

TRAGEDY? WHAT TRAGEDY? SWORDS OF DAMOCLES AND THE CASE OF INSTITUTIONALLY ERODING COMMON PROPERTY REGIME IRRIGATION IN NEPAL

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ABSTRACT

Scholarship on common pool resources governed as common property regimes² is characterised by discourses in which notions of ‘tragedy’ in and ‘threats’ to ‘community’ cooperation feature prominently. In this paper the relevance of the notions is questioned. The paper seeks to explain, first of all, why these notions run so deep, by exploring the underlying assumptions, as well as their origins and manifestations in common property regime analyses. It is argued that their appeal among champions of common property regimes, is closely associated with interesting combinations of idealised notions of community cooperation and conventional economic theory. This combination contributes to explaining the popularity of common property regimes across a range of academic disciplines, and in rural development policy.

Secondly, the paper tests the relevance of the notions against the context of changing cropping patterns and related water tenure changes in irrigation system cases in the hills of Nepal and elsewhere in Asia. It is argued that while common property regimes indeed erode as non-cereal crops gain ground, cooperation in pursuit of livelihood activities does not, and that, in the face of improving livelihood trajectories, it is difficult to lament the demise of common property regimes. The cases serve to illustrate that the assumptions in common property scholarship and policy, about tragedy, threats and the direction of cooperative governance, tenure and livelihood arrangements are problematic given a rapidly changing rural reality. *Common property regimes, water tenure, commons scholarship, irrigation, threats, tragedy, livelihoods, Nepal*

1. INTRODUCTION

This paper questions the relevance of the focus on, and assumptions associated with, notions of tragedy, threats and community cooperation in scholarship and policy on common property regimes. Under scrutiny, in particular, is the implicit assumption that cooperation in the countryside, characterised by communal tenure and management of natural resources, is a particularly desirable form of cooperation, and that failure in this endeavour amounts to tragedy. This questioning is prompted by the author’s research on irrigation systems in the hills and mountains of Nepal. That research finds that the importance of communal irrigation is reduced as farmers diversify crop portfolios and livelihoods. It also finds this reduction does not mean less cooperation in the rural economy, but rather that new types of cooperation other than those associated with communal tenure arrangements

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² Common property regimes are social arrangements that denote structured modes of common pool (or simply ‘commons’) resource governance and tenure. It represents the institutions, regulations and management practices involved (see Bromley 1992 for a discussion, Berg 2008, Fuys et al 2006).

emerge and that, generally, farmers experience livelihood improvements in these contexts of institutional plurality. Why then the continued focus on common property regimes as a particularly desirable form of cooperation?

One reason would be that common property regimes in relation to water, forests, pastures or other resources, whether highly or loosely structured forms of cooperative tenure are considered “significant property arrangements in many parts of the developing world” (Fuys *et al* 2006). As such they play important roles with respect to the livelihoods (and sometimes survival) of the rural poor. In recognition of their importance, common property regimes are situated in Community Based Natural Resource Management (CBRNM) policies. These have been pursued on a significant scale in developing countries in the past couple of decades (see Blaikie 2006). Cooperation is particularly evident in small-scale irrigation which often represent, as Bromley points out,

“the essence of a common property regime. There is a well-defined group whose membership is restricted; an asset to be managed (the physical distribution system); an annual stream of benefits (the water that constitutes a valuable agricultural input); and a need for group management of both the capital stock and the annual flow (necessary maintenance of the system and a process not only for allocating the water among members of the group of irrigators), to make sure that the system continues to yield benefits to the group” (1992:13).

Questioning the continued relevance of the notions and concepts used in common property scholarship leads to the questioning of other assumptions that are central to the scholarship and to CBRNM policies: First of all, that common property regimes and the communities in which they exist (and are often treated as synonymous with) are closed economic and social systems (Engberg-Pedersen 1997). Secondly, that communities and their common property regimes are economically and socially stable and homogenous, characterised by shared norms and incentives to manage resources effectively and in a sustainable manner, with agriculture and/or natural resources as the main sources of people’s livelihoods (Berg 2008).

This questioning is considered relevant in the context of at least two debates on common property regimes and CBRNM: At scholarship level, the debate is concerned with the extent to which assumptions about stability and incentives adequately capture the dynamics of common property regimes in a rapidly changing rural reality, characterised by livelihood diversification as outcomes of economic and social integration with the outside world (Berg 2008, Moench 2002, Sadeque 1999, Barker and Molle 2002, Rigg 2006). This discussion places common property regimes firmly in the context of debates on the direction of rural development. In these debates, social and economic change in rural areas are seen to lead to increasingly complex rural development trajectories, where “trends and discontinuities in the character of rural areas generate a rural development problematic sharply different from that of the past” (Ashley and Maxwell 2001:397). Assumptions about homogeneity, static and closed economic systems – and indeed ‘community’ are problematic in these trajectories. In the context of Asian irrigation systems, Barker and Molle sum up the issue:

“Although traditional communal irrigation schemes are often praised for their endogenous mix of local wisdom and social cohesion, and sometimes romanticized, these systems are now exposed to new threats, as communities have opened to the world, agriculture moved from subsistence to commercialization, and villagers diversified their economic activities” (2002:4).

Another debate is concerned with the policies that promote common property regimes. In CBRNM policies common property regimes are seen as relatively egalitarian and effective ways of organising rural development and natural resource management at the micro-level (Berg 2008). The points of contention deal broadly with the ability of CBRNM policies to deliver outcomes that match stated goals (Blaikie 2006) and, as Johnson points out, “with problems of creating and sustaining resource access for poor and vulnerable groups in society” (2004:408). Indeed, as Bromley pointed out in the early 90s, membership in common property tenure arrangements tend to be restricted; not least in irrigation where it is based on land ownership (Bromley 1992). It is often overlooked that common property regimes resemble individual or corporate common property regimes and that the internal egalitarian element where all members of the ‘club’ have some degree of access to water is based on an exclusive logic (Berg 2008). Partly because this logic is becoming evident through elite capture, the policies that have promoted CBNRM over the past decades, in the name of decentralisation, participation, equity and poverty orientation, are increasingly criticised (Meynen and Doornbus 2004, Ribot 2004, Manor 2004, Beck and Fajber 2006, Vandergeest 2006). Such criticism of what otherwise tends, by many, to be considered both small and beautiful (Blaikie 2006) is, as this investigation intends to demonstrate, again related to the debate on the direction of rural development, as commercialization and livelihood diversification affect access to, and the sustainability of, water tenure institutions.

2. CONCEPTUAL ISSUES

The investigation is informed by what may broadly be termed ‘political economy of institutions thinking’. This implies an analytical approach based on the premise that, as Rangan puts it, “human and non-human life are linked through dynamic processes and constantly transforming relationships” (2000:63). Related to this approach is the notion that individuals play out livelihoods in the context of varying matrices of institutions (Bingen 2000). So are the notions of institutional bricolage, as well as ‘post institutionalism’ (Cleaver 2002), and analytical concepts associated with the institutional mechanisms on which access, control and use of property rights depend (see Ribot and Peluso 2003).

3. TRAGEDY IN THE COMMONS AS A SWORD OF DAMOCLES

Questioning the relevance of the use of the concepts of tragedy and threats prompts an exploration of the origin and use of these concepts in common property discourses. ‘Tragedy’ in cooperative endeavours, particularly common property regimes, has been a powerful metaphor with a broad appeal since the publication of Hardin’s ‘Tragedy of the Commons’ article in 1968. With its pessimistic arguments, firmly rooted in neoclassical economic thinking’s dogma of utility maximization of the

individual, environmental degradation was considered inherently related to common ownership. Any attempt at restraining individual use of a common resource was considered likely to fail because of human nature (Hardin 1968), the crux of the argument being: One person may limit his use of a resource but if others do not (and why should they?) then the resource will degrade anyway, so why restrain oneself?

But the metaphor was never directly applicable to common property regimes because Hardin confused open access regimes with more structured common property tenure. Researchers, in reaction to Hardin were quick to point out that there was indeed quite a difference between his grazing lands example, where overgrazing led to environmental degradation which represented “common property with open access conditions where no rules existed to limit entry and use” (Ostrom et al 2003:11), and that of closed access common property regimes on which defined groups rely for access to resources (Ostrom 1990). However, despite Hardin’s confusion, the notion of potential tragedy, as a sword of Damocles, where the onset of tragedy is restrained by a slight trigger, continues to characterise much of the post-Hardin common property regime literature. The power of the tragedy metaphor goes beyond common property research. Broadly speaking, it is used to describe a wide range of ‘collective action’ problems; situations where private interest undermines that of society and ‘community’, and situations where levels of cooperation are reduced for whatever reason.

The power of the tragedy metaphor certainly brings a sense of urgency to issues of cooperation in natural resource management. Its power is rooted partly in the intellectual history of common property regime research, partly in its theoretical context: Reactions to Hardin’s paper—said to be one of the most cited scientific papers of the second half of the twentieth century—formed a theoretical context that initially challenged and nuanced Hardin’s assertions (Martinussen 1997). At a later stage³ it mapped and systematized conditions for community-based natural resource management. The quest for resolving the ‘tragedy’ of the commons by scholars championing cooperative tenure arrangements (see e.g. Ostrom 1990 and the collection of cases in Bromley *et al.* 1992) fed into the phenomenal rise, in mainstream economic thinking, of attention to institutions in the 1980s and 1990s that is commonly referred to as new-institutional economics.

The theoretical context that challenged Hardin was based on the strand (another being that of transaction costs) in new-institutional economics that deals with collective action in relation to public or collective goods (Nabli and Nugent 1989) and resources associated with common property arrangements. The concepts of excludability (the degree to which someone can be excluded from benefiting from a good) and subtractability (the degree to which someone’s use of a good means less of that good for others to use) within categories of goods⁴ were central to the theoretical context. Common pool resources, to which irrigation systems were seen to belong, are understood to have low excludability; it is difficult to exclude someone

³ The 1985 Annapolis, Maryland, United States conference organized by the National Research Council Panel on Common Property Resource Management is considered a major point of departure in commons research.

⁴ Usually public goods, private goods, common pool, and toll goods.

who, by virtue of, for example, land ownership, is entitled to irrigation water. At the same time subtractability is high; “the withdrawal of an acre-foot of water from an irrigation canal means that there is one acre-foot of water less for anyone else to use”, as Ostrom *et al.* (1993:89) put it. These characteristics may lead to a situation, analogous to Hardin’s ‘tragedy’, where:

“Whenever one person cannot be excluded from the benefits that others provide, each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others. If all participants choose to free-ride, the collective benefit will not be produced” (Ostrom 1990:6).

In the context of common property regimes in irrigation contribution to the joint effort is mainly associated with labour and other forms of contribution to maintenance. The bottom line here is that, within a rational choice framework that stresses the micro-foundations of institutions (Scott 2001), Ostrom (1990, 1992), in particular, argued that the presence of specific rules and incentives might overcome the collective action problem of free-riding and subsequent tragedy. This led to the idea of institutional engineering through adherence to a number of design principles for robust and enduring common property regime institutions (Ostrom 1992).

4. FROM TRAGEDY TO THEORETICAL AND PRACTICAL SUCCESS

Non-government organisations and grassroots that work at community levels may be surprised to learn that collective action in most common property regime scholarship connotes the ability to cooperate in the management of resources, and not necessarily – as in the agrarian change literature - ideas of solidarity, equity and struggles against oppression. The idea that “social outcomes can be explained in terms of the calculation that individuals make about the perceived costs and benefits of future actions” is, as Johnson (2004:411) points out, strongly embedded in methodological individualism. Initially accommodated in the ‘rolling back the state’ policies of the 1990s, the practical appeal of these ideas has been enormous, as evidenced by the extent to which they have found their way into CBRNM policy and project documents, in part or in full. In irrigation, social mobilization and the ‘get the institutions right’ social engineering design principles of Ostrom (1992) have become key elements.

The centrality of the ideas and of common property regimes as an effective mode of organising agricultural production may be traced back to research in Nepal: Here it was demonstrated in the early 1990s by Ostrom and others (see Ostrom *et al.* 1992, Shivakoti and Ostrom 2002) that community-managed irrigation systems perform better in terms of productivity than government-managed systems. This research (and a series of studies that championed farmer managed irrigation systems; see e.g. Pradhan P 1989, Pradhan *et al.* 1987, Rana 1992, KC and Pradhan 1992, Yoder 1994, International Labour Organisation 1995, Pradhan P 2003) influenced irrigation policy in Nepal throughout the 1990s and led to some removal of power from line agencies by allowing ‘participation’ by farmers, mainly in the construction and operation of irrigation schemes but also in a formal legal sense. Eventually, formal legal ownership of irrigation systems (and other resources from forests to drinking water) came to rest with communities who became responsible for operation and maintenance.

In sum, common property management regime institutions—based on individual economic rationales as determinants for investment in what is referred to as collective action—have, since the early 1990s increasingly been seen as efficient ways of organizing economic activity within the realm of natural resource management (Berg 2008) and may, perhaps, be seen to constitute a nearly hegemonic discourse (van Meijl and von Benda-Beckmann, F 1999). However, the idea of impending tragedy remains powerful.

5. PERCEIVED THREATS TO COMMON PROPERTY REGIMES

As a result of the nuances brought into collective action scholarship in the past couple of decades, tragedy is no longer purely associated with Hardin's non-cooperating individuals in open access regimes, but increasingly associated with communal endeavours that erode, underperform or even fail. Four related categories of threats that directly or indirectly create obstacles to common property regimes and trigger tragedy can be identified: Internal institutional factors; government and administrative penetration; market forces, and; enclosure as a cross-cutting theme.

5.1 *Internal Institutional Erosion.* A great deal of common property regime scholarship tends to analyse these regimes as closed economic and social systems. In irrigation this often translates into literature in which threats to systems (typically decreasing labour contributions to maintenance, distributional problems etc) are seen as resulting from weak institutions. The focus on the internal workings of systems means that tragedy – situations when individuals free-ride to the extent that a collective benefit is no longer produced (Ostrom 1990) – tends to be attributed to internal, largely managerial matters (Berg 2008).

5.2 *Government and Administrative Penetration.* The penetration of state administrative structures and market forces into commons structures is a recurrent theme in common property regime scholarship. The specific threats include non-recognition of customary laws and customary institutions by the state, legal ambiguities, as well as privatisation and conservation that may affect access to common property regimes (see Berg 2008).

5.3 *Market Forces.* Commercialisation and labour markets are seen as major threats and, again, the perspective is often managerial. This is typically the case in irrigation, where, in the context of Nepal, Pradhan, observes that “able-bodied youths from rural areas have migrated to urban centres and other countries in search of employment. Because the maintenance of FMIS [farmer-managed irrigation systems] is a labour-intensive task, without the muscle power of young men, the tasks of repair and maintenance have been neglected in many systems” (2003: 332). See also Gyawali and Dixit (1999) for a similar perspective on threats to the effectiveness of common property regimes from a predominantly managerial perspective.

5.4 *Enclosure.* The historical awareness of the threat of enclosure to common property regimes runs deep, and cuts across the range of perceived threats. As

mentioned in an address by the president of the International Association of the Study of the Commons (IASC):

“We have abundant reminders, both during the 2008 biennial conference and in the news that many local commons are under threat. I realize that this is nothing new – we’ve had examples of almost 500 years of enclosures of one type or another in this country alone” (Meinzen-Dick 2008).

While Meinzen- Dick refers to the North American experience, common property regime scholars often draw, more or less explicitly, on the English and European experience of enclosure which ended open-field farming or common-field agriculture (see Campbell and Godoy 1992, Runge 1992). That system, “based on communally administered agricultural organisation and production” (Turner *et al* 2003:125) began dissolving after 1750 “through private and local acts of parliament, most of which changed the farming system from communal to several (private) ownership and from communal to several administration” (Turner *et al* 2003:125). External pressures that included agricultural commercialisation in the face of changing demand was considered a factor in this process as was an emerging ideological belief, not dissimilar to that of Hardin (1968) that private tenure would increase agricultural efficiency. As Ostrom argues:

“The enclosure acts of British history have been presented in many history books as the rational elimination of an obviously inefficient institution that had been retained because of an unthinking attachment to the past for an overly long time” (1990:224).

The verdict of inefficiency has, as Campbell and Godoy (1992) point out, coloured attitudes to communally managed resources and been used to further the case for privatised property systems. In Sub-Saharan Africa, as Blaikie suggests, the inefficiency verdict dominated colonial thinking on communal tenure, and it was assumed that processes of ‘natural evolution’ would “eventually lead to individual tenure, a market in land and the commercialisation of agriculture” (2006:1943). Individual tenure, it was assumed, would lead to long term investment in resources and avoidance of tragedy. Notions of inefficiency persisted throughout the 1970s, because the distinction between different tenure systems was relatively unrecognised. As Blaikie further points out, Hardin’s thinking “resonated with a large volume of ecological studies of rangelands in the 1970’s, which identified serious environmental degradation due to what was assumed to be overgrazing of an open access resource” (2006:1947,1948) by ‘incompetent’ herders, with privatisation and fencing as the logical policy response.

In the case of irrigation in Asia the inefficiency argument did not so much lead to enclosure in the form privatisation; instead it came in the shape of ‘governmentalisation’, not least in the context of irrigation. A ‘productivist’ (Wilson and Rigg 2003) quest to increase national food production combined with water control thinking (Berg 2008) led to an expansion of government managed large scale irrigation systems. Enclosure thus came in the shape of government authority that took over existing irrigation systems, often incorporating these into new, large-scale irrigation development. With legislative and regulatory frameworks that were imposed on customary institutions, this generally led to the erosion of capacity for

cooperation in irrigation as, in the process, considerable indigenous managerial and technical skills were lost (Berg 2008).

As a corollary to enclosure thinking, Blaikie and Sadeque note, in a study on the Himalayan region, that “penetration of governmental or quasigovernmental, authority, demographic growth, market forces and even education are alienating forces reducing the viability and authority of community groups” (2000:175). Evidently, the threats are seen to emanate from the centre and penetrate to the periphery, connoting a certain passiveness on the part of rural communities; in other words, outsiders are doing something (usually negative) to communities and their institutions. This centre-periphery thinking, where the core develops at the expense of the periphery, though rarely applied as an actual analytical framework in commons research, appears to underpin a great deal of the commons literature.

6. THE ‘WARM EMOTIONAL PULL’ OF COMMONS AND COMMUNITY

It appears that the focus on threats to common property regimes and communities cooperation, is associated with what Taylor (2002) calls the “warm emotional pull” (125) of CBNRM. This ‘pull’ it would appear, contributes to explaining why the commons, cooperation and ‘community’ tend to be seen as ‘good things’ that are practically synonymous. It also explains why the well-being of the commons - the essence of ‘community’ - is an issue about which many people are quite passionate, across a broad range of ideological schools. Agrawal and Gibson (1999) discuss the relationship between village institutions and the nebulous concept of ‘community’, and point out that ‘community’, village life and working the soil together were popular subjects of analysis among nineteenth and early twentieth century scholars attempting to understand the social and economic transformations of their time. Some of these scholars represented romantic notions of kin networks, harmony and joint property seen to be under threat from the external forces of progress. Such notions, Agrawal and Gibson argue, may still explain some of the attraction that ‘community’ holds today, particularly among conservationists.

That attraction may explain how ‘community’ resistance against the penetration of external forces is transformed into myths. The 1970’s Chipko movement of people hugging trees in the Garhwal region of India to protect the livelihoods derived from forest commons, is an example of this. As Rangan suggests, Chipko has reached mythical proportions as it “has found a niche in the imaginations and memories of numerous scholars” (2000:xi). In line with Agrawal and Gibson’s suggestion of the persistence of romantic notions of cooperation in rural settings, there is, amongst many champions of the commons, an undertone of concerns with the preservation of traditional communal rural ways of life, characterised by various forms of cooperation that produce and reproduce so-called social capital.

It is tempting to situate this preoccupation with preservation of the commons in the context of neo-populism, in what Roszak has characterised as “organic decentralist economics.....a libertarian political economy that distinguishes itself from orthodox socialism and capitalism” (in Kitching 1982:97). Much commons research is indeed allied with Schumacher’s (1973) neo-populist ‘Small is Beautiful’ thinking in that the decentralisation and autonomy of management units is considered important. Unlike Schumacher, however, scale in much commons research is not seen as an

independent problem; rather, organisation is added as an additional and primary problem.

7. CHANGING LIVELIHOODS, CHANGING COMMON PROPERTY REGIMES: WHERE ARE THE THREATS AND THE TRAGEDY?

The suggestion made by Barker and Molle (page 2 of this paper), that common property regimes in irrigation are challenged as a result of commercialisation and livelihood diversification, is not questioned in this paper. What is being questioned is the usefulness of applying romantic notions in attempts at understanding tenure arrangements that change as farmers diversify crop portfolios and livelihoods. In this context the following is asked: If eroding common property regimes reflect peoples livelihood activities and indeed interests, why lament their demise? Where is the threat and where is the tragedy?

In order to address these questions, the next section draws mainly on research carried out by the author amongst farmers (all with access to irrigation) in 9 small-scale irrigation systems in the hills and mountains of Nepal's Dhaulagiri Zone, in which relationships between system performance (productivity, management), livelihoods and institutional change were investigated by means of repeat-survey (early 1990s compared with 2004/2005) methodology. This decade or so coincided roughly with a great deal of democratic space in which political and organisational life flourished. All irrigation systems studied were rehabilitated, physically and institutionally as part of the interventions of the Dhaulagiri Irrigation Development Project between 1989 and 1996 (see Berg 2008).

7.1 Commercialisation and Eroding Common Property Regimes

The research from Nepal finds that urban demand, stimulated by remittances from abroad, is transforming relatively road-near irrigation systems from producers of cereal crops (mainly wheat, rice and maize) into producers of relatively high value crops such as potatoes, flowers, coffee, fruits etc. This has had ramifications for the organisation of irrigated agriculture: Cereal crops, most prominently rice, tend to be most effectively produced under common property regimes where cropping calendars and irrigation schedules are coordinated. Non-cereal crops, with their varied irrigation schedules are more difficult to coordinate. Crop diversification has therefore lead to increased individualisation of water use, where farmers obtain water either from individual sources or from sources belonging to gradually eroding communal systems. Indications of institutional erosion include reduced labour contributions to collective operation and maintenance activities, along with widespread dissatisfaction with system maintenance and water distribution compared with the situation a decade before. While still important to many farmers, the common property regime is no longer the sole sources of most farmers' agricultural livelihoods.

The water and labour intensiveness of much non-cereal production means that proximity to water sources is of essence, and farmers who adopt high value crops invest in water storage or well facilities, or are located in the head-ends of systems where water is often relatively plentiful. Farmers in these advantageous locations increasingly free-ride and use irrigation system water in an unauthorised manner. In

sum, individualization of water use enables farmers who diversify crop portfolios to overcome shortcomings in communal irrigation systems that are geared organizationally towards the fixed schedules demanded in cereal production.

Consider the case of a vegetable-growing household, headed by a widow, in the hill village of Lampata a one-hour walk from the main road. While the family has a small plot in the irrigation system command area where they grow rice, wheat and maize, vegetable production is their main concern. In 2005, the household earned some 90 per cent of its cash income, from the production of vegetables. The family of 14 persons includes one son, his wife and their small children. The son, the daughter-in-law and the widow herself represent the only members of the household of working age who live at home. The neat vegetable plots of some 2 *ropani*⁵ extend from the homestead into the upper portion of the command area. What enables the household to operate a relatively large plot of vegetables is a reliable water source that serves both domestic and agricultural purposes, a private spring connected with a pipe. The spring, however, does not yield the required amounts of water during the winter season; hence the pipe is connected to a covered water storage tank from where water is carried to the vegetable plots. Most of the households that have success in producing vegetables have similar, individualized sources of water such as springs, small streams or ponds. Many farmers in the village would like to adopt, or expand vegetable production, but face a combination of labour and water constraints.

A drastic reduction of the cooperative element in irrigated agriculture is also evident from research on the effects of the commercialization of agriculture in the highlands of northern Thailand, where the relationship between market access and erosion of communal forms of irrigation organization (known as *muang-fai*) is very well documented. Elstner and Neef observe, in a village⁶, with good market access that supplies vegetables to the city of Chiang Mai and beyond that:

“... until the mid-1980s farmers in Muang Kham⁷ produced mainly wet rice with the traditional muang-fai system... with the economic and infrastructure development and improved market access, farmers changed their cropping patterns which induced the individualization of water management. With this development, the quantities of water used and the requirements on water quality have increased” (2004:11).

However, commercialization in Muang Kham, located some 30 km from the markets of the provincial capital of Chiang Mai, has not led to individualized water management completely; in addition to accessing water through streams, springs and private wells, it is also accessed through one of the canals that originally supplied water for wet rice cultivation. Here, farmers benefiting from the canal still perform collective maintenance activities at the call of a caretaker, but with respect to distribution the collective element has disappeared; farmers withdraw water individually in accordance with their requirements. Elstner and Neef compare the

⁵ 1 Ropani=approximately 500m²

⁶ Farmers in this village are even engaged in contract farming of capsicum with multinational companies.

⁷ In the Mae Sae watershed in Chiang Mai Province.

situation in Muang Kham with a more remote village where poor infrastructure and limited market access has meant the continuation of wet rice production as the main source of agricultural livelihoods, and the continuation of relatively stable common property regime arrangements. Much the same picture is evident in Nepal's Dhaulagiri Zone, where the more remote irrigation systems are also those that are the least affected by access to markets. The water management situations in the market-oriented village of Muang Kham in Northern Thailand, and the road-near irrigation systems in Nepal's Dhaulagiri Zone are characterised by legal and institutional pluralism, a concept denoting the co-existence of different tenure systems, as well as legal orders in a social field (Pradhan and Pradhan 2000). Both cases are characterised by a combination of common and private property or tenure regimes and heterogeneity of stakeholders.

7.2 Eroding Common Property Regimes: Cause for Lament?

Overall productivity and incomes from agriculture in the Nepalese villages have increased over the past decade, in which also crop diversification and water tenure individualisation has taken place. The implications of water tenure utilisation must be understood in the context of economies where sources of livelihoods are increasingly diversified, and where remittances in particular, stimulate demand for high value crops in rural towns. In the villages the broad question: 'Has life in (village name) become better or worse over the last 10 years?' was asked to key informants, all of whom were irrigated farmers with a record of being active in water users' associations. Practically all respondents found that life in their villages had improved. Explanations as to how and why this was the case is summarised in the table below:

Table 1
Main Reasons for Improved Livelihood Trajectories, 2004 (n=29)

General, short-term themes (decade)	Better conditions for agriculture (irrigation, transport, markets) More opportunities for trade and business Access to foreign employment/remittances
Personal, longer-term themes (generation)	Better conditions for agriculture (irrigation, land, transport, markets) More opportunities for trade and business Access to non-agricultural sources of income, including foreign employment/remittances More (and more varied) food available Less drudgery (walking, carrying) owing to bridges, roads, water supply Availability of clothes, shoes Sanitation, hygiene Education

Source: Berg 2008.

That livelihoods have diversified is illustrated by ‘improved agriculture’s’ competition with ‘foreign employment’ as the principal reason for finding that life has improved. Improved agriculture is understood holistically as related to irrigation, production, crop diversification, extension, and market access/transportation. Another table illustrates the level of both livelihood and crop diversification and general changes (last column) over the past decade:

Table 2
Agricultural vs. Non-agricultural Incomes, 2004

Characteristics of Respondents	Agricultural to Non-Agricultural Incomes	Source of Non-Agricultural Incomes	Change?
Medium farmer, female, Brahmin (Arjewa)	50/50	Teaching	Increased agricultural income from vegetables
Large farmer, male, Chettri, ex-serviceman (Arjewa)	50/50	Army pension	No change
Medium farmer, female, Brahmin, widow with sons (Lampata)	90/10	Sons’ remittances	Increased agricultural income from vegetables; remittances recently
Medium farmer, male, Brahmin (Amalachaur village)	85/15	Son’s remittance	Remittance recently
Large farmer, male, Brahmin (Amalachaur)	70/30	Teaching/ sons’ remittances	Remittances very recently
Medium farmer, male, Brahmin, ex-policeman in India (Pakuwa)	55/45	Police pension	No change
Medium farmer, male, Brahmin, politician (Pakuwa)	50/50	Government pension	No change
Large farmer, male, Brahmin, ex-army in India (Pipalbot)	35/65	Army pension	Increased agricultural income from vegetables
Small farmer, female, low-caste (Kurgha)	50/50	Husband’s remittance	Remittance increased
Small farmer, female, Thakali (Thini)	5/95	Husband’s army salary	Increased salary income
Small farmer, male, low-caste (Thini)	10/90	Blacksmith work	Increased non-agricultural income/decreased agricultural income

Source: Berg 2008.

The cases in the table are fairly representative of the variation in income composition and income sources across a spectrum of households, ranging from those for whom agricultural incomes constitute almost the only source to households for which agricultural incomes are negligible. Two aspects should be noted. Firstly, that most farmers had experienced changes in the composition of their income over the decade of the study, either as a result of the sale of vegetable products, remittances or local non-farm employment. Secondly, that in only one of the cases had agricultural incomes decreased; for the vast majority, the changed composition reflected enhanced overall incomes in absolute terms and higher levels of economic activity in general.

It is difficult to lament the erosion of common property regime irrigation at the expense of a shift towards individualisation of water tenure and institutional plurality, if that shift – as the data would suggest – is part of processes of improving livelihoods by moving away from subsistence production. These villages are not passively accepting penetration by external forces, but are actively responding to market opportunities. Market forces have certainly impinged on communal irrigation, but if livelihoods in the village, amongst irrigated farmers have improved – and such improvement is indeed the aim of most development policies, including CBRNM – then market forces hardly constitute a threat. The relative demise of the irrigation commons in both the Nepal and Thailand cases may at a narrow level of analysis be understood as inability to achieve collective action but is, chiefly, about the desirability to invest in such action, and about conditions for, and the viability of, producing certain crops in certain contexts: Common property regimes are particularly well suited to cereal crop regimes where irrigation may be coordinated, but less suited to commercial crops such as vegetables with individualised irrigation requirements. And if the collective benefit to be obtained from common property regimes is not as attractive as the benefits obtained from other forms of water tenure, where then, is the tragedy?

7.3 DOES THE REDUCED ROLE OF COMMON PROPERTY REGIMES MEAN LESS COOPERATION?

As argued earlier, the dominant rural development and collective action discourses have assigned important places to local resource management institutions—including irrigation institutions—as central institutions to safeguard livelihoods in rural economies thought to depend on agriculture as the central source of livelihoods. Common property regimes tend to be strongly associated with social capital, usually understood as trust, shared norms and interests, and associational life. Likewise, it is generally assumed in common property scholarship that various threats, in the shape of internal and external forces will negatively affect the institutional mechanisms that ensure the success of not only the commons as the centrepiece of ‘community’ cooperation. But are these processes necessarily related? In the following, this question is addressed by examining, first of all, the institutional landscape and, secondly, changes in institutional priorities in the Dhaulagiri Zone.

7.3.1 *The Institutional Landscape of the Irrigation Villages*

An overview of the institutional landscape within the nine irrigation systems that have been studied is provided in tables 3 and 4. The tables draw on qualitative

surveys across the systems: Key informants (n=14) were asked about their involvement in committees and boards, as well as the existence of agricultural institutions in the community (understood as composed of households with access to irrigation); additionally, randomly selected farmers were asked which institutions were present in the community in two surveys that sought to trace institutional (n=16) and livelihoods trajectories (n= 18).

Table 3
Socio-Economic Institutions at Community Level

Institution	Amalachaur	Arjewa	Kurgaha	Pakuwa	Lampata	Pipalbot	Thini	Tiri	Khingara
1. Irrigation (<i>adhyakshya</i>)	•	•	•	•	•	•			
2. Irrigation (<i>mukhya</i>)							•	•	•
3. Savings/Credit Association(s)	•	•	•	•	•	•			
4. Vegetable Cooperatives	•		•	•	•				
5. Mothers' Group	•		•	•	•	•	•	•	•
6. Forest Users' Association	•	•		•		•	•	•	
7. <i>Dhikur</i> Groups	•	•		•		•	•	•	•
8. <i>Parma</i>			•		•				•
9. Beekeepers' Association				•					
10. Goat Farmers' Association				•		•			
11. Coffee Traders Association				•					
12. Seed Production Group						•	•		
13. Health Post Committee	•	•		•					
14. Drinking Water Committee			•						
15. Motor Road Committee						•			
16. Energy Group						•	•	•	
17. Post Office							•		
18. ACAP (i)							•	•	•
19. NEWAH (ii)				•	•				
20. PDDP (iii)					•				
21. Lumle Project (iv)				•					
22. Small Farmers' Association			•						

Source: Berg 2008

Notes: (i) Annapurna Area Conservation Project; (ii) Nepal Water for Health; (iii) Participatory District Development Project; (iv) Project from Lumle Regional Agricultural Research Centre.

Table 4
Socio-Cultural Institutions at Community Level

Institution	Amalachaur	Arjewa	Kurgha	Pakuwa	Lampata	Pipalbot	Thini	Tiri	Khingara
1. Youth Clubs					•	•			
2. <i>Gompa</i> (i)							•	•	•
3. Temple Group			•						
4. School Committee	•	•	•	•	•	•	•		

Source: Berg 2008. Note: (i) Buddhist monastery.

The listed institutions, which probably should not be considered exhaustive, are divided into socio-economic (table 3) and socio-cultural institutions (table 4) so as to suggest their relevance in a livelihood context.

The division of these institutions into socio-economic and socio-cultural categories does not mean that they are mutually exclusive in terms of livelihood importance; youth clubs, for instance, often constitute entry points for the mobilization of young people by non-government organisations and therefore may serve as institutions that attract external resources; and mothers' groups, as suggested in the next section, serve both important cultural and economic functions. As social capital, or networks of social relations, all the listed institutions would appear to constitute assets that may affect bargaining and other forms of power, and probably levels of shared norms and identity among entire communities or among those affiliated with specific institutions. With respect to norms and identity, it would also appear that the *gompa* or Buddhist monasteries of Thini, Tiri and Khingara are particularly bonding socio-cultural institutions.

Rather than referring to deeply embedded institutions as 'traditional' (which connotes something static) and more recent institutions as 'modern' (which may be taken to connote upgraded versions of the traditional), it makes more sense to refer to these institutions in more neutral terms as customary and non-customary, respectively. The customary institutions featuring among those listed in table 3 above, include the *mukhya* irrigation system of the mountains and the *adhyakshya* irrigation system of the hills (see Berg 2008 for details), *dhikur* (credit groups) and *parma* (exchange labour). The latter is considered a central institution in the context of irrigated agriculture (Miller 2000) and is one amongst many reciprocal arrangements found throughout Nepal (though not at all unique to Nepal⁸). Other labour mobilization arrangements, including 'vertical' institutions based on access to and control of productive means and, subsequently, caste and class, would—as in other rural areas of Nepal—range from the hiring of labour on market terms to semi-feudalistic arrangements as well as sharecropping and other land-renting arrangements.

⁸ Messerschmidt (1995) reports that they are found in North India, China and Tibet. I would suggest that they exist, or have existed, in most agricultural societies in some form.

Staying within the realm of customary institutions, and directly related to financial resource mobilization, *dhikur*, or rotating credit associations, are important. *Dhikur* tend to operate at disaggregated levels, made up of members who contribute to a fund at predetermined rates and frequencies, in order to raise capital for individual investment. As institutional fabric in the specific regional context of the study, based on the dynamics associated with 'communities of trust' and shared interests upon which they depend for existence and successful operation (Seddon *et al.* 1979), *dhikur* should not be underestimated.

Except for post offices, health centres and schools, the bulk of the non-customary institutions are spin-offs from projects implemented by government or non-government organisations, usually with the assistance of international donors in the period from 1990 onwards when democracy was (re)introduced. Depending on the project, but in line with the emphasis on participation and the 'local' in the dominant discourse of the time, these institutions featured as community-based organizations or users' groups in most project and policy documents, as well as in Nepalese legislation. Some, such as the savings and credit groups and the vegetable cooperatives, stem (as elaborated on in the following section) from the tripartite collaboration between the Dhaulagiri Irrigation Development Project, the District Irrigation Office line agency and local non-government organisations. Others, such as the seed production and goat farmers' associations, are among a plethora of groups initiated as part of the Participatory District Development Programme (PDDP) of the United Nations Development Programme which aimed to promote decentralization through District Development Committees. Yet other 'institutions' such as Nepal Water for Health (NEWAH) and the Annapurna Area Conservation Project (ACAP) are projects that, because of their recent nature, are still referred to by the name of the external agent and not yet to the name of the community-based organisation or non-government organisation offspring.

These non-customary institutions differ substantially from customary institutions by virtue of their origin and internal architecture. Like CBNRM policies, they originate in a liberal environment, emphasizing incentives, choice and (designed) decentralized collective action in the context of the decentralization policies of Nepal in the 1990s. In its practical local manifestation, the 'democratic' basis has typically been a so-called mass meeting organized and conducted by a project 'mobilizer', who would in many cases, have identified potential stakeholders as part of a rapid rural appraisal exercise. The mass meeting served as a general assembly where principles and objectives were discussed and constitution-cum-by-laws agreed upon. A committee made up of both (pre-nominated) women and men, with as a minimum a treasurer, a secretary and a president, would be elected; every association listed in figure 3 has a committee that is often, by many nominal members of the association, seen as the actual institution.

The standard formula involved formal, recorded membership and enabled registration with and incorporation into the legal framework of local levels of government. Registration as a legal community-based organisation or non-government organisation entity in theory created eligibility with respect to access to resources (projects, funds, etc.) through local line agencies, as well as District and Village Development Committees. In the context of irrigation and other infrastructure projects the awarding of legal status to these community-based

institutions marked a departure from previous centralized project implementation practice that involved only line agencies and a hierarchy of contractors.

7.3.2. Institutional Priorities

It would appear from the previous section that the Dhaulagiri Zone represents a fairly diverse landscape of institutions that involve cooperation, including irrigation institutions in which – as established earlier – the cooperative element appears to be decreasing. But is the cooperative element decreasing in overall terms? How important are these institutions to people's livelihoods?

The Dhaulagiri Zone saw a fair share of institutional engineering in the 1990's: For instance, the Dhaulagiri Irrigation Development Project's 66 irrigation projects all involved the setting up of Farmers' Irrigation Associations and Water Users' Management Committees. Additionally, the project formed some 43 functional literacy groups and 90 women's savings groups/mothers' groups (under the heading of 'irrigation-related income-generation'). The trajectory of the latter form of group is particularly illustrative of the dominant approach of the time: savings were seen as an entry point for other income-generating activities and the groups received training on everything from environmental awareness creation and vegetable nurseries to smokeless stove construction and financial management. Upon the departure of the Dhaulagiri Irrigation Development Project, local non-government organisations, some of them erstwhile partners of the project, created new alliances with new donors, and continued what they were by then good at, often in the villages where they were good at it, with 'beneficiaries' who were also good at it.

One effect of this intensive, often complementing input of a battery of soft resources has been vegetable marketing cooperatives. In the village of Lampata the vegetable cooperative has 75 member households in a locality of 122 households. Most members, in line with the shift away from purely producing cereals for subsistence, earn the majority of their cash incomes from the sale of vegetables in nearby towns. Farmer's involvement started in 1992 when Dhaulagiri Irrigation Development Project social mobilizers encouraged the formation of a mothers' group (*ama samuha*). Based on that group, a women's savings group was formed and registered with the authorities in 1993, with the help of the social mobiliser.

Members of the savings group, while benefiting from interaction with the social mobiliser, received (among a number of training activities) formal skills development training, off-season vegetable production training, and financial management training. When the social mobiliser left in 1996, a local non-government organisation⁹ assisted a number of women from the savings group to set up a livestock group, and when the same non-government organisation, in 1997, received a grant from a bilateral donor, it also assisted in creating the present vegetable cooperative. Similar institutional trajectories are found in most of the irrigated communities; the mothers' group in particular appears to have been a successful entry point for credit provision.

⁹ The Baglung-based Dhaulagiri Community Resource Development Centre (DCRDC).

Table 5 shows a summary of replies to the question, “Which is the most important institution for farmers in your community? The respondents are representatives of Farmers’ Irrigation Associations (six, all male), farmers otherwise ‘active’ in the community (five, of which four are female), and ordinary farmers (eight, two of which are female).

Table 5
Institutional Priorities, All Communities, (n=19)

Rank	Institution	Reason Assigned
1	Farmers’ Irrigation Association/ Village Irrigation Governance	Survival, livelihood, dispute resolution, water and natural resource management
	Vegetable Cooperative	Livelihood
	Farmers’ Association	Power (political)
2	Village Development Committee	Protection of water rights, conduit to access resources, registration, link to resources and formal recognition
	Mothers’ Groups	Role in solving social problems, checks social vices, savings and income-generation, encourages women’s participation, credit
	Drinking Water Committee	Safe drinking water
	School	Access to education
	Gompa	Guidance (spiritual, astrological)
3	Health Post	Access to medical services
	District Agriculture Office	Canal maintenance assistance
	District Development Committee	Assist in resolution of water rights disputes
	Post Office	Convenience
	Forest Users’ Group	Livelihood
	District Irrigation Office	Occasional advice
	District Administration Office/ Magistrate	Not specified

Source: Berg 2008

As the table suggests, institutions that are directly associated with livelihoods, such as the vegetable cooperatives mentioned above, are the most highly prioritized. Within this category, Farmers’ Irrigation Associations/village irrigation governance institutions are considered to be of utmost importance. The Village Development Committee ranks among the second most important institutions in the hills. The high prioritization is associated with obtaining legal status, and minor grants. As a woman farmer from the village of Pipalbot explains:

“When we had problems the Water Users’ Management Committee went many times to knock on the door of the Village Development Committee office, which was located in our village. Three years ago they provided funds for repairing damage to the irrigation system. We influenced the use of funds and their planning, and had dialogues with the chairman on how to spend

Village Development Committee funds. The Village Development Committee supports us for solving some problems, particularly the issuing of recommendation letters for line agencies"

Institutions hold different meanings to different social actors. While 'simple' livelihood concerns predominate, power, acquired through local institutions as platforms for gaining influence in the wider institutional landscape, hold meaning in a number of communities. Particularly in the hills, connections between the village users' groups such as the Farmers' Irrigation Associations, the Village Development Committees and the District Development Committees holds opportunities for power for some groups, typically male, Brahmin farmers often with sizeable landholdings. The ability to establish links between community organizations and local authorities and thus access to external resources, to a large extent depends on the presence of politician farmers, along the lines of Seddon and Adhikari's observation on the effect of democracy at local level in Nepal:

"...at the local level at least the shape of political competition had important implications for the deployment of social capital, and ultimately, for the distribution of economic and other resources. Increasingly, one's political alignment affected one's access to resources and the dominance or otherwise of a particular political tendency at the national, regional and local level determined the volume and direction of benefits" (2003:58).

Mother's groups are also relatively highly prioritised. The role of these groups as a form of social reform movement is known from other parts of Nepal, particularly with respect to the question of alcohol; throughout the past decades, women have successfully campaigned for the banning of the sale of alcohol in a number of districts. However, in the hill communities of this study, meaning is attributed less to the social reform functions of these groups, than to their economic function, particularly the savings and credit functions, as mentioned earlier. It is quite evident that the latter functions have made the potentially controversial activities associated with women's rights, awareness creation, safe motherhood, etc., palatable to men in conservative Hindu society. The secretary of the mothers' group in Lampata gives a fairly representative account of the origin and meaning of these groups in the hills context:

"After the change in 1990, different non-government organisations came here. Then the Dhaulagiri Irrigation Development Project came to the village and formed women's groups. We got a feeling of unity. Before, women were only doing household activities and did not have permission to go out alone. If a woman had to [go out], she had to take a man for security".

Health posts and schools feature lower down the list of important institutions in both the hills and the mountains. The reason for including them as relative priorities is fairly obvious, namely, as access to medical treatment and education. This overall picture of the priorities suggests that—with the notable exception of the 'justice and morals' meaning of the mothers' groups—the economic, livelihood and resource access functions of institutions are central to the attribution of meaning to institutions.

This section has revealed that the institutional landscape in the communities is much more diverse than a singular focus on irrigation institutions would warrant. Multiple livelihood interests are accompanied by expanded matrices of institutions. It

is important to note, however, that amid growing institutional plurality since the early 1990s, irrigation institutions are still considered among the most important institutions in livelihood terms. While the cooperative element in water management may decline, it seems improbable to assume that cooperation in agriculture and in communal life in general declines; rather, the data examined in the previous sections suggest that cooperation merely takes on other forms. Vegetable farmers, owing to the more individualized water requirements of their crops, may reduce their involvement in collective action in the common property regimes, but at the same time they form marketing cooperatives and farmers associations that help in linking them to markets and the surrounding government institutions. Likewise, the rise in importance of mothers' groups, although not directly related to productive activities, certainly represents increased levels of engagement in civil society and cooperation with respect to social matters at the community level.

8. CONCLUSION AND PERSPECTIVES:

In this paper, key assumptions in scholarship and policy on common property regimes have been questioned, particularly the practical applicability of notions of tragedy, threats and community. The importance of common property regimes in the Dhaulagiri Zone has been reduced and the internal mechanisms of the regimes have certainly eroded in processes of shifts towards individualised water tenure. But it would be inadequate to merely perceive the erosion as cases of tragedy in the classic sense of benefits not being produced as a result of too much free-riding. Rather, the eroding systems should be understood as part of larger processes of commercialisation leading to cropping patterns for which common property regime irrigation is not well suited.

Further, it has been demonstrated that for farmers in irrigation systems in Nepal's Dhaulagiri Zone these processes have been a boon rather than a bane in terms of livelihood improvement. Closely related to this, community cooperation, if measured in terms of the matrices of institutions that people use in the pursuit of livelihoods, is not on the wane, and the assumption that reduced cooperation in common property regimes equates reduced community cooperation appears improbable: Rather, cooperation takes on other forms, as institutional plurality is required to accommodate diversified livelihoods. The institutions that constitute access mechanisms to various benefits are indeed both fluid and dynamic (Berry 1993, 1999, Ribot and Peluso 2003). Unless it is considered desirable to maintain certain production systems, rather than improving livelihoods, discourses of threats and tragedy appear analytically problematic in the cases that have been investigated, and most probably in many other rural economies with reasonable market access.

However, these findings should not divert attention from other implications of the erosion of common property regime-based irrigation. In general, the social and environmental implications of water tenure individualisation are under-researched. Transformations from common property towards individual irrigation regimes may impact negatively on the environmental sustainability of water resources (see Shah 1998, Barker and Molle 2002). While the shift towards individualisation may lead to increased productivity for farmers with good access to individual water sources, they may also negatively affect the food and livelihood security of farmers with more limited access. In this context farmers located in end-reaches of irrigation systems,

women-headed households and poor farmers in general should be regarded as vulnerable.

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