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THE MAKING OF “NEW SEED”: RITUAL, POLITICS AND RICE SEED PRODUCTION IN INDONESIA

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Introduction¹

In the context of Indonesia's rice intensification programs, “new seed” is a common metaphor used to refer both to seed distributed within these programs, and to new, high-yielding varieties which were a compulsory part of packages delivered to farmers during the “Green Revolution”. The literature has mostly stressed the second component – spread of new varieties – and neglected the first: the transition to a different mode of seed production and distribution. Although both processes are closely inter-related, the analytical stress on production of rice seed in different institutional settings, on its fertilization within different cultural traditions can bring up interesting avenues for further research. How is seed reproduced? Who reproduces it? What institutional mechanisms have been put in place to guarantee seed fertility or viability? What interests do they reflect? In which language are they described? These are all questions implied in the idea of a far-reaching transition to “new seed”, but have been scarcely addressed so far.

This article thus proposes to take a preliminary look at the cultural and political implications of seed production. Drawing from case studies and the general literature, I will first describe seed treatment practices in traditional societies. I will then discuss some of the fundamental changes that occurred since the 1960s after the implementation of a state-controlled system of seed multiplication. My argument will be concerned with rice as the staple food of most Southeast Asian societies. I will draw from three cases to illustrate my major points: First the Iban of Sarawak as an example of a society supported by subsistence agriculture of hill rice where

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seed is mostly saved by individual households during harvest. Second rice intensification programs in Indonesia which show a crucial transition from a state interfering only marginally with seed production to a state that controls seed production and variety use to a substantial extent. Third the Rejang of Southwest Sumatra which show the interaction of national and local procedures for seed production in the context of state intervention.

The concept of seed

Seeds – in the sense I use it here – are the parts of cultivated plants that are used to generate or multiply these plants. Practices related to seed are at the center of every agricultural system. To have enough seed of good quality has always been a central concern for cultivators, and a multitude of technical and ritual procedures were developed to ensure availability and fertility of seed.

In subsistence agriculture, the partition of the harvest into food for consumption and seed created a direct link of food and seed production. Only with the industrialization of agriculture and the development of scientific plant breeding were these processes separated to a large extent. Commercial companies or seed grower associations started to specialize in the production of “good seed”, often closely collaborating with state policies and using crop varieties that had resulted from scientific breeding programs. In most industrialized countries, a “formal seed sector” (Cromwell 1996) has been created since the early decades of this century. The formal sector has fundamentally altered relations of agricultural producers to the seed they use². Its two main characteristics are: First, that it produces seed of varieties which were selected with the use of scientific plant breeding methods, and second, that seed is produced by specialized seed suppliers which are formally constituted both in the private and in the public sector. Seed suppliers can be government companies, seed grower associations, or domestic and multinational companies. In many countries, the growth of

2 See Kloppenburg (1988) for a comprehensive analysis of what he – informed by Marxist political economy – calls the commodification of seed in modern (Western) agriculture.

the formal seed sector for major crops has been supported by the state and thus been part of a development policy *avant la lettre*.³

In the first development decades (1960s to 1980s), the establishment of a formal seed sector has been considered a key element in raising agricultural productivity. The "Green Revolution" as it was conceived in the 1960s revolved not only around new, fertilizer-responsive varieties but also on the organizations needed to produce sufficient and reliable seed. Though the notion of "new seed" (or "new rice") has been popular in accounts of rice intensification in Asia (Palmer 1977), the focus of analysis has been on seed as "improved variety". However, if the term "seed" is used to refer to physical seed, the focus shifts from an analysis of science and plant breeding to the institutional processes that supported – and in some cases enforced – the cultivation of "new rice" by farmers. I will make an attempt to clearly distinguish these two aspects of the term analytically: the dynamics of varietal change on the one hand from the institutional processes by which the physical seed is made available on the other. The first rests on a notion of "variety" and complex processes of maintenance and diffusion, the second more on an analysis of seed reproduction and provision.

Development projects in the seed sector have stimulated research into traditional mechanisms of seed production in countries of the South. Seed-saving by farmers and seed-exchange within and among communities have been aggregated under the term "informal seed sector". In this context, "informal" expresses the idea that indigenous seed supply systems operate on the basis of less rigid requirements than formal sector organisations. They also deal with much smaller quantities of seed (Cromwell 1996:21). However, given the wide variety of indigenous mechanisms in seed production, the term "informal sector" is a residual category and not very useful for analysis. In the seed technology literature, a bias against the "informal sector" was obvious in that it was believed to generate seed of poorer quality – both genetically and physiologically – compared to formal sector seed. But even from a technical point of view, farmer-managed seed is usually of good quality and subject to a number of practices which improve

3 I have tried to develop this argument in a case study on the development of formal plant breeding and seed grower institutions in Switzerland for the first half of this century (Schneider forthcoming).

its quality (Cromwell 1996:23). Some of the features of traditional seed management in the context of small-scale subsistence farming are illustrated with the following case study of Iban hill rice cultivators⁴.

Self-reliant and autonomous seed production

The first and perhaps not surprising feature is that seed is maintained and reproduced on-farm. A part of each harvest is separated and used as seed stock for the next planting season. The social unit responsible for farming (in the Iban case the nuclear *bilek* family) also manages the seed stocks. By assigning the task to the senior women of the household, the Iban further emphasize the importance of the task. During harvesting, seed paddy is reaped separately by the senior women of the family. She leads the harvest and cuts the seed herself. In this way seed paddy is separated right on the field from rice which will be consumed as food.

Iban hill rice farms are planted with up to 20 different strains cultivated on separate, but adjacent plots. Varieties are differentiated according to use, maturation time and ritual importance. This functional variation is crucial because it represents an adaptation of the subsistence crop to the needs of the household. Differing maturation, for example, is important as it allows to stagger harvesting over several weeks, to spread the peaks of labor demand while allowing to harvest only ripe grain. If no mature grain has to be left standing in the field, losses through bird pests can be avoided or reduced.

Varietal diversity can only be maintained if seed grain is harvested carefully, type by type. The prevailing harvest technique – with the finger-knife – supports careful seed selection as it is able to differentiate between varieties, size and other important traits. It also allows for the selection of the best-formed and most mature grain – a process called mass selection in the technical literature. Sometimes the harvester will also select small or peculiar ears (Freeman 1970:73). Unwanted types that would be discarded

4 There are numerous cases for which ethnographic literature exists and a similar description could be given. I have selected the case of the Iban of Sarawak (Jensen 1965; Freeman 1970; Sather 1992) which is a classic example of Southeast Asian hill rice farming.

in specialized seed production through roguing are left to the other harvesters. This enables what I have called elsewhere a "autonomous mode of varietal management" (Schneider 1995).⁵

Much as cultivation steps in the field, the storing of rice in the family compartment of the longhouse is an elaborate ritual (Sather 1980). Seed is stored for each variety separately. To minimize risk, the Iban keep about double the amount required for one sowing in storage. In case the first crop sown fails, the field can be cultivated for a second time. If such backup seed is not needed anymore, it will be eaten. If a household is short of seed grain, it may also sow rice stored for consumption. As seed grain can in principle be eaten, food grain can be sown.

In addition to seed-saving by each household, exchange, purchase and stealing are reported as ways to obtain seed or new varieties. The attitude of farmers towards "new seed" is not conservative. All Iban take great interest in new and uncommon strains. Seed obtained on travels is readily integrated into the variety inventory, or serves to replace seed destroyed by natural hazards (Freeman 1970:190). Seed exchange, however, can also be limited by indigenous concepts. Apart from owning a number of cultivars accessible to outsiders, each Iban farming family possesses one variety regarded as the heirloom strain (*padi pun*). This variety is exclusive possession of the family. Even when a family splits into two or more households in the second generation, the *padi pun* is transferred to the child and its spouse who stays with the parents and continues the original household. Children who move into separate households have to select a different variety from the family's inventory and make it their new *padi pun*. The prescriptions concerning the heirloom variety of rice reflect the way in which families reproduce themselves over generations; their significance is symbolic and not technical. Thus it could also be considered a "ritual technology" to control the seed, a notion I would like to turn to now.

- 5 Sather (1980:75) deplores that detailed investigations of cultivar diversity are lacking. More specific questions regarding the management of cultivar diversity can thus not be answered. He mentions the harvesting of *padi sempeli*, a late harvest of rice that has germinated from grains fallen to the ground. This paddy is not separated by strain; if some is used as seed stock, this would certainly contribute to new strains.

Seed and "ritual technology"

"When we look at the people's cultures from the inside then it is seen that they – ritual and technology – cannot be separated ... religious activities associated with plant cultivation are indissolubly integrated into agricultural tasks." Yet people "have also a keen appreciation of the resources, possibilities, and limitations of the environment and the technical means of acting on it" (Condominas 1986:29).

Procedures for the maintenance or improvement of seed fertility are particularly numerous in traditional Iban rice farming and are regularly applied both on the level of the household and the community which is in this case the longhouse. Rice fertility is addressed and remains a constant focus during the agricultural year. The careful treatment of rice – in any stage of its growth or throughout its use by humans – is an attitude which transcends the technical or rational. It is rooted in the concept of rice as being animated or having a soul.

Any activity carried out by humans "assumes the character of technology as long as it enters into a procedure which is destined to achieve the objective of production or reproduction" (Condominas 1986:39). These activities may be highly formalized, particularly in the case of ritual procedures aimed at ensuring a fertile crop or a good harvest. The proper handling of tasks is also a central concern in indigenous seed-management activities.

In traditional Iban society, the largest socio-political unit is the longhouse which was also the largest unit performing rice ritual. Political integration above that level was weak or confined to limited periods such as warfare in the past. Thus Iban society which has no lineages, clans nor institutions such as chieftancy has been characterized as egalitarian. In a more hierarchical society, we might expect the existence of rice fertility rituals performed at higher levels of social integration. Such is or was the case among the Rejang, a highland society in Southwest Sumatra.⁶

6 I have conducted fieldwork among the Rejang from 1988-1990 (see Schneider 1995), as member of a research group from the Institute of Ethnology, University

Much as the Iban, Rejang farmers have been hill rice cultivators; household seed-saving and exchange were common and dominant ways of seed production. Most rituals related to seed fertility were performed locally by households or ritual specialists of the village. Before dibble-planting may begin on an upland field, the "shaman of the earth"⁷ was invited by the owner of the field to perform a rite (rej. *kedurei*) to invoke the blessing of the rice goddess Nyang Serai. Jaspan – who did fieldwork in the early 1960s and was the first ethnographer of the Rejang – says about this event that the shaman

"... arrives early in the morning to supervise the gathering of the ritually required foods and herbs for the *kedurai*. He brings a small basket of paddy, preferably grains that have been made magically potent at one of the great cyclic rice fertility festivals (*mdundang poi*) ... The seed basket is brought to the centre of the field at a place where the shrine (*pnai*) to Njang Serai will be built. There the shaman makes a small seed bed and surrounds it with a bamboo fence. In its midst a length of bamboo ... is planted in the ground. Beside it two stalks of young *puea* (*Amomum Cardamomum*) are placed close together to symbolise the ladder with which Njang Serai is believed to have descended from heaven and from which the paddy *smangeut* [rice spirit, author's note] descends and enters the rice seed about to be planted. Finally a mat for the shaman's invocation is laid before the shrine and a charcoal brazier is placed immediately below the cardamom ladder. The field owner and the patrilineage elders then gather before the shrine to participate in the *kedurai*." (Jaspan 1964:106)

In the case described here, the ritual (*kedurei*) is largely a household affair. Other people such as the officiating shaman and the lineage elders are from the same village. Yet the "great cyclic rice fertility festivals" (*mdundang poi*) Jaspans refers to were supra-local rituals which required the participation of the constituent parts of traditional Rejang society who had to gather and reenact their clan history. The festival is sometimes also called *mdundang bénéa* – "inviting the seed".

of Berne. In the following I will make use of a number of publications from other collaborators of this research project.

7 *Dukun tebo* (rej.), also called shaman of the land spirits (Jaspan 1964:217).

Contrary to the Iban, the Rejang were organized in patrilineal clans with a relatively loose but ideologically important clan leadership. There were four original patrilineal clans which had to send representatives into the council managing the festival. One of the clans, the Birmani clan, was considered the owner of the ritual and had to be the festival's host. *Mdundang poi* lasted several days with dancing, entertainment and animal sacrifices. Jaspan (1964:109) says that "... apart from stressing the ideal exogamic structure and relationship of the four pillar clans, [the festival] emphasizes their unity as an integrated politico-ritual confederation within which bride exchange occurs, blood money is paid and the rice goddess is propitiated." Since 1945, that is already previous to Jaspan's fieldwork, *mdundang poi* festivals had become very infrequent events.⁸

A central element of the *mdundang* festival was the blessing of seed which then could be used as admixture to seed saved on farm. For these blessings to be effective, a political and spiritual authority (*Sutan*) who was a lowlander and non-Rejang had to be present at the festival. The Sutan was a descendent of Minangkabau nobility and resident in Rinduhati in lowland Bengkulu. He represented the spiritual authority with the link to Pagarruyung in the Minangkabau heartlands. According to Rejang mythology Pagarruyung was the place where rice had originated (Schneider 1995:110).

The vitalization of the rice – the core of the *mdundang* ceremony – takes place at the central pillar of a ritual structure with a roof (*balai*). During a ritual meal the Sutan enters into contact with the ancestor spirits and recites a prayer inviting the rice spirits to return for the new planting season. Seed paddy has been put next to the central pillar: this is the "spirited seed" that is taken back by the clans in four heirloom containers representing the four original Rejang clans. There, it is further distributed and mixed with the seed paddy. Seed renewal is linked in the ceremony to a recitation of Rejang clan history and a reenactment of the hierarchy among clans. Clan exogamy has to be respected in the ritual dancing accompanying the festival (Psota 1996:130-132).

Right into the 1980s, the Sutan was believed by many farmers to be in possession of the original rice grain. Psota (1996) comments that the infre-

8 Jaspan (1964) attributes this to depleted rice stocks after the war requisitions by the Japanese army.

quent staging of festivals in the previous decades had led many individuals in the Lebong area and elsewhere to make a trip to the Sutan in the lowlands individually or in small groups to have their seed paddy blessed. Thus, if farmers were concerned about the productivity of their seed, they would turn to the Sutan. Individual or group visits were also possible, and in the absence of fertility festivals, this was even the only option available (Psota 1996:171). Such direct interaction with the Sutan is indicative of a continuing belief in the spirited nature of seed grain. At the time of my fieldwork, it struck me that farmers telling of recent visits to the Sutan were "modern" rice farmers using fertilizer and new seeds. Most of them had been exposed to government programs and the products of the "formal sector" for over a decade. Yet I observed that a possible response for some farmers was to change agricultural practice but retain an ideology closely related to traditional fertility rituals. The situation in the late 1980s thus has been influenced by the impact of rice intensification programs to which we now turn.

New seed and the state

"Rice is and always has been a critical determinant of the stability of the political-economic system,"

says Hart (1986:45) of Indonesia. In a society that subsists on rice, the state has taken a primary interest in a sufficient and affordable supply of the staple food. With increasing urbanization, the relation of basic food supply and political stability becomes even more critical as urban populations are more dependent and more vulnerable in times of insufficient production.

The beginnings of a formal seed sector in Indonesia go back to colonial times. Evaluation work on rice varieties started in 1905 with the establishment of the *Experimental Station for Rice and Secondary Crops* in Bogor. Varieties with a good performance were distributed to regional demonstration fields in Java for testing and diffusion, but no seed multiplication for further distribution took place in this early period. In 1913, the first seed gardens were established by the Experiment Station; in 1928 the seed multiplication system was extended and improved. These

gardens had to supply seed to local extension services “who either used it in their demonstration fields or supplied it to enterprising farmers for further multiplication” (van der Eng 1994:22). This should remain a basic pattern: variety diffusion with the extension service as a crucial intermediary. Despite the low quantities of seed produced in the central seed gardens, such a system was probably quite effective in spreading a number of new varieties.⁹ “New” needs qualification here because during that period it referred to selected local or foreign varieties, but not to the products of plant breeding which really started only with an intensive hybridization program after 1930.¹⁰ Extension officials encouraged the establishment of seed farms run on a commercial basis on the local level by villages or private seed-growers, yet there was no uniform system of seed multiplication. The production of seed within the network of experimental stations, extension service and seed farms was not limited to *improved varieties*¹¹, i.e. varieties selected from hybridization. It also included introductions of local and exotic material.

- 9 Van der Eng(1994:23) mentions that a variety called *padi cina* was among the successful introductions; a variety with this name was still cultivated in Rejang-Lebong in 1988 – though its identity with the *padi cina* of the 1920s would have to be investigated.
- 10 Early breeding programs were facing many difficulties: A lack of staff and funding, and in the case of rice the very wide range of local varieties adapted to different conditions. Moreover, the race of tall and large-grained varieties (Javanica or *padi bulu*) dominant in Indonesia showed a high tendency for cross-pollination; thus their genetic make-up guaranteed a continuous flow of new types for the farmer who wished to select on-farm (van der Eng 1994:26).
- 11 The term *improved variety* is printed in italics because it is used in technical plant breeding literature as part of an idiom. Clarity as to what “improvement” means is essentially lacking. Closest is probably the idea of varieties that have been released by formal plant breeding institutions. This can create confusion because in the early period such releases also include local or exotic material that has not been subject to crossbreeding. How else could we interpret the fact that “improved varieties” have reached a share of 30% of cultivated area in Java in 1960 according to one source (van der Eng 1994:32), but start again with 0% in the same year according to another (Barker, Herdt et al. 1985:63)?

Therefore, the growth of the formal seed sector, which was supported by the colonial government in the 1930s cannot be taken as a direct indicator for the spread of "improved varieties". However it was certainly the main vehicle by which such seed had reached 10% of the harvested irrigated area in Java by 1940 (van der Eng 1994:32). Despite the political turmoil of the years before and after the National Revolution, the available sources suggest continued growth of the seed multiplication system. This is a clear sign of the political priority rice production received in this period. The upward trend of *improved varieties* in the early 1950s – from less than 10% to over 30% on the harvested irrigated area in Java – is particularly impressive (van der Eng 1994:32), and probably related to the spread of varieties such as Bengawan and Syntha, in addition to Cina which had been popular since the prewar period.

During the last years of the Sukarno presidency, Indonesia found itself in a economic and political crisis in which rice prices soared. From 1959 onward, a number of programs were implemented by which the government tried to increase production and channel it to urban markets. Many programs succeeded each other; it was a "hothouse of many experiments", as Palmer (1977:21) has called it. First came a Three-Year Plan (1959-1962), which failed due to economic mismanagement and coercion of farmers in those irrigated areas that were amalgamated into "paddy centres" of about 1,000 hectares each. In structural terms, however, this was the first time that the Indonesian state had implemented a program to raise rice productivity which was aimed at a large part of the farming population and tried to change the use of agricultural inputs (seeds, fertilizer) at an unprecedented level.

The shortcomings of the Three-Year Plan were to be amended by the following program, BIMAS¹². In its full-fledged form, BIMAS and its cognates (INMAS, INSUS¹³) have been the vehicles to distribute "new seed". For this reason, I will take a closer look at the aspect of how seed has been incorporated into BIMAS and which political and ideological concerns of the state were written into it.

The origin of BIMAS lies in a experimental program labelled DEMAS or "mass demonstration" which was started in 1963. Students from

12 Bimbingan Massal, "mass guidance".

13 Instruksi Massal, "mass instruction", Instruksi khusus, "special instruction".

the Agricultural University were sent to villages where they should introduce five principles or "endeavours" (ind. *panca usaha*) recognized – until the present day – as the cornerstones of modern and productive rice farming: the use of fertilizer, modern seeds, application of pesticides, a number of cultivation measures and improved irrigation (Pearse 1980:91; Maurer 1986:39). It seems that within the "Five Endeavours", emphasis was not primarily on the use of improved seeds. Later categorized as "improved national varieties", these seeds were distributed as "extension seeds", but they were not seen as the core, nor as a compulsory part of the program.

The success of DEMAS in terms of improved rice yields convinced the government to rapidly expand it under the label of BIMAS, "mass guidance". Compared with the Three-Year Plan, BIMAS was conceived to be less coercive; instead a more flexible type of interaction between the extension service and farmers was intended (Hart 1986:45). This also signals the awareness of some officials and researchers that the extension of new seed is a transfer of knowledge, which ideally is accompanied by a two-way communication between farmers and extensionists or, in this case, students. However, the rapid expansion of the program overstretched the capacity of administrative personnel to the detriment of this idea.

BIMAS had originally nothing to do with the "Green Revolution", a term coined only in 1968 (Ward n.d.:XI). When BIMAS was initiated, IRRI which would be associated with the concept of "Green Revolution" in rice agriculture existed for a mere three years. In 1968, the BIMAS program was differentiated into a "new" (ind. *baru*) and a "ordinary" (ind. *biasa*) version. The New BIMAS were different from the ordinary program in two significant respects: First the package of inputs delivered included seed from semi-dwarf IRRI-varieties (IR-5 and IR-8). Under Ordinary BIMAS, seed had not been a fixed part of the package. Normally farmers themselves provided it (Maurer 1986:104). Second, these varieties had much higher recommended fertilizer applications. Therefore the credit extended for the New BIMAS was increased by about 50%.

The IRRI-varieties used in the program were named PB¹⁴ or "new Peta" in Indonesia. "Peta" is a variety that had been developed in the pre-war rice breeding program of the Dutch in Bogor, West-Java. It had been released in 1941 and was among the many parents used by IRRI to breed

14 Peta Baru.

IR-5 and IR-8. The original Peta belonged to a number of strains grouped together after the onset of the "Green Revolution" as "national improved varieties". At the time, these varieties were in terms of productivity not really inferior to the first releases from IRRI (Palmer 1977:168). The use of the name Peta also reveals the need to have an Indonesian representative in the ancestry of the IR-strains which had symbolically and actually benefitted from that "national heritage". The name demonstrates continuity where in other respects there was a radical break with the past.

The reorganization of seed production

To realize the ambitious goals of the BIMAS program the level of seed production in the late 1960s was insufficient. In 1969, the FAO conducted a study which produced a report to the Indonesian government (Ghose 1969), and starting in 1971, the formal seed sector was reorganized. The restructuring closely followed international standards of seed multiplication and was financed with a loan from the World Bank.¹⁵ Seed production was much like a cascade growing in quantity while it fell from breeder to farmer. *Breeder seed* was produced at the research stations before it was multiplied at seed centers (ind. *balai benih*) to become *foundation seed*. The latter went to government companies and private seed-growers who specialized in growing *certified seed* which was delivered to farmers or cooperatives. At all stages, the quality of the seed had to be controlled by a national *Seed Control and Certification Service* (*Badan Pengawasan dan Sertifikasi Benih*) which was set up to address problems of quality in seed production. Given the premium price seed fetched on the market compared to normal unhusked rice and the difficulty to distinguish both, fraud with fake seed had been both attractive and widespread (Palmer 1977:171). Evidently, if such seed failed to yield adequately, the willingness of farmers to adopt varieties provided through state agencies was negatively affected. In practice, quality control means that the number of generations of seed multiplication between breeder and farmers has to be limited, and that there needs to be continuous supply of breeder seed. If faults occur they

15 The terminology for example follows the nomenclature of the US "Association of Official Seed Certifying Agencies" (Cromwell 1996:148).

can be traced back to the original seed lot, if necessary (Cromwell 1996: 148). Thus, the government had a vital interest in seed quality if intensification programs were to succeed. One of the state companies set up for seed multiplication was given the name of the rice goddess: *Perum Sang Hyang Seri*. The name is again significant for a shift of emphasis and location as to the source of fertility. The goddess who had blessed so many farmers' fields in the past should now also label the seed delivered to seed growers and ultimately to farmers.

Mobilizing farmers for "superior seed"

Progress of science has been a handy formula to explain the rapid spread of the new seed. Ward (n.d.:103) says that science has developed "something worthwhile to extend". Such a view is mistaken in that it omits the various mechanisms by which farmers were convinced and sometimes coerced to plant new rice. These mechanisms were partly ideological, partly economic – by extending credit –, and partly political. The state considered the adoption of new seeds by farmers a matter of national importance. Unwillingness or reluctance was regarded as a fundamental opposition and often labelled as communist-type of opposition. The importance of the rice self-sufficiency (ind. *swasembada beras*) program for the legitimacy of the New Order can hardly be overestimated.

As regards the economic incentives, I will not enter here into a discussion of the credit schemes under which the necessary inputs were delivered to farmers because this aspect has been treated extensively in the literature (Palmer 1977; Maurer 1986).

On the level of representation, categories and labels were created which were both practical and could contribute to the credibility of new seed. There was a claim for superiority which is demonstrated by the consequent use of the adjective "superior" for "new rice". New varieties are referred to as "superior seed" (ind. *bibit unggul*). "Unggul" renders, in official publications, the english "high-yielding"¹⁶. This term generally used by farmers – taken over from the language of extension service – also

16 See for example (CRIFC 1991) where the translation given for "high-yielding" is "unggul" (superior).

shows how the sources of fertility are located outside; the term implies that local varieties are inferior. The alleged superiority of new seed is backed up by other rhetoric devices such as the use of *Sang Hyang Seri* for a national seed growing company cited above.

It is clear that the claim to deliver "superior seed" can – if judged against the performance of varieties – be true only for certain parameters. Yield was of paramount importance, to the extent that other traits such as taste were initially dissatisfying farmers. Yet the classification of "superior" versus "old" rices remained fundamental even if based on a unitary logic which violated the variable parameters farmers had used for evaluation previously.¹⁷

Mobilization could also be facilitated by the use of acronyms which were made part of everyday language. The acronyms created as labels for intensification programs represented an easy-to-use currency for complex programs. BIMAS for example stood, in 1965, for the idea that "demonstration", "guidance" or "instruction" should be given to farmer groups (the "mass"), and not to individuals. Thus, BIMAS tried to say something about how the government wanted to relate to farmers.¹⁸ At the time, this was both a practical approach – as qualified personnel for individual extension was limited – and an improvement to the previous approach in which government personnel largely with no agricultural knowledge had been used to register farmer enrollment in the program. With successive developments and program reformulations, the meaning behind the components of the acronym mattered less than easy recognition on a national scale.

17 Cf. Rigg (1995:25) who finds that farmers in the Northeast of Thailand who have switched to new seed have also adopted a new scala to judge which is "better".

18 In one case, BIMAS was also further specified to say something about third parties involved. This is the case with BIMAS gotong royong. It is ironic that the specific variant of BIMAS termed *gotong royong* (mutual help) was the collaboration of the government with Ciba of Switzerland and other chemical companies, and not the collaboration with farmers. During this phase of rice intensification (1968-1970), a number of measures – such as aerial spraying – were applied which were much resented by farmers in Java. Yet the label is using a term of a regional Javanese tradition which has become an emblem of national self-reliance (Bowen 1986).

“New Seeds” at the local level: The case of Rejang-Lebong

The local impact of rice intensification programs was very variable and staggered over a period of more than twenty years. This holds particularly true if one looks at cases other than the Javanese where state intervention was very strong and a homogeneization in the more favoured agricultural systems achieved relatively rapidly. I thus will briefly return to the area for which a few examples of traditional seed fertility procedures have been discussed above.

In 1988, I collected data on variety distribution and seed production on the farmer level in the area of Air Putih¹⁹ which is representative because it fits the conditions under which intensification programs can succeed – good irrigation facilities, within reach of government agencies, good access to markets – and was selected early on to be included into the BIMAS program. In the area surveyed, high-yielding varieties covered almost two thirds of the area planted with rice (Schneider 1995:101). The bulk of HYV's were those of the second generation, and particularly adapted to highland conditions (34% of the cvs.). The remaining area was planted to local or “national improved” varieties.

Farmers grouped together all varieties introduced since 1970, the start of rice intensification programs in the area, under the terms “new” (*baru*) or “superior” (*unggul*). The remaining varieties – with the exception of glutinous rices – were lumped together as “local” (*lokal*) or “old” (*lama*) although they fell into at least two subcategories known to most farmers: varieties which were indigenous to the region, and varieties introduced before 1970. The latter group belonged to the group of “national improved varieties” or had reached the area during the colonial period. A limited number of these introductions were still popular mainly for reasons of taste and premium prices that could be fetched on the local market.

Accordingly, there was variation in seed production practices (Schneider 1995:116-117). Since the introduction of “new seed”, farmers were compelled to buy seed from time to time. Commercial seed sources in the region were the village cooperatives (*Koperasi Unit Desa*) and the government seed farm (ind. *balai benih*) of which there was one in the district. However, farmers tried to rely as much as they could on their

19 Air Putih, near Curup, capital of the district Rejang-Lebong, Bengkulu Province.

classical sources of seed, i.e. seed planted back from their own harvest or obtained in exchange from other farmers.

These sources were preferred as they were cheaper and more practical but limited. In the case of HYV's plant back was sustainable only during three or four cultivation cycles after which seed lost its viability and had to be replaced. For local varieties no such degeneration was reported. However, this seed had a dormancy period of varying length which had to pass before it could be replanted.

Seed transactions among farmers were not commercial. Farmers who obtained seed through exchange applied a customary rate of one to two: one part husked rice (*beras*) to two parts seed rice (*gabah*). For the seed giver, this was a return slightly above the quantity (40% of the *gabah* volume) he would have obtained if he had taken his rice to the mill. For the seed-taker, the risk associated with such relatively cheap seed was that sometimes its viability did not meet expectations. He had to trust the giver and thus would prefer exchange with a fellow farmer with whom he had a reciprocal and respectful personal relation.

Seed exchange among farmers was resilient not only for financial reasons but also because it is and has been an important instrument for variety diffusion and testing. An example for this is the cultivar Bungawan – an "improved national" variety – which had spread rapidly in the 1960s from a very small amount of seed introduced to Air Putih by a Sundanese farmer. In 1988 however this cultivar had already been displaced by more recently introduced HYV's.

In this area of high-input cultivation, traditional cultivation practices had shown much less resilience than seed exchange. Field rituals in particular had completely disappeared, and there were no more arguments between adopters of new techniques and the practitioners of the old procedures. These arguments had previously opposed farmers who defended the practical relevance of the concept of the rice soul for example with regard to harvesting methods, and the modernizers who did not directly contest the idea of an animated paddy, but gave it only theoretical or transcendental value (Schneider 1995:111-113). In more remote villages where rice was grown mainly for subsistence such debates could still be relevant, as rice intensification had failed or been only partially successful.

One of the most serious consequences of new rices was their shorter maturation. One complete cultivation cycle required about four to five

months compared to an approximate seven months for the local varieties. Under the old regime, double-cropping of rice had been non-existent. Under the new system, double-cropping became the rule. Very soon, individualized cropping schedules sprang up as farmers realized that growing more and faster crops would increase their income.

Previous to rice intensification programs, cropping schedules had been socially regulated partly for technical, partly for socio-ritual reasons. In the technical realm, the off-season – with no rice cultivation – and the simultaneous start of the rice season had been crucial for pest control in the agroecosystem of rice (Schneider 1995:98-99). The result of individual cropping was in many cases an upsurge of pests. The common-sense solution to this problem was to synchronize rice crop cycles again, and government agencies were quick in recommending or mandating this practice. But they generally failed to achieve their objective although extension personnel or coordinating farmers were promised incentives as attractive as a motorbike (Schneider 1995:97). If a motorbike would not do the job, perhaps the force of traditional ritual could?

The commencement and structuring of the cultivation cycle was also a structuration and creation of social time. Rice varieties contained a set amount of time which was a nexus for local action. As this nexus was dissolved by short maturing strains and their potential for double cropping, this interfered with the “social time” of rice-growing communities (Znoj 1996). Local government actions to synchronize planting cycles again were mostly to no avail, as the following example will demonstrate.

Local and national idioms: A Rejang fertility festival in 1988

“... given the dialogical construction of the national tradition, the imposition of national symbols must sometimes be complemented by the appropriation of local idioms.” (Acciaoli 1994:40)

In October 1988, the district administration of the subdistrict of Lebong sponsored a Rejang fertility ritual (*mdundang poi*) in an attempt to popularize HYV strains of rice and to convince farmers to plant their paddy fields simultaneously. This is a case in which local implementation of a

national intensification program recurs to using local idioms, a case much more infrequent than the imposition of a national idiom on diverse local traditions. Despite an apparent failure to achieve its objective, the event which lasted two days lends itself to an analysis²⁰ of two conflictive modes of seed control supported by different concepts, driven from different loci of power. It could be seen as an attempt of the local government "to communicate with the peasants through the use of traditional cultural elements" (Galizia 1989:63).

As a consequence of the weight of local government authorities, several elements of the traditional festival were altered: Instead of a clan chief or *pasirah*, the chief district officer acted as host. Instead of local seeds, new high-yielding varieties were blessed. The intention of the authorities staging the event was quite clear: after the festival farmers were expected to take the seed out to their fields and sow without delay. The synchronized planting should help to prevent the kind of devastating and serious plagues (stemborer, rats) the region had experienced in previous years. The farmers were provided with government seed paddy and perhaps an opportunity to voice dissident opinions.

It is interesting to note that dissidence took partly the form of a debate on *adat* rules and morality. The larger context of the festival had always been a cosmological one. It was not just the blessing of a few grains of rice but the renewal of agreements between people, spirits, and god. If during the event of 1988 questions such as proper seating order were discussed by participants, this represented a more fundamental critique than one of etiquette: That the entire setting was not up to the task of renewing rice fertility. Commonly, doubts were also expressed as to whether *adat* procedures were applicable to "new seeds" because these did not reach full maturation and required various treatments which violated the agreements with the spirits.

Thus the ritual brought together contrary and unresolved positions: that of government officials pushing for a rapid transition to "new seed" while expecting farmers to retain traditional patterns of synchronized planting; that of farmers opposing a planting schedule decreed by the chief

20 For the analysis developed here, the ethnographic accounts by Jaspan (1964) and Psota (1996) have been used as well as Galizia (1989) who witnessed the event of 1988 and interprets it in the framework of ethnic identity in a nation state.

district officer, but excluded from any forum where these issues could be discussed in a more democratic way. The event in Muara Aman was an idiosyncratic attempt to renew fertility of modern pest-afflicted seed with old methods. This is interesting because it illustrates a conflictive mode in which local and national traditions interact. Old ritual and new technology seem to be incompatible as neither can fully control the other mode.

Conclusion

Seed is fertility, productivity, survival, and well being. For a crop as central for the reproduction of the social order as rice, there can be no *a priori* difference between the ritual and the technological. The theoretical framework for the analysis of seed production has to integrate these categories and ask how seed is reproduced, fertility is ensured, ritual procedures are administered.

I have shown that ritual and technology are related both in relatively egalitarian societies and in politically more stratified contexts. Seed reproduction in Iban societies is organizationally autonomous; though basically a task of individual households it is protected or contained by ritual practices on the longhouse level. Among the Rejang, the renewal of seed fertility has to conform with the mythological charter of the constituent clans, and also involves an external politico-spiritual authority who fertilizes seed.

Intensive rice production techniques which spread in the 1970s and 1980s located the sources of fertility and productivity differently: in "New Seed", in fertilizer. A new organizational arrangement was created which assumed technical and ritual functions to guarantee for success in production. For example, state agencies now controlled and "certified" seed, and quality considerations replaced the former concern with "fertility". In the national context, the mechanisms to give more leverage to rice intensification programs were thus not limited to credit schemes or political coercion. Symbolic control was manifest in labels and categories, for example the separation of rice diversity in the two main classes of "superior" and "local".

This arrangement was not compatible with rice spirits and the Sutan, the old blend of ritual and technology. In local contexts, however, critical periods of crop fertility could provoke the reactivation of local tradition –

such as the *mdundang bénéa* among the Rejang – in isolated attempts to fertilize "New Seed" with old methods.

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