

Theories of swidden agriculture, and the political economy of ignorance

MICHAEL R. DOVE

The Rockefeller Foundation and Environmental Studies Center, UGM, Yogyakarta, Indonesia

Abstract: Swidden agriculture is today the focus of a great deal of debate in the context of agroforestry development in humid, tropical countries. This paper argues that much of this debate deals not with the empirical facts of swidden agriculture, however, but rather with widely-accepted myths, and that this explains the widespread failures of developmental schemes involving swidden agriculturalists. The paper examines three of these myths in some detail.

One myth is that swidden agriculturalists own their land communally (or not at all), work it communally, and consume its yields communally. The truth is that their land (including land under secondary forest fallow) is typically owned by individual households, it is worked by individual household labor forces and/or by reciprocal but not communal work groups, and its yields are owned and consumed privately and individually by each household. A second myth is that swidden cultivation of forested land is destructive and wasteful, and in the worst cases results in barren, useless grassland successions. The truth is that swidden cultivation is a productive use of the forests, indeed more productive than commercial logging in terms of the size of the population supported, and forest-grassland successions are typically a function not of rapaciousness but of increasing population/land pressure and agricultural intensification – the grasses, including *Imperata cylindrica*, having value both as a fallow period soil-rebuilder and as cattle fodder. A third myth is that swidden agriculturalists have a totally subsistence economy, completely cut off from the rest of the world. The truth is that swidden agriculturalists, in addition to planting their subsistence food crops, typically plant market-oriented cash crops as well, and as a result they are actually more integrated into the world economy than many of the practitioners of more intensive forms of agriculture.

In the conclusion to the paper, in a brief attempt to explain the genesis of these several myths, it is noted that they have generally facilitated the extension of external administration and exploitation into the territories of the swidden agriculturalists, and hence can perhaps best be explained as a reflection of the political economy of the greater societies in which they dwell.

1. Introduction

According to recent estimates, swidden agriculture is practised by 240 to 300 million people on nearly one-half of the land area in the tropics [32, 53, 65]. Given the magnitude of the land and population involved, and given the enormous efforts currently being directed towards social and economic development in most tropical countries, it is perhaps inevitable that swidden agriculture has become the subject of intense scrutiny and debate. It is not surprising that the role of swidden agriculture in the developmental process be subjected to much analysis and discussion. What is surprising, however, is

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that much of what is debated and discussed is not the reality of this system of agriculture but rather a much distorted, mythical conception of it. This distortion interjects an added and unwanted factor into the development process and, by its prevalence and non-recognition, causes this process to be less successful than would otherwise be the case.

In this paper I will illustrate the problem by briefly analyzing three of the most prevalent myths concerning swidden agriculturalists: the myths of their primitive communalism, their mis-use of the environment, and their isolation from the regional, national and international economies. I will argue that the swidden cultivators' economic relationships are actually not communal but reciprocal, that their use and transformation of the environment is usually highly productive and a rational function of their particular population/land balance, and that they have strong links to the global economy. Finally I will suggest that the persistent miscomprehension of each of these points is explicable in terms of the economic and political self-interest of the broader societies in which the swidden agriculturalists dwell.

2.The question of primitive communalism

Swidden agriculturalists tend to use their land and labor in a manner which is different from that of more intensive agriculturalists. Many observers have reacted to this foreignness as evidence of a basically different ideology, namely, an ideology of 'communalism' [17].

2.1 The question of communal land

Some observers (especially from governmental bodies) have maintained that swidden cultivators possess either communal land tenure or else no land tenure at all [46]. This conclusion is based on the erroneous interpretation of two phenomena: first, the failure to distinguish between village rights and household rights and, second, a misunderstanding of the great ratio of fallow time/land to cultivation time/land. Regarding the latter, at any given point in time swidden agriculturalists have only a relatively small proportion of their land under active cultivation: most of the land in a typical village's territory is covered by secondary forest (perhaps mixed with some planted fruit trees). Too often, outsiders perceive this forested land as unworked and hence unowned — whereas in fact it is merely fallowed land. In a typical Southeast Asia system of cereal swiddens, the swidden is fallowed after each cropping (or two) and allowed to succeed back to forest, which then eventually restores the land to a state in which it can be cultivated again, and so on. The fallow period thus plays an important role in the overall agricultural cycle, and consequently fallowed and forested land is usually no more a 'free' good than is land under cultivation. Throughout Southeast Asia, rights to secondary forest are usually held by specific, individual households; these rights being initially acquired by virtue of the opening of the primary forest on that land,

and then extending to the secondary reforestation which follows each subsequent cropping there [15]. The failure of outsiders to recognize the existence of these rights, rights not only to the cultivated land but also to the fallowed land, is a source of continual difficulties in the development of human and natural resources in the territories of swidden agriculturalists [39, 51].

In the absence of such recognition, some swidden agriculturalists have modified their land-use practices in an artful adaptation to the conception of land rights prevailing in the broader society. For instance, some Banjarese in South Kalimantan (Indonesia) customarily plant fruit trees (durian, etc.) in their forest swiddens, although their intent is not to thereby convert that swidden land into permanent fruit groves: after the passage of a normal fallow period, they recultivate the land, cutting down the scattered fruit trees in the process. Rather, their purpose in initially planting these trees is to obtain a classification for their fallowed land, in the eyes of government officials, as *kebun buah* 'fruit grove' rather than merely *hutan* 'forest'. The value of such a classification to the Banjarese is two-fold. First, since the government is legally obliged to recognize private title to individual, planted fruit trees but not to natural, secondary forest, its perception of land as fruit grove as opposed to forest has obvious implications for continued control of the land (in the context of widespread opening of forested lands for logging, plantations, settlements, etc.) by the Banjarese as opposed to the government itself. Second, the official perception of the land as fruit grove enables the Banjarese to evade governmental proscriptions against cutting down forest for swiddens, since the Banjarese can claim in each case that they are merely clearing an unproductive fruit grove for replanting. The Banjarese strategem in planting fruit trees in their swiddens may appear to be a means of deceiving the government, but it is really only a means of securing its de-facto recognition of a fact which otherwise escapes it, namely that the forest fallow atop previous swidden sites is a definite part of an ongoing agricultural cycle of a specific, individual household or group.

It is incorrect, therefore, to perceive the secondary forest which has grown up over previous swidden sites as unowned. It is equally incorrect to perceive it as owned communally. In Indonesia, for example, it has long been known that the concept of 'communal land ownership' obfuscates important distinctions, in terms of their rights to land, between the household and the village [67]. In a typical case, among the tribal Kantu' of West Kalimantan, each village or longhouse holds rights to a distinct, bounded territory. This right chiefly consists in the ability to prohibit anyone from another village from farming land (especially never-farmed land, covered by primary forest) within that territory. This village-wide right of proscription is not the same as the individual right of use, however [15].

Use-rights or farming rights to given sections of land/forest are held by individual households. As stated earlier, such rights are created when a given household clears the primary forest from a given section of land. It follows

that as the age, composition and histories of different households vary, so too will vary the amount of primary forest that they have been able to clear; and so too, consequently, will vary the amount of secondary forest to which they hold rights. In the Kantu' village of Tikul Batu, for example, each household was found to hold rights to an average of 24 swidden-sized sections of forest, but the standard deviation from this figure was 13.6 and the overall range of variation was from 4 to 52 sections. Given such wide variation in individual land rights, it is clearly misleading to label such systems of land tenure as 'communal'. This label incorrectly focuses on land rights at the level of the village to the exclusion of the individual household level, it confuses residual rights with rights of use, and it obscures the fact that whereas the former are the same for everyone in the village, the latter can vary considerably from one household to the next.

2.2 The question of communal labor

Just as many observers have erred in concluding that swidden cultivators hold land in common, so have many erred in concluding that they work this land in common. This latter conclusion often derives from the observation of multi-household work groups, the use of which is common among swidden agriculturalists. The use of such work groups can be explained, in many cases, as a way of overcoming time constraints imposed by techno-environmental factors on the practice of swidden agriculture [7, 17, 18, 43]. In the course of a typical agricultural year, there are work seasons in which the available labor resources are under great pressure in the swiddens followed by seasons in which labor is forcibly idled. To return to the Kantu' of West Kalimantan, a household which cuts one swidden from secondary forest will experience an average of over 100 days during the year on which none of their labor can be used in that swidden, while a household cutting primary forest instead will experience almost 200 such days. The Kantu' diminish these numbers of 'idle' days by their participation in inter-household labor arrangements. On some of the idle days in a given household's swidden, it will work in the swidden of another household; and when this latter household's swidden is idled it will pay back this labor by working in the swidden of the first household. The labor given by one household to another in such arrangements is always reciprocated in this way on a strict man-day for man-day basis. Thus, the multi-household work group represents not communal labor but reciprocal labor, since the labor input of each household is always reckoned separately, and since the venue of labor, namely the swiddens, are also always reckoned as the private property of one household or another.

The misconstrual of this reciprocal labor as communal labor, by external observers, can have a number of unfortunate consequences. In some instances the national governments have felt political concern over the purported primitive communalism of their swidden cultivators, leading to misguided attempts to suppress the basis for and expression of this communalism (e.g.,

longhouse organization) and to stimulate the development in its stead of an individualistic, entrepreneurial character [17]. Such attempts are misguided because most swidden agriculturalists are, as suggested earlier, already fiercely independent and self-oriented producers. Moreover these attempts, far from stimulating the swidden economy, may actually destabilize it: since the perpetrators of these efforts are ignorant of the role in this economy of reciprocal labor and the constraints which give rise to it, in the event that they succeed in eliminating this labor pattern they typically offer nothing else to take its place.

Ill consequences also attend the governmental perception of this 'primitive communalism' not as a political threat, but as a potential asset in rural development. This is based on the erroneous notion (or political fantasy) that peasants are predisposed to self-sacrifice for the group good, which has given great currency to the idea that rural development is best stimulated through peasant communes, cooperatives, and cooperative activity [29]. However, many of the critical studies of this topic caution against a naive belief in the promise of group or cooperative farming, noting that the modern cooperative farming ideal is often very different from the ideals of the peasant societies onto which it is imposed [71]. As discussed earlier, traditional cooperation between swidden farmers is typically based not on the greater good of the group, but on strict reciprocity and self-interest.

2.3 The question of communal consumption

The myth of primitive communalism among swidden agriculturalists encompasses a third element in addition to land and labor, namely the product of this labor. Criticism is often heard in government circles of the communal consumption among swidden cultivators, especially those living in multi-household dwellings such as the Dayak longhouse. The criticism is that this pattern of consumption robs individual workers and households of incentives to greater production. The conclusion of reduced incentive in such circumstances may or may not be warranted, but what is relevant here is that the initial premise of communal consumption has no empirical basis. In some swidden groups, it is true that some agricultural produce is passed between different households, but it is more often in the guise of loan or payment-in-kind for farm labor than as outright gift; and in any case it is always at the discretion of the donor household. Rarely if ever is the harvest of one household subject to the claims of another household, and in no case known to me are the harvests of two or more households ever 'pooled'. Among swidden cultivators as among farmers in more intensified agricultural systems, there is a nearly universal rule of 'One household, one farm, one cooking pot'. Among the Kantu' of West Kalimantan, thus, the basic definition of a household under their own customary law is a group of people who eat together. By cultural definition, therefore, members of two or more different households do not join in consumption.

3. The question of misuse of the environment

A second, major myth in the study and development of swidden agriculturalists concerns the way in which they perceive, exploit and alter their environment, the tropical forest. The pioneering studies of swidden agriculture in Southeast Asia long ago demonstrated that long-fallow forest farming is a highly sophisticated, productive use of the environment [9, 11, 22, 36, 61]. Nevertheless, many observers continue to view the cutting and burning of the forest for swiddens as a basically wasteful act.

3.1 *Swidden agriculture versus commercial logging*

Implicit in such criticism is the belief that other, potential usages of the same forest – especially for commercial timber production – are less wasteful. Rarely, however, is this belief based on a detailed comparison of the alternate systems of exploitation.¹ Such a comparison, of swidden agriculture versus commercial logging, yields some surprising conclusions. Over each ten-year period, for example, the Kantu' of West Kalimantan can take at least one-half metric ton of milled rice out of one hectare of secondary forest, using their techniques of swidden agriculture (assuming one year of cropping, with a half-ton harvest, followed by a nine-year fallow). This is the equivalent of \$179 in 1981 dollars, based on the then market price of 225 rupiah per kilogram of milled rice in the markets of Kalimantan [41], and the exchange rate prevailing then of 630 rupiah to the dollar. Since, while rice is the principal crop of the Kantu' swiddens it is by no means the only crop – an average of twenty additional non-rice crops are planted in each swidden – the above figure can be conservatively increased by 50% to \$268, to represent the entire output of the swidden. This total can now be compared to the potential yield of that same hectare of forest if exploited under a system of commercial logging (which is in fact the alternative system of exploitation proposed by the government for many of the territories of swidden agriculturalists in Kalimantan and elsewhere in Indonesia). In 1981, it was estimated that one hectare of secondary forest in Indonesia would yield a gross return of \$1,054 (in constant dollars) over ten years, under sustained yield management [5].

It may be argued, therefore, that commercial logging is a more desirable use of the forest than swidden agriculture because the gross yield of the former is four times that of the latter. However, gross yield is only one basis – and not necessarily the most revealing – for evaluating alternative systems of resource exploitation. It is often more useful, especially when planning the development of rural populations, to evaluate alternative systems in terms of their characteristics not simply of production, but also consumption [8, 30]. One way to do this is to calculate the number of people who are supported by each system.

Average, annual per-capita consumption needs among the Kantu' include approximately 220 kilograms of milled rice, in addition to various amount of

the other, non-rice, swidden cultigens. The total dollar value can be estimated at \$118 per capita per year for 1981. Given this level of consumption and given the previously cited level of productivity of secondary forest under exploitation by Kantu's system of swidden agriculture, it is seen that this system currently supports approximately 23 persons per square kilometer.² In calculating the equivalent figure for the system of commercial logging, it is important to recognize that the population which is supported by this system differs in some important respects from the one supported by the system of swidden agriculture. Of most importance, the former is urban and consumer-oriented, with a much higher standard of living. If we equate the loggers' consumption requirements with their income, the very lowest of which is perhaps \$1150, per year, these requirements can be conservatively estimated to be ten times as great as those of the Kantu'. Using this estimate and the previous estimated return from the commercial logging of secondary forest, it can be calculated that this system of exploitation supports only 9.4 persons per square kilometer – less than one-half of the figure under the system of swidden agriculture.

The calculations used in the preceding comparison are quite simplistic.³ Nevertheless they clearly suggest that in an objective comparison of forest exploitation by swidden agriculture versus commercial logging, not only in terms of yield but also in terms of population supported, there is no unequivocal basis on which the former can be called more 'wasteful' and less desirable than the latter. A similar conclusion follows the comparison of swidden agriculture with other, alternative systems of land use. In comparing swidden cultivation with wet rice cultivation, for example, although the size of the population supported is usually greater in the latter than in the former, the return on their labor is usually much smaller [11, 12, 19], and sometimes the returns per unit of land are even smaller as well [10].

These several comparisons call into question not only the accuracy of many criticisms of swidden agriculture, but also the motivation for these criticisms. They suggest, for example, that the 'waste' that loggers perceive in swidden agriculture is specifically a waste (of the forest) *to them*, as opposed to a genuine waste to *all* of the populations involved, at some broader level of analysis. To take another example from the colonial era in Indonesia, it is now clear that what was signified by the Dutch term for swidden agriculture, 'robber economy', was not that this system of agriculture robbed either the physical environment, its practitioners, or the country as a whole [70], but that it 'robbed' the colonial government which had little way of controlling and hence exploiting such dispersed, uncaptialized, peasant farmers. In evaluations of the use of forest resources by swidden agriculturalists, greater heed must be paid to this connection between self-interest and perspective.

3.2 Swidden agriculture and grassland succession

More attention must be paid to the problem of perspective not only with regard to exploitation of the forest by swidden agriculturalists, but also with

regard to attendant environmental succession. Considerable attention is being paid today to the succession of forest to grassland in the humid tropics. This is undeniably a transformation of major proportions. In Indonesia, for example, in 1976 it was estimated that 64.5 million hectares or almost one-third of the country's land area lay under grassland – for the most part a fire climax grassland of *Imperata cylindrica* [62]. This succession is almost universally deplored. The grass itself, *Imperata cylindrica*, is variously excoriated as 'practically worthless for grazing' [53], 'useless for cultivation' [46], or for anything else [23], 'of little economic value and serious pest' [52], 'one of the world's worst weeds' [2] and 'a green desert' [27]. The succession to the grass is called a process of 'ecological deterioration' [25] or 'degradation' [69] which cannot be reversed [13, 25]. It is attributed either generally to swidden agriculture [50, 52], or specifically to a 'break down' in the system of swidden agriculture [53], chiefly involving the shortening of fallow periods under increasing population/land pressure [23].

All of these conclusions are flawed to a greater or lesser extent, chiefly due to their incomprehension of the perspective of the principal actors in this succession, namely the swidden cultivators themselves. Their system of agriculture can indeed, under certain circumstances, stimulate a grassland succession. This typically occurs when the land is cropped two, three or more times within the space of a few years [59], as opposed to just once every 5–15 years (e.g.). Such intense cropping is sometimes the product of a rapacious attitude towards the land, as among contemporary migrants in East and South Kalimantan [66] or among the historic Iban of Sarawak [22]; but more often it is the product of increasing population pressure on a finite (or decreasing) land base. More specifically, and following Boserup [4], I suggest that grassland succession is a function of a particular balance between land and population, in the sense that it occurs because grassland is the vegetative cover most appropriate to that balance. This appropriateness is highly visible among the Banjarese of South Kalimantan, whose upland valleys are largely covered in *Imperata* [16].

The Banjarese today are in the midst of a process of agricultural intensification. Some still make forest swiddens high up on the valley sides, but many others farm the grasslands of the valley bottoms. These grasslands are the relatively recent product of intensified exploitation of the forests nearest to the Banjarese settlements. Using brush-sword, fire, and cattle-drawn plough, the Banjarese open up the grasslands, sow them with dry rice, and repeat this annually for as long as 5–7 years, before leaving the land to a three-year fallow [35, 62]. Vigorous regrowth of the *Imperata* is taken by the farmers as a sign that the fallow can be ended and the land returned to cultivation [57, 58]. In this agricultural cycle, therefore, *Imperata* plays the role of a fertility-restoring, fallow period ground cover [2, 58]. The second major value of *Imperata* to the Banjarese is as graze for their livestock [11, 60], its protein content being kept at a tolerably high level by frequent

burning. The grasslands also have minor value as a source of roof-thatching [11], and as a place to hunt the sambhur deer, a known lover of *Imperata* [45]. Given the current, integral role of *Imperata* in the agrarian ecology of the Banjarese, it seems likely that the role of the Banjarese in the initial grassland succession was more than a passive or unknowing one [6, 55, 57]. In any case, it is clear that the Banjarese play an active and conscious role in maintaining the grasslands as they are today, by actively preventing further, undesirable successions to either ligneous complexes or other herbaceous complexes. In the absence of this active management, these further successions can and do occur, leading eventually to re-establishment of secondary forest on the land [6, 12, 21, 42, 46, 52, 55].

In cases like that of the Banjarese, the predominant views of forest-grassland succession as cited at the beginning of this section have little or no explanatory value. They cannot explain the creation or persistence of the grasslands because they ignore the latter's integral role in a particular agrarian ecology.⁴ Nor, for this same reason, can they guide successful, future development in the grassland regions. Some developmental plans, based on the prevailing myths and thereby presuming the grasslands to be worthless as they are, propose their reforestation, reseeding, resettlement and so on [5, 13]. The actual, very different role of the grasslands means that the economics and politics of such planning is at best problematic and at worst fatally flawed [33, 60]. Not until this role is fully appreciated is successful development, in whatever direction, likely to be possible.

4. The question of the insular subsistence economy of the swidden agriculturalists

A widespread view of swidden agriculturalists is still of a 'poor, backwards, isolated' people [49, 50], whose economy provides 'perennial poverty' and 'subsistence but little else', [53, 54] and is without ties to broader trading and commercial networks [14]. This view is fundamentally flawed, and the flaw is due to the misconstrual of swidden farming as not just the focus but the sum total of the economy, and also to the misconstrual of geographical remoteness as economic isolation [37]. It is true that swidden agriculturalists largely subsist on the food crops grown in their swiddens; and it is also true that they tend not to market any of these food crops, even when there are surpluses (which is a highly adaptive strategy, since stored crops are needed to meet the frequent and unpredictable harvest shortfalls). However, in addition to this clearly subsistence-oriented making of swiddens, all or almost all swidden cultivators also engage in major, non-swidden economic pursuits — and these latter are typically the basis for strong ties between them and the rest of the world [61].

Since prehistoric times, swidden cultivators have been major actors in the collection and international trade of such jungle produce as birds nests, wild

resins, bezoars and so on [47]. The existence of ancient Chinese ceramic jars in Dayak longhouses deep in the interior of Borneo attests to both the antiquity and extent of this trade. In more recent times this trade has continued, indeed increased in importance, but with cash crops tending more and more to supplant jungle produce. One of the best-known examples of this involves the cultivation of opium by swidden agriculturalists in the highlands of Thailand, Laos, and Burma [26, 39]. Less well-known is the fact that Indonesia's pepper, coffee, bezoin, coconuts, tobacco and rubber are also mostly grown by swidden agriculturalists [27, 48].

Rubber is the most important and least understood of these crops. In one Kantu' Dayak longhouse of swidden agriculturalists I studied, located nearly two weeks' travel by river boat into the interior from the coast of Kalimantan, 95% of the households owned one or more rubber groves apiece, with the average household's groves containing a total of 800–900 trees [22, 25, 34]. These Kantu' subsist on rice and assorted non-rice cultigens from their swiddens, but they make most of their market purchases – chiefly tobacco, salt, kerosene and cloth goods – using the proceeds from periodic tapping in their rubber groves. Most of Indonesia's rubber is produced by this sort of tapping for these sorts of reasons: in 1982 it was estimated that 80% of Indonesia's rubber was being produced by small holders [1], most of whom were also swidden agriculturalists [48, 56, 64]. The picture is largely the same for Indonesia's other export crops [48, 63].

As a result of this participation in cash cropping, Indonesia's swidden cultivators make more of a contribution to the nation's export economy than do the country's wet rice agriculturalists [48]. This is a startling fact, given the common, invidious comparisons of swidden agriculture to wet rice agriculture [19]. Leaving the question as to why swidden agriculture is so wrongly maligned until the conclusion to this paper, it remains to ask how its practitioners can be such successful cash croppers. Some scholars have viewed this very success as a failure, attributing it to the baleful, involuting influence of colonial and post colonial government [27]. More useful is the observation that the rubber smallholdings of Indonesia (e.g.) are more competitive than the plantations because they are less capitalized [14]. Most useful of all is Pelzer's [48] thesis that the swidden cultivators of Indonesia have been able to successfully exploit opportunities for cash cropping because of their favorable location, their favorable environment, and the flexibility of their system of subsistence agriculture.

Pelzer's conclusions are basically supported by my own research on the Kantu' of West Kalimantan. The extensive nature of their swidden system means that the opportunity cost of land for rubber cultivation is low, and the extremely seasonal nature of work in the swiddens means that the opportunity cost of labor to tap the rubber trees is also low (*viz.*, during slack periods in the swiddens). In addition to being complementary in these ways [25], I

believe that swidden agriculture and rubber cultivation are also mutually supportive. In normal times the Kantu' subsist on their swiddens and draw on their rubber groves to meet market needs; but when their swiddens fail in a given year, they can draw more heavily on their rubber groves to meet more of their subsistence needs (viz., by buying rice) as well [22, 25, 64]. On the other hand, when there is a temporary drop in the price of rubber, such that tapping the groves is no longer profitable, the Kantu' can still count on their swiddens minimally for subsistence [64]. This relationship insulates their overall economy from short-term market fluctuations, and ensures that when the price of rubber rises back to a profitable level, there will still be groves to be tapped and Kantu' to do the tapping.

It is surely the symbiotic character of this relationship which has made the cultivation of rubber (among other cash crops) by swidden agriculturalists as perduring and widespread as it has become.⁵ It is also this symbiosis which is least known to – much less appreciated and utilized by – governing and developing bodies. For example, in the current efforts to further develop the export crop sector of the Indonesian economy, there is as yet little or no recognition being paid to the historic association between this sector and swidden agriculture and agriculturalists. As a result, current development is focusing either on plantations or else on smallholdings whose owners are pledged to full-time cultivation, neither of which system has the strengths of the traditional one just described [28].

5. Discussion and conclusion

In this paper I have attempted to show the reality behind several of the commonest myths of swidden agriculture. It should be clear from this exercise that the myths are easily dispelled, as they have been periodically since Conklin's [11] pioneering work nearly 30 years ago. The fact that these myths are so easily and frequently dispelled compels me to ask why they have been nonetheless so persistent. The answer to this question can perhaps be found in the consequences that these myths (as held by outsiders) have had for the swidden cultivators (as well as the outsiders themselves).

The view of Indonesian swidden cultivators' lands as either communally owned or not owned at all clearly helped to justify the former colonial government's self-serving administration, expropriation, and exploitation of rural lands, especially forest lands [57]. The view of forest-farming as the destruction of a valuable natural resource, and the view of grasslands as wastelands, have similarly served both then and now to justify the extension of external control into the territories of swidden agriculturalists – in many cases resulting in the alternative exploitation of forested land for commercial timber extraction and of open grasslands for timber plantations [16]. Finally, the studied ignorance of the role of swidden agriculturalists in smallholder, cash crop production has clearly been in the interest of the alternative

development of plantations, whether historically or currently, by private and governmental interests. In some cases this has only meant that the swiddeners cum smallholders have not received the technology and extension assistance that they might otherwise have received, but in other cases (e.g., in some parts of Kalimantan today) it has meant that their smallholdings have actually been cleared to make way for large-scale plantations.

In all of these cases, it is patently obvious that the prevailing myths have in no way benefitted the swidden cultivators themselves. In most cases, bearing in mind the evidence presented in the body of this paper, it can be argued further that the policies supported by the myths also have not benefitted the greater society as a whole. Rather, in each case it appears that only certain groups or classes have profited by the myths, these being those groups with the most political and economic capital, and the greatest ability to direct and benefit from large-scale, capital-intensive, resource exploitation [19]. These myths of swidden agriculture are part of the myth of a 'dual economy' [3], which has been used since colonial times to justify the exploitation of a very rational, productive, and entrepreneurial but politically vulnerable peasantry, by an often less rational, less productive, but more powerful urban and governing elite.

Notes

1. See Kunstadter [37] for one of the very few comparisons of the economics of swidden agriculture and commercial logging, and see Kunstadter [38] for a comparison of the respective world views.
2. Under other circumstances the carrying capacity of a territory under swidden agriculture can be far higher [20].
3. I used gross yields instead of net yields because although the former are less readily compared, the latter are not easily conceived or reckoned within a system of subsistence agriculture. I did not consider the 'multiplier effects' of commercial logging in recognition of the fact that the system of swidden agriculture is also part of a broader economic context, which it feeds into and supports (see Section 4).
4. The widespread incomprehension of the *human* ecology of secondary forest and grassland successions is one likely reason why, as Richards [52] has said, they represent the most serious gap in current knowledge of the tropical forest.
5. Scholars who have not understood this relationship have been unable to make much sense of the phenomenal growth of rubber smallholdings in Indonesia [68].

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