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WHAT DOES 'COMMUNITY' MEAN FOR FARMER ADOPTION OF CONSERVATION PRACTICES? SOME LOGIC AND EVIDENCE

Graham R. Marshall

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1. INTRODUCTION

Since the 1980s, Australian governments have sponsored participatory, decentralised approaches to natural resource management (NRM). This style of governance has often been described as ‘community based’. Such approaches have been chosen as a means for supporting farmers’ self-reliance in adopting conservation practices, where self-reliance is defined in the New Oxford Dictionary of English as ‘reliance on one’s own powers and resources rather than those of others’. I argue in this paper that excessive emphasis has been placed on ‘rural extension thinking’ as a basis for understanding how community-based governance may strengthen this self-reliance. I argue further that this has led the Australian NRM policy community to think too narrowly about the potential of this approach. Drawing on evidence from my earlier research, I propose that insights from developments in the theory of collective action can broaden this understanding and help us design and implement community-based arrangements more capable of strengthening farmers’ self-reliance in adopting conservation practices.

This paper is organised in ten sections. After this introduction, section 2 discusses the origins and evolution of community-based NRM in Australia. Section 3 considers how this approach became understood mainly in terms of ideas from the discipline of rural extension, and how this contributed to a lack of policy focus on the elements of social capital needed to enhance farmers’ self-reliance in adopting conservation practices.

Section 4 proposes that developments in the theory of collective action offer useful insight into these social capital issues. Section 5 considers how the use of governance arrangements to help solve problems of collective action introduces a need to establish and maintain ‘vertical’ social capital between those arrangements and the individuals sharing the problems. In particular, it highlights how support from community-based organisations aiming to strengthen farmers’ adoption of conservation practices can undermine the self-reliance of farmers unless the governance arrangements are designed and implemented so farmers become motivated to reciprocate the support they receive.

Section 6 presents a model of the ‘Samaritan’s Dilemma’ as a way of appreciating the challenges we face in motivating farmers to enter relationships of reciprocity with NRM governance structures, whether these be community based or not. Section 8 explores the potential of a community-based approach to help solve the Samaritan’s Dilemma in NRM governance contexts, and thus strengthen farmers’ self-reliance in adopting conservation practices. Section 9 discusses quantitative evidence from my previous research that suggests community-based NRM arrangements in the cases studied have achieved significant success in motivating farmers to reciprocate the support towards adopting conservation practices that they received under those arrangements. Conclusions are presented in section 10.

2. THE AUSTRALIAN TURN TOWARDS SUPPORTING COMMUNITY SELF-RELIANCE IN NRM

In most nations until the late 1970s, people concerned about degradation of natural resources tended to expect governments to intervene. By the 1980s, however, citizens in many nations had lost considerable faith in their governments’ ability to respond to their concerns and were demanding to participate more directly in this domain.

The National Conservation Strategy for Australia, prepared in 1983, emphasised the need for rural communities to participate in the planning and implementation of conservation initiatives. This emphasis was reinforced by a vanguard of soil conservationists, extension agents and farmers who

were adapting emerging theories of rural development (e.g., Chambers 1983; Esman et al. 1984) to a developed economy. These theories emphasised:

- self-help supported by change agents;
- human resource development rather than technology transfer;
- public participation; and
- cooperative efforts at the local community scale (Curtis 1998; Curtis et al. 2008).

The National Landcare Program (NLP), launched in 1989, is an early landmark in the Australian turn towards community-based NRM. The NLP's original emphasis was on catalysing local activity by supporting the formation and facilitation of Landcare groups, education and awareness-raising activities, and demonstration sites. The Commonwealth Department of Primary Industries and Energy stated at the time that it was 'trying to encourage a process of self-help ... [S]ome day the local community has to pick up all this' (House of Representatives Standing Committee on Environment Recreation and the Arts 1989 p. 72).

Adoption by Australian governments of the concept of 'integrated catchment management' (ICM) during the 1980s and 1990s consolidated this move towards a community-based approach, although the catchments delineated for ICM programs were normally much larger than the local landscapes around which Landcare groups had formed. Given fears that 'a regulatory approach to ICM could focus farmers' energies on resisting interference by bureaucrats rather than on improved land management' (Hollick 1992 p. 51), ICM committees were expected to achieve voluntary cooperation from those they depended on for implementation of their strategies.

The focus of the NLP on fostering local self-help made state and territory governments particularly interested in Landcare groups as vehicles for implementing ICM programs with modest additional budget outlays. For instance, Cunningham (1988 p. 43), then the Chief of Services for the NSW Soil Conservation Service, argued that '[i]n today's economic climate where governments are faced with escalating non-discretionary expenditure, it is essential that notions of self-help be promoted to achieve catchment management. No longer can the Government foot the bill for catchment protection ...'.

In 1997, the Commonwealth established the Natural Heritage Trust (NHT) which differed from the NLP by focussing its investments on on-ground implementation and by channelling investments principally via catchment- or regional-level ICM organisations. The NHT program was presented as a framework for 'partnerships' between communities, industry and government. Concerns regarding the accountability of regional NRM organisations to investing governments (e.g., Industry Commission 1998) led to a tightening of partnership arrangements under the National Action Plan for Salinity and Water Quality (NAP), established in 2000, and the extension of the NHT (NHT2), announced in 2001.

The NAP and NHT2 programs became known jointly as the 'regional delivery model'. Governments viewed the partnership approach as a means of fostering 'community ownership' of natural resource problems. The aspiration was to foster among farmers and other community members a sense of shared responsibility in addressing environmental problems (Wallington et al. 2008). Policy documents preceding the launch of the regional delivery model referred accordingly to landholders having 'a mutual obligation, or duty, to manage and care for [natural] resources in a sound and sustainable manner' (Agriculture Fisheries and Forestry Australia 1999 p. 53), and to an objective of 'self-sustaining, proactive communities that are committed to the ecologically

sustainable development of natural resources in their region' (Steering Committee 2000 p. 6). The *National Natural Resource Management Capacity Building Framework* stated that a 'strong feeling of ownership over the NRM planning process will increase motivation and the likelihood that the outcomes identified in the regional integrated NRM plans are achieved' (Natural Resource Management Ministerial Council 2002 pp. 5-6).

Governments continue to assume that devolution of appropriate NRM responsibilities to community-based regional organisations strengthens community members' self-reliance in addressing environmental problems. The *Framework for Future NRM Programmes* endorsed by the Natural Resource Management Ministerial Council (2006 p. 5) prior to completion of the NAP and NHT2 programs argued that 'strategic landscape-scale change is most effectively achieved where communities have a sense of ownership over planning and investment decisions, and will therefore make the investments of time, resources and better practices that are needed to achieve better NRM outcomes'.

The (New South Wales, NSW) Natural Resources Commission (2008 p. 3) stated, 'A key part of the CMAs' [Catchment Management Authorities]¹ role is to engage with their communities, gain their trust, build their ownership of the regional [Catchment Action Plan] and targets and then 'help them help themselves' by voluntarily adopting sound NRM practices and acting as stewards of the natural resource assets on their land'. Launching the Outcomes 2008-2013 Statement for the Australian Government's Caring for our Country program (which superseded the NAP and NHT2 programs), the Minister for the Environmental, Heritage and the Arts stated: 'One of the national priorities in Caring for our Country is community engagement and ownership and connection' (Garrett 2008).

3. INTERPRETING THE ROLE OF COMMUNITY IN NRM

The focus of the aforementioned NRM programs on fostering community self-reliance soon came to be interpreted predominantly through a rural extension lens, given that many Australian NRM policy makers and practitioners received an education that encouraged them to view social issues in NRM as rural extension issues. Hence, the focus was mainly on strengthening the self-reliance of farmers in adopting conservation practices through rural extension activities. Largely due to government pressures at the time to wind back government expenditure on rural extension, these activities tended to employ group-based methods requiring less public funding than one-on-one methods². Kingwell et al. (2008 p. 904) observed how:

In the late 1980s and early 1990s the widely held view, especially in government circles, was that farmers were unaware of key land degradation issues and they lacked the attitude, knowledge and skills necessary to address these issues ... Accordingly governments committed billions of dollars, mostly to the community-based approach, to raise awareness, to provide education resources, to offer skills training and to support research and community-based projects.

Early research into the community-based approach (e.g., Vanclay 1992; Curtis et al. 1996; Curtis et al. 2001) demonstrated it had been successful according to the conventional yardsticks of rural extension. Farmers' awareness and knowledge of NRM issues had increased, and their attitudes towards conservation had become more positive. Moreover, various studies (e.g., Cary et al. 2002; Curtis 1997; Mues et al. 1998) found a positive relationship between membership of Landcare

¹ Regional NRM organisations in New South Wales are called Catchment Management Authorities.

² The shift to group-based extension methods was influenced also by ideas from the rural development and adult education literatures that had gained traction within the rural extension profession.

groups and adoption of some conservation practices, although the direction of causation is not clearly established.

Nevertheless, the reliance on group-based extension approaches for solving land degradation problems in agriculture came to be criticised from the late 1990s (e.g., Lockie et al. 1997). For instance, Marsh et al. (2000 p. 624) stated that:

We are dismayed that Government and funding bodies appear to believe that extension through Landcare groups will be sufficient to achieve widespread adoption of conservation practices. In particular, we are concerned that there is a belief that farmers can solve difficult and complex land degradation problems themselves through group-based processes, even when it is apparent that a solution requires development of new technologies that are probably complex and possibly require support from off-farm sectors.

Given the extent to which community-based approaches to NRM had become identified with group-based extension methods, critiques of this kind led to arguments that reliance on such approaches should be reduced. For instance, Kingwell et al. (2008 p. 909) stated that ‘there are indications that the maintained investment and emphasis on the community-based approach could be an over-investment. The community-based approach may have been more effective if more funds were directed earlier toward developing technical and economic solutions to salinity’.

Meanwhile, some researchers have been seeking to promote a broader understanding of the role of community-based approaches in Australian NRM. These researchers (e.g., Reeve et al. 2002; Marshall 1999, 2002, 2008b) have argued that the community-based approach is at least partly an attempt to reverse the mistrust, non-cooperation and dependency of farmers that arose from prior government-based approaches that tended to be paternalistic and unresponsive to local conditions.

Concerns have been expressed accordingly at how expectations of community-based approaches in respect of ‘capacity building’ became narrowed to extension efforts designed to build the *human* capital of individual community members, in terms of their awareness, knowledge, attitudes and skills, and at how the need to build the complementary *social* capital required to engender community ownership, or mutual obligation, came largely to be sidelined³ (Bellamy et al. 2002; Marshall 2001). Lack of systematic attention to the building of such social capacities, within and between communities and governments, meant that progress in remedying the damage to these capacities from prior government-based approaches remained limited at best.

A review of Australian ICM programs in the mid-1990s, for instance, identified ‘a profound lack of understanding, even a misunderstanding, about community empowerment by both government and communities’ (AACM and the Centre for Water Policy Research 1995 p. 32). Price (1996 p. 5) observed that ‘it is probably fair to say that the ICM process has largely been driven by government institutions ... [and consequently] programs such as ICM and Landcare often have the opposite effect to that which they aspire to achieve. Many of these programs ... can reinforce notions that natural resource management issues are taken care of by government programs’.

4. INSIGHTS FROM THE THEORY OF COLLECTIVE ACTION

The present author (Marshall 2004b, 2004a, 2005, 2009b) has previously applied insights from the theory of collective action to help explain how devolution of governance responsibilities to

³ A typical regional NRM strategy addresses a number of NRM themes (e.g., land, water, biodiversity, and community) of which one is normally called the ‘community’ theme or similar. ‘Community capacity-building’ activities undertaken within such a theme tend to be dominated by extension activities focused on farmers’ human capital in terms of their awareness, knowledge, attitudes and skills.

community-based organisations can sometimes, given supportive conditions, increase the degree to which community members cooperate voluntarily by way of helping to discharge those responsibilities. This theory is relevant to community-based NRM given that many of the outcomes this approach seeks are collective goods. Goods of this kind are non-exclusive, in the sense that individuals contributing towards their provision are unable to exclude others from sharing the resulting benefits (Olson 1965).

Many, but not all, natural resource systems are collective goods. For instance, a farmer adopting a conservation practice that helps to enhance water quality in a river is normally unable to exclude others from sharing in the benefits. However, the collective goods with which community-based NRM is concerned are not confined to natural resource outcomes. Other relevant collective goods include knowledge and social capital. Hence a collective-action perspective can be useful even when the natural resource system at issue is itself not a collective good but some of the inputs on which its ongoing provision depends do happen to be collective goods⁴.

Mancur Olson (in Sandler 1992 p. xiii) reprised his seminal contribution to the theory of collective action (Olson 1965) by observing that ‘there is an externality inherent in all collective good situations, in that each individual’s provision of any amount of a collective good would confer some benefit to others’. He explained that the externality problem becomes greater the larger the group of individuals who would benefit from the good. The greater the group size, the less will any individual share in the benefits of their contribution towards provision, and thus the less motivated will they be to contribute.

Olson (ibid.) observed too that individuals with a greater interest in seeing a collective good provided typically contribute disproportionately to the provision effort. The expression ‘free riding’ was coined to describe this situation where individuals stint in their own provision efforts in the expectation that others with greater interest will contribute sufficiently that the collective good gets provided. Olson (ibid. p. 62) predicted that free riding would rule in groups large enough that ‘each member ... is so small in relation to the total that his action will not matter much one way or the other’, thus making it irrational for individual members to incur the costs of monitoring and punishing each other’s free riding.

A version of this free-rider problem became interpreted by game theoreticians as an ‘assurance problem’ where obstacles to collective action stem from the challenges group members face in assuring one another they can be trusted to reciprocate each other’s contributions (Runge 1981). Key insights into how such challenges might be overcome came from research by Axelrod (1984 p. 12) designed to test the hypothesis that: ‘What makes it possible for cooperation to emerge is the fact that the players might meet again. ... The future can therefore cast a shadow back on the present and thereby affect the current strategic situation’. The hypothesis was supported by the research, which demonstrated that individuals following strategies of reciprocity (i.e., who begin by contributing and then reciprocate what others do) can, if the ‘shadow of the future’ is strong enough, compete successfully with individuals following strategies of free riding and unconditional non-cooperation.

Nevertheless, it remained unclear how the shadow of the future could be strengthened sufficiently within large groups for a critical mass of members to become motivated to adopt reciprocity

⁴ Pannell et al. (2001) referred to hydrological evidence revealing that dryland salinity problems were often more localised than previously assumed. Hence, they and others (Kingwell et al. 2003; Kingwell et al. 2008) questioned the need for community-based approaches given that the need for collective *on-ground* action by farmers in addressing such problems was less than what was originally anticipated. However, a considered decision to move away from community-based approaches to such problems would need to account also for any other benefits from such approaches in enhancing collective goods including farmers’ trust in NRM governance and building stocks of local knowledge.

strategies. Based on an extensive review of empirical research, Ostrom (1998) concluded that individuals sharing an assurance problem engage in ongoing monitoring of each other's reputations as trustworthy reciprocators. When individuals perceive that others' adherence to a reciprocity strategy has increased, this strengthens their trust that others will reciprocate their future contributions. This strengthens the shadow of the future by raising their payoffs expected from contributing, thus strengthening their own motivations to practise reciprocity. The more that individuals come to practise reciprocity, in turn, the stronger becomes their reputations as trustworthy reciprocators.

Ostrom (ibid. p. 13) concluded accordingly that 'levels of trust, reciprocity and reputations for being trustworthy are positively reinforcing'. The implication was that successful large-group provision of collective goods depends on establishing and maintaining a structural setting conducive to generating a shadow of the future strong enough that individuals become motivated to enhance their reputations as trustworthy reciprocators (Marshall 2005).

5. A ROLE FOR GOVERNANCE

One of the key elements in establishing a structural setting conducive to successful large-group collective action involves governance by a third party⁵ (North 1990). Such third-party activity can bolster the shadow of the future by increasing the likelihood of free riders being identified and punished, thus preventing free riding from becoming so common that trust and reciprocity begin to unravel in a vicious cycle. Third-party governance of this kind can be organised endogenously by the group (e.g., by appointing members or staff to undertake this role) or it can be provided by government or some other external organisation (e.g., regional NRM organisation).

Nevertheless, governance comes at a cost. Aside from the resources expended in this activity, introducing a third party creates a new challenge of establishing and maintaining a 'vertical' cooperative relationship between group members and the third party on the basis of mutual trust and reciprocity. The more that this trust and reciprocity is lacking, and the less consequently that members cooperate voluntarily with third-party efforts at monitoring and enforcement, the greater will be the need for costly coercion and the risk of successful collective action becoming unaffordable (Marshall 2002, 2005, 2008a). Although focused on governments as third parties, the following remarks from Ostrom (under review p. XXXX, original emphasis) are valid for third parties generally:

The problem of collective action does not disappear once a government makes a policy to deal with an externality. Governmental policies need to rely to a great extent on willing cooperation from citizens. When citizens approve of a government policy, think they *should* comply, and this view is complemented by a sense that the government policy is effective and fairly enforced, the costs of that enforcement are much lower than when citizens try to evade the policy.

The focus in the literature on the vertical dimension of the challenge faced in large-group collective action has been largely on the importance of gaining and maintaining group members' trust in the third party. The presumption tends to be that increasing this trust will increase the degree to which group members' cooperate voluntarily with third-party decisions. In their review of factors affecting rural landholders' adoption of conservation practices, for instance, Pannell et al. (2006) concluded that a key determinant of landholders' adoption of conservation practices is their trust in the researchers who developed the practices and in the advisors who promote it to them, and presumed that adoption would tend to be influenced positively by such trust.

⁵ As distinct from 'first-party' monitoring, enforcement and other governance activities undertaken directly by group members.

In previous research (Marshall 2004b, 2004a, 2008a, 2009b), however, the present author has explained that the relationship between farmers' 'vertical trust' and their 'vertical voluntary cooperation' is more complex than normally assumed. There will be no relationship when farmers are following strategies not contingent on their levels of vertical trust (i.e., strategies of unconditional cooperation or unconditional non-cooperation) (Marshall 2008a, 2009b).

The relationship between farmers' vertical trust and their vertical cooperation will be negative when they are following strategies of free riding in their interactions with the relevant governance structures (e.g., community-based NRM organisations). Farmers following free-rider strategies with a community-based organisation supporting them to adopt relevant conservation practices would cooperate less with that organisation the more they trusted it as a source of reliable support (ibid.).

This free-riding behaviour takes various forms. Common internationally is a form where farmers accept financial support for establishing conservation works on the understanding that they will maintain the works, but then stint in this maintenance in the expectation that further support will become available to rehabilitate or replace the works (Gibson et al. 2005). Barr et al. (1992) found that expectations in Australia of farmers maintaining government-funded conservation works at their own expense have been normally misguided. Farmers can also free ride on support in various other ways, including by: not adopting practices as agreed (e.g., in return for financial support) unless strong enforcement occurs; curtailing existing plans for on-ground NRM activity in the expectation that financial support for that activity will later become available; and relaxing one's efforts to learn about conservation problems and practices in the expectation that advice will be provided through extension activities.

In contrast, the relationship between farmers' vertical trust and their vertical cooperation will be a positive one when group members (e.g., farmers) follow reciprocity strategies in their interactions with the relevant governance structures. Farmers following reciprocity strategies with a community-based organisation supporting them to adopt conservation practices would cooperate more with that organisation the more they trusted it as a source of reliable support (Marshall 2008a, 2009b). This cooperation could take various forms, including: accepting financial support only for adoption that would not have otherwise occurred; maintaining conservation works as agreed; adopting practices as agreed in the absence of enforcement, or beyond the minimum levels that were agreed; exerting peer pressure on other farmers to adopt the practices; and acquiring information about NRM problems and practices in excess of that gained through extension activities.

In recent publications from this research (ibid.), it was argued that caution is required in assuming that Australian farmers nowadays generally follow reciprocity strategies in their interactions with governance structures, community-based or otherwise, responsible for supporting them to adopt conservation practices. Hence:

With the Australian history of paternalistic natural resources governance in respect of farmers, and the considerable antagonism this has sometimes caused, it seems reasonable to assume that few farmers were following reciprocity strategies in their dealings with government before the mid-1980s. This pattern may have begun to shift around this time as a consequence of the introduction of Landcare, integrated catchment management, and other community-based programs. With such programs, Australian governments turned towards supporting the self-reliance of farmers and their communities in addressing natural resource issues, while expecting farmers and their communities to reciprocate this support by voluntarily contributing some resources towards resolving these issues (e.g., investing in adoption of recommended on-farm conservation practices).

Nevertheless, the focus of such programs until the introduction of the regional delivery model was on community levels no higher, relative to the scale of regions delineated under this model, than what is now called ‘subregional’. To the extent that such programs have effected a transition in farmers’ dealings with higher-level NRM bodies towards strategies of reciprocity, therefore, we would expect this transition to be more evident in their dealings with subregional groups than in their dealings with regional groups (Marshall 2009b p. 1515).

6. THE SAMARITAN’S DILEMMA

The challenge of engaging farmers in reciprocal relationships with organisations responsible for promoting their self-reliance, instead of creating perverse incentives for farmers to become more dependent, tends to be more readily acknowledged in the literature on ‘third-world’ rural development (Uphoff et al. 1998; Korten 1983; Gronemeyer 1992; Schumacher 1964; Gibson et al. 2005) than it has been in related ‘first-world’ public policy discourse. The relevance of this challenge for third-world environmental management was recognised by Pretty et al. (2001 p. 220) who wrote of the need ‘to ensure the transition is made from dependence [of individuals and their groups] to interdependence ...’. In a recent discussion of this challenge in the third-world context, Ellerman (2007 p. 563, original emphasis) wrote that:

The assumed goal is transformation towards autonomous development on the part of the doers, with the doers helping themselves. The problem is how can the helpers supply help that actually furthers rather than overrides or undercuts the goal of the doers helping themselves? This is actually a paradox. If the helpers are supplying help that is important to the doers, then how can the doers really be helping themselves? Autonomy cannot be externally supplied. And if the doers are becoming autonomous, then what is the role of the external helpers? This paradox of supplying help to self-help ... is the *fundamental conundrum* of all helping relationships.

Nevertheless, the relevance of this paradox for first-world contexts has not gone unnoticed by scholars. Buchanan’s (1977 pp. 169-185) discussion of the ‘Samaritan’s Dilemma’ was a seminal contribution in this respect, and one which allows us to elaborate the collective-action perspective on the role of community-based NRM that was considered earlier. His game-theoretic model of the ‘Active Samaritan’s Dilemma’, reproduced in Figure 1, consists of a two-by-two payoff matrix confronting two players, A (the ‘Samaritan’ or ‘helper’) and B (the ‘recipient’ or ‘doer’). The relevance of this model for natural resources governance has been noted recently by Gibson et al. (2005) and Bruns (2008).

Figure 1: The Active Samaritan’s Dilemma

		Doer (player B)	
		1 (self-help)	2 (not self-help)
Helper (player A)	1 (not help)	I 2, 2	II 1, 1
	2 (help)	III 4, 3	IV 3, 4

The model follows conventional game-theoretic notation. Player A (helper) and Player B (doer) each can choose options 1 or 2. The helper’s option 1 involves providing help to the doer, and her

option 2 involves not helping the doer. The doer's option 1 involves acting to help herself, and her option 2 involves not acting to help herself.

The 'payoff' of each player from her choice depends on the other player's choice. A player's payoff from a particular combination of choices is rated ordinally from 1 to 4 according to her preferences. The payoffs (a, b) to the helper (player A) and doer (player B) from a particular combination of choices are shown for each possible choice combination. If the helper chooses to help and the doer chooses to not help herself (i.e., as portrayed by cell IV), for instance, the helper obtains a payoff of 3 and the doer receives a payoff of 4.

Given the configuration of payoffs, the helper will choose to help regardless of the choice she expects the doer to make. In contrast, the doer's choice depends on the helper's choice. If the helper chooses to not help, the doer maximises her payoff by choosing to help herself. If the doer knows the helper will always choose to help, however, then the former will always choose against helping herself and the 'solution' to the model lies in cell IV.

Nevertheless, the helper would prefer the outcome in cell III where she helps and the doer reciprocates by helping herself. Buchanan (ibid.) reasoned that the helper could achieve this outcome by recognising that her choice affects the doer's choice, and then behave 'strategically' by pretending that her preferred response to the doer not helping herself is to withhold help. Such strategic behaviour will be costly to the helper, however, who denies her true preferences whenever she denies help. Holding to this behaviour therefore requires from the helper what Buchanan called 'strategic courage' (ibid. p. 173) and parents nowadays may refer to as 'tough love'.

Buchanan was pessimistic about the prospects for strategic courage in modern societies. He reasoned that the increasing wealth of such societies was undermining the motivation for such courage, given that it 'may be a markedly inferior economic good ... As incomes have increased, and as the stock of wealth has grown, men have increasingly found themselves able to take the soft options. ... Welfare rolls can be increased dramatically without national bankruptcy' (ibid. pp. 173, 184). He reasoned too that the prevalence of strategic courage tends to weaken as human populations expand and social groups facing samaritan-like dilemmas tend to grow accordingly. Thus:

An individual's motivation for behaving to influence the behaviour of others in the direction of generating preferred outcomes for the all-inclusive community varies inversely with the size of the group. The expected influence of any one person's behaviour on that of others diminishes sharply as numbers are increased. Beyond some critical size limit, the individual who finds himself in a samaritanlike setting must rationally treat the behaviour of others, parasites and samaritans alike, as beyond his power of influence. When this point is reached, the pattern of behaviour in others is accepted as a parameter for his own choice ... The game setting disappears in his subjective calculus, and there are no rationally derived reasons for behaving with the strategic courage that the community interest may require (ibid. p. 181).

7. THE SAMARITAN'S DILEMMA, COMMUNITY-BASED NRM, AND FARMER ADOPTION OF CONSERVATION PRACTICES

What does the prior discussion add to our understanding of the role of community-based NRM in strengthening farmers' adoption of conservation practices? To begin with, two key lessons can be drawn from Buchanan's analysis. Firstly, the tendency for farmers to reciprocate help (e.g., extension services or financial incentives) from NRM governance structures (e.g., government agencies or community-based organisations) can be expected to strengthen with their perceptions

that those structures possess the strategic courage needed to practise reciprocity with them⁶. The more that farmers expect future help to be withheld if they do not reciprocate present help (e.g., by adopting conservation practices promoted to them through such help), for example, the more likely are they to reciprocate the help rather than free ride on it and thereby become more dependent.

The second key lesson is that NRM governance structures face considerable challenges in convincing farmers that they possess strategic courage of this kind. Farmers have a number of reasons to be sceptical of the ability of governments, or other governance structures, to summon and sustain such courage.

One reason derives from farmers' historical experience of governments acting paternalistically towards them (i.e., and therefore not expecting reciprocal community self-help) on the presumption that community members are generally incapable of contributing usefully to NRM efforts. Another reason is that governments often face strong political pressures to 'take action' on NRM problems, and therefore can be reluctant to desist from action if farmers' reciprocation fails to eventuate. A third reason is that governments not uncommonly evaluate their agencies and other structures they fund on their demonstrated ability to 'get money out the door' so that budgets are expended as allocated. Hence, governance structures can face strong incentives to discard strategic courage, given the risk that withholding help will lead to under-expenditure of their budgets and consequent reduction of their budgets in subsequent years.

A fourth reason for farmers' scepticism regarding the ability of NRM governance structures to summon and sustain strategic courage may stem from their awareness of the self-interest of those involved in the business of providing help. Ellerman (2007 p. 565) noted how:

The helping professions do depend on neediness, disability, incapacity, and helplessness to make their living so they are in the paradoxical position of working to eliminate their own jobs – at least insofar as they actually try to help people help themselves. It should thus come as no surprise when again and again 'helpers' use 'giving-out-fish' strategies that tend to perpetuate the continuing need for helpers rather than 'help the doers learn how to fish' strategies that would foster the doers' autonomy.

A fifth reason stems from competition between governance structures that can undermine each structure's strategic courage by leading to expectations that the benefits of their own courage will be negated by other structures stepping in to compensate for any help that they withhold. This reason relates to the well-known phenomena of 'turf protection' and 'empire building'. A sixth reason derives from the high costs often encountered in monitoring individual farmers' actions such that a legitimate basis exists for judging that reciprocal self-help is lacking, and consequently that future help should be withheld⁷. The final reason to be mentioned here relates to the high transaction (including political) costs that can arise in enforcing decisions to withhold future help from farmers whose reciprocal self-help is judged lacking⁸. These costs can be high given the continuing effectiveness of farmers in the political arena.

⁶ Farmers can be expected to reciprocate help only when they perceive it as helpful. It is not uncommon in NRM for actions intended to help farmers to be perceived by them as unhelpful. Accordingly, 'help' is defined here in terms of farmers' perceptions, rather than according to the helper's intentions. An advantage often claimed for community-based NRM, compared with centralised NRM governance, is that community-based structures have better access to local knowledge and are better able to adapt their actions to local context. To the extent that this is true, actions by community-based structures intended to help farmers are more likely to be perceived as help by those farmers.

⁷ Farmers' capacities in the short term to reciprocate any help they receive can vary greatly with fluctuations in their seasonal and market circumstances. Farmers following reciprocity strategies who face severe seasonal and market circumstances can be expected to postpone their reciprocation until their circumstances improve. Hence, judgements of whether farmer self-help is lacking can require a longer-term perspective in order to be regarded as legitimate.

⁸ See previous footnote.

8. WHAT 'COMMUNITY' MEANS FOR FARMER ADOPTION OF CONSERVATION PRACTICES: TOWARDS A DEEPER APPRECIATION

What scope exists then for a community-based approach to (i) increase strategic courage within the NRM governance system sufficiently that farmers become motivated to follow reciprocity strategies in their interactions with the system, or (ii) reduce the strategic courage needed to provide this sufficient level of motivation?

Appropriate devolution⁹ of NRM governance responsibilities to community-based organisations may strengthen strategic courage in fulfilling those responsibilities to the extent that community members leading and staffing those organisations are likely more motivated to see the particular NRM problems faced by their community solved than would be the case in larger-scale organisations with a more diffuse interest in seeing those problems solved. A number of case studies in Australia have observed this effect. Based on her research into catchment, Landcare and other environmental stewardship groups under NHT1, for instance, Carr (2002 p. 123) observed how:

Once stewardship groups are successful in securing financial resources and begin implementing projects, they tend to pore over the allocation and disbursement of funds at a level of detail much more precise than that of normal government accounting systems. Also, groups allocate money, implement projects and make adjustments to expenditure along the way with more alacrity and responsiveness than government budgetary systems. It could be argued that group members have a higher stake in ensuring that their money is well spent than the anonymous government employee has in protecting government coffers.

Marshall (2002, 2004b, 2004a, 2005) found similar dynamics at work in his case study of devolution of NRM governance responsibilities to Murray Irrigation Limited, a local company co-owned by the irrigators to which it supplies water. An officer of the Murray-Darling Basin Commission involved in the devolution exercise observed, 'It's interesting that when you get things down to an arrangement, communities tend to be tougher on themselves than they'll let government be with them' (Marshall 2004b p. 161). A director of the company at the time of interview stated along similar lines:

I believe, and I say this to irrigators, 'We should respect the responsibility we have been given as an organisation. Do we really want the Environment Protection Authority going up all the back lanes looking for problems? Or do we want to be responsible for finding out ourselves what's going on up those back lanes ourselves and nipping those in the bud? ... If we don't take our responsibilities seriously, we may well lose them. Then all the irrigators would be worse off' (ibid. p. 161).

We might also expect devolution of NRM responsibilities to community-based organisations to reduce the level of strategic courage needed within the governance system to ensure fulfilment of those responsibilities. A number of reasons may be advanced for this expectation.

The first of reasons is that decomposing a given responsibility (e.g., deciding how government funds should be invested in particular NRM activities) so it can be devolved to multiple lower-level groups (e.g., from a state government agency to a series of regional community-based

⁹ The principle of subsidiarity is commonly advocated as a criterion for assessing the appropriate degree to which a responsibility should be devolved to lower levels of a governance system. According to this principle, higher-level governance structures are subsidiary to lower-level ones, and each responsibility should therefore be assigned to the lowest level of governance with capacity to exercise it effectively (Marshall 2008b, 2009a; 2010).

organisations) can break down a large-group problem of collective action into a series of smaller-group problems more conducive to group members cooperating voluntarily with one another in helping to fulfil that responsibility. The more that a responsibility is discharged by group members self-reliantly in this way, the less is the need for the governance system to provide help in order for the responsibility to be discharged satisfactorily. It follows that less reciprocity is required from group members (i.e., farmers given the focus of this paper) in their interactions with the governance system, and the need for that system to exercise strategic courage is reduced accordingly. Hence, a given stock of strategic courage is more likely to be adequate for discharging a particular responsibility.

This reasoning is consistent with a key lesson drawn by Axelrod (1984) from his research into the role of reciprocity in successful collective action. This lesson, 'Enlarge the shadow of the future' (ibid. p. 126), was based on his finding that '[m]utual cooperation can be stable if the future is sufficiently important relative to the present. This is because the players can each use an implicit threat of retaliation against the other's defection – if the interaction will last long enough to make the threat effective'.

One of the basic ways that Axelrod recommended for enlarging the shadow of the future was 'to make interactions more frequent. In such a case the next interaction occurs sooner, and hence the next move looms larger than it otherwise would' (ibid. p. 129). He reasoned that interactions between specific individuals can be made more frequent by excluding others so that interactions between those individuals become more concentrated. Moreover, he remarked as follows on how multi-levelled organisation of people promotes voluntary cooperation by making interactions between specific individuals more concentrated: 'By binding people together in a long-term, multi-level game, organizations increase the number and importance of future interactions, and thereby promote the emergence of cooperation among groups too large to interact individually' (ibid. p. 131).

A second reason for why the need for strategic courage may be reduced by devolving NRM governance responsibilities to community-based organisations is that this devolution may strengthen community ownership of those responsibilities sufficiently that the 'payoffs of the game', at least when 'played' with farmers whose sense of ownership of those responsibilities has been strengthened most, shift from those of a Samaritan's Dilemma towards payoffs more aligned with farmers reciprocating help provided to them. This reason is consistent with another of the key lessons that Axelrod (ibid. p. 133) drew from his research into collective action problems, namely, 'Change the payoffs'.

Dynamics of this kind were observed in the aforementioned case study of devolution of NRM governance responsibilities to Murray Irrigation Limited. An officer with the New South Wales (NSW) Government involved in the process judged that the devolution of responsibilities to this community-based organisation had been 'very important in getting real change on farms. You would not be able to get it out of Government' (Marshall 2004b p. 161). An irrigator commented:

It's no longer the Government chasing us around and saying 'You're not doing the right thing'. ... If we can collectively show through Murray Irrigation that we are trying, and that we're not going to tolerate people who do the wrong things, it must help us collectively (ibid. p. 161).

A third reason for why devolving responsibilities may reduce the need to establish strategic courage within a NRM governance system is that this devolution brings the system closer to the world of farmers, and thus can make it easier for them to monitor the degree of strategic courage that does exist in that system. This effect may be particularly important where the objective is to 'turn

around' an NRM governance system that has established a reputation among farmers for low strategic courage. The easier it is for farmers to observe that a governance system is acting with increased strategic courage, the less is the need for this strengthening to be 'acted out' in order for farmers to recognise that strengthening has indeed occurred.

This reasoning is consistent with another of the key lessons that Axelrod (1984 p. 139) drew from his research, which he encapsulated as 'Improve recognition abilities'. The lesson is that 'the scope of sustainable cooperation can be expanded by any improvements in the players' ability to recognize each other from the past, and to be confident about prior actions that have actually been taken' (ibid. p. 140).

9. SOME QUANTITATIVE EVIDENCE

The reasoning in the previous section suggests that involving the community in NRM governance may mean considerably more for farmer adoption of conservation practices than embracing a more participatory approach to developing the *individual* capacities (or human capital) of farmers in terms of the awareness, knowledge, attitudes and skills that they need for this governance to succeed. It indicates also that significant additional scope exists for a community-based approach to strengthen the *collective* capacities (or social capital) of farmers, and of the NRM governance system as a whole, to solve the problems of collective action typically associated with NRM issues¹⁰.

Up to this point in the paper, however, this reasoning is yet to be corroborated by quantitative evidence. This shortfall is addressed below, where relevant quantitative evidence from two research projects led by the present author is discussed. The focus in this discussion is on examining whether farmers in the cases studied were following reciprocity strategies in their interactions with the community-based NRM organisations assisting them through extension activities and financial incentives to adopt locally-relevant conservation practices.

9.1 Two projects covering four cases of community-based NRM

The first of the research projects was referred to in section 8. It involved a case study of devolution of NRM responsibilities to Murray Irrigation Limited (MIL), a company co-owned by the irrigators to whom it supplies water. The farmland area in the irrigation districts serviced by MIL is 7,490 km². These districts are situated in the central-Murray region of NSW which lies about 750 km south-west of Sydney. The number of farm businesses within these districts at the time of the research was estimated at 1,610. Further details of the case study context are available from Marshall (2001, 2002, 2004b, 2004a).

The second of the projects involved case studies in three of the 56 NRM regions defined under the regional delivery model. The area of each of these regions (and also of the subregions focused on within two of the regions) is appreciably larger than the total area of the four irrigation districts focused on in the first project. The first of the three regions was the South West Catchments Region in Western Australia, which encompasses 51,657 km² and around 193,000 people. Within this region, the focus was on the Blackwood Basin subregion which contains 23,500 km² and about

¹⁰ This is not to suggest that individuals' awareness, knowledge, attitudes and skills are irrelevant for these collective capacities. For instance, individuals cannot begin to solve a problem of collective action until they become aware they share such a problem. Rather, the suggestion is that these collective capacities will remain under-developed while 'community capacity building' remains focused on individuals' awareness, knowledge, attitudes and skills, and the broader task of strengthening social capital in the governance system remains neglected.

37,000 people. The regional and subregional NRM bodies in this case were the South West Catchments Council and the Blackwood Basin Group, respectively.

Another of the regions was the Fitzroy Basin Region in Queensland, which contains 156,000 km² and around 200,000 people. Within this region, the focus was on the Central Highlands subregion which encompasses 45,000 km² and about 20,000 people. The regional and subregional NRM bodies in this case were the Fitzroy Basin Association and the Central Highlands Regional Resources Use Planning Cooperative, respectively.

The remaining region was the Mallee Region in Victoria, which contains 39,000 km² and about 65,000 people. To maintain comparability across the three cases, the focus in this region was on dryland farming districts since agricultural activity in the other two focal subregions was predominantly dryland-based. The regional NRM body in this case was the Mallee Catchment Management Authority (CMA). This CMA decided against establishing subregional arrangements with similar status as in the other two cases. See Marshall (2008a) for further details of the three cases studied in the second project.

The strength with which community-based organisation/s could reciprocate lack of farmer cooperation in adopting conservation practices differed between the two projects. In both projects, the relevant community-based organisations could reciprocate farmer non-cooperation by withholding further support. In addition, however, the community-based organisation in the first project (i.e., MIL) strengthened the shadow of the future perceived by irrigators by making their receipt of water supply services conditional on their cooperation.

9.2 Research method

The quantitative research method followed in each project was similar, and involved:

- (i) surveying random samples of farmers;
- (ii) using the survey data to measure, inter alia, (a) each respondent's intended change in adoption of conservation practices promoted to them by their community-based NRM organisation, and (b) each respondent's level of trust in their community-based organisation as a source of NRM assistance; and
- (iii) testing statistically whether the relationship between (a) and (b) across each sample of respondents is positive as would be expected if farmers were predominantly following reciprocity strategies in interacting with their community-based organisation.

Step (iii) in each case involved application of multiple regression methods. In testing any relationship between a dependent variable (e.g., farmers' intended adoption of conservation practices) and a particular explanatory variable (e.g., farmers' trust in their community-based organisation as a source of NRM assistance), these methods control for the influence on the dependent variable of other explanatory variables expected to be relevant (e.g., farmers' current financial viability, education levels, and perceptions of whether adoption would serve their interests).

An explanatory variable in respect of farmers' current financial viability was included in each regression model to control for the influence on farmers' adoption plans of their current financial circumstances. Otherwise, the degree to which farmers in a region facing severe circumstances (e.g., prolonged drought) at the time of their survey were actually following reciprocity strategies over the longer term may have been under-estimated. The risk that the reciprocity of farmers facing

current negative circumstances may be underestimated was addressed also by measuring their adoption-change intentions over a period long enough (ten years) that reasonable opportunities to reciprocate the support provided to them should have arisen.

Details of the surveys undertaken for the four case studies are provided in Table 1.

Table 1: Details of the surveys

Project and case	Timing of survey	No. of farm businesses responding	Approx. no. of farm businesses in population
Project 1: Central-Murray Irrigation Districts (NSW) ^a	Jul. – Aug. 1999	235	1,610
Project 2: Blackwood Basin (Western Australia) ^b	Sept. 2006 – Feb. 2007	333	1,950
Project 2: Central Highlands (Queensland) ^b	“	170	890
Project 2: Dryland areas of Mallee NRM Region (Victoria) ^b	“	318	862

^a Source: Marshall (2004a). ^b Source: Marshall (2008a).

9.3 Findings from the central-Murray case (first project)

The survey item used in the first project to gauge farmers’ trust in their community-based organisation involved them rating their level of agreement with a statement that Murray Irrigation Limited was committed to supporting implementation of the ‘land and water management plans’ (LWMPs) that had been developed through community-based processes in each of the four irrigation districts under its jurisdiction.

Multiple regression analysis identified a statistically-significant positive relationship between the variable constructed from this survey item (called *trust in Murray Irrigation*) and farmers’ intended levels of adoption of conservation practices relevant to their situations for which aggregate adoption targets (i.e., for farmers as a group) had been set in the LWMPs (Marshall 2004a). We can conclude, therefore, that farmers in this setting were predominantly following reciprocity strategies with their community-based NRM organisation.

9.4 Findings from three case studies under the regional delivery model (second project)

A combination of five survey items was used in the second project to gauge farmers’ trust that their relevant community-based regional NRM organisations were committed to supporting them in adopting the kinds of conservation practices prioritised in their region’s NRM strategy and investment plans. The explanatory variable constructed from these items was called *trust in regional body*.

An equivalent set of five items was used to measure farmers’ trust that their relevant subregional organisation was similarly committed (except in the Mallee dryland case where no such

organisation existed). The explanatory variable derived for the two relevant cases from this set of items was called *trust in subregional body*.

In each of the three cases, multiple regression models were estimated for each of the conservation practices that the relevant community-based organisation was promoting to farmers as a matter of priority. With 22 such practices identified across the three cases, this number of models was estimated. The dependent variable for each model related to each farmer's expected change in adoption (measured in hectares) of a particular conservation practice over the subsequent ten years (Marshall 2008a, 2009b).

Fifteen models were estimated in the two cases where *trust in subregional body* was relevant. Nine of these 15 models (60 per cent) identified a statistically-significant positive relationship between this explanatory variable and farmer's expected change in adoption of the relevant practice. None of the remaining six models identified a statistically-significant negative relationship. Hence, we can conclude that farmers in these two cases were (a) predominantly following reciprocity strategies with their subregional community-based NRM organisation for more than half of the practices promoted to them, and (b) predominantly not following free-riding strategies in respect of the remaining practices promoted to them.

In contrast, six of the full array of 22 models (27 per cent) identified a statistically-significant relationship between *trust in regional body* and farmers' expected change in adoption of the relevant practice. Aside from the one Mallee dryland model in this set, the five other models found the relationships to be negative. In the Blackwood Basin and Central Highlands cases, therefore, it seems that farmers' trust in their regional NRM body is, when it is exerting influence, predominantly influencing farmers' adoption plans through free-rider dynamics.

Interestingly, four of the five models from the Blackwood Basin and Central Highlands cases that found *trust in regional body* to have a significant negative relationship with farmers' expected adoption changes also found *trust in subregional body* to have a significant positive relationship with farmers' expected adoption changes. The implication seems to be that subregional bodies in these cases have been more successful than their counterparts at the regional level in managing the Samaritan's Dilemma – and thus in leading their relationships with farmers away from those fostering dependency towards those that foster self-reliance.

The Mallee model in this set found that the relevant regional body (Mallee CMA) had managed predominantly to foster relationships of reciprocity with farmers in respect of the relevant conservation practice. The CMA's greater apparent success, compared with the two other regional bodies, in fostering relationships of reciprocity with farmers might be explained by the absence of a subregional group in this case. This absence may have led farmers in this case to interact more directly with the CMA than otherwise would have occurred, and thus allowed farmers greater opportunity to recognise from its behaviour that (at least in respect of this practice) it possesses the strategic courage needed to motivate reciprocity from them.

Nevertheless, the Mallee CMA seems to have established reciprocity dynamics with farmers for a lower proportion of priority conservation practices than was established by the subregional bodies in the other two cases. A possible explanation is that community-based NRM at the regional level is more remote from the world of farmers than is a community-based approach at the subregional level. This may disadvantage a regional body, compared with a subregional body, in two ways:

- (i) in establishing a reputation for strategic courage¹¹; and
- (ii) in gaining from farmers the ownership of its initiatives needed to ‘change the payoffs of the game’ sufficiently for them to become motivated to help implement those initiatives on the basis of reciprocity.

9.5 Discussion of findings

The quantitative evidence presented in this section from two different research projects, and from the four different cases that these projects covered, indicates consistently that reciprocity was the predominant strategy followed by farmers with their community-based NRM organisations in these cases for a substantial share of the relevant conservation practices. Due to the lack of ‘control treatments’ (i.e., government-based programs providing similar NRM support in similar contexts), it is not possible to determine conclusively that any occurrence of farmers following reciprocity strategies in interacting with their community-based organisations is a consequence of introducing a community-based approach.

However, it seems likely given the historical experiences of Australian farmers with governmental NRM interventions that farmers would predominantly not be following reciprocity strategies if they were now dealing with government-based programs (Marshall 2008a, 2009b). The Natural Resources Commission (2008 p. 13) observed accordingly that:

While there may be some administrative efficiency gains to be made from centralising control [of NRM governance from CMAs], they are likely to be overwhelmed by the loss of community support and inability of central agencies to motivate the long-term behaviour change that CMAs are beginning to drive.

We can conclude with reasonable confidence from the quantitative evidence considered above that the reciprocity found to be followed by farmers when interacting with their community-based NRM bodies is a consequence of introducing a community-based approach. The second of the two research projects (i.e., the one focused on the regional delivery model) generated some quantitative evidence also for the proposition that the ability of a community-based approach to engage farmers in relationships of reciprocity with their community-based organisation tends to increase the more that responsibilities under the approach are devolved towards the local level. However, further evidence is needed for this proposition to be evaluated with reasonable confidence.

10. CONCLUSIONS

The reasoning and evidence presented in this paper combine to indicate that the conventional understanding of the role of community-based NRM in Australian agricultural landscapes – as an innovative approach to rural extension efforts concerned with farmers’ relevant awareness, knowledge, attitudes and skills – under-estimates the potential of this approach. This is not to deny that farmers’ self-reliance in NRM can be enhanced when community-based approaches help them more effectively to develop these elements of their individualised human capital. However, it is clear from the preceding sections that attempts to help develop farmers’ self-reliance in NRM can be counter-productive unless community-based approaches can succeed in developing the ‘vertical’ social capital needed in the NRM governance system to motivate farmers to reciprocate the help provided to them. Without such social capital, there is a real risk that farmers will predominantly

¹¹ Both because (a) the regional body’s greater remoteness from farmers in a particular community may lead to a more diffuse interest in seeing their specific NRM problems solved, and (b) the regional body’s greater remoteness increases the difficulty that farmers face in monitoring its behaviour closely enough to gauge its strategic courage.

free ride on the help they receive rather than reciprocate it, so that their dependence on external help is reinforced or deepened.

The role of social capital in fostering promoting farmers' adoption of conservation practices has not gone unnoticed in the literature on community-based NRM in Australia. However, discussions in this area have tended to focus on one particular element of social capital, i.e., farmers' trust in the organisations promoting conservation practices to them through extension activities and financial incentives. This literature has largely presumed that farmers' adoption of conservation practices invariably tends to increase with their trust in the organisation promoting the practices to them. In contrast, it is evident from the logic and evidence presented in this paper that the influence of this vertical trust of farmers on their decisions to adopt conservation practices depends on whether they are motivated to practise reciprocity – at least over the longer term – with organisations supporting them in adopting those practices.

Realising more of the promise of community-based NRM requires a deepening of how leaders and policy makers at all levels understand this approach as strengthening farmers' self-reliance in adopting the conservation practices on which successful NRM depends. This deepening requires complementing the rural extension ideas underpinning the conventional understanding with insights from developments in the theory of collective action.

These insights reveal the promise of a community-based approach in strengthening the motivation of farmers to reciprocate the support given them towards adopting relevant conservation practices, and thus in truly enhancing their self-reliance in adopting these practices. However, this promise will be realised only to the extent that leaders and policy makers at all levels:

- (a) acknowledge the Samaritan's Dilemma normally faced in helping farmers become more self-reliant, and accordingly to
- (b) attend to developing community-based arrangements with the 'strategic courage' needed to motivate most farmers to reciprocate the support they receive towards adopting conservation practices.

The responsibility in a community-based organisation for establishing the vertical social capital needed to motivate farmers to reciprocate the organisation's support to them cannot be left to a 'community' program which has limited influence over how the rest of the organisation behaves. Farmers' trust in the organisation depends on their experiences with it across all its activities, as does their perceptions of its strategic courage. A whole-of-organisation strategy for establishing vertical social capital with farmers needs to be followed for a community-based organisation to realise its promise in helping farmers more effectively to help themselves.

Meanwhile, we need to keep the promise of community-based NRM in perspective. Strengthening farmers' motivations to adopt conservation practices will not be enough when the practices on offer fail to serve their interests and are thus not 'adoptable'. Hence, realising the promise of community-based NRM often relies on complementary efforts to develop adoptable practices (Pannell et al. 2006). Here too, external support for such efforts (e.g., government investment in research) will likely encounter the Samaritan's Dilemma. Appropriate involvement of community-based organisations in these efforts can be a way of addressing the risk of these efforts undermining farmer motivations to undertake complementary efforts of their own.

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