
Property and Authority in a Migrant Society: Balinese Irrigators in Sulawesi, Indonesia

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ABSTRACT

Multiple definitions of resources as property lead to competition over legitimate authority between state and non-state organizational and institutional arrangements. This article focuses on the overlapping and competing domains of the water users' association, WUA, and the 'traditional' Balinese irrigators' institution, *subak*. While the former is backed up by the power of state regulation and administration, the latter derives legitimacy from Balinese irrigators. The author presents a case study of the establishment and transformation of property rights in an irrigation-based Balinese migrant society in Indonesia; he concludes that, in the ongoing process of competition for authority and mutual adjustment, both institutions undergo important transformations.

INTRODUCTION

In recent years the role of property rights to natural resources in processes of rural transformation has enjoyed rapidly growing scientific and policy attention. This is primarily evidenced by the booming literature on common property. Studies on common property have directed attention to local definitions of rights and responsibilities, and to the importance of local resource management practices and institutions. This has yielded a more empirically based understanding of resource use and management, in which local resource users are no longer by definition the perpetrators of the 'tragedy of the commons'. This in turn opened up new options for institutional solutions to management problems.

However, according to critics, this new focus also has its price. Mosse (1997) has criticized both the mainstream approach based on rational choice theory and institutional economics (for example, Ostrom, 1992) and approaches based on 'moral economy' thinking (stressing the importance of social norms and traditions in collective action) for oversimplifying complex realities. Both overemphasize local autonomy, neglecting the state; both are a-historical and biased to economic thinking; and both reduce institutions to socially homogeneous entities. According to Johnson (2004), the normative focus in common property studies on sustainable management, rational

choice, and incentives and institutions for collective action is not conducive to a deeper social and historical understanding of property rights. Agrawal (2003: 257) suggests that common property theorists have, 'in their preoccupation with sustainable management and successful institutions', paid too little attention to the role of coercion and enforcement, of power relationships, conflict and competing institutions.

Property can itself be analysed as a social institution (Bruns et al., 2005; Meinzen-Dick and Pradhan, 2001). This brings us to the way institutions are often dealt with in common property literature. The literature inspired by institutional economics is also rule-focused, normative, and driven by instrumental ambitions of 'crafting institutions' (Ostrom, 1992) for efficient management (Agrawal and Gibson, 1999; Mosse, 1997). Complex property relationships, competing claims, and legitimizing legal systems are often presented as unambiguous and uncontested. Policy recipes recommend 'getting the rules in place' by using the neo-institutionalist toolkit of creating the right incentives and reducing transaction costs. However, rather than a stable and uncontested core of institutions, the 'rules of the game' or 'rules in use' often referred to (for example, Ostrom and Schlager, 1996) can be the very focus of contestation.¹

Alternative approaches — often based in social anthropological research rather than institutional economics — focus on the social and cultural 'glue' of institutions rather than on rules, instrumentalities and economic rationality. For their functioning, institutions need the socially, culturally and morally binding forces and qualities of specific societal contexts (Jentoft, 2004). This surplus value is often taken to be the core characteristic that distinguishes institutions from organizations. This brings us close to approaches to property rights that stress the importance of taking into account their socially and otherwise 'embedded' character (Hann, 1998; McCay, 2002; McCay and Jentoft, 1998). Thus, McCay (2002) stresses that property is not only about valuable goods but also about meaning, identity, power and competing rights and claims. Hann (1998: 5) approaches property as 'directing attention to a vast field of cultural as well as social relations, to the symbolic as well as the material contexts within which things are recognized and personal as well as collective identities made'. It is important to stress that 'embeddedness' does not presuppose the stability, unity and homogeneity so often taken for granted in community-based approaches (Agrawal and Gibson, 1999). Embeddedness may be a source of coherence as well as of competition and conflict. Assuming too much 'glue' and too little contestation and conflict here would make such approaches liable to Agrawal and

1. More refined approaches to institutions and institutional design take into account factors like the plurality of sources of legitimacy (e.g. Bruns et al., 2005), the socio-cultural embeddedness of property rights (e.g. Schlager, 2006), and the importance of attention to ontological and methodological aspects (Hotimsky et al., 2006).

Gibson's (1999) and Mosse's (1997) critique of idealizing approaches to common property, community and collective action.

Vandergeest and Peluso (1995) have directed our attention to the role of the state and state strategies of territorialization. In local settings of resource use and management such strategies, aimed at greater control over people and resources, may create conflicts of authority, legitimacy and power between different enforcing institutions (*ibid.*). We have to deal, then, not only with the management instrumentalities of 'getting the institutions right' but with resource management as a field of tensions between the abstract or disembedded space of state territorialization in the domain of natural resources, and resources as embedded in local society, lived and experienced by local resource users.

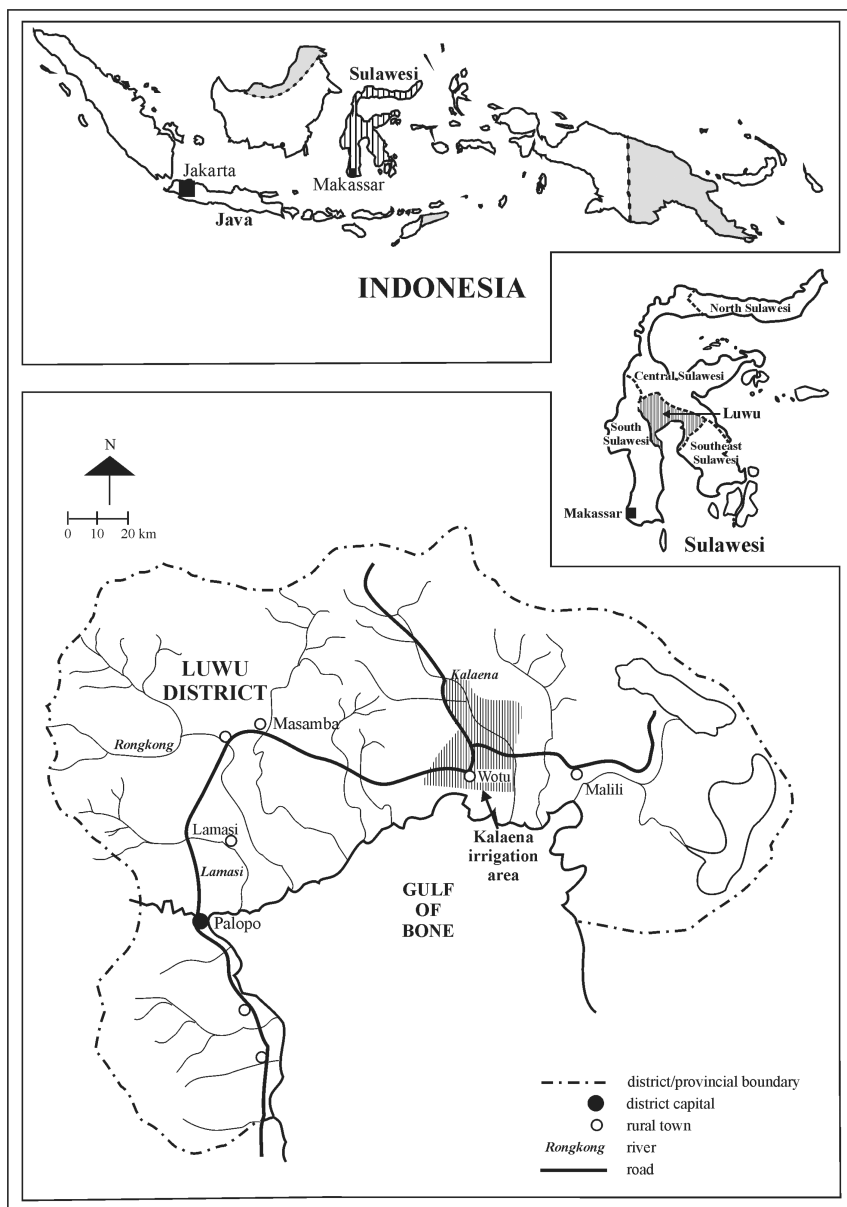
Empirical research on property rights in relation to such processes of institutional competition over legitimate authority is badly needed. It should start from a contextualized understanding of how institutions are embedded in society. This includes the role of religious and cultural notions and practices as the 'glue' of such institutions (see Hotimsky et al., 2006), but also of competition and conflicts over power, authority and legitimacy within and between institutional/organizational arrangements. Second, these need to be related to the specific ways in which property rights to resources are established, defined and redefined in the dynamic resource use context being researched.

This article focuses on the relations between property rights and competition for legitimacy between different (state and non-state) sources of power and authority in a migrant society of Balinese cultivators of irrigated rice in Luwu District, South Sulawesi, Indonesia (see Figure 1).² Increased mobility and inter-regional migration by various population groups play an important role in property transformations. These processes may give property rights and their transformations specific and plural characteristics of ethno-religious identity, norms and values, and knowledge and experience. The increasing diversity of population groups in a region like Luwu creates legally and institutionally plural ways of dealing with property. Focusing on property in a migrant society allows for research on the 'reinvention' of property and on the role of 'mobile' values, norms and rule systems in this process (see also von Benda-Beckmann et al., 2005).

The article analyses a history of plural definitions of property rights, of ways of dealing institutionally with management, and socially organizing around property. These are explored in a setting of government intervention and regulation of irrigation management which has public, private and common property characteristics (see Meinzen-Dick, 2000). As these domains are complex and overlapping, there tends to be little clarity and much

2. This article is based on research carried out in 1996–97, shortly before the (1998) political changes in Indonesia that led to the fall of Soeharto's 'New Order' regime, and during another short period in 1999. Names of individuals have been changed.

Figure 1. Indonesia, Sulawesi, Luwu and the Kalaena Irrigation Area



disagreement about ‘the rules’, the bundles of rights and responsibilities. Property rights are claimed, negotiated, defined and contested by social actors at various levels of organization (Zwarteveen et al., 2005: 257). In this case it is not so much access and claims to resources *per se* that are contested, but rather the legitimacy of state and non-state sources of authority.

Which bodies of rules are seen as legitimate? Which rights and responsibilities apply to which case? Who has legitimate decision-making power? In-depth analysis of these issues requires a perspective that starts from a broad conception of law taking into account the plural character of legal regulation and its close relationship to the social, political and cultural dimensions of life; that approaches property rights in land, water and irrigation infrastructure as ‘bundles’ of rights and responsibilities (‘goods’ and ‘bads’ of property; see Verdery and Humphrey, 2004); and that takes into account the ‘layered’ character of property relationships (von Benda-Beckmann et al., 2006).³

The following section describes the context of the case study and discusses how state-allocated resources are given meaning by Balinese migrants. This is followed by a more specific discussion of the rights and responsibilities attached to state-allocated land, water and irrigation infrastructure. Here, I focus on the relationships developing between the Balinese irrigators’ association, *subak*, reinvented in a migrant setting, and the state-introduced water users’ associations (WUAs) of the tertiary irrigation units (TUs), including the property rights dimension and consequences for local management practices. The subsequent section illustrates the contested character of both WUA and *subak* by focusing on the role of Balinese identity in an ethnically mixed tertiary irrigation unit and on the diverging interpretations of legitimate *subak* authority in Balinese society. Finally, a brief conclusion relates the insights from the case study to the main theme of transformations of property rights.

FROM STATE-ALLOCATED RESOURCES TO ‘EMBEDDED PROPERTY’

The Setting: Luwu District, South Sulawesi

Luwu is a large district in South Sulawesi Province.⁴ The North Luwu Plain is particularly suitable for irrigation development. From the 1930s, Luwu became a destination for the Dutch ‘colonization’ programme through which farmers from Java were resettled.⁵ The main objectives of the programme were poverty alleviation and the reduction of population density in Java and Bali, the economic development of the archipelago, and greater colonial

3. In other publications I have dealt with the relationships between technical, normative and organizational dimensions of irrigation management (Roth, 2005), and with aspects of ‘order’ and ‘disjuncture’ pertaining to interventions for irrigation development (Roth, 2006).

4. Recently Luwu was split up into the districts of Luwu, North Luwu, and East Luwu. As this is not relevant to the topics discussed here, I continue using ‘Luwu’.

5. Dutch resettlement of Balinese took place on other islands. Note that ‘colonization’ means pioneer settlement here, not colonial rule (although it was, of course, crucially based on colonial conceptions of political order, economic development, and resource exploitation).

control over both population and resources. The programme aimed at creating rural settlements based on irrigated agriculture, using Javanese and Balinese farmers' experience. In northern Luwu, the Dutch combined resettlement of Javanese with the construction of irrigation systems.

After independence, the Indonesian transmigration programme continued this policy. From the 1960s to the 1990s (when the programme stopped with the demise of the 'New Order' regime of former president Soeharto), thousands of farmer families from Java and Bali were resettled in Luwu.⁶ In the twentieth century the population of Luwu increased rapidly under the influence of colonial resettlement, transmigration and regional migration. Regional migrants, attracted by Luwu's resource potential, often engaged in smallholder agriculture. Until the 1990s there was a strong focus on irrigated rice cultivation; since the 1990s, the booming cocoa sector has become increasingly attractive.

Kertoraharjo village forms the northern part of the former transmigration settlement Kertoraharjo I. It is located in the command area of the Kalaena irrigation system. In 1972–73, 500 hundred families — 350 from Bali and 150 from Java — were resettled here by the government. Each family received 2 ha of (forest-covered) land to be developed into home yards (0.25 ha), irrigated fields (1 ha) and rain-fed fields (0.75 ha). In later years two administrative villages emerged from the former settlement: in the late 1990s, Kertoraharjo had a fully Balinese population of some 1,300 people, while Margomulyo has a mixed Javanese and Balinese population. As the Javanese often sell land to the offspring of Balinese settlers, the number of Balinese households in this village is increasing. From the early 1980s, when the expanding irrigation canals reached the settlement, Kertoraharjo became a relatively thriving village. Almost all agricultural land is irrigated and yields two rice harvests a year. In addition, many Balinese have expanded, or sometimes shifted completely, into cocoa cultivation on land bought primarily from Javanese transmigrants and the local population around the Balinese settlement.

Thus, from a transmigrant settlement, Kertoraharjo gradually became a blueprint Indonesian administrative village (*desa*). However, Balinese migration also entailed a recreation and reinvention of Balinese culture, identity, social organization and institutions for local governance. An elaborate domain of Balinese customary arrangements was gradually established. The most important Balinese village institutions in Kertoraharjo are customary villages and temple groups. The customary village (*desa adat*) covers all

6. State-sponsored transmigration resettled Javanese and Balinese farmers on major islands like Sumatra, Kalimantan and Sulawesi, which were characterized by a relatively low population density and extensive forms of agriculture like shifting cultivation, and which were inhabited by a variety of ethnic groups. The programme has rightly been criticized for its negative ecological, economic, social, political and human rights effects (especially on ethnic minorities).

Balinese people living in the two administrative villages that emerged from the initial mixed Javanese–Balinese settlement. Balinese inhabitants of the (mainly Javanese) *administrative* village of Margomulyo therefore belong to the *customary* village of Kertoraharjo. In daily life the customary rather than administrative village tends to be their main point of reference.

Customary villages are ritual communities united through the village temple; they have religious, administrative, social and legal functions. Paraphrasing Guernonprez (1990: 62), Warren (1993: 20) stresses that ‘the fundamental conception of village territory as sacred space in which the land belongs ultimately to the gods who are ancestors and “real social partners” is central to the meaning of *desa* in Balinese cosmology, irrespective of structural variations’.

Water Users’ Associations and Balinese Irrigators’ Associations

From the 1970s, water users were organized into water users’ associations (WUAs),⁷ which were responsible for operation and maintenance of the irrigation system at the level of so-called ‘tertiary units’ (TUs), blocks of land irrigated from a tertiary canal.⁸ The establishment of WUAs in most Public Works irrigation systems was made obligatory in a 1984 Presidential Decree. This resulted in a form of ‘co-management’ in which operation and maintenance of the main system (weir, primary and secondary canals, and tertiary gate) remained the responsibility of the irrigation agency of Public Works, while that of the TUs was transferred to WUAs. The heads of administrative villages became responsible for WUA affairs. Since TUs may cover irrigated fields belonging to one or more administrative villages, WUA membership often also cuts across village boundaries.

At the same time, there is the customary Balinese irrigators’ association, the *subak*, which enjoys a relatively high degree of autonomy from the customary village leadership.⁹ The forested land allocated to the Balinese settlers had to be ritually transformed into irrigated fields. These fields have to be maintained physically and in a ritual–ceremonial sense, to maintain the balance between gods, human beings and resources. Other ‘stakeholders’ are involved — spirits that, if not treated with care, may threaten people and crops. Clearing forest, therefore, must be accompanied by ceremonies, rituals and offerings (Charras, 1982). As in the village, the

7. In Indonesia these are called P3A (*Perkumpulan Petani Pemakai Air*).

8. In the Indonesian context, TUs can cover an area between around 50 and 150 ha, depending on local conditions. TUs are defined by a set of formal principles for design and use (e.g. subdivision into quaternary units irrigated by quaternary canals, separate canal functions for irrigation and drainage, rotational water distribution) as well as for internal organization (a WUA board with various functionaries, prescribed administrative procedures, etc.).

9. Therefore the *subak* was also referred to as the ‘wet village’, in contrast to the ‘dry village’ (Geertz, 1972).

gods are also ‘real social partners’ (Guermonprez, 1990: 62) in the irrigated fields.

Once land becomes productive, this relationship continues. The rice cultivation cycle, from field preparation to post-harvest offerings, forms a highly ordered chain of interrelated activities. Gods subsist on the essence of rice and the existence of rice (the substance) in the human world is due to them. This essence originates from the body of the rice goddess Devi Sri, and should be returned to her after the harvest to allow the cycle to continue. Rice cultivation is susceptible to the transgression of ceremonial rules, ritual pollution and disturbance of the relationship between humans and the rice goddess; the cultivation cycle is therefore accompanied by a ritual–ceremonial cycle. In the words of Howe (1991: 454): ‘Rice production is a cooperative endeavor between gods and people’.

LAND, WATER AND INFRASTRUCTURE: BETWEEN *SUBAK* AND WUA

Property Rights to Land, Water and Infrastructure

The creation, definition and development of property rights to land, water and irrigation infrastructure are crucial in the management of irrigated land. The situation appears straightforward, with the state as primary actor in land allocation, settlement and irrigation development. Current rights to land were defined and allocated by the state in the framework of transmigration.¹⁰ Between the 1960s and 1990s, when transmigration was a spearhead of the ‘New Order’ regime, the state appropriated extensive areas of land throughout the country that had previously been held under local customary tenure, and reallocated it to transmigrants under an individual ownership title. This has also been the case with transmigration in Kalaena.

As to water, the picture seems equally simple. The Kalaena irrigation system, in which the Balinese own and cultivate land, was planned, designed and built by a state agency. It has a blueprint set-up of state-devised technology, organizational arrangements and regulations. Water rights are state-provided and tied to landownership in the command area. As noted, system management takes the form of ‘co-management’; the irrigation agency operates and maintains the main system, while responsibility for the TUs has been transferred to WUAs. This came down to a devolution of management responsibilities, under a superficial ideology of ‘community participation’ and the creation of ‘sense of ownership’ (*rasa milik*). Through the WUAs, the state agency has delegated to the farmers a limited bundle of (operational) water rights and managerial responsibilities. Establishment of WUAs — and farmers’ membership of them — are compulsory. Administrative responsibility

10. As in other parts of Indonesia, transmigration in Luwu has caused conflicts between local populations and settlers. In Kalaena such conflicts have only occurred on a small scale.

for the WUAs rests with the leadership of the administrative village to which the WUA belongs.

Water rights (in the narrow sense of a right to a share of the resource; Pradhan and Meinzen-Dick, 2003), defined in terms of crop water requirements per area irrigated, are allocated by the state agency responsible for main system operation.¹¹ Formally, determination of water requirements takes place in a management-intensive process of bottom-up field data gathering, involving regular contacts between WUA representatives and the agency. Water distribution by the agency takes place at the level of the TU (at the tertiary off-take). Inside the TU, the WUA (through its 'water master') is responsible for rotational water distribution to the 'quaternary' units into which TUs are subdivided.

All irrigation infrastructure is state-owned. Farmers organized in a WUA have the right to use the TU infrastructure and the duty to contribute to cleaning and maintenance. Use of tertiary water division structures is narrowly circumscribed. Farmers are not allowed to operate or bring about changes to the tertiary gate. Operation of the tertiary systems by changing the gate settings of water division boxes is formally the task of the TU water master. Farmers are formally not allowed to change tertiary infrastructure (division structures, canals, drains). Their role is mainly limited to maintenance and small repairs.

***Subak* and WUA: Competing Claims of Authority**

The establishment of *subak* gave state-allocated resources a specifically Balinese meaning. In Bali, the *subak* has many functions related to irrigated agriculture in the broadest sense. These include construction, repairs, operation and maintenance, agricultural planning and pest control, conflict resolution, the organization of rituals and ceremonies, temple construction and maintenance, maintenance of religious purity, collection of tax and fines, creation and enforcement of *subak* regulations and sanctions. A *subak* typically includes a complex which covers anything from tens of hectares to hundreds of hectares of (mainly) irrigated rice fields (*sawah*). Physical boundaries (rivers, ravines), hydrology (a water source shared by a group of farmers), and socio-political factors co-determine the *subak* area, which often crosscuts village boundaries. *Subak* may be subdivided into smaller units or be part of larger complexes (Birkelbach, 1973; Geertz, 1980; Jha, 2002; Lansing, 1991; Spiertz, 2000; Sutawan, 1987).

The head of the *subak* (*klian subak* or *pekaseh*) is assisted by other functionaries.¹² Membership entails a bundle of rights and duties with regard to

11. The 'main system' refers to the weir, primary and secondary canals (in contrast to the tertiary canals and TUs).

12. The term *pekaseh* is also used to describe the higher level, encompassing various *subak* and their heads.

water, ritual, agricultural planning, organization and management. Important responsibilities and obligations are labour contributions, water use in accordance with allocated shares, following planting and cropping schedules, guarding against pollution (in a religious sense) of the irrigated fields, attending meetings, and contributions in money or kind. Technology for water division is based on fixed proportional division of continuous flows through wooden, stone or concrete overflow weirs. An advantage of this method is that the water flow is divided in a direction parallel to the current.¹³ Water division through these structures is relatively transparent and easily controllable by farmers (Horst, 1996; Sutawan, 1987).

In Kertoraharjo, *subak* establishment and development was determined by the specific conditions of settlement and irrigation development outside Bali. Although much of the land was still forested and agriculture rain-fed, the first settler groups established a *subak* upon arrival. After some years, when all Balinese settlers had arrived and developed their land, the initial village *subak* was split up into four separate ones, defined more or less spatially by the boundaries of the areas of land allocated to these groups. The organizations are still primarily known by names that refer to the settler groups initially forming their membership: *subak* 150KK, *subak* 100KK, *subak* 50KK, and *subak* 50KK Tampaksiring.¹⁴ Each was headed by a *klian*, assisted by other functionaries. Together, the four *subak* formed a *pekaseh*, headed by a functionary with that name. *Subak* regulations taken from Bali were adapted to the local situation.

In their development, the *subak* in Kertoraharjo potentially showed the same wide variety of functions already known from Bali, covering ritual, agricultural practices and decision making, and irrigation. Contrary to those in Bali, *subak* in Kertoraharjo were not defined by hydrological or physical boundaries. The pattern of land allocation to settler groups rather than water flows determined *subak* membership and approximate boundaries. This definition of the *subak* in terms of land allocation by the state became an important 'resource' in later conflicts about the scope of legitimate *subak* authority (see below).

Irrigation water of the expanding system reached Kertoraharjo around 1983, with important consequences for the *subak*. Management arrangements in the form of WUAs were delivered as one package with the TU infrastructure. Layout and construction of the TUs were fully based on irrigation-technical criteria, and did not take into account pre-existing social organizational, settler group or ethnic boundaries. The TU boundaries (based

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13. In contrast to division structures of Public Works systems, where water is divided in a direction perpendicular to the flow direction. Acceptance of this latter method by Balinese farmers is low (Horst, 1996; Sutawan, 1987).
 14. KK (*Kepala Keluarga* — 'household head') refers to the number of initial Balinese settler families (350). The second group of fifty households (from Tampaksiring) is often referred to as 'Tampaksiring', to distinguish it from the first group of fifty.

on design criteria) cut across the pre-existing *subak* which, based on earlier land allocation, had never been directly linked to irrigation. This boundary cross-cutting, and the compulsory nature of WUA establishment, made the *subak* lose relevance as organizations for irrigation management. However, the WUAs, with their sometimes ethnically heterogeneous farmer population, could not fulfil the *subak* functions of organizing Balinese rituals and offerings.

Thus, upon establishment of TUs and WUAs, the broad *subak* domain of agronomic-agricultural, irrigation-managerial, and religious-ritual activities of irrigated agriculture was torn apart. This separation arose from diverging perceptions of irrigated agriculture between the government-administrative world and the life world of Balinese. The bureaucratic understanding of 'management' as a separate category of activities includes routine operation and maintenance tasks (canal cleaning, repairs), but excludes agronomic and religious-ritual dimensions of irrigated agriculture. While the former is mainly the responsibility of the Agricultural Service, the latter is classified as belonging to the domain of religion. Neither of the two is associated with irrigation management.

Balinese have different perceptions of irrigated agriculture. Rather than using 'management' (*manajemen*), Kertoraharjo farmers tend to use '*per-subakan*' to refer to the broad domain of irrigated agriculture as covered by the Balinese *subak* — system management and agricultural planning as well as the religious-ritual cycle associated with rice agriculture. However, 'irrigation management' in the narrow sense of operation and maintenance of the tertiary unit became the responsibility of the WUAs. Agricultural planning belongs to the government domain as well, with an important role for the Agricultural Service and the district Irrigation Committee. Hence, the *subak*, as organizations, were forced to retreat to the religious-ritual domain and refrain from interference with management as sectorally defined by government agencies.

In the first years after the establishment of WUAs and the forced separation of religious-ritual and 'management' functions, when the system was already fully functioning and farmers were adapting to the new TUs and WUAs, the *subak* continued to play an important role in irrigated agriculture. The Balinese had accepted government management regulations, but farmers' accounts show that they had great difficulty in making WUAs function without using important elements of *subak*. In this period *subak*-derived elements emerged in the WUA domain. The Balinese created an organizational structure in which the *pekaseh* became 'WUA coordinator' of all WUAs in Kertoraharjo. Later, a conflict with the (then Javanese) village head forced the *pekaseh* to retreat from the WUA domain, reasserting the formal functional separation between *subak* and WUA. Since then, the TUs and WUAs are said to have seriously deteriorated (Roth, 2005).

The four *subak* and the *pekaseh* have developed regulations which are restricted to those issues the *subak* are formally allowed to deal with: they

organize rice rituals, are the guardians of ritual purity, collect tax, determine the schedule of the agricultural season, and provide cash loans to members. As formal organizations, they are no longer involved in 'water management issues' of the WUA domain. Nevertheless, they remain important institutionally in regularizing patterns of behaviour between individuals and groups (see Leach et al., 1999; Meinzen-Dick and Pradhan, 2001). In the TUs and WUAs with a Balinese farmer population, the influence of *subak* on the legal, organizational and technical dimensions of irrigation continues. In some places, farmers have taken full control of water division technology and replaced the Public Works division boxes — which farmers are formally only allowed to operate and not to change — with Balinese division structures. It is often around such technology, where small groups of farmers are active in maintaining and improving the system, that Balinese organizational arrangements and regulations develop as well. Wherever the Balinese have organized around water management, *subak*-derived arrangements and practices have become the institutional 'glue' that keeps the state-imposed WUAs together (Roth, 2005).

***Subak* as Guardians of Purity: Determining Cropping Season and Transplanting**

The rice transplanting ritual forms the main point of interaction between *subak* and government policy. It also influences Balinese agricultural practices.¹⁵ For Balinese, determining a suitable transplanting date is crucial in agricultural planning. The beginning of transplanting is marked by a ritual and accompanied by strict regulations on timing and on agricultural labour. Transplanting before the ritual is regarded as a polluting act that disturbs the harmonious relationship between nature, people and gods. While farmers are allowed to start transplanting after the ritual, other labour is forbidden on that day. Rules are strictly maintained and enforced by 'spies' in the fields. Transgressors are fined by the *subak*, and must finance a cleansing ritual.

The *pekaseh* is not free to determine the transplanting date. He must take into account complicating factors and competing interests. The same goes for farmers and their agricultural activities. First, there is the government schedule for system opening and closure, and government indications for stages of the agricultural season (ploughing, transplanting, harvesting). Agencies and administrators try to increase cropping discipline among farmers: district policy is based on the latest advice from provincial research centres about crop resistance against pests and diseases, expected seasonal influences and rainfall. These government agencies co-operate in shifting forward the

15. This is where *subak* becomes most clearly visible as a normative and legal order. Other ritual is either left to the individual farmer, depending on the growth stage of the crop or the harvest moment, or taken care of by the *subak*.

beginning of the dry season cropping period to as early a date as possible. For this, their most powerful instrument is choosing an early opening date for the irrigation systems, while strictly adhering to the planned closure date.

The district Irrigation Committee determines the opening and closing schedule of irrigation systems. These dates, a schedule for agricultural activities, and instructions on rice varieties and inputs are passed down hierarchically to the subdistrict and administrative village through so-called *tudang sipulung* meetings.¹⁶ After the subdistrict meeting, ideally a village-level meeting is held. For Balinese, the agricultural season is so closely related to ritual obligations that this meeting is crucial. In Kertoraharjo it provides a forum for discussion and decision making on how to match the government schedule with Balinese preferences for a day for starting land preparation, receiving the first irrigation water, and especially transplanting, based on the Balinese calendar.

Other factors — crucial for farmers — also play a role. These include crop conditions and expected planting behaviour in neighbouring villages, from which Balinese farmers do not want to deviate too far, and availability of tractors and labour power (for land preparation, extracting and bundling, and transplanting) during peak periods. Irrigated agriculture depends to a large extent on wage labour at all stages except harvesting. Appointments with tractor owners and transplanting groups have to be made weeks in advance. Land preparation schedules, especially the last stage of levelling, must be attuned to transplanting.

The transplanting ritual on the village customary land is organized by the *pekaseh*. He instructs a Hindu priest specializing in rice ritual to enact this ritual on the morning of the date determined in the village meeting. After praying for a good harvest and absence of pests and diseases, a bundle of stalks is ritually cleansed with holy water from the irrigation temple, and planted out by the priest. In the core *subak* areas — the irrigated fields initially defined as *subak* areas — transgressions of the rules for the beginning of transplanting seldom occur. In the following case a *subak* member transplanted his rice before the day of the ritual. The farmer was convicted and had to pay a cleansing ritual, executed on his field by the *subak* priest. In the words of the farmer:

I had my rice transplanted one day before the transplanting ritual. The problem was that the definitive date chosen by the *pekaseh* had been announced very late. . . . When it was finally announced, I had already contracted a transplanting group that I could not cancel without getting into serious trouble with finding new labour power at short notice. My rice stalks had already been extracted and bundled . . . ready for transplanting. So under these circumstances

16. This is a Bugis term meaning something like 'sit and discuss together'; the Bugis are a major ethnic group in South Sulawesi. The term refers to a Bugis tradition of collective decision making on rice cropping. It is a good example of the use of an 'indigenous' term appropriated by state agencies as an instrument of top-down control, veiled in participatory rhetoric (see Acciaioli, 1997).

I was forced to steal one day. The transplanting group arrived and transplanted my rice before [the official opening of transplanting season]. Late announcement of the transplanting date is a problem for farmers. It makes finding a transplanting group very difficult. If it is a late date, it makes it impossible for us to follow the government schedule (source: field notes)

The Balinese often stress that these *subak* regulations only apply to Balinese farmers. However, I witnessed a case of a Javanese farmer (a Muslim) who started working his land located near the field hut of the (Balinese) water master of the TU. Immediately the water master forbade him to transgress Balinese *subak* rules. The water master told me that he had been ordered by the chairman of the WUA (also a Balinese) to guard the fields against transgressions of *subak* regulations forbidding agricultural labour on this day (source: field notes). This example shows that the formal separation of functions and spheres of influence between the WUA and the *subak* is not always clear in agricultural and management practices on the ground. Such formal distinctions need not correspond to actors' understandings of the domains of human activity on which they have been imposed. In this case, a WUA chairman was enforcing *subak* rules upon a non-Balinese farmer.

CONTESTED BOUNDARIES OF WUA AND SUBAK

Dividing a Tertiary Unit: A WUA for Balinese Only

The TU known as PS3 covers about 90 ha of irrigated fields. It cuts across village and ethnic boundaries. The upstream (head) part belongs to Patengko village with a migrant population from Tana Toraja¹⁷ in highland South Sulawesi, while the middle and tail end belong to Kertoraharjo. As a consequence of the history of land allocation, land tenure in the Balinese part of the TU is relatively egalitarian. Land ownership still reflects the state allocation pattern of 1-ha plots of irrigable land (*sawah*; see above). Most land in Patengko used to be owned by a small number of initial Toraja settlers. Gradually, they sold land to Toraja and Balinese farmers or had it worked in sharecropping arrangements. One trend in land tenure is clear: land ownership shows a 'Balinization' of the Patengko part of this TU. About eighteen Balinese farmers own land here bought from Toraja farmers, and this Balinese take-over of land is continuing.¹⁸ There is a marked difference in cropping schedule between Balinese and Toraja. Most Toraja cultivate and harvest one to two months later than their Balinese neighbours. The Balinese, who have no control over the head end of the TU, see this as an advantage: spreading the high water demand of land preparation over a longer period may prevent conflicts about water.

17. Toraja are mainly Christians.

18. At the time of the research the TU had fifty-eight Balinese and thirty-four Toraja landowners.

Many parts of the infrastructure did not function well when the system began to be used. The original tertiary canal is still in use, but all five water division boxes in the TU have lost their function of rotational water distribution. Many quaternary canals from the boxes have disappeared. On several locations in the Patengko part of the unit, water is taken directly from the tertiary canal by opening the tertiary embankment or boring (usually invisible) holes in the canal embankment, a practice of water appropriation common among Toraja farmers but strongly disapproved of by the Balinese. The water thus appropriated flows directly into an irrigated field and is further distributed on a field-to-field basis. In the Toraja part of the TU, there is much water loss through leakages from tertiary canal and degraded boxes. All quaternary canals have disappeared, as have many drains.

Where the tertiary canal enters Balinese village territory, Balinese farmers have constructed a proportional division structure (*temuku*) using bricks and cement. This guarantees water allocation to the Balinese with land in Patengko, and an equitable share for the middle and tail ends. Further downstream, Balinese have constructed another division structure to replace a Public Works division box which never functioned because of its low position. It divides the water supply proportionally into three, the larger portion of which enters the tertiary canal, while two smaller shares enter smaller canals from which groups of eleven farmers each take water. Farmers taking water from these small canals have been very active in improving access to water, making culverts, and maintaining a farm road. Many farmers place a small wooden division structure¹⁹ in the canals to divert the water proportionally into their field. A relatively controlled and transparent water distribution exists in this part of the TU. Thus, all kinds of irrigation-technical adaptations to the degraded TU infrastructure have come into being here.

In terms of the organizational arrangements, the WUA has an all-Balinese board consisting of a chairman, vice-chairman, secretary, treasurer, and water master. At a lower level of organization, four Balinese farmers function as group leaders of four 'quaternary unit' subgroups of the WUA. This formal structure and the relationship between quaternary infrastructure and formal organization have never existed in practice. The small groups have primarily developed where Balinese farmers have constructed new division structures to replace degraded ones, thus changing the boundaries of quaternary irrigation units as well as arrangements for their management.

As a consequence of the tensions between the two groups about water appropriation and collective labour, the Toraja farmers have been excluded from the WUA. Although the TU has physically remained one irrigation unit, organizationally the Balinese have separated off and formed their own WUA without Toraja farmers. The fifty-eight farmers registered in the WUA administration are all Balinese. They belong to four smaller farmers' groups,

19. These are also called *temuku*, like the concrete ones built in some places; see above.

three of which are located on Kertoraharjo land while the fourth consists of Balinese farmers who have bought land in the Patengko part of PS3. The thirty-four Toraja farmers are not organized in such groups, and not registered with or represented in the WUA. The Balinese chairman of the WUA states that the organization now exclusively represents Balinese farmers.

During a meeting of the Balinese section of the TU — part of an initiative by the Balinese administrative village head (responsible for WUA affairs) to bring new life into the badly functioning WUAs — new rules were formulated to strengthen its performance. The regulations, drafted by the WUA chairman, were presented to the members and accepted unanimously. The regulations, later to be extended with rules concerning water allocation and distribution, cover collective labour (rules and fines for absence), labour compensation for those unable to work, in proportion to land ownership,²⁰ cattle and fowl (fines on damage to canals and crops), and purity of the irrigated fields (fines on sexual intercourse in the irrigated fields; the need for a cleansing ritual). Reference to religious–ritual purity, rules on labour compensation and other rules in the new regulations have given the TU a strongly Balinese identity. The Balinese have turned the WUA into a fully Balinese organization to which *subak* regulations are increasingly applied.

The Contested *Subak*: Multiple Definitions of Legitimate *Subak* Authority

Initially, land allocation had determined *subak* membership (see above). Although different from the situation in Bali, this definition, emerging under the specific migrant conditions in Kertoraharjo, was clear enough at the outset. However, it no longer suffices for defining and demarcating *subak* authority in certain domains of *subak* activity. The active role of Balinese as buyers of land and their increasing land ownership in other villages influence the *subak* and make the initial definition of its membership problematic. These ambiguities and different interpretations have now become a destabilizing factor.

A key issue is the status of land bought by Balinese outside areas initially defined as *subak* areas. Are its owners subject to *subak* taxes and contributions, rights and responsibilities? The status of this land is unclear, the issue not covered by *subak* regulation. This problem of boundaries of authority — not this time between *subak* and WUAs but between land under *subak* control and land outside its control — haunts the Kertoraharjo *subak*. Two elements make this problem particularly sensitive: payment of *subak* tax proportional to irrigated land owned, and the regulations on transplanting. According to strict interpretations, *subak* ritual must be performed for

20. In the latter, a ‘standard’ area is determined (in this case 1 ha), for which owners must perform collective labour. Owners of more land should pay per hectare per season for land above the standard, while farmers owning less receive compensation.

all Balinese and their irrigated fields, irrespective of location of the land. If Balinese own irrigated fields in surrounding villages, according to this interpretation they are subject to *subak* regulations.

However, this interpretation is not shared by all. For irrigated areas initially under *subak* control the picture is more or less clear. Balinese transmigrants started off with an equal area of (mostly irrigated) land: 1.75 ha.²¹ In the meantime, some have sold (part of) their land while others have bought additional land from Balinese in the *subak* areas. Such changes are taken into account in determining the seasonal member contributions, paid in proportion to area owned in one of the initial areas.²²

Other cases are more difficult. Farmers owning land located partly within and partly outside the initial areas tend to pay for the former only, and usually do not respect the *subak* transplanting schedule for the latter areas. There are also farmers who own irrigated fields outside the initial *subak* areas only. Most are not *subak* members, do not pay tax, and do not respect the transplanting date. The status of land bought by Balinese from Javanese farmers in neighbouring Margomulyo is also unclear. Some farmers pay for this land, while others do not. Farmers take widely diverging positions on the issue, as the examples and quotations below clearly demonstrate. The first, Wayan Gatra, once openly refused to pay *subak* tax for his land located outside the initial *subak* areas. Irritated by the unwillingness of fellow villagers to pay tax for such land, he decided to stop paying:

Subak ceremonies are held for all Balinese who work irrigated fields. I held the opinion that either everybody should take his responsibility and pay the full tax, or that it should be collected on the basis of irrigated area in the transmigration areas only. But nothing in between, me paying my tax and others not taking their responsibility. That is why I refused to pay. In the end, I remained a *subak* member . . . though I have sold my land in the *subak* areas a long time ago and bought irrigated land in another village. *Subak* ceremonies are organized for all Balinese rice farmers, including those outside the *subak* areas. So we have to be members The best solution would be to decide that all irrigated land owned by Balinese from the customary village of Kertoraharjo must pay *subak* tax (source: field notes)

This farmer pleads for taking customary village membership as the key criterion. Others would even leave tax collection to the customary village, limiting the relative autonomy of *pekaseh* and *subak*.

The following farmer defies *subak* authority by refusing to pay tax for land bought from another Balinese, located in one of the initial *subak* areas:

Many years ago Pan Budarsana bought an irrigated field from a Balinese transmigrant who returned to Bali. Since then Budarsana refuses to pay tax and observe *subak* decisions

21. The official allocation pattern was 1 ha of *sawah*, 0.75 ha of *lading* (rainfed land). Most of the latter turned out to be irrigable in Kertoraharjo. Apart from this, settlers received 0.25 ha of houseplot; see also above.

22. Though the status of such land bought by Balinese is widely acknowledged, there is no general agreement. Some farmers do not agree that taxation should cover land acquired through purchase.

on transplanting. For his other land, acquired by transmigration, he pays the amount due. Budarsana avoids the subject and does not want to comment. According to other farmers, the case is clear: Budarsana bought his land from a transmigrant who had received it by government allocation. Therefore, it is *subak* land. There is quite general agreement among farmers that he should pay. Budarsana, however, maintains that he acquired the land not by state allocation but by purchase from a transmigrant. According to him, even though the land is located in a *subak* area, it is not subject to its regulations. Since many years this case threatens *subak* unity. If Budarsana is fined by the *subak*, he simply does not pay. Budarsana continues to turn up for *subak* meetings, where he is tolerated. The *subak* uses no further sanctions to enforce its regulations (source: field notes).

The following farmer, Made Suarna, owns land outside the *subak* areas only. He uses his status as a 'spontaneous transmigrant' (not state-sponsored) as an argument for not joining *subak*.

Made Suarna owns two irrigated fields, both outside the original *subak* areas. He is not a *subak* member, does not pay tax and only partly follows the planting schedule. On one irrigated field in Purwosari he does not follow the *subak* schedule; under the influence of his neighbours, he says. The mostly Javanese-owned fields in this village are usually planted before the Balinese transplanting ritual. On his other land he follows the *subak* schedule, because there are other Balinese landowners nearby who do so as well. Suarna: 'In Bali it is a great advantage to be a member of the *subak*; it regulates everything: water, offerings, holy water. Here, if your irrigated field is located outside the *subak* areas, you get information from hearsay only. I should actually be a member, but I am not because the farmers around me are all Muslims. Let us not unnecessarily show off our religion. I do my own small offerings and that is it' (source: field notes).

What keeps Suarna from becoming a member, and what is the difference between his situation and that of others like Wayan Gatra in the first case? According to Suarna:

Wayan Gatra is a transmigrant. He sold his transmigration land and bought new land in another village. Though his current land is located outside the initial *subak* areas, he has been a member from the beginning and should remain so. I came as a spontaneous transmigrant and did not get government land. Therefore, I am not a *subak* member. *Subak* is for owners of irrigated fields in the *subak* areas or for those who were members but transferred their land to another location. I happen not to own any irrigated fields there, and I never did. Once the *subak* leaders tried to force people like me to become members, but their proposal was voted down. If we join *subak*, the consequence is that we also have to execute the [ritual for welcoming the water], bring offerings and respect the transplanting date. That will probably not be accepted by non-Balinese who own irrigated fields there (source: field notes).

Sometimes, conflicts occur about temporary use of the land of *subak* members by other farmers, especially non-Balinese. The following account comes from Ngurah:

Sarin tahun [*subak* tax] means 'the proceeds of a year's labour'. Payment for land outside the *subak* area would not be a problem to me. Whenever there are proceeds we must pay. But we have to be consistent with regard to its meaning. The following happened to me some time ago. I own three irrigated fields in Margomulyo, totaling 2.25 hectare. Some time ago I pawned one of these fields to a Javanese farmer, so 1.5 hectare was left for cultivation by myself. As I did not harvest from the pawned field, I did not pay tax for it. I ended up having

a conflict with the *subak*. The chairman demanded payment for a *sawah* I do not work. He demanded payment for 2.25 hectare while I only owed him tax for 1.50 hectare. I told him that he should realize the meaning of *sarin tahun*. If a farmer with another religion uses the land, what can we do about it? . . . If the land user is a Balinese, tax payment is settled by an agreement between the owner and the temporary user. But if the user is a Javanese, that is not possible: I do not want to pay because I have no proceeds, and he does not want to pay either because he is not a Balinese and does not recognize *subak* (source: field notes).

Some Balinese stress that the unity of the Balinese Hindu community is at stake. Taking location of land rather than religious affiliation as a criterion for membership and contributions would severely jeopardize the unity and authority of the community. Other considerations related to processes of economic differentiation, particularly, also play a role. Should differences in land ownership be expressed in a proportional differentiation of member duties? Should tax, additional contributions in kind, or labour contributions (for example, for temple maintenance) *all* be collected and demanded on the basis of irrigated area owned? Another problem concerns the specific position of land outside the initial *subak* areas. There is a dilemma here, between following *subak* regulations or adapting to the people in the area where the land is located. Should a minority of Balinese farmers among a non-Balinese majority be forced to follow *subak* regulations or be left free to adapt to the agricultural practices of farmers of different origin and ethno-religious identity around them? Many Balinese stress that individual farmers can and must make their personal field offerings, but should refrain from 'showing off' by expanding *subak* ritual to areas with a non-Balinese farmer majority.

Subak legitimacy is uncontested only in those areas that were initially under *subak* control, but often ignored elsewhere. Balinese farmers owning irrigated land outside these areas only have a completely different relationship to *subak* than farmers who own land within the area. The former are mainly spontaneous settlers without initial access to transmigration land, and offspring of transmigrants, dependent on inheritance and land purchases. Their different relationship to *subak* makes such landowners vulnerable to accusations of 'free riding': *subak* members finance the necessary rice ritual, and fulfil labour and other requirements. The same goes for farmers who have sold land in the initial areas and bought new land in other areas.²³

CONCLUSION

Debates about property rights, common property and institutions for resource management have often under-emphasized the role of competing claims and legitimizing institutions, and of disjunctures, tensions or conflict between

23. Sometimes such farmers were accused of shirking *subak* responsibilities. Usually other considerations prevail: land quality, access to water, or distance between the irrigated field and the home.

state and non-state authorities. Studies about rural property transformations should pay more attention to the relationships between state agencies and their strategies of territorialization in the domain of resource governance, on the one hand, and local resource users and their specific perceptions of property rights, resource governance and authority, on the other. The case study presented here of the competition for legitimate authority between state and non-state arrangements in the domain of local irrigation management against the backdrop of complex property rights to land, water and infrastructure clearly illustrates this point.

Property rights to state-allocated resources are given meaning in the life world of Balinese migrants in a new socio-cultural and agro-ecological environment. Transmigration and settlement were products of, and structured by, increasing state control over natural resources, definitions of property rights, and arrangements for management and governance. Gradually, however, new structuring forces have emerged locally, accompanied by new values, norms, definitions of rights and responsibilities, and regulatory arrangements; specifically Balinese but also the product of 're-invention' of Balinese society. This process of giving meaning to a state-defined space and associated governance and managerial arrangements is crucial in the settlement history of these migrants.

This re-embedding also brought to the surface differential interpretations of the scope of the bundles of rights and responsibilities pertaining to resources, of irrigation management, of the boundaries between the state-defined and the Balinese domain, and of the legitimacy of *subak* authority under conditions of expanding Balinese land ownership. Even in a setting where property rights to the resources *per se* are relatively 'clear', such differential interpretations and related sources of legitimacy give the domain of irrigated agriculture and irrigation management an ambivalent, institutionally and legally complex character.

The TU/WUA structure introduced with the irrigation system involves specific bundles of rights and responsibilities, and forms of management. The Balinese have at their disposal other ways of managing irrigated agriculture associated with *subak*. These entail different bundles of rights and responsibilities, norms, rules and ways of organizing, and relationships between 'religion' and 'management'. Formal exclusion of *subak* from resource management could not prevent the gradual introduction of its normative, organizational and technical characteristics in irrigation management. *Subak*-related norms, arrangements and practices became the institutional 'glue' in local irrigation management, at the level of the WUA wherever possible, or at lower levels of farmer organization.

The new functions of the *subak* as formal organizations for guarding and staging the religious-ritual elements of irrigated agriculture brought new interactions with the government domain, including the planning of the agricultural season, especially the determination of the date on which rice transplanting is allowed to begin. Although the schedules of government agencies and *pekaseh* are never far apart, there is some tension between the

government policy of transplanting as early as possible and the Balinese stress on forbidding transplanting before the day of the ritual. The issue may also become sensitive in relation to stresses and constraints associated with another factor in agricultural planning: availability of labour for plowing and transplanting. The way in which transplanting regulations are enforced in the field shows that the formal separation of *subak* and WUA is not always clear-cut in social practice.

The forced separation of *subak* as organization from the formally defined WUA domain and the gradual reintroduction of some of its institutional elements into irrigation management have set off new processes of contestation of the boundaries of both WUA and *subak*. The case of a multi-ethnic WUA with increasing Balinese land ownership shows that growing Balinese influence, in combination with tensions about irrigation management between Balinese and Toraja farmers, brings in the factor of identity related to property and resource management. New infrastructure, organizational arrangements and rules have turned TUs and WUAs into spaces and organizations with an increasingly prominent Balinese (*subak*) identity, leading to the *de facto* exclusion of non-Balinese farmers from the WUA. At the same time, the definition of *subak* in terms of land allocated by the state has led to conflicts about the legitimacy of *subak* authority to impose *subak*-related restrictions (on transplanting) and obligations (tax payment) upon Balinese landowners outside the initial settlement area. There is no general agreement on the scope of *subak* authority regarding these issues. Causing divisions among the members, such problems weaken the *subak*.

It can be concluded that the embedding of state-allocated resources in Balinese social institutions and cultural-religious notions deeply influences local governance and irrigation management structures and arrangements. The plural character of rights and responsibilities influencing irrigated agriculture is reflected in conflicts about authority and legitimacy between competing organizations and institutions in the domain of management of irrigated agriculture (WUA and *subak*), as well as within them (*subak*). In the process, both local definitions of property rights (bundles of rights and responsibilities) and competing arrangements undergo important transformations. These transformations deeply influence both state and non-state resource governance and management arrangements, turning them into locally specific and 'embedded' institutions. Such processes, in which institutional arrangements are reproduced, transformed, or wholly discarded and replaced by new ones, are characterized by struggles about legitimacy, authority and power.

REFERENCES

- Acciaioli, G. (1997) 'What's in a Name? Appropriating Idioms in the South Sulawesi Rice Intensification Program', in J. Schiller and B.M. Schiller (eds) *Imagining Indonesia: Cultural Politics and Political Culture*, pp. 288–320. Ohio University Center for International Studies,

- Monographs in International Studies, Southeast Asian Series, No. 97. Athens, OH: Ohio University Press.
- Agrawal, A. (2003) 'Sustainable Governance of Common-Pool Resources: Context, Methods, and Politics', *Annual Review of Anthropology* 32: 243–62.
- Agrawal, A. and C.C. Gibson (1999) 'Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation', *World Development* 27(4): 629–49.
- von Benda-Beckmann, F., K. von Benda-Beckmann and A. Griffiths (eds) (2005) *Mobile People, Mobile Law. Expanding Legal Relations in a Contracting World*. Aldershot: Ashgate.
- von Benda-Beckmann, F., K. von Benda-Beckmann and M.G. Wiber (eds) (2006) 'The Properties of Property', in F. von Benda-Beckmann, K. von Benda-Beckmann and M.G. Wiber (eds) *Changing Properties of Property*, pp. 1–39. New York: Berghahn Books.
- Birkelbach, A.W. (1973) 'The Subak Association', *Indonesia* 16: 153–69. (Cornell Modern Indonesia Project.)
- Bruns, B.R., C. Ringler and R. Meinzen-Dick (eds) (2005) *Water Rights Reform: Lessons for Institutional Design*. Washington, DC: International Food Policy Research Institute.
- Charras, M. (1982) *De la Forêt Maléfique à l'Herbe Divine. La Transmigration en Indonésie: les Balinais à Sulawesi (From Hostile Forest to Divine Grass)*. Paris: Editions de la Maison des Sciences de l'Homme Paris.
- Geertz, C. (1972) 'The Wet and the Dry: Traditional Irrigation in Bali and Morocco', *Human Ecology* 1(1): 23–9.
- Geertz, C. (1980) 'Organization of the Balinese Subak', in E.W. Coward Jr. (ed.) *Irrigation and Agricultural Development in Asia. Perspectives from the Social Sciences*, pp. 70–90. Ithaca, NY, and London: Cornell University Press.
- Guermonprez, J.F. (1990) 'On the Elusive Balinese Village: Hierarchy and Values Versus Political Models', *Review of Indonesian and Malaysian Affairs* 24: 55–89.
- Hann, C.M. (ed.) (1998) *Property Relations. Renewing the Anthropological Tradition*. Cambridge: Cambridge University Press.
- Horst, L. (1996) 'Intervention in Irrigation Water Division in Bali, Indonesia. A Case of Farmers' Circumvention of Modern Technology', in G. Diemer and F. Huibers (eds) *Crops, People and Irrigation. Water Allocation Practices of Farmers and Engineers*, pp. 34–52. London: Intermediate Technology Publications.
- Hotimsky, S., R. Cobb and A. Bond (2006) 'Contracts or Scripts? A Critical Review of the Application of institutional Theories to the Study of Environmental Change', *Ecology and Society* 11(1): 41. <http://www.ecologyandsociety.org/vol11/iss1/art41/>
- Howe, L. (1991) 'Rice, Ideology, and the Legitimation of Hierarchy in Bali', *Man (N.S.)* 26: 445–67.
- Jentoft, S. (2004) 'Institutions in Fisheries: What They Are, What They Do, and How They Change', *Marine Policy* 28: 137–49.
- Jha, N. (2002) 'The Bifurcate Subak: The Social Organisation of a Balinese Irrigation Community'. Dissertation, Brandeis University. UMI Dissertation Services.
- Johnson, C. (2004) 'Uncommon Ground: The "Poverty of History" in Common Property Discourse', *Development and Change* 35(3): 407–33.
- Lansing, J.S. (1991) *Priests and Programmers. Technologies of Power in the Engineered Landscape of Bali*. Princeton, NJ: Princeton University Press.
- Leach, M., R. Mearns and I. Scoones (1999) 'Environmental Entitlements Dynamics and Institutions in Community-based Natural Resource Management', *World Development* 27(2): 225–47.
- McCay, B.J. (2002) 'Emergence of Institutions for the Commons: Contexts, Situations, and Events', in E. Ostrom, Th. Dietz, N. Dolsak, P.C. Stern, S. Stonich and E.U. Weber (eds) *The Drama of the Commons*, pp. 361–402. Washington, DC: National Academy Press.
- McCay, B.J. and S. Jentoft (1998) 'Market or Community Failure? Critical Perspectives on Common Property Research', *Human Organization* 57(1): 21–9.

- Meinzen-Dick, R. (2000) 'Public, Private, and Shared Water: Groundwater, Markets and Access in Pakistan', in B.R. Bruns and R. Meinzen-Dick (eds) *Negotiating Water Rights*, pp. 245–68. New Delhi: IFPRI.
- Meinzen-Dick, R.S. and R. Pradhan (2001) 'Implications of Legal Pluralism for Natural Resource Management', *IDS Bulletin* 32(4): 10–17.
- Mosse, D. (1997) 'The Symbolic Making of a Common Property Resource: History, Ecology and Locality in a Tank-irrigated Landscape in South India', *Development and Change* 28(3): 467–504.
- Ostrom, E. (1992) *Crafting Institutions for Self-Governing Irrigation Systems*. San Francisco, CA: Institute for Contemporary Studies Press.
- Ostrom, E. and E. Schlager (1996) 'The Formation of Property Rights', in S.S. Hanna, C. Folke and K.G. Mäler (eds) *Rights to Nature: Ecological, Economic, Cultural, and Political Principles of Institutions for the Environment*, pp. 127–56. Washington, DC: Island Press.
- Pradhan, R. and R. Meinzen-Dick (2003) 'Which Rights are Right? Water Rights, Culture, and Underlying Values', *Water Nepal* 9–10 (1–2): 37–61.
- Roth, D. (2005) 'In the Shadow of Uniformity. Balinese Irrigation Management in a Public Works Irrigation System in Luwu, South Sulawesi, Indonesia', in D. Roth, R. Boelens and M. Zwarteveen (eds) *Liquid Relations. Contested Water Rights and Legal Complexity*, pp. 66–96. New Brunswick, NJ: Rutgers University Press.
- Roth, D. (2006) 'Which Order? Whose Order? Balinese Irrigation Management in Sulawesi, Indonesia', *Oxford Development Studies* 34(1): 33–46.
- Schlager, E. (2006) 'Property Rights, Water and Conflict in the Western US', in F. von Benda-Beckmann, K. von Benda-Beckmann and M.G. Wiber (eds) *Changing Properties of Property*, pp. 293–308. New York: Berghahn Books.
- Spiertz, H.L.J. (2000) 'Water Rights and Legal Pluralism: Some Basics of a Legal Anthropological Approach', in B.R. Bruns and R.S. Meinzen-Dick (eds) *Negotiating Water Rights*, pp. 245–68. New Delhi: IFPRI.
- Sutawan, N. (1987) 'Farmer-Managed Irrigation Systems and the Impact of Government Assistance: A Note from Bali, Indonesia', in *Public Intervention in Farmer-Managed Irrigation Systems*, pp. 49–69. Digana Village, Sri Lanka: International Irrigation Management Institute.
- Vanderveest, P. and N.L. Peluso (1995) 'Territorialization and State Power in Thailand', *Theory and Society* 24: 385–426.
- Verdery, K. and C. Humphrey (eds) (2004) *Property in Question. Value Transformation in the Global Economy*. Oxford and New York: Berg.
- Warren, C. (1993) *Adat and Dinas. Balinese Communities in the Indonesian State*. Kuala Lumpur: Oxford University Press.
- Zwarteveen, M., D. Roth and R. Boelens (2005) 'Water Rights and Legal Pluralism: Beyond Analysis and Recognition', in D. Roth, R. Boelens and M. Zwarteveen (eds) *Liquid Relations. Contested Water Rights and Legal Complexity*, pp. 254–68. New Brunswick, NJ: Rutgers University Press.

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