. There are downriver areas in the Second Division [Lupar

and Saribas basins] where the Ibans have always cultivated what they call swamp rice (*padi paya*)” (1970: 26). Indeed, there is circumstantial evidence that their long-fallow system of hill rice (*padi bukit*) cultivation may have evolved from short-fallow swamp rice cultivation in the inland valleys of West Kalimantan (Seavoy 1973; Padoch et al. 1998; Cramb 2007). A survey of Iban farmers along the Oya River, spanning lowland, midland and upland environments, found a continuous progression from swamp rice (*padi paya*) to dry rice on flat land (*padi emperan*) to hill rice (*padi bukit*), with cropping intensity steadily falling along this toposequence (Cramb and Dian 1979a). Where pockets of bottomland are interspersed among low hills, the continuity between the two basic types of swamp rice and hill rice can be readily observed, often within the same farm. These pockets of swamp rice (some of them quite extensive, as in the lower Lupar) have provided a basis for significant intensification in recent decades, as discussed below.

The Sarawak Malays, descended from sea-going traders and Islamised Dayaks, and occupying settlements along the coastal and riparian fringe, predominantly in south-west Sarawak, also derived their livelihoods in part from swamp rice cultivation, but mainly from coastal fishing, foraging in the swamp forest, and small-scale riverine trade (Harrisson 1970; Pringle 1970; King 1993). Malay traders provided an historically important conduit for surplus rice and forest products from the shifting cultivators of the interior, until this role was progressively taken up by Chinese traders in the nineteenth century (Chew 1990). They also planted coconut palms, particularly between the Sarawak and Sadong river mouths, which became the basis of a minor local industry.<sup>17</sup> The Malays now make up 21 per cent of Sarawak’s population but a much smaller proportion of the agricultural population.

Thus the expansion of the shifting cultivation frontier across Sarawak over several centuries has involved major demographic and land-use

<sup>16</sup> See Janowski (2004) for an important account of the development and intensification of rice growing in the Kelabit highlands – a somewhat different story to that described here for other Dayak areas.

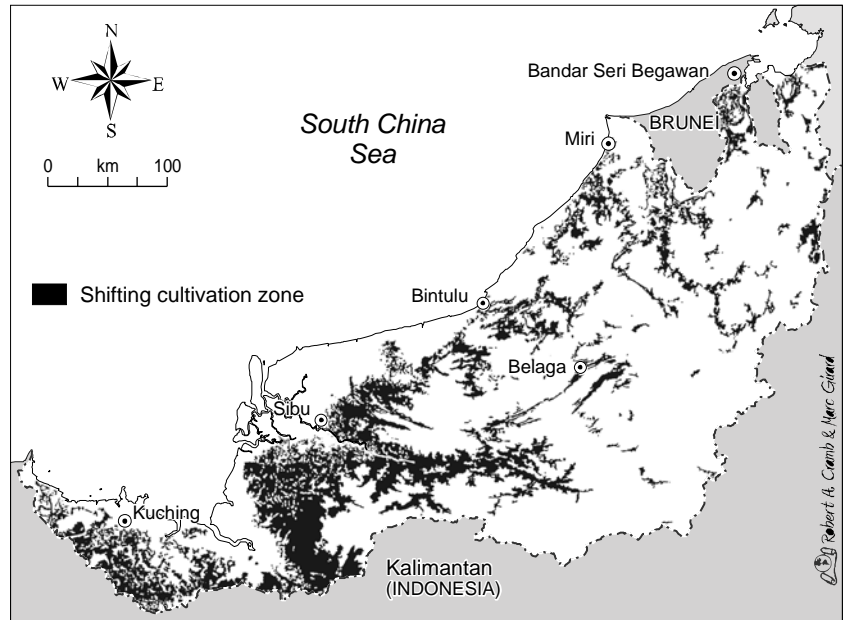
<sup>17</sup> Bugis and Hakka Chinese smallholders also developed coconut holdings in this area, since re-named Asajaya.

changes, resulting in the transformation of the forest landscape and the intensification of food production systems within this landscape. Fig. 2, compiled by Hatch (1982), shows the extent of shifting cultivation lands by the 1970s, including hill rice clearings, forest fallow, islands of communal forest reserve, and small plots of swamp rice, pepper, rubber, and fruit trees. The area was estimated to be 31,780 sq. km or 26 per cent of Sarawak's total land surface (Hatch 1982). This shifting cultivation zone was still increasing marginally as some communities in remote districts continued to convert old-growth forest, but at an estimated annual rate of only 0.2 per cent (Cramb 1988b, 1990b; see also Hansen 2005). The long expansion phase of shifting cultivation in Sarawak had effectively ceased.

### Territory and tenure

The expansion of shifting cultivation has also entailed significant changes in territorial control and land tenure. There is evidence that at least some bands of hunter-gatherers claimed extensive territories within which they moved and husbanded resources (termed *tana pengurip* in Penan), while in other cases bands moved freely into each other's range without concern for boundaries, though probably within the domain of the same tribe (Brosius 1986, 1988; King 1993; Sellato 1994; Lembang 1994; Langub 2007). However, at least among the Penan, individuals marked and preserved (*molong*) groves of sago, rattan, and other forest resources for future use, and these claims were upheld by their own and other bands (Langub 1988, 2007). Certainly agriculturalists who cultivated sago, such as the Melanau and Kajang, claimed exclusive territorial rights on behalf of the longhouse community as well as household and even individual use rights to cultivated land and trees (Morris 1976; Nicolaisen 1986;

**Figure 2.** Sarawak. The shifting cultivation zone



Source : Hatch, 1982

Strickland 1986). The Iban, Bidayuh, Kayan, and Kenyah shifting cultivators all established territorial control over the regions they moved into, displacing or absorbing hunter-gather groups in the process.<sup>18</sup> They used armed force to establish and defend longhouse territorial boundaries, which included cultivated land and extensive forest reserves.

Within these territories the system of land tenure varied. While all recognised the general right of access of longhouse members, the mode of sharing specific use rights, first established

<sup>18</sup> Displaced hunter-gather groups such as the Bukitan moved just ahead of the Iban frontier into new territory and progressively adopted Iban agricultural practices and lifestyles, becoming "Ibanised" in the process. A survey in 1978 in the Anap River in Bintulu Division included a single Bukitan longhouse at the headwaters of a stream occupied by Iban settlements (Cramb and Dian 1979b). Many of the residents had intermarried with local Iban, and both the Iban and Bukitan languages were spoken in the longhouse. There was also an elderly woman of the related Lugat tribe, of which no separate communities remained, presumably having been previously absorbed into Bukitan society. The Bukitan practised shifting cultivation of rice but were less proficient than their Iban neighbours, perhaps because of their greater reliance on hunting and gathering. This has also been observed among the "semi-settled" Penan of the upper Rejang (Brosius 1986; State Planning Unit 1987).

through felling old-growth forest, took several forms. The Bidayuh system conformed to Bose-rup's depiction of a temporary use right reverting to a descent group (Geddes 1954b), while Iban, Kayan, and Kenyah land tenure generally recognised permanent household cultivation rights, so long as the household remained in the longhouse community (Freeman 1970; Whittier 1978).<sup>19</sup> In some cases, the community took over the annual allocation of cultivation rights, though this appeared to be a localised, historical adaptation to specific conditions (e.g., taking over the secondary forest of migrants) rather than reflecting a primordial communalism (see Rousseau (1974, 1987) on the Kayan and Cramb (1989) on the Iban). In all these cases, however, the customary law (*adat*) of the longhouse community provided effective governance of individual and group access to land and forest resources.

The territorialisation strategies of the Sarawak state have been directed primarily at controlling the expansion of shifting cultivators and reserving forest land for logging and plantations. In the nineteenth century the Brookes were at first merely concerned to prevent the Iban in particular from getting too far away from government control. Ironwood markers (*pak*) were inserted to indicate the upriver boundaries of authorised settlement, but these proved difficult to enforce. By the 1920s and 1930s the Brooke Government was endeavour-

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<sup>19</sup> However, Chin (1985) found the Kenyah system at Long Selatong in the Baram to be similar to that of the Bidayuh, with land circulating within descent groups. The Selakau studied by Schneider (1978) also followed both forms. This variation comes down to a critical choice whether to divide a household's accumulated land holdings at the time of the formation of an offshoot household or to keep the land as an undivided pool for all the descendants of the first feller to draw on. In both situations the head of the original household (in Iban the *bilek asal*) retains authority (*kuasa*) over the allocation of land. In the case of fruit and other valuable forest trees, it seems that among all Dayak groups these are typically not divided on household partition but remain the property of the descent group, again subject to the control of the senior household (Rousseau 1974; Whittier 1978; Sather 1990; Cramb 2007).

ing to establish permanent forest reserves, following the example of the Malayan Forest Service (Kaur 1995). A major internal report on Sarawak's administration condemned "our present policy of non-interference" and advocated that "legislation should be introduced to confine the operations of the shifting farmer to secondary forest." In addition, "having classified all forest areas, legislation should then be introduced to prohibit the felling of virgin forest except for permanent forms of agriculture" (Le Gros Clarke 1935: 31). Following the report's recommendations, the total area of forest reserves was increased from 1.2 per cent of Sarawak's land area in 1934 to 5.5 per cent in 1940.

The post-war British Colonial Government took sterner action to restrict shifting cultivation, increasing the area under forest reserves to 24 per cent by 1960 and introducing a total ban on the felling of primary forest for shifting cultivation, effectively from the introduction of the 1958 Land Code (though some local administrative approvals were given to clear primary forest in the 1960s). The Land Code rendered shifting cultivators mere "licensees of the state" in terms of the land already cleared or otherwise occupied, and gave no recognition at all to territorial rights, undermining customary claims to the extensive forest lands reserved by shifting cultivation communities, as well as the hunting and gathering domains of the remaining nomadic groups (Brosius 1986; Cramb and Wills 1990). Amendments to the Land Code in the 1990s have further undermined customary land rights (Ngidang 2005; Cramb 2007).

This legal defencelessness became apparent with the rapid expansion of mechanised, commercial logging into Sarawak's hill forests in the 1970s and 1980s, particularly in the upper Rejang and Baram watersheds. Fig. 3 shows the area logged by 1992, though this has since expanded eastwards as far as the Indonesian border. The expansion of logging through and beyond the territories of upland communities (particularly Orang Ulu and Penan) sparked a prolonged and on-going conflict between these communities, logging companies, and the forces of the state that has been well-documented elsewhere (State

Planning Unit 1987; Hong 1987; WRS/SAM 1989; INSAN 1989; Colchester 1989; King 1993: 290–302; IDEAL 1999, 2000). The resistance of local people through blockades and legal avenues seemed only to strengthen the resolve of the Sarawak Government to sweep them aside through draconian legislative changes and police action, as well as an ideological campaign that blamed shifting cultivators rather than logging for the forest destruction that was occurring (State Planning Unit 1987; Cramb 1988b; Chin 1989).<sup>20</sup>

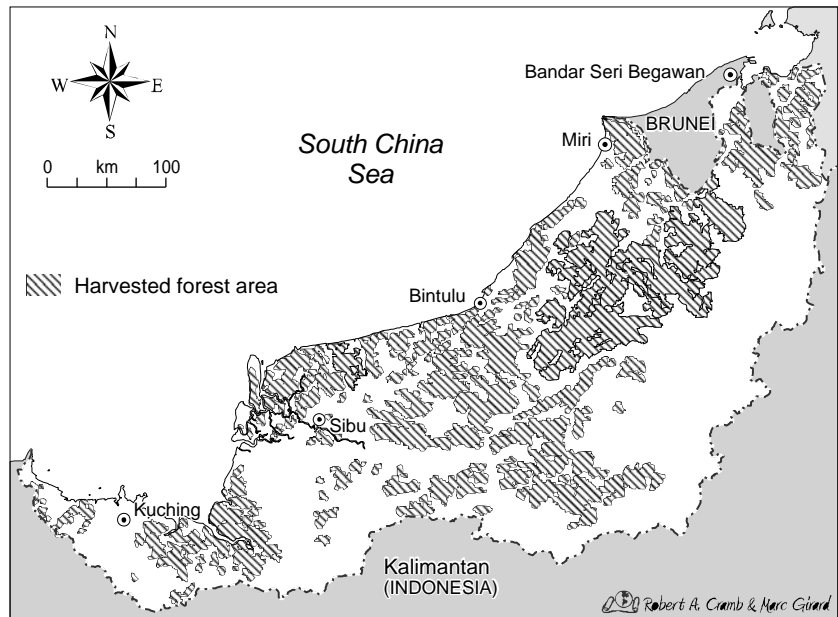
There are two points to make here in regard to agrarian transition. First, as a comparison of Figs. 2 and 3 shows, the rapidly expanding logging frontier intensified the use of the forest well beyond the extensive margin of traditional long-fallow agriculture, both downriver into the swamp forests and upriver into previously inaccessible hill forests. Second, the expansion of logging prepared the way for and was intertwined with the transition from smallholder to plantation agriculture (discussed in a later section), both by providing access to forest land and generating the surplus capital to invest in plantation development. Before considering this most recent and far-reaching transition, however, it is necessary to go back in time and review the emergence of commercial smallholder production, particularly among subsistence shifting cultivators.

## The Transition from Shifting Cultivation to Smallholder Cash Crops

The second major agrarian transition in Sa-

<sup>20</sup> Pedersen et al. (2006) found that in the Model Forest Management Area south of Bintulu, Iban shifting cultivation and commercial logging were able to co-exist, because of a clear demarcation between the secondary forest used by the shifting cultivators and the primary forest that was within the logging concession, but they acknowledge this might have been a special case.

**Figure 3.** Sarawak. Logged area up to 1992



rawak, overlapping the first by a century or so, involved shifting cultivators inserting commercial tree and shrub crops into existing territories by converting a portion of their fallow lands under secondary forest into semi-permanent smallholdings or “gardens” (*kebun*), particularly of rubber (*Hevea brasiliensis*) and pepper (*Piper nigrum*). This occurred to varying degrees throughout the area shown in Fig. 2, thus, although it involved an “expansion” of particular cash crops, it was essentially a (spatially concentrated) “intensification” of land use within the shifting cultivation zone. This development is consistent with the alternative intensification trajectories outlined by Raintree and Warner (1986), Barlow and Jayasuriya (1986), and Barlow (1997).

In particular, following Barlow’s (1997) schema, there was a long phase of “emergence from subsistence” when swamp or hill rice production remained dominant and was merely supplemented by one or more cash crops. Since the 1970s this has been overtaken by an “agricultural transformation” phase, with smallholder farming becoming largely commercialised and new high-yielding technologies progressively adopted. Currently the smallholder cash crop sector is undergoing a phase of “extended structural change” as rural-urban migration reaches

the point at which the absolute size of the agricultural labour force begins to decline (Morrisson 1996).<sup>21</sup> Thus many longhouse communities are losing population, especially young people, making it difficult to find the labour to maintain either subsistence or commercial agricultural pursuits.<sup>22</sup>

Contrary to Barlow (1997), however, the spread of smallholder cash crops was not due to diffusion from commercial estates (until the advent of oil palm). There were only ever five large rubber estates in Brooke-era Sarawak, three of them close to Kuching, one in the mid-Rejang, and one at the far end of the state near Lawas (Kaur 1995), and all were broken up in the post-war period. The more important influence was that of Chinese smallholders, who have a long history in rural areas of Sarawak; Chinese now make up 26 per cent of the Sarawak population, with a high proportion still involved in rural pursuits close to roads and towns (Cramb 1982).

### The spread of Chinese smallholders into shifting cultivation lands

Hakka Chinese had been settling in western Borneo since the middle of the eighteenth century, primarily mining gold within self-governing communities (*kongsi*) but also planting lowland rice and other crops (Chin 1981). In the first half of the nineteenth century in-

<sup>21</sup> Despite the difficulties in adequately defining and measuring the agricultural labour force and the rural population in Sarawak, it is likely that, by the 1980s or 1990s, Sarawak had reached what Tomich et al. (1995: 12–7) refer to as the “structural transformation turning point”, when the absolute size of the agricultural labour force peaks and begins to decline. This is leaving aside the Indonesian agricultural workforce brought in to work on the oil palm plantations.

<sup>22</sup> A study of two Iban longhouses in the Saribas District found that, from 1980 to 2001, the resident population had not grown in one and declined by 37 per cent in the other, consistent with census data showing an overall decline of the Iban population in this largely rural district (Cramb 2007: 302). Correspondingly, in 2001 only 8 per cent of households in the two longhouses cultivated hill rice and none tapped rubber trees; instead, 96 per cent concentrated on small plots of pepper.

creasing numbers crossed over from Sambas to Sarawak, settling around Bau and re-establishing the *kongsi* system. As well as mining antimony and gold, the Bau *kongsi* encouraged smallholders to produce food crops and livestock for local needs and cash crops such as pepper and gambier (*Uncaria gambir*), used in tanning and dyeing (Chin 1981; Chew 1990). In 1857, angered by newly imposed trade and other restrictions, the *kongsi* attempted unsuccessfully to overthrow the fledgling Brooke regime in Kuching. In retaliation, Charles Brooke led an Iban force to drive the insurgents back over the border, killing thousands in the process. Not surprisingly, Chinese mining and agricultural activities in Sarawak languished as a result.

Nevertheless, from the 1870s the numbers of Hakka and other Chinese groups in south-west Sarawak began to grow markedly, encouraged by new laws that made land available for intensive smallholder agriculture, particularly pepper and gambier.<sup>23</sup> Both contract or bonded labourers (*sinkeh*) and free settlers were recruited from China through Singapore to meet the perceived labour shortage. They leased small plots of land from the state on a “use-it-or-lose-it” basis or worked as tenants on the Borneo Company concession between Kuching and Bau (Chew 1990; Kaur 1995). The Second Rajah’s view was that “anyone who takes the trouble to study the difference of cultivation between Dayaks and Chinese will easily arrive at the conclusion that one Chinese garden is of more value to the country than fifty Dayak holdings” (Criswell 1978: 139).

The spread of Chinese pepper and gambier planting in the Bau-Lundu area led to frequent conflict with Bidayuh shifting cultivators, whose fallow lands were being cleared and encroached

<sup>23</sup> An 1876 proclamation offered grants of land for 99 years at a nominal rent to Chinese pepper and gambier planters, who were offered assistance to migrate to Sarawak for the purpose (Porter 1967: 38–9). These grants were initially made in the vicinity of Kuching. In 1896 the provisions of the Land Regulations were applied to the issue of grants for pepper and gambier throughout Sarawak. A permit from the Resident was required to open or extend a garden. However, “squatters” cultivating pepper and gambier with “care and diligence” were allowed to continue.

upon. However, according to Chew, "Charles Brooke, who wished to promote agricultural growth in the state and looked to the Chinese as the precursors of economic development, was not prepared to admonish the Hakka gardeners, even if it meant that Land Dayak [Bidayuh] customary law was being violated" (1990: 46). This official attitude was reflected in an 1875 Order, intended to make ad hoc provision for the increasing number of Chinese farmers taking up land to the south and west of Kuching. The preamble to the Order states that "it is common practice among the native communitys [sic] to make large clearings of old jungle, and afterwards abandon them." So the Order allowed "squatters" (presumably Chinese smallholders without a title) to "occupy without interference land cleared and abandoned by others" (Porter 1967: 37). As Porter remarks, the Order "suggests a curious misunderstanding on the part of Government, not simply of the practices permitted under native customary law but also of the biological demands the practices made on the land" (1967: 37).

As the Brooke state expanded its borders, Chinese smallholders were encouraged to settle in other districts. The most significant undertaking was an agreement in 1900 to settle Foochow colonists in the Rejang delta at Sibuh, with a view to expanding rice production (Chin 1981; Chew 1990). Over 1,000 settlers arrived in 1901–1902 and proceeded to plant wet rice. Early crop failures, disease, deaths, and desertions gave way to food self-sufficiency by 1903, and by 1906 the settlers had turned to planting pepper and rubber, the first rubber trees being tapped in 1910 when the world price of rubber had risen dramatically. Rice cultivation was soon largely abandoned and the Foochow capitalised on successive rubber booms to achieve economic prosperity. In Chew's words, "the Foochow settlers overcame the initial setbacks of padi crop failures, and in a spirit of independence, isolated themselves from other communities, catered to their own immediate needs of churches and schools, and

relied upon rubber cultivation for their livelihood" (1990: 142).<sup>24</sup>

As in south-western Sarawak, however, the notion that forest, whether primary or secondary, was "idle waste" became a serious problem as more settlers arrived and the Foochow farming settlements spread up the Rejang as far as Kanowit and downriver to Sarikei and Binatang. The preference of the Foochow for clearing secondary growth rather than primary forest, and their lack of any concept of farming that did not involve continuous cultivation, led them to encroach on Iban forest-fallow land, particularly with the rapid uptake of rubber planting after the 1910 boom. The resulting tensions peaked in 1925 with the outbreak of violence in the Binatang area. As Pringle remarks, "the Binatang incident of 1925 was only one spectacular symptom of a more basic problem, that of accommodating large numbers of Chinese farmers in a country of shifting cultivators" (1970: 13).

The spread of Hakka, Foochow, and other Chinese pepper and rubber smallholders into Bidayuh and Iban lands thus prompted a second territorial strategy on the part of the Brooke state. As well as attempting to restrict the movement of shifting cultivators into primary forest through the creation of Forest Reserves, the state also moved to limit Chinese smallholder encroachment on the secondary forest of the shifting cultivators and, at the same time, to prevent the latter from "prematurely disposing of their land" to the Chinese. Consequently the 1933 Land Rules introduced for the first time a distinction between Native Areas and Mixed Zones, with Chinese and other "non-native" farmers restricted to the latter (Porter 1967: 51). This racially based zoning system was carried over to the 1948 Land Classification Ordinance and incorporated in the 1958 Land Code. Despite a controversial attempt to overthrow it in the 1965 Land Bills, the land zoning remains in force (with important implications for the subsequent

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<sup>24</sup> This, coupled with their strategic position in relation to the Rejang's vast timber resources, provided the basis for their economic domination and political influence in post-war Sarawak (Leigh 1988).

transition to plantation agriculture, discussed below).<sup>25</sup>

Fig. 4 shows the distribution of Mixed Zone Land, Native Area Land, Forest Reserves, and Interior Area Land (a residual category) in the 1980s. As can be seen by comparing Figs. 2 and 4, Mixed Zone Land occurs mainly in regions of early Chinese smallholder expansion and skirts around most of the shifting cultivation lands of the Dayaks and the downriver settlements of the Malays and Melanau (except in the Saribas and Krian, where Iban farmers were more commercialised).

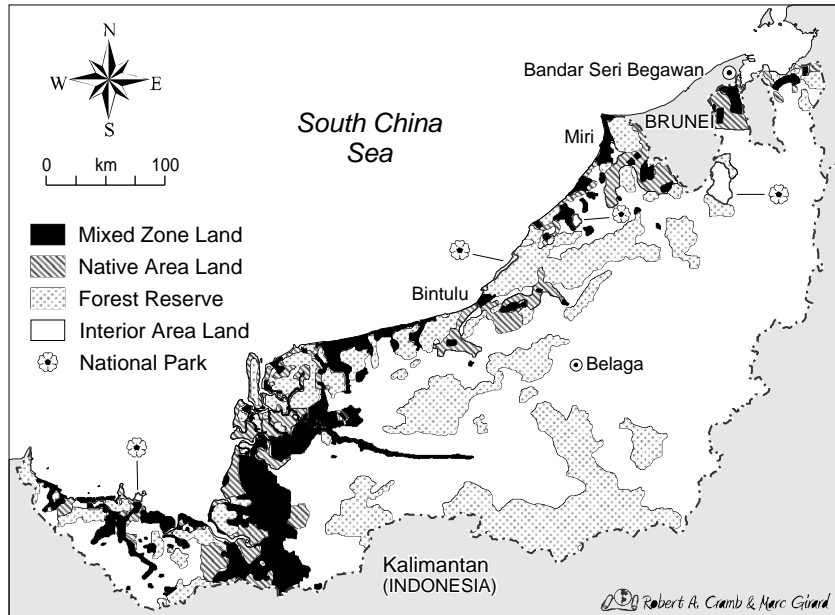
### The adoption of rubber by shifting cultivators

As well as creating land conflicts, the juxtaposition of the intensive, commercial smallholdings of the Chinese and the more extensive, subsistence farming systems of the Dayaks and Malays exposed the latter to both Chinese agricultural practices and the trade networks that grew up to support them (T'ien 1953; Ward 1960).<sup>26</sup> This demonstration effect accelerated the adoption of cash crops (though Iban involvement in the nineteenth century trade in forest produce had prepared the way for new cash-earning activities (Cramb (1988)). Dayaks and Malays sometimes worked as labourers on Chinese pepper and rubber gardens and ac-

<sup>25</sup> The 1962 Land Committee argued in support of Brooke and British colonial land policy that, "though we appreciate the urgent need of the Chinese for more land ... we believe the native must be prevented from disposing of his land until he has been better educated in how to use it properly" ("Report of the Land Committee", Kuching, Government Printing Office, 1962, p. 14). Nevertheless, informal long-term leasing arrangements outside Mixed Zones, particularly between Chinese farmers and Iban and Bidayuh landholders, persist to the present day.

<sup>26</sup> The Hakka and Foochow dialect groups, as well as dominating in the agricultural sector, were the dominant groups in first-stage trading in the rural bazaars (T'ien 1953).

**Figure 4.** Sarawak. Land tenure classification



quired planting material from them, as well as credit from traders in the local bazaars. Some experimented briefly with pepper and coffee planting in the 1890s, but it was the widespread adoption of rubber planting from around 1910 that transformed the rural economy. The Resident at Simanggang wrote in his memoirs: "I think that the years 1911–12 might be designated the Planting Era. Natives caught the rubber infection badly. Malays planted up all the land they could. Dyaks followed suit, and rubber banished all thoughts of tribal warfare and headhunting" (Ward 1966: 145).

Rubber fitted well into the Dayak agricultural cycle and grew well in a wide range of soil types. When it had been decided to establish a garden, the hill rice farms for that year would be cleared close to the longhouse or along a larger, more accessible stream, and the rubber seedlings would be inter-planted with the rice after weeding or in the stubble following the rice harvest. The forest regrowth would be slashed periodically in subsequent years to promote the growth of the young trees, and after 8–12 years the rubber would be ready for tapping (Bridges 1937: 66). This labour-economising, "silvicultural" approach to crop establishment was already a familiar technique used in cultivating indigenous tree crops. In effect the rubber garden was a managed or enriched forest-fallow – one of Rain-

tree and Warner's (1987) agroforestry pathways for the intensification of shifting cultivation.

In more commercially-oriented regions such as the Saribas District, many Iban landowners planted up to 10-20 ha of rubber and employed Iban, Malay and Chinese labourers to tap their trees during the boom years (Cramb 2007). Communities in the more remote and less commercialised districts were slower to respond and planted much smaller areas, typically one or two hectares (Jensen 1966). By 1940, after three decades of smallholder rubber planting, there were 97,000 ha under rubber, of which 92.5 per cent was in smallholdings (< 40 ha), about equally divided between Chinese (mainly Hakka and Foochow) holdings (45 per cent by area) and "native" (mainly Iban and Malay) holdings (47.5 per cent). Chinese smallholdings averaged about 2.4 ha while those of the Iban and Malay averaged 0.6 ha, notwithstanding the larger gardens of the Saribas Iban.<sup>27</sup> Sarawak's exports of rubber in that year totalled 36,000 tons, valued at 26 million Straits dollars (Cramb 2007). In Reece's view, the predominance of smallholder rubber in Brooke Sarawak offered "an alternative form of economic ownership to that practised in other parts of colonial Southeast Asia" (1988: 33).<sup>28</sup>

The post-war British colonial government built on this legacy with its Rubber Planting Scheme (RPS) to provide smallholders with improved, high-yielding planting material for both new planting and replanting, capitalising on the 1950s rubber boom. The Scheme was intended to wean hill farmers from their supposedly irrational attachment to shifting cultivation and establish them as viable commercial farmers, taking them into Barlow's "agricultural transformation" phase, though the technology of production has not kept pace with

that in Peninsular Malaysia. Almost 100,000 ha of smallholder rubber were planted in the first three decades of the RPS. Notwithstanding this effort, however, the deteriorating world market for natural rubber led to a steady decline in production, from 51,000 tons worth MYR 122 million in 1960 to 20,000 tons worth MYR 15 million in 1972.

The RPS was suspended in this year and almost no further planting took place until its reintroduction in 1977, after which the area of high-yielding rubber continued to expand. Moreover, since 2000 the Sarawak Government has initiated an expensive program of Rubber Mini-Estates, mainly on Iban fallow land, in which all the costs of establishing and managing the estates are met by the government, with net proceeds to be paid to the landholders. By 2005 the total area under rubber was stable at almost 157,000 ha, of which 92 per cent was in smallholdings – now almost entirely owned by Dayaks and Malays rather than Chinese – and 8 per cent in the new mini-estates (Fig. 1).<sup>29</sup> Just over 40 per cent of the smallholder rubber trees were high-yielding clones. In Dayak lands, rubber occupied between 25 and 40 per cent of a longhouse territory (Cramb 2007).

However, the utilisation of this extensive area of rubber has continued to decline and rubber production reached a new low in 2001 when net exports amounted to just over 500 tons, worth only MYR 2.3 million. The downward trend in production reflected global market demand but also that Sarawak has entered Barlow's (1997) phase of "extended structural change", with fewer workers in the longhouses available and willing to tap their rubber trees. Even with the significant upsurge in price since 2002, driven by demand from China, most of Sarawak's exports of rubber are in fact re-exports of processed rubber originating in Indonesian Borneo, where the opportunity cost of labour is

<sup>27</sup> However, many Iban households had several separate "holdings".

<sup>28</sup> Though John McCarthy (pers. com.) makes the point that in areas of Sumatra away from the plantation belt a similar pattern of smallholding prevailed.

<sup>29</sup> A correction was made to estimated rubber area from 1995 to allow for senile gardens and those cleared for other uses. The revised estimate for this year (172,000 ha) probably represents the peak expansion of smallholder rubber. Dominic Dares, Sarawak Department of Agriculture, pers. com., 15 December 2008.

lower.<sup>30</sup> Although the higher price has certainly helped farmers in hilly upland areas of Sarawak that are unsuited to oil palm (or were withheld from oil palm schemes), much of the tapping in areas such as the Saribas is now done by Indonesian workers, paid on a one-third share (*bagi tiga*) basis.<sup>31</sup>

### The rise of Dayak pepper cultivation

While the long-term involvement of shifting cultivators in rubber cultivation has been widely documented (Dove 1993; Wibawa et al. 2005), less often emphasised is the agricultural transformation brought about through the cultivation of pepper by Dayak smallholders, particularly since the 1970s (Wadley and Mertz 2005). This is partly because the highly intensive nature of pepper cultivation means that a holding of half a hectare is sufficient to fully employ (and fully support) a typical rural household. So pepper may only occupy 1–2 per cent of an established longhouse territory while contributing perhaps 80 per cent of household income (Cramb 2007). This renders the transformation largely invisible to those, like the Chief Minister, who want to see “modern agricultural development along the major trunk road with rows of plantations and villages well organised in centrally managed estates” (cf. Fig. 1).

Before the war only a small number of Dayaks had planted pepper, mostly in the vicinity of Chinese gardens. However, the post-war boom in pepper prices was even more dramatic than for rubber, prompting increasing numbers of Dayaks to take up pepper planting in the 1950s. The early Dayak gardens were small, usually around 50 vines. The largest would have been 100–200 vines, or less than 0.1 ha. They were planted in hill farms following the rice harvest and, as they were unterraced and clean-weeded, the erosion was considerable, though the total area affected was not great. The gardens were fertilised with burnt earth

and soil from under the longhouse. Later, organic fertilisers such as guano, prawn meal, and soya meal were purchased. For insecticide, *tubai* – a traditional rotenone-containing root preparation of the climber *Derris elliptica* – was sprayed, using home-made bamboo pistons. Weed control was entirely by hand. The annual labour input for a 50-vine garden was probably around 25 man-days. The output would have been less than 100 kg, nevertheless returning enough in 1952 to buy almost twice the average household’s annual rice requirement. Thus the enterprise was kept to modest proportions in terms of land, labour and capital inputs and, despite being very remunerative, remained a small-scale activity, supplementary to hill rice cultivation (Best 1988; Cramb 1988).

Pepper prices declined in the 1960s, but from 1968 there was a decade of steady price increases, encouraging a significant shift into pepper planting. A further development was the introduction of improved management practices based on a detailed program of research that had been carried out by the Department of Agriculture since the colonial period. This involved the use of inorganic fertilisers and a range of measures to control the pests and diseases that had made pepper such a risky undertaking. The most serious disease, “footrot” or “sudden death” (caused by the soil fungus *Phytophthora cinnamomi*), though still without remedy, had nevertheless been thoroughly researched and methods of containing it were now known. As a consequence, with adequate fertilisation, pepper could be grown continuously on the same plot, instead of being periodically abandoned.<sup>32</sup>

The swing to pepper was given added impetus in 1972 with the introduction of the Pepper Subsidy Scheme (PSS). The subsidy was intended to cover 50 per cent of the establishment costs for a 200-vine garden, including fertilisers and hardwood supports for the pepper vines. The scheme met a genuine need among the Iban for capital. The Chinese shopkeepers would will-

<sup>30</sup> Dominic Dares, Sarawak Department of Agriculture, pers. com., 15 December 2008.

<sup>31</sup> Joseph Blandoi, pers. com., 7 August 2008.

<sup>32</sup> Reid (1995) argues that traditional forms of pepper cultivation caused extensive deforestation in insular Southeast Asia in the centuries after 1400.

ingly provide fertiliser on credit within a year of the pepper harvest, on condition that the crop was then sold to them, but few would consider providing credit over a longer period. Institutional credit was also insufficient to meet the need. Notwithstanding the importance of the PSS, however, the majority of pepper vines have been planted and maintained with the farmer's own resources (Cramb 1990a).

Thus, since the mid-1970s, smallholder pepper cultivation has taken agricultural intensification in the shifting cultivation zone to a new level, in the sense of both a much higher input of labour and capital per unit of land and a total reliance on global markets and industrial inputs. Rather than pushing out the extensive margin, as with many boom crops, the growth of pepper production has involved a spatial concentration in quite small areas of existing territories, close to the longhouse and to transport routes (roads and rivers), consistent with both von Thunen and Boserup (Windle and Cramb 1997). In 2005, there were 64,100 households (over half the total number of farm households in the state) cultivating nearly 12,700 ha of pepper (0.2 ha per household), producing over 18,500 tons valued at over MYR 115 million (Sarawak 2007; Fig. 1). Ninety per cent of these households were classified as "native" – almost all of them Dayaks – and these accounted for 88 per cent of the planted area.

So what had begun as a distinctly Chinese form of intensive agriculture was now predominantly a Dayak form of land use. Moreover, while rubber could be successfully adopted with a low level of technology (Barlow and Jayasuriya 1986), pepper has required the development of considerable technical, financial, and managerial skills on the part of Dayak smallholders. At first pepper merely provided another cash-earning activity in a subsistence-oriented farming system still based on shifting cultivation. In the past two decades most Dayak farmers, even in quite remote areas, have become semi-commercialised or fully commercialised pepper farmers, operating intensive systems with considerable success

(Cramb 1993; Wadley and Mertz 2005). Though highly dependent on the global market for pepper, they are not beholden to traders or money-lenders; in fact, many have substantial savings, as well as support from urban-based family members via remittances. With the increasing allocation of household labour to pepper production at the expense of subsistence shifting cultivation, the spatial concentration of production has been associated with significant disintensification in the surrounding secondary forest, in the sense that the frequency of cropping has fallen markedly and in some cases ceased altogether.

### **Intensification and disintensification in rice farming**

The post-war transition to smallholder cash crops, combined with an increase in rural-urban migration and the rising opportunity cost of agricultural labour, has had a major impact on Dayak and Malay rice production. From 1960 to 1985 rice output grew by an annual average of 3.2 per cent, faster than the rate of population growth (Cramb 1990a). However, this was entirely due to growth in the output of wet rice, which grew at 4.9 per cent; there was little or no change in the output, area cultivated, or yield of hill rice over this period (Best 1988). The growth in wet rice production was due partly to a steady expansion of cultivated area and partly to a doubling in yield, from a low base of around 1.1 tons per ha in the early 1960s to a still modest 2.0 tons per ha in the mid-1980s.

The increase in yield was consistent with some improvement in land preparation and water control, and low levels of fertiliser application. There was evidence that the Assistance to Padi Planters Scheme (APPS), implemented by the Department of Agriculture since 1968, had been an important factor affecting both the area and yield of wet rice, while the large-scale drainage and irrigation schemes scattered through the lowlands and accounting for 10 per cent of the wet rice area, had contributed relatively little (Cramb, 1992). So while there was a transition from traditional short-fallow swamp

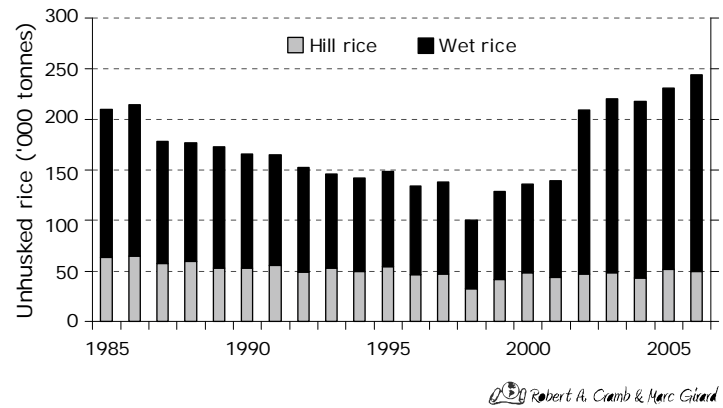
rice (*padi paya*) to bunded rainfed rice (*padi sawah*), cropped on an annual basis, there was no “green revolution” as such.

Following these years of steady growth, rice output halved from the mid-1980s to the late-1990s, before rising sharply to record levels in the mid-2000s (Fig. 5). There were several factors at work here. First, while the yield of hill rice remained unchanged, the area cultivated began a downward trend of about 1.8 per cent per year that has continued to the present, from 85,000 ha in 1985 to 65,000 ha in 2006 (Fig. 6). Second, the area of wet rice also fell, from 76,000 ha in 1985 to a low of 55,000 ha in 1997. Third, the yield of wet rice fell from around 2.0 tons per ha in 1985 to 1.4 tons per ha in 1998. All of these trends were consistent with a shift of labour effort away from rice production for subsistence towards commercial crops, especially pepper. Most of the rice farmers were also pepper farmers, hence there was a sharp trade-off in labour use between the two crops as pepper cultivation expanded. In addition, the trends are consistent with the steady rural-urban migration that has been occurring since the mid-1980s, with longhouses losing population and labour as a result (Morrison 1996).

The gradual decline in hill rice cultivation is consistent with a trend throughout Southeast Asia (Padoch et al., 2007). In Sarawak it has involved farmers cultivating smaller annual clearings, cultivating intermittently rather than every year, and in many cases abandoning hill rice cultivation altogether (Cramb 2007). It is driven by many interrelated factors, including the conversion of fallow lands to oil palm estates and the loss of longhouse labour to off-farm pursuits, including education (Hansen and Mertz 2006). It can simultaneously involve more intensive rotations on smaller plots closer to roads and permanent farms (in some cases to supply urban markets with “traditional” foods), alongside the reversion of more remote fallow lands to old secondary forest (Hansen 2005; Hansen and Mertz 2006; Cramb 2007).

The decline in wet rice production, however, was spectacularly reversed from the late-

**Figure 5.** Sarawak. Rice production, 1985-2006



1990s (Fig. 5). While there has been some increase in area (12 per cent from 1997 to 2006), the most significant factor has been a doubling in yield from around 1.5 to 3.0 tons per ha, particularly from 2002. This is in response to the sharp increase in the world rice price since 2001. In addition, the Federal Government has been providing a fertilizer subsidy to wet rice farmers in Sarawak since 2000 under the “Skim Bantuan Baja Padi Persekutuan” (Federal Padi Fertilizer Assistance Scheme). More recently, added assistance has been given for land levelling, liming, pesticide, and weedicide.<sup>33</sup> There has also been renewed investment in large-scale rice schemes in this period.<sup>34</sup>

So Dayak and Malay farmers in lowland areas have been investing in a significant intensification of wet rice cultivation – not by moving to multiple cropping but through land improvement and greater use of external inputs. In some cases farmers residing in the uplands have also invested labour in lowland rice. Iban from the upper Saribas, having largely abandoned hill rice cultivation for pepper, have made use of the improved road network to “commute” to wet rice lands downriver that they have purchased, rented, or borrowed, thus pursuing a form of spatial intensification as outlined by Pingali and

<sup>33</sup> Dominic Dares, pers. comm., 15 December 2008.

<sup>34</sup> Ole Mertz, pers. comm., 16 March 2009

Binswanger (1987).<sup>35</sup> Hence the population pressure on these downriver sites has been greater than might appear from census data. As an example, of the 26 Iban households resident at Batu Lintang in the middle Saribas, 11 (42 per cent) had wet rice farms downriver near Betong in the 2000–2001 season, while no-one cultivated hill rice. At the same time, 24 households (92 per cent) worked on pepper gardens within their longhouse territory. No-one tapped rubber, despite having extensive holdings, including a rubber mini-estate (Cramb 2007).

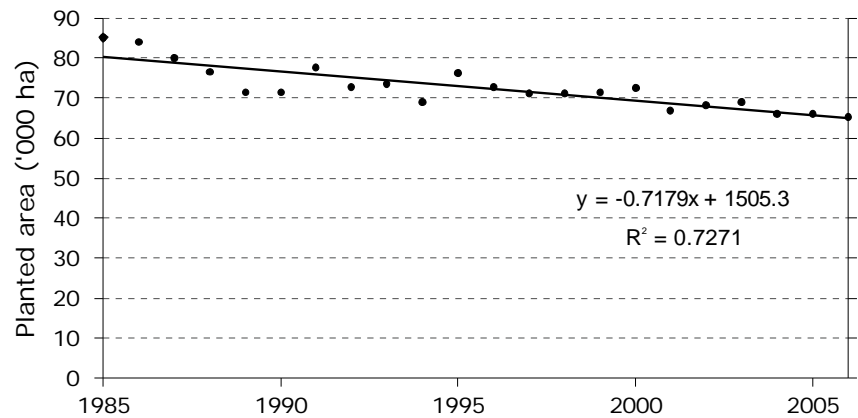
### Smallholder cash crops and land tenure

The history of smallholder rubber and pepper not only demonstrates responsive and dynamic economic behaviour on the part of Dayak shifting cultivators but also that customary land tenure has not been an obstacle to the adoption and expansion of cash crops. Most of the developments described above have taken place on untitled land administered within longhouse communities according to their own *adat*. As indicated above, the customary tenure of Sarawak's shifting cultivators generally recognises a permanent household cultivation right to land cleared from primary or old-growth forest. Consequently, individual households wanting to establish cash crops have been able to do so on their own land, without adversely affecting others in the community.

In the case of traditional Bidayuh land tenure, however, where the cultivation right circulated within a wider descent group, a decision by one member of the group to plant a crop like rubber would unfairly remove a significant area of land from the common pool. Hence in

<sup>35</sup> The Saribas Iban adopted this strategy in the 1960s and early 1970s when rubber and pepper prices were low and hill rice yields were poor, but at that time had to reside permanently downriver during the rice season.

**Figure 6.** Sarawak: Area planted with hill rice in Sarawak, 1985–2006



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recent decades Bidayuh communities have almost universally moved by stages to divide the descent group's land, typically by first restricting the descent group to those with a common grandfather, then by dividing these lands among separate households. This corresponds to Bose-rup's analysis of the rising value of use rights with intensification, leading to greater individualisation and permanency. However, it has not been a smooth process, often causing friction between close kin and creating opportunities for strategic behaviour, given the informal nature of the process and the limited capacity of village elders, let alone external authorities, to keep abreast of developments in what are now large and complex villages with many extra-village links and interests.

The Brooke state attempted to exercise some control over the planting of commercial crops on customary land, issuing planting grants, pepper garden permits, and occupation tickets. These were issued without any supporting cadastral survey or map, so they necessarily relied on the local knowledge of community elders for their enforcement. Nevertheless, they were held in high regard by Dayak smallholders, who treated them as government-sanctioned title to the plot in question, even when the rubber or pepper had been abandoned and the household had left the longhouse. In the post-war period there were no such titles issued for individual gardens; all that was required to be eligible for assistance from the RPS, PSS, or APPS was the signature of the

longhouse headman to certify that the land indeed belonged to the applicant.

Rather, the 1958 Land Code provided for the systematic survey of whole settlement areas and the issuing of individual titles to everyone with customary rights to land inside the area. From 1974 these titles became grants in perpetuity, so long as they remained with the original recipient or his/her heirs; once sold, they reverted to standard 99-year leases of state land, such as held by Chinese farmers in a Mixed Zone (Cramb 1982). However, the land titling process has been grindingly slow. By 1998, 40 years after the Land Code was introduced, only 88,000 ha in the predominantly Iban Second Division had been titled, representing only 9 per cent of the total area and 11 per cent of customary land (Cramb 2007). So most customary land is still held by licence from the state. As mentioned, this has not been an obstacle for smallholder schemes, but it has become a major issue with the spread of oil palm plantations in the past 20 years.

As already discussed, Binswanger and McIntire (1987) hypothesised that intensification through cash crops would accelerate the individualisation and transferability of specific use rights, giving land a market value and a value as collateral, resulting in increasing indebtedness, inequality, landlessness, and tenancy. However, the spread of smallholder cash crops in Sarawak in the twentieth century did not produce this outcome. Two interrelated factors have been important in this respect. First, the longhouse system of land tenure was, until recently, strong enough to resist the disqualifying effects of an unrestrained market in land. Second, the zoning of land since 1933 has meant that Dayak land could not be used as collateral for loans from Chinese moneylenders, so the latter could not hope to acquire land by foreclosing. Consequently credit was restricted to short-term financing of inputs with the standing crop as collateral, particularly in the case of pepper. In the past 10 years, with increased rural-urban migration, the erosion of community institutions, the spread of rural feeder roads, and especially the oil palm boom,

there has been a complex and largely unrecorded process of land transactions involving extra-village actors (government officials, traders, professionals, and others, many of them Dayaks), that may yet confirm the Binswanger-McIntire hypothesis.

## The Transition from Smallholdings to Estates

The third agrarian transition in Sarawak has been by far the most rapid and pervasive, involving the expansion of plantation agriculture, particularly oil palm estates, throughout the territories previously occupied, utilised, and claimed by shifting cultivation communities (Figs. 1, 2 and 7). In fact, oil palm expansion has not only intensified land use in the shifting cultivation zone shown in Fig. 2, but also, in a symbiotic relationship with logging, pushed the agricultural frontier into old-growth forests to an extent that was unimaginable 10 or 20 years ago, including both the peat swamp forests of the lowlands and the remaining hill forests of the deep interior. In the process, the long tradition of customary and smallholder land use and tenure that has characterised Sarawak's agriculture up to the 1980s has been drastically modified or completely swept aside. Given the extensive areas involved and the desire to keep costs low, most of the labour for the private estate sector (as now in government land schemes) has been provided by legal and illegal Indonesian workers.

The two types of oil palm development, one involving the conversion of existing farmlands and secondary forest and the second the clearing of "primary" (logged-over) forest, have tended to be associated with different institutional modes, related to the pre-existing tenure status of the land. Where existing farm and fallow lands are involved and customary rights are recognised, oil palm has been planted largely in group or managed smallholdings and, more recently, in joint venture arrangements between landholders and plantation companies, as well as in independent smallholdings. Expansion into old-growth forest on what is deemed to be un-

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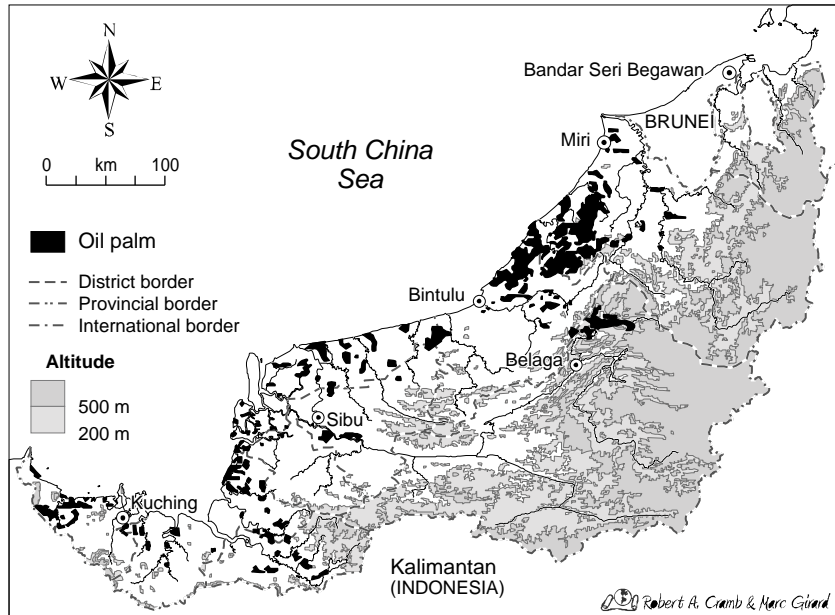
encumbered State land has been the province of large-scale plantation companies, both public and private. However, even this distinction is blurred due to the contested nature of customary land rights in Sarawak, with areas of secondary forest and community forest reserves in the more recently settled central and northern regions of Sarawak being allocated by the government for private estate development on the presumption that no valid customary rights exist. A preliminary estimate, based on the aggregate planted area in the two types of oil palm development (Table 2), is that around 80 per cent of the oil palm area has been converted from primary forest (following logging) and 20 per cent from secondary forest and other land uses.<sup>36</sup>

### Oil palm estates on State land

The first large-scale commercial planting of oil palm in Sarawak began in 1968 with the establishment of Sarawak Oil Palm (SOP) Bhd, a joint venture between the Sarawak Government and the Commonwealth Development Corporation, which planted an area of just over 5,000 ha of State land in northern Sarawak near Miri. This functioned from the outset as a commercial estate with largely Indonesian (Javanese) labour. From 1972 the Sarawak Land Development Board (SLDB) began to establish oil palm estates in the same region, primarily in Forest Reserves that had been designated for conversion to agriculture (Zain 1986). The SLDB was established as the Sarawak equivalent of FELDA, which had been settling poor

<sup>36</sup> This is supported by Hansen (2005) who, in a study of land-use change between 1972 and 2002 in the Niah catchment in northern Sarawak (at the heart of the oil palm zone), found that oil palm increased from 0 to 41 per cent of the catchment area during this period and that about 88 per cent of the oil palm area in 2002 had been converted from logged-over forest and 12 per cent from former shifting cultivation lands.

**Figure 7.** Sarawak: Distribution of oil palm, 2005



and landless Malay farmers in rubber and oil palm schemes in the Peninsula since 1956 (Sutton 1989; Fold 2000). The original policy was that the land schemes in Sarawak would also be subdivided following crop establishment, with titles being issued to individual settlers drawn from among the three major ethnic groups – Malays, Iban and Chinese. However, in 1974, due to the lack of interest from Malay and Chinese settlers and the government's unwillingness to make land settlement an exclusively Iban affair, it was decided to place a freeze on the recruitment of settlers. From that point the oil palm schemes were effectively run on conventional estate lines (Kedit 1974).

In 1981, when Abdul Taib Mahmud became Chief Minister, SLDB and SOP Bhd had the only oil palm estates in Sarawak, totalling about 20,000 ha. However, this changed dramatically with the surge in the profitability of oil palm, the closing of the agricultural frontier in Peninsular Malaysia, and the policies and legislative changes introduced by the Taib Government (Cramb 2007). With cashed-up local timber companies such as WTK and Rimbunan Hijau, plantation companies from Peninsular Malaysia such as Perlis, Golden Hope, Boustead, and Tradewinds, and government-owned corporations such as FELDA Bhd keen to invest in large-scale oil palm estates, the Taib Government

streamlined access to State land for this purpose, including large areas subject to native customary rights claims. Speaking in 1982 at the launch of the Land Custody and Development Authority (LCDA), Taib's main vehicle for the transformation he had in mind, he "noted that many plantation-owning companies and individuals have found they cannot get enough suitable land in Peninsular Malaysia and are investing in agro-based projects in the Philippines and Papua New Guinea as a result. 'Why not come to Sarawak to invest? You can operate from Kuala Lumpur. Sarawak welcomes you,' Datuk Taib said."<sup>37</sup> The two key mechanisms were the issuing of provisional leases (in effect, bypassing or deferring the question of customary land claims) and joint ventures with LCDA, which was "deemed to be a native" under the Land Code, thus permitting the private development of State and customary land outside a Mixed Zone.

Since the 1980s, with the Taib Government's support, the SOP Group has grown into one of the largest private plantation companies with over 30,000 ha of oil palm in Miri and Bintulu Divisions, generating revenue of RM85 million in 2005. SOP is now majority-owned by the Miri-based Shin Yang Group, headed by Datuk Ling Chiong Ho, which has extensive logging, plantation, shipping and construction interests and close connections with the political elite. LCDA also holds a substantial share. Shin Yang has been involved in controversial logging activities in the upper Baram as well as developing a large oil palm plantation in the

forested lands in the upper Rejang vacated for the Bakun Dam project (Fig. 7).

By 1980, notwithstanding its substantial assets, SLDB was making substantial losses and carried major liabilities. The Taib Government moved by stages to privatise SLDB's operations and assets. In 1987 the management of SLDB was contracted to Sime-Darby, a commercial plantation company, and it soon reported improved financial performance. In 1993 it was corporatised and in 2000 its assets were transferred to Sarawak Plantation Bhd (SPB), a public company set up to facilitate a management buy-out, though other players linked to Taib became involved, including the CEO of one of Sarawak's largest timber companies. By 2006 SPB had over 24,000 ha under oil palm in 13 estates – the legacy acquired from SLDB (Table 2). It was listed on the Kuala Lumpur Stock Exchange in August 2007, when the general manager announced plans to secure 30,000-50,000 ha of land in Indonesian Borneo for further expansion of oil palm.

Apart from SOP and SLDB, the first new player in the post-1981 expansion of the estate sector was FELDA Bhd, operating as a public plantation company. Perhaps hoping to replicate its large estate complex in eastern Sabah, FELDA Bhd negotiated a provisional lease through LCDA to what was ostensibly unencumbered State land near Lundu in the south-western corner of the state. However, it encountered local resistance from Dayak claimants. This was initially met with force but eventually resulted in a negotiated settlement. Perhaps because of these difficulties, the operations of FELDA Bhd have been confined to this one estate of 7,680 ha (Table 2).

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<sup>37</sup> K.C. Jong, "A Year Focused on an Overwhelming Problem", *Borneo Bulletin* 10 April 1982, p. 11.

**Table 2.** Sarawak: Oil palm planted area by plantation category, October 2006

Category	Planted area (ha)	% of total area
Independent smallholders	18,988	3.3
Organised smallholders		
- SALCRA	45,178	7.8
- FELCRA	26,980	4.6
Sub-total	72,158	12.4
Joint venture estates on customary land	33,193	5.7
Public-owned estates		
- Sarawak Plantation Bhd (formerly SLDB)	24,445	4.2
- FELDA Bhd	7,680	1.3
Sub-total	32,125	5.5
Private estates		
- Private-public joint ventures (LCDA)	65,527	11.3
- Private estates	35,9049	61.8
Sub-total	424,576	73.1
Grand total	581,040	100.0

Sources: Sarawak Department of Agriculture; Ministry of Land Development, Sarawak; Land Custody and Development Authority; Sarawak Plantation Bhd.

Despite this early setback, from the 1990s the number of provisional leases issued for oil palm development grew rapidly. Consequently, the area in private oil palm estates increased from 20,300 ha in 1990 to 456,700 ha in 2006 and now represents almost 80 per cent of the total oil palm area (Table 2). In some cases the provisional lease has been issued to a joint venture company formed between LCDA and the private investor, with LCDA holding 40 per cent of the equity. There were 20 such joint venture projects by 2006 with a total planted area of 65,500 ha, mostly under oil palm. This accounted for 11 per cent of the total planted area in the state (Table 2). In most cases, however, provisional leases have been issued directly to private plantation companies, including Sarawak-based timber companies and other local firms set up to exploit the oil palm boom (many with close political connections to the Taib government), as well as long-established plantation companies from Peninsula Malaysia. These purely private estates accounted for 359,000 ha or 62 per cent of the to-

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tal oil palm area (Table 2). As well as the returns to investment in oil palm, developers and their associates often have the opportunity to profit up-front from the clear-felling of timber in the lease area, thereby helping to finance the development (Fold and Hansen 2007). Another form of up-front benefit is obtained when a paper company formed for the purpose obtains a provisional lease and is then able to extract rent through its contractual relationship with a genuine developer.<sup>38</sup>

In theory, the provisional lease requires the lessee to identify any customary claims and negotiate acceptable arrangements with the claimants (such as compensation) before the lease can be confirmed. In practice, capital has been raised and land clearing commenced on the assumption that the provisional lease gave the company clear title to all the land falling within the perimeter of the lease area. Hence longhouse communities who claimed customary rights to part or all of the land allocated for a private oil palm estate often knew nothing of the granting of a provisional lease until bulldozers arrived to clear the area for planting. When they protested they were mostly ignored, given notice to leave the area or, in the worst cases, subjected to violence. The response of a number of Dayak communities has been to blockade estate access roads, impound bulldozers, and in many cases institute legal proceedings (IDEAL 1999; Cramb 2007). In two incidents, one in 1997 and another in 1999, both

<sup>38</sup> The payment (premium) for a provisional lease is MYR 741 per ha whereas the 'market' rate for such land is around ten times that amount.

in northern Sarawak, clashes between long-house members and police or plantation company employees have resulted in fatalities.

Such incidents represent the extreme outcomes of a widespread and on-going conflict over land. In 2000 the Ministry of Land Development recorded 107 private oil palm estates with a planted area of 263,000 ha (an average of almost 2,500 ha per estate). Of these, 24 were listed as having problems with their provisional lease. However, these 24 accounted for an approved area of 206,500 ha and a planted area of 105,500 ha (about 40 per cent of the private sector planted area at that time). Of the total approved area, 46,100 ha (22 per cent) were under native customary rights claims and 16,400 ha (8 per cent) were said to be occupied by "squatters". For individual estates the area under such land claims ranged from zero to 5,700 ha in the case of the SOP's Suai Estate, the latter comprising 87 per cent of the approved area.

### Oil palm estates on customary land

Oil palm development on customary land was pioneered by the Sarawak Land Consolidation and Rehabilitation Authority (SALCRA), which was established in 1976 primarily to develop customary land "for the benefit of the owners". SALCRA's mode of operation has been to borrow public and donor funds on concessional terms for the capital costs of oil palm development. These costs are charged to the participants who progressively pay back the amount and in time receive the net proceeds from the sale of their fruit. After taking adequate steps to "ascertain the wishes of the owners", SALCRA can declare a tract of land to be a "development area", thereby giving it powers to develop the land, without however affecting "the legal ownership of that land or any customary rights". In fact, the SALCRA Ordinance requires it to arrange a survey of land rights and, on completion of the development, landholders are issued with grants in perpetuity.

By 2006 SALCRA had established over 45,000 ha of oil palm, involving over 12,500 participants. The finance for these schemes has come from state and federal budgets and from development financiers such as the Asian Development Bank. While initially the labour was provided by the landholders, in many cases Indonesian workers are now employed. Though the agency continues to be plagued by allegations of inefficiency and corruption, high palm oil prices and the passage of time have eased many of the participants' concerns and there is unmet demand from many upriver Iban communities who have requested a SALCRA scheme on their land. However, SALCRA's growth beyond southern Sarawak has been blocked by the government, with priority being given to joint venture projects (see below) in the central and northern regions.<sup>39</sup> The Federal Land Consolidation and Rehabilitation Authority (FELCRA) also undertakes in-situ schemes for smallholders in Sarawak. It has been expanding rapidly in the past decade and had established nearly 27,000 ha by 2006. Most of this is in downriver areas on titled Malay land. In total, the area of land developed as group or managed smallholdings by these two agencies totalled about 72,000 ha by 2006, or 12 per cent of the total oil palm area (Table 2).

Joint venture estates on customary land are those established under the Taib Government's "Konsep Baru" (New Concept) policy, launched in 1995 (Ngidang 2002). Under this policy the customary landholders agree to assign their land rights to the LCDA, which then forms a joint venture company with a private-sector partner.<sup>40</sup> A consolidated land title covering 5,000 ha or more is issued to the joint venture company for a 60-year period (two cycles of oil palm). Following a rough ground survey of individual holdings within the lease area, the private investor

<sup>39</sup> This block had been partly lifted by 2008, though only for the remote Kapit Division, which was unattractive to commercial investors, having no road access.

<sup>40</sup> LCDA was established in 1982. As with SALCRA, LCDA is deemed to be a native, giving it power to deal in Native Customary Land. It acts as an intermediary rather than a land development agency as such.

pays the value of the land to the owners, pegged at MYR 1,200 per ha. Of this, 10 per cent is paid up-front in cash, 30 per cent is invested in a government unit trust scheme, and 60 per cent is regarded as the landowners' (30 per cent) equity in the company. The private-sector partner has 60 per cent equity and LCDA 10 per cent. Landholders receive no title to their land but can expect to receive dividends according to the area of land contributed to the project. In effect, then, the private plantation company leases the land from LCDA, acting as trustee for the landholders, in return for 60 per cent of the profits, and it can then manage the estate as if it was a private concern.<sup>41</sup> Landholders can obtain employment on the estate but are not involved in any management decisions or financing arrangements; in practice, most of the labour, particularly for harvesting, is now provided by Indonesian workers.

By 2006 there were 34 joint venture projects on customary land with a total of 33,000 ha planted with oil palm (Table 2). Thus only 6 per cent of the total oil palm area is in Konsep Baru projects, less than half the area under group or managed smallholdings. Over a third of the area in joint venture schemes is in one large project, the Kanowit Oil Palm Project, commenced in 1995 with Boustead Holdings Berhad as the joint venture partner. However, the project has given rise to a number of issues (Ngidang 2002, 2005; IDEAL 2001; Matsubura 2003). Some of the early concerns expressed by both participants and non-participants were: there was little opportunity to pursue alternative land-use options as almost all the land was planted with oil palm; the workers received low wages and disliked plantation work; there was no involvement in the management of the joint venture company; there was uncertainty about the level of future dividends; there was uncertainty about the status of the land at the

<sup>41</sup> Fold and Hansen (2007) also argue that the Konsep Baru policy was merely a way to alienate more land for private development at a time when most of the suitable state land was becoming scarce.

end of the project, or if the project failed. Similar concerns were expressed by customary landholders in other areas earmarked for Konsep Baru schemes (Songan and Sindang 2000; Ngidang 2000; Majid-Cooke 2006). These concerns seemed well justified in that, by 2007, more than a decade after the policy was launched, none of the joint venture companies had issued dividends. In 2008 this led to protests and blockades in the Kanowit project (Thien 2008), calling into question the future of the joint venture approach.<sup>42</sup>

Independent smallholders have grown up at a rapid rate in the past decade, particularly in the vicinity of the large-scale estates and palm oil mills in northern Sarawak (Majid-Cooke et al. 2006). In this case, customary landowners are developing their land using their own labour and capital, without assistance from a government agency. However, some who have good connections with Chinese traders obtain finance to establish their plantations, and in some cases wage labour is employed, including Indonesian workers who prefer this arrangement to working on private or government estates. Some of this planting is clearly pre-emptive, that is, to prove to government agencies who may seek to allocate the land for a private estate or joint venture estate that it is being productively used (Majid-Cooke 2006). Subsidised or supported smallholders are those who plant on individual lots, perhaps in a contiguous area, with varying degrees of support from government agencies such as the Department of Agriculture or the Malaysian Palm Oil Board. By 2006 there were around 3,418 smallholders (independent and supported) with an average planted area of 5.3 ha. Though the area planted by these smallholders was only 3 per cent of the total in 2006 (Table 2), the growth has been rapid, from only 670 ha in 1990 to the current figure of 19,000 ha – more than doubling in the past six years. Subsidised or supported smallholdings account for

<sup>42</sup> By August 2008, in response to the protest, a small "interim dividend" had been paid in one of the six Kanowit estates, and "advances" were paid or promised for the others.

only 2,040 ha or 12 per cent of the total area of smallholders in these two categories. Thus the growth in smallholdings has largely occurred without government support, and despite some opposition from sections of the government favouring estate development.

It is true that, unlike rubber or pepper, oil palm cultivation displays economies of scale in first-stage processing, and the harvested product is not storable, so there is a need for a minimum planted area within a maximum distance from a mill for timely and efficient conversion of fresh fruit bunches into palm oil. This is the technical basis of the argument for large-scale, centrally managed production systems. However, private estates are only one such system. The varied history of oil palm expansion in Sarawak outlined above shows that a spectrum of institutional arrangements, including those that rely on smallholder initiative, can deliver these benefits. In particular, the adoption of oil palm by unassisted smallholders in those regions with access to mills is an unsurprising extension of Sarawak's long history of autonomous smallholder development.

## Conclusion

Taking the long view of agrarian transition in Sarawak gives a new perspective on the processes of agricultural intensification and expansion. Successive waves of agricultural expansion, overlapping in time and space, have entailed the intensification of previous land and forest use, as people, crops, and farming systems have spread through the landscape. These transitions have entailed not only agro-ecological or land-use change but also the (sometimes violent and often contested) reworking of property rights, territorial control, and modes of agricultural organisation – from nomadic bands, to longhouse-villages, to independent family smallholdings, to large private and public estates. The result has been a distinctive layering or imbrication of socio-ecological landscapes such that elements of pre-existing landscapes influence both the possibilities and constraints of subsequent transi-

tions, seen most clearly in the political geography of recent oil palm expansion.

The first and second agrarian transitions have been driven, not only by demographic change, as highlighted in Boserup's initial contribution, but also by socio-cultural shifts, improvements in transportation, market trends and fluctuations, new crop technologies, and changes in agrarian laws and policies, as later writers in the Boserupian tradition (including Boserup herself) have elaborated. Broadly consistent with the Boserup hypothesis, the intensification of land use has resulted in the long-term, aggregate-level growth of food output and incomes in Sarawak, beyond the growth in rural population, though obviously not all members of the population shared equally in this growth. Food output grew due to the areal expansion of hill rice cultivation and both the areal expansion and increased yield of wet rice cultivation. Incomes grew due to the complementary incorporation of cash crops, notably rubber, pepper, and oil palm, in previously subsistence farming systems. This growth in incomes, though assisted by government programs in the post-war era, has been largely due to innovation and investment on the part of both independent and village-based smallholders.

The environmental constraints to intensification in Sarawak have, however, been more significant than anticipated by Boserup, such that further intensification of hill rice cultivation has not been seen as a productive use of household labour. Rather, in recent decades, the spatial concentration of smallholder agricultural production in more favourable locations (both environmentally and in relation to infrastructure) has resulted in parallel trends of intensification (and commercialisation) in these locations and disintensification in the more remote forest-fallow lands. Hence the widespread and remarkably persistent belief that shifting cultivation would result in a downward spiral of land degradation and deforestation has not been borne out.

Boserup's theory also depicts an evolution of land tenure from rotating use rights of relatively low exchange value to permanent, individual

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rights of high exchange value as land use intensifies. Binswanger and McIntire's extension of this theory predicts the emergence of indebtedness, inequality, landlessness, and tenancy as commercial tree crops are incorporated in the land-use system. In Sarawak, however, this evolutionary pathway has not been as inexorable or unidirectional as the theory suggests. Most shifting cultivators have in fact recognised permanent household rights to cleared land within the community territory since the pioneer phase. In some cases land scarcity has subsequently induced communities to adopt rotating use rights to maintain equitable access to land for subsistence, thus reversing Boserup's hypothesised sequence. Moreover, the recent intensification and commercialisation of smallholder agriculture has not led to significant landlessness and tenancy, as seen in many parts of Indonesia and the Philippines. Among the reasons are Sarawak's low population pressure and relative land abundance (particularly for intensive crops like pepper), the widespread provision of capital inputs by the state in the form of planting grants, legal safeguards against debt-induced loss of customary land rights, and the high rate of permanent rural-urban migration associated with Malaysia's rapid economic growth and structural transformation. However, as communities become "less bounded socially and spatially",<sup>43</sup> informal land transactions are occurring on an increasing scale, particularly in the now extensive peri-urban zone, warranting further detailed research to trace the processes involved and their implications.

The third agrarian transition, involving plantation agriculture in conjunction with commercial logging, is beyond the scope of Boserup's analysis, being driven not by local population growth or smallholder market opportunities but a radical policy shift favouring the expansion of private investment from both inside and outside Sarawak, coupled with the large-scale importation of Indonesian labour (the latter a demographic consequence rather

than a cause of intensification). No doubt the output of commodities – both timber and palm oil – from the remaining forestlands has increased substantially as a result of this intensification of resource use. However, unlike earlier land-use changes, the broad-scale impacts on the hill and swamp forest environments have been devastating, while the benefits to local livelihoods have been, at best, marginal (as in many SALCRA schemes) and, at worst, totally detrimental (as in failed joint-venture schemes or private estates that exclude customary landholders).

As it turns out, then, Charles Brooke's desire to see "the jungle falling left and right" has been more than fulfilled in recent decades, but his agrarian populist vision of "people settled over what are now lonely wastes" has not been realised. In fact, the notion of "lonely wastes" has taken on a new meaning in a landscape of logged-over and heavily degraded forests, end-to-end oil palm plantations, and half-deserted longhouses (only partly offset by the presence, not of settler homesteads as Brooke envisaged, but the hidden-away barracks of migrant Indonesian labourers). Similarly, Taib Mahmud's vision of "modern agricultural development along the major trunk road with rows of plantations" has been largely achieved, but his long-held plans to have "villages well organised in centrally managed estates with a stake of their own in them" has proved more contentious and elusive. Expansionist agrarian policies that fail to acknowledge the complex historical and geographical layering of customary usages and claims – that treat the landscape, in other words, as if it was "levelled terrain on which to build (dis)utopias" (Scott 1998: 89) – will invariably encounter the kinds of frustration, losses, conflict, and resistance experienced during the third agrarian transition in Sarawak.

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<sup>43</sup> Tania Li's phrase.

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