



Creating culturally sustainable agri-environmental schemes

Rob J.F. Burton^{a,*}, Upananda Herath Paragahawewa^{b,1}

^a Centre for Rural Research, N-7491 Trondheim, Norway

^b AgResearch Limited, Ruakura Research Centre, Hamilton, New Zealand

A B S T R A C T

Keywords:

Agri-environmental schemes
Cultural capital
Cultural sustainability
Farmers
Bourdieu

Evidence is emerging from across Europe that contemporary agri-environmental schemes are having only limited, if any, influence on farmers' long-term attitudes towards the environment. In this theoretical paper we argue that these approaches are not 'culturally sustainable', i.e. the actions are not becoming embedded within farming cultures as part of conventional 'good farming' practice. We propose (following Bourdieu) that, in order to culturally embed the environmental values, beliefs and knowledges that underlie such schemes, policy-makers need to devise approaches that allow the creation of cultural and social capital within farming communities – rather than simply compensating for economic capital lost. We outline the theoretical basis of our position and discuss how the contemporary agri-environmental approach of paying for specified environmental management services restricts the ability of such schemes to generate cultural and, thereby, social capital. Finally, we outline two possible ways of accounting for cultural capital in scheme creation: either through the development of measures of cultural capital that enable its incorporation into contemporary economic models or through a major revision to the way we construct and apply agri-environmental schemes.

© 2010 Elsevier Ltd. All rights reserved.

1. Introduction

One of the main mechanisms for achieving agri-environmental policy goals is the provision of financial rewards in return for the generation of environmental public goods. In Europe, this approach formed an important part of the 1992 McSharry revisions to the Common Agricultural Policy² and, in more *laissez-faire* economies such as New Zealand and Australia, volunteerism has been the main philosophy behind promoting environmental friendly forms of farming. Measured in terms of the impact on land use and/or farmer participation, these policies appear to have been highly successful. In Europe, for example, 30.2 million ha were covered by agri-environmental scheme (AES) agreements by 2002 – a 24 per cent share of utilisable agricultural land (Burton et al., 2008). Similarly, in Australia, the

establishment of the voluntary Landcare³ program in 1989 saw a rapid uptake of the scheme such that by 1994 Landcare had been adopted by 30% of commercial farming ventures in Australia (Lockie, 1997).

Some commentators expected long-term behavioural changes to result. For example, Lowe et al. (1999: 271) asserted over a decade ago, "it would reasonably be expected that there would already be discernable changes in farmers' attitudes, and even farming cultures, from participation in agri-environmental schemes". Similarly, Valentine et al. (2007: 315), suggest that for New Zealand "Voluntary and economic incentives... are also seen as effective circuit breakers to encourage environmentally sustainable practice that, once accepted by the community, will provide an enduring change even when the financial support is removed." Early promotion of the Landcare program in Australia was also underlain by the assumption that Landcare groups "will accelerate attitude change"

* Corresponding author. Tel.: +64 3 467 2063.

E-mail addresses: rob.burton@bygdeforskning.no (R.J.F. Burton), upananda.paragahawewa@agresearch.co.nz (U.H. Paragahawewa).

¹ Tel.: +64 7838 5324.

² Payments for voluntary action became the preferred mechanism as a result of strong resistance to initial attempts to introduce mandatory controls on emerging problems of landscape change, wildlife loss and habitat destruction in the early 1980s (Latacz-Lohmann and Hodge, 2003).

³ In the case of Landcare, financial rewards are not provided directly for scheme participation. However, the state provides funding for peer support networks, experimental projects, training and planning exercises (Higgins and Lockie, 2002) and, critically, participation has become "a prerequisite for those farmers wishing either to access direct financial assistance for drought relief and/or structural adjustment or to purchase irrigation water entitlements" (Lockie, 2009: 417).

and lead to the “development of more appropriate land management systems” (Curtis and De Lacy, 1996, p. 65).

However, while voluntary agri-environmental schemes are now widespread, their success in promoting sustainable attitudinal and environmental change is being increasingly questioned. In the European Union researchers in Austria (Schmitzberger et al., 2005), Finland (Herzon and Mikk, 2007), Ireland (Aughney and Gormally, 2002), Switzerland (Schenk et al., 2007), the Netherlands (Kleijn et al., 2004), and the UK (Macdonald and Johnson, 2000) have found little evidence that farmers' attitudes have changed despite almost two decades of engagement. At the same time, European ecologists have observed that voluntary agri-environmental schemes are having only a limited impact on species richness and abundance (Kleijn et al., 2001, 2004; Whittingham, 2007). Similarly, in Australia, early research by Curtis and De Lacy (1996) found no significant differences in the stewardship/land ethos of Landcare and non-Landcare participants. Wilson (2004) concludes from reviewing this (and other) evidence that rather than changing environmental attitudes Landcare has been simply preaching to the converted. As a result of a failure to effect change, Lockie and Higgins (2007: 6) have observed a “continuing escalation of agricultural land and water degradation in Australia”.

Other studies contend that an extended period of engagement with agri-environmental schemes can turn farmers' motivations from predominantly financial to intrinsically environmental (Bager and Proost, 1997; Fish et al., 2003; Morris, 2004). However, while this may be true in some specific schemes and for some individuals, it is unlikely to be widely applicable. Experimental research suggests that the impact of providing extrinsic rewards such as payment for conducting behaviours is usually to *weaken* the intrinsic motivations rather than to strengthen them. For example, Deci et al. (1999: 659) conducted a meta-analysis of 128 studies and concluded “Although rewards can control people's behaviour – indeed that is presumably why they are so widely advocated – the primary negative effect of rewards is that they tend to forestall self-regulation.” Thus, rather than strengthening environmental attitudes, payments for voluntary actions may actually be forestalling attitudinal change.

Overall, the evidence from both the Northern and Southern hemisphere points to a failure of voluntary agri-environmental approaches to alter the culture of conventional farming or, more critically, to halt environmental degradation and species decline. Rather than ushering in a new farming culture based on a more sustainable relationship between farming and the environment, it appears that the main impact of these payments has been to support conventional agriculture – not only from an economic perspective, but from a cultural/social perspective as well. We contend that such policies are thus not ‘culturally sustainable’ – by which we mean that in failing to become embedded within the culture of local communities, removal of financial reward would lead the re-establishment of pre-existing cultural norms and behaviours. The problem is, as Pretty (2003: 1914) observes, “Without changes in social norms, people often revert to old ways when incentives end or regulations are no longer enforced, and so long-term protection may be compromised”.

If voluntary agri-environmental payments are not embedding ideologies of environmental sustainability, the question is: what *would* make environmental policy culturally sustainable? The issue of the ‘cultural sustainability’ of agricultural policy has received only limited attention in the literature – representing what Nerlich and Doering (2005: 166) observe as a gap in rural and sociological research. The authors suggest – with respect to farmers' response to the foot and mouth outbreak in the UK in 2001 – that,

“future policies for a sustainable agriculture can only work if they are not only economically but also *culturally sustainable* and take into account not only monetary but also human cost ... Policies need not only be politically implemented, they need to be culturally embedded.”

Constructing schemes that facilitate cultural embeddedness would have advantages for both policy-makers and participants. For policy-makers, cultural sustainability would result in a diminished role for the government in facilitating innovation, monitoring, extension and enforcement activities as these activities would increasingly be performed by the peer group. As a consequence, the need for economic support would decline as embeddedness deepened. For the individuals and communities targeted, culturally sustainable policies are likely to be more readily accepted as they would provide intrinsic rewards such as social capital (through increased trust) and cultural capital (through contributing to prestige). In addition, if monitoring and enforcement become social acts rather than regulatory acts (as is the case in effective common-pool resource management – Ostrom, 2000), culturally sustainable policy is likely to be more readily adopted by farming communities.

Current methods for selecting environmental policies involve cost minimisation processes aimed at achieving environmental targets subject to various constraints. Here the assumption is of utility or profit maximisation under neoclassical rational behaviour (Gowdy, 2007), with the cost components including private and public costs (Pannell, 2008), transaction, public finance, and production costs (Goulder and Parry, 2008; Richards, 2000; Keohane, 2000). Policy-makers choose from among a range of instruments measures that enable the government to reach its goal while minimising the sum of private and public costs, public finance impacts, and transaction costs. Legal, political and institutional constraints limit the range of instruments that can be used for any given problem. Within this process ‘culture’ is considered only as one of a number of ‘political feasibility’ constraints (e.g. politics, culture, equity, distribution) – with the focus of the instruments resting squarely on economic principles and utility maximisation. In other words, within contemporary environmental policy-making the importance of social and cultural factors in individual decision-making is minimal. This is despite increasing recognition that individuals are not utility maximisers (e.g. Kahneman, 2003; Venkatachalam, 2008) and decisions concerning the environment are often not made on the basis of economic rationality (Schneider et al., 2010).

In this paper, we present a theoretical perspective on how to make agri-environmental schemes more culturally sustainable. The discussion is centred on three key sections. First, we present a basic outline of Bourdieu's broader concept of capital as a theoretical framework, specifically focusing on cultural capital. Second, we discuss how contemporary voluntary agri-environmental schemes impact on cultural capital generation. Finally, we suggest how cultural capital might be incorporated in agri-environmental schemes either through the development of measures of cultural capital for use in economic policy models or, alternatively, the restructuring of agri-environmental schemes to directly encourage the generation of cultural capital.

2. A broader concept of capital? Using Bourdieu as a theoretical framework

To develop an understanding of cultural rewards in farming, this section introduces the philosopher/sociologist Pierre Bourdieu's theory of capital as a framework. This theory has been extensively used in a number of disciplines including economics and sociology

and constitutes arguably the most complete and compelling theory of capital (Holt, 2008). Bourdieu (1986) argued that our focus on economic capital has been due largely to the unambiguous immediacy and transparency of economic exchanges, and that, consequently, this has meant that other forms of accumulated labour such as cultural and social capital have tended to be neglected. Thus he argues economic theory is too narrow as it.

“... has allowed to be foisted upon it a definition of the economy of practices which is the historical invention of capitalism; and by reducing the universe of exchanges to mercantile exchange, which is objectively and subjectively oriented toward the maximisation of profit, i.e., (economically) self-interested, it has implicitly defined the other forms of exchange as non-economic, and therefore disinterested.” (p. 46)

In an effort to redefine capital, Bourdieu proposed its existence in three fundamental forms: as economic capital (resources as material property), social capital (resources that can be mobilised via social connections and mutual obligations) and cultural capital (resources in the form of knowledge, skills, dispositions, and possession of culturally significant objects). Central to Bourdieu's theory is the notion that capital is transferrable between all three forms via ‘symbolic capital’ (status, prestige and reputation) such that “profits in one area are necessarily paid for by costs in another” (Bourdieu, 1986: 54). While we focus on enhancing cultural capital as a way to cultural sustainability, it is cultural capital's ability to generate *symbolic capital* and the ability of this symbolic capital, in turn, to establish and strengthen social relations, that explains why cultural capital is a valuable asset in farming communities.

Bourdieu (1986) argues there are three key forms of cultural capital: institutionalised forms such as educational qualifications, objectified forms, as in the possession of high status cultural goods, and embodied forms as long-lasting dispositions of the mind or body.

1. **Institutionalised cultural capital:** By providing qualifications from formal institutions, institutionalised cultural capital offers individuals a certification of cultural competence which is consistent and thus directly comparable across a range of agents. For farmers, it is provided by agricultural organisations such as the National Farmers Union (UK), reputable farming press (e.g. the Farmers Weekly “Young farmer of the year” competition) and breed societies, which are able to define the qualities of a particular breed and acknowledge farmers through formal certification and awards (e.g. Holloway, 2005; Yarwood and Evans, 2006).
2. **Objectified cultural capital:** Objectified cultural capital is capital incorporated in material objects of high status value. This could be in the form of farming equipment such as a new tractor or grain silo, but it could equally be in the form of a well-tended ‘tidy’ field (Burton et al., 2008). A key aspect of capital in this form is that its value is dependent on its use in accordance with a specific purpose as actioned through the embodied cultural capital of the agent (Bourdieu, 1986).
3. **Embodied cultural capital:** Embodied cultural capital is cultural capital in its fundamental state as it involves a labour of assimilation (self-improvement) on the part of the investor and cannot be transmitted instantaneously, as can property or money. It is present in the form of learned skills and knowledge (e.g. how and when to plough, how to manage farm dogs, how to use computers, and so on).

Cultural capital exists in two main guises – ‘highbrow’ forms (e.g. a refined ‘taste’ in art, wines, or poetry – often associated with high social class) and ‘lowbrow’ forms (skills, abilities and

experience based knowledge “acculturated in a social milieu in which they [individuals] engage continually the material rigors of everyday life” – Holt, 1997: 109). Many studies associate cultural capital solely with ‘highbrow’ academic and artistic pursuits as outlined in Bourdieu's (1984) publication *Distinction*. However, increasingly researchers argue that Bourdieu does not suggest that one form of cultural capital is more relevant than another. For example, Lareau and Weininger (2003: 569) in criticising the division of skill and other forms of competence from ‘highbrow’ aesthetic culture observe that, “We can identify nothing in Bourdieu's writing that implies a distinction between cultural capital and “ability” or “technical” skills. Instead, we argue he considers them to be irrevocably fused” (also see Sullivan, 2007).

There is some empirical evidence to support this contention. For example, Erickson (1996) observes that in a business environment, knowledge of sporting events can serve the same role as higher forms of capital – forming and reinforcing social networks and serving to maintain (in her case predominantly male) elites. Similarly, Lamont and Lareau (1988: 156) suggest that those who are not in fields where high status culture (i.e. literature and the arts) is of concern, cultural capital can consist of, for example, “owning a luxury car or a large house” (a modern tractor or well kept farmyard), being a good citizen (being a “good farmer” – e.g. Stock, 2007), having scientific expertise (knowing how to treat crop problems and set machinery) and “knowing how to send signals of one's own competence” (‘roadside farming’, see Seabrook and Higgins, 1988; Burton, 2004).

Another important feature of cultural capital is that it can be transferred between generations. For example, in a family business the incumbent generation may pass on skills and knowledge as well as any particular preferences that are socialised into the individual as ‘habitus’⁴. In addition, on taking over the business the next generation will inherit any reputation for quality (e.g. awards, peer esteem) the business possesses as well as the culturally significant objects associated with production. In a field such as agriculture where family farming remains the dominant form of business organisation throughout the world (Pritchard et al., 2007; Brookfield, 2008), there is clearly potential for family farms to accumulate high levels of cultural capital through intergenerational transfer.

As mentioned above, it is the role of cultural capital in generating symbolic capital (status and prestige) and its consequent conversion to social capital that makes cultural capital important for our argument. Holt (2008: 232) observes that “Cultural capital (institutionalised, objectified and, perhaps most importantly, embodied) facilitates the development of social capital” as

“embodied cultural capital inculcates within individuals the dispositions and manners that facilitate the types of appropriate sociability which allow the ‘alchemy of consecration’ to transform contingent relationships into relations of mutual obligation”.

The direct connection between social capital and the economic wellbeing of rural regions is one reason why it often forms the basis of studies of rural development (e.g. Lee et al., 2005; Shortall, 2008) – including environmental scheme participation

⁴ Habitus is described by Bourdieu as: “a socialised body, a structured body, a body which has incorporated the immanent structures of a world or of a particular sector of that world – a field – and which structures the perception of that world as well as action within that world.” (Bourdieu, 1998, p. 81). While cultural capital plays a critical role in shaping the habitus (Holt, 1997), in this paper we do not refer to the habitus itself – but rather focus on processes of capital generation. The farming cultural norms discussed below exist as part of the habitus within the individual.

(e.g. Mathijs, 2003; Dobbs and Pretty, 2008). Bourdieu (1986: 47) defines social capital as:

“the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectively-owned capital.”

Thus, social capital is measured as the resources (information, labour, tools, etc.) that are available to an individual via their social network. While there are other definitions of social capital, Bourdieu's conceptualisation is widely acknowledged in the literature as being “theoretically more compelling than the more popular versions proffered by James Coleman and Robert Putnam” (Swartz and Zolberg, 2004: 9 – also see Portes, 1998; Holt, 2008). Putnam, (1993), in particular, has been criticised on the basis that he suggests no mechanism for the generation of social capital other than through enhancing existing social capital through building institutions (Portes, 2000; Sobels et al., 2001; Holt, 2008).

This is where Bourdieu provides a more comprehensive explanation. When an individual possesses cultural capital applicable to a particular social field (e.g. a new tractor is of greatest relevance to those engaged in farming, and may be insignificant in other social fields) this cultural capital can be employed for the purpose of “establishing or reproducing social relationships that are directly usable in the short or long-term” (Bourdieu, 1986: 52). People who possess field appropriate cultural capital are both able to act in appropriate ways within social networks, and possess knowledge, skills, and culturally/economically important objects that make their inclusion within social networks desirable. In farming, the most desirable social relationships (in terms of their utility) are those with other ‘good farmers’ (Burton, 2004; Stock, 2007) – for example, those who are the best at managing their farms, selecting livestock for breeding, selecting the optimal seed varieties, taking care of animals, ensuring machinery is working effectively, reading and targeting markets, and so on. Thus, we argue, the cultural capital lost or gained in changing farming activity contributes to the overall capital loss of the farmer.

Some economists – particularly from the sub-discipline of cultural economics – have examined cultural capital and noted its potential importance as a driver of behaviour. For example, Throsby (1999: 9) observes “a production function incorporating cultural capital could, if it were able to be estimated, provide insights into the substitutability, if any, between different forms of capital” and thus measure the contribution of culture to economic growth. He further notes that “if there does exist a distinct phenomenon that can be called cultural capital” then it could be used in techniques that are applied in other contexts, such as cost-benefit analysis – to incorporate willingness to pay for perceived cultural value.

However, despite Throsby's (and others' – e.g. Cochrane, 2006) interest, theoretical progress in cultural economics appears to have been limited. Definitions of cultural capital appear confused. For example, Schulze (1999: 199) observes that cultural capital is simply “part of social capital” and attributes this, incorrectly, to a Bourdieusian perspective. Mazzanti (2002: 533) similarly combines the concepts to refer to “social cultural capital” although, this time, without reference to Bourdieu. In addition, the focus in cultural economics is on highbrow capital alone – i.e. it is more an economy of the arts (as noted by Blaug, 2001 and Towse, 2003) than an theory to account for cultural capital alongside economic capital. Finally, the common practice of using datasets to estimate ‘high-brow’ cultural capital is problematic and often leads to what van Deth (2003) describes as a “perverse logic” where the definition of cultural capital is determined simply by the proxies available.

3. The impact of current voluntary agri-environmental schemes on cultural capital generation

This section examines why voluntary agri-environmental schemes may conflict with the generation of cultural capital in conventional farming communities. An important distinction between our approach and that of cultural economics is that we contend, for farmers, it is ‘lowbrow’ cultural capital that is important rather than highbrow forms. Research has illustrated that in agriculture much prestige and status is generated through producing quality livestock (Madsen and Adriansen, 2004; Holloway, 2005; Yarwood and Evans, 2006), producing ‘tidy’ agricultural crops (Seabrook and Higgins, 1988; Burton, 2004; Burton et al., 2008), and following good stockmanship practices (Haggerty et al., 2009). Likewise, status symbols (objectified cultural capital), in farming communities tend to be associated with the practical activities of the farmer – for example, new agricultural machinery (Dessein and Nevens, 2007), large grain silos (Dalton, 1967; Rogers, 1983) and the size of the farm itself (Bell and Newby, 1974; Wilson, 1988).

Thus, we suggest that social networks and social capital in agriculture are not grounded predominantly in highbrow cultural pursuits, nor in ‘pre-existing’ social capital (cf. Putnam), but rather in the practical skills and abilities necessary for being recognised as a ‘good farmer’. Status as a ‘good farmer’ (potentially built up over generations – Burton, 2004) is important as farmers often know each other by reputation and this can determine whether cooperative action is likely to occur, or not (Lundqvist, 2001). The better a farmer's reputation, the more likely he/she will be able to access the social capital of others within the farming field (including obtaining preferential treatment from suppliers, machinery rings, and the like). Conversely, non-compliance with group norms can lead to farmers developing a bad reputation (Bogetoft and Olesen, 2002) – thus restricting their access to shared group resources.

This is important because conventional farmers have a peer group that is highly judgemental and critical – particularly of practices that fall outside standard production oriented farming activities (Seabrook and Higgins, 1988; Short, 1997; Morgan and Murdoch, 2000; Burton, 2004). In addition, unlike in many occupations, work on the land is open to the direct, uninvited and unavoidable scrutiny of the peer group (Nassauer and Westmacott, 1987) and thus “agricultural land becomes a display of the farmer's knowledge, values and work ethic” (Rogge et al., 2007: 160). Clearly, therefore, any activity visible on the land that is not indicative of ‘good farming’ may restrict the generation of cultural capital, damage the reputation or status of the farmer and, consequently, lower their access to social capital.

We contend that this cultural resistance to change explains, at least in part, why voluntary agri-environmental schemes have failed to become culturally embedded in farming communities across Europe. In particular, conventional farmers across the world are known to dislike untidy farming and view it as indicative of bad farming (e.g. New Zealand – Egoz et al., 2001; Jay, 2005; the United States – Nassauer, 1997; Norway – Setten, 2004; Daugstad et al., 2006; Switzerland – Schneider et al., 2010; the United Kingdom – Fish et al., 2003; Burton, 2004; Morris, 2004; Belgium – Dessein and Nevens, 2007; and the Netherlands – Schoon and Grotenhuis, 2000). Burton et al. (2008) suggest that the reason for this cultural preference is that untidy farming is seen as inefficient with production wasted because of the inability of the farmer to, for example, apply the correct pesticides and fertilisers at the correct times and at the correct level, plough straight, set machinery properly, space ‘tramlines’ evenly, keep grass in good condition, and so on.

'Straight lines' (in reality 'equidistant lines'), in particular, are important to the management of the farm because they prevent the over and under application of field treatments during the year. Similarly, ploughing to a regular depth is important for the even emergence of crops, even drill spacings limit the competition for nutrients between the plants, and even colours (non-patchy crops) mean the soil preparation and treatment have been good and the crop will yield evenly (Burton et al., 2008). Likewise, for livestock farming, tidy fence lines represent effective stock barriers and fields with a dense light-green grass coverage suggest good stock management practices (i.e. fertilised appropriately, no soil compaction caused by overgrazing, and so on). It is these signs of the embodied farming skills that enable the farmer to be socially recognised as a 'good farmer' and, consequently, allow the transformation of the symbols of cultural competence into usable social relations.

We contend that the primary reason conventional agri-environmental schemes are not becoming culturally embedded is that, whereas for conventional agriculture a tidy farm provides evidence of embodied skill, this is reversed when creating a more 'natural' environment where diversity and complexity are the objectives. We do not dispute that skill is involved in producing areas of high conservation value. However, the outcomes of skilled conservation production (as measured by a diverse and complex landscape) are antithetical to the outcomes of skilled conventional farming performances. Farmers have a long established tradition of 'road-side farming' where the regularities 'tidy farming' produces in the landscape mean that they are able to judge the skills of others from a distance (and a considerable amount of time may be spent doing exactly that). In contrast, complex landscapes with high biodiversity are likely to be inaccessible from a distance – the symbols are simply too small to be read from a distance in the same way that conventional farming activities can be read (see Burton et al., 2008, for further details).

In our opinion one of the main reasons voluntary agri-environmental schemes do not lead to conservation management skills being seen as part of 'good farming' lies in the construction of the schemes – and in particular in the scheme requirements as determined by the World Trade Organisation (WTO). To ensure that agri-environmental payments are not trade-distorting, the WTO established two key criteria (Annex 2, Section 12), namely:

- a) "Eligibility for such payments shall be determined as part of a clearly-defined government environmental or conservation programme and be dependent on the fulfilment of specific conditions under the government programme, including conditions related to production methods or inputs", and
- b) "The amount of payment shall be limited to the extra costs or loss of income involved in complying with the government programme." (WTO, 1994: Page 63).

There are three ways in which these requirements may directly impact on the production and embeddedness of cultural capital.

First, in laying out "specific conditions ... related to production methods or inputs" agri-environmental schemes effectively block the development and display of skilled cultural competencies, i.e. "there is no reward for doing anything more than the minimum necessary to qualify for the subsidies" (Deuffic and Candau, 2006: 574). Consequently, rather than allowing true voluntary action, such schemes simply "force farmers to follow the standard rule" (Kaljonen, 2006: 214). Hodge (2001) makes a similar observation with respect to prescribed approaches to agri-environmental policy stifling innovation and development in land management practices. We strongly support this contention but add that, in stifling innovation and development, prescribed approaches also stifle the development of cultural capital.

In addition to blocking the display of skilled competencies, prescriptive approaches also prevent the development of new knowledge of conservations and, consequently, the extent to which knowledge associated with conservation management is likely to become embedded within the local 'knowledge culture' (see Tsouvalis et al., 2000). As a farmer states in Burton et al. (2008) of the Hessisches Landschaftspflegeprogramm (HELP) agri-environmental scheme in Hessen, Germany:

"Well, by now many of them take part, they take part because of the money you get. So, nobody says 'What's growing on this meadow?' Nothing grows there! By now they all know about the HELP money and that one isn't allowed to fertilise. Only natural things can grow there, and nobody comments about it."

In limiting communication about agri-environmental issues between farmers prescribed approaches effectively restrict the development of tacit knowledge of environmental management, as tacit knowledge is "difficult, if not impossible to communicate other than through personal interaction in a context of shared experiences" (Morgan and Murdoch, 2000: 161). We are not suggesting that there is no tacit knowledge associated with conservation management, but rather that agri-environmental schemes may not be contributing greatly to its development.

A second issue with voluntary agri-environmental schemes relates to the common practice of stipulating the parts of the farm to be committed to agri-environmental provision. This enables farmers to disown personal responsibility for scheme areas while concentrating on production (and the accumulation of productivist symbolic capital) in the remaining areas of the farm (Wilson and Hart, 2001; Deuffic and Candau, 2006; Burton et al., 2008). Again, this is likely to limit the extent to which the behaviours become integrated within the local knowledge culture as all of the focus can remain on the skills applied to productive land.

The third issue relates to the restriction that payments must only compensate for "the extra costs or loss of income involved in complying with the government programme." As noted above, in the creation of agri-environmental policy culture is generally considered only as a 'political feasibility' constraint. However, if Bourdieu is correct, then compensating farmers for 'income involved in complying' does not compensate them for the total capital lost in participating in the scheme – in particular when such schemes are likely to involve the production of landscapes that are the opposite of farmers' 'tidy farming' preference. Failing to account for the cultural costs of engagement may make it difficult to encourage farmers to enrol unless the impact on farm management (and thus established cultural capital generation) is minimal – thus simultaneously minimising the likelihood attitudinal or cultural change will occur.

4. Discussion: creating 'culturally sustainable agri-environmental policy'?

In the above discussion we suggest that the structure of contemporary agri-environmental schemes restricts the generation of cultural capital and, consequently, limits the likelihood that the behaviours they promote will become culturally embedded within farming communities. It is important to note that developing agri-environmental schemes that promote cultural sustainability should not be confused with attempting to socially engineer specific cultural changes. Rather, we are advocating the development of approaches that facilitate, rather than inhibit, the development and embedding of cultural capital around agri-environmental activities. In order to allow 'skills' to develop around agri-environmental provision, it is essential that the responsibility for developing management solutions remain with the farmers – even though the

environmental objectives of the schemes themselves are specified by the government. Thus any cultural change should occur as a result of farmers' own actions and behavioural changes, rather than being specified as part of the scheme's parameters.

If we are to make agri-environmental policy culturally sustainable, the question now is: how can we account for cultural capital within scheme formulation? We contend there are two potential ways of addressing this issue. The first involves finding a way of measuring cultural capital to enable its integration within the economic models that are currently used to make agri-environmental policy decisions – i.e. to find a way of elevating 'culture' from a side issue, to a central issue. Through this, the loss of income that may be compensated for under WTO rules may include 'income' in the form of cultural capital as well as income in its crude economic form. The second approach would be to throw out the rulebook and completely rethink the way we approach agri-environmental schemes – to incorporate approaches that are more able to contribute to the generation of cultural capital. In this section, we discuss both options – tackling the difficult problem of estimating cultural capital for incorporation in economic models and suggesting alterations to agri-environmental schemes that may encourage the generation of cultural capital.

4.1. Measuring cultural capital for inclusion in economic models

Measuring a construct as intangible as cultural capital is problematic and may even be unacceptable for some. However, as discussed above, agri-environmental policies tend to be made on the basis of quantitative economic analysis, thus quantifying cultural capital is required if it is to be used in policy formulation. This poses some challenges as (a) "there is no standard way of measuring the concept of cultural capital" (Robson, 2009: 109), (b) most measures of cultural capital are poor (Georg, 2004) and un-nuanced (Prieur et al., 2008), and (c) almost invariably existing measures of cultural capital are of 'highbrow' forms – such as the frequency of book reading, frequency of attendance at high cultural events, frequency of listening to classical music, playing musical instruments, and so on (Throsby, 1999; DiMaggio and Mukhtar, 2004; Georg, 2004).

Given the importance of 'tidy farming' as an indicator of the 'good farmer', in an ideal world, a measure of 'tidiness' would provide one effective measure of the level of cultural capital possessed. However, finding a quantitative measure of tidiness is likely to be an exceptionally difficult task. Alternatively, as noted above, the importance of tidy farming is that it represents the efficiency with which the farmer has performed the everyday tasks of the farmer – a factor controlled directly by the skill level itself. Consequently, we propose that it may be possible to use alternative tangible measures of skill. There are a number of potential candidates for this.

First, the quality or quantity of produce the farmer has been able to glean off the land. Burton (2004) observes that, for cereal farmers, 'yield' (tons of produce per hectare) is used to compare both (a) one year's performance with the previous year's, and (b) their performance against that of the peer group. Others have shown the importance of breeding and showing as a measure of skills in husbandry (Holloway, 2005; Yarwood and Evans, 2006), meaning another candidate measure is the highest price received for breeding stock relative to other prices at an auction. It is important to note, however, that owing largely to the variable nature of agricultural prices and the hidden nature of farmers' accounts, 'income' is not generally a good measure of the social/cultural value of production (Burton, 2004; Jay, 2007; Schneider et al., 2010).

Second, we could focus on measuring cultural capital in its institutionalised form – as comparable certificates of cultural competence. Two measures may be useful here. First, certificates from recognised farmers' organisations (companies, farmers' unions, breed societies, etc) acknowledging the quality of produce or practices, e.g. ploughing awards, 'best in show' awards, young farmer awards, etc. Second, as Wacquant (2008) observes that cultural capital can be gained through 'explicit teaching', a measure of *agriculturally relevant* educational qualifications could be included (courses in sheep production, cereal production, ploughing, etc.) as well as the status of awarding institution. For all measures the scarcity value of the qualification should be taken into account as Bourdieu (1986: 49) observes that when cultural competences are scarce they have additional value that yields "profits of distinction" for its owner. To be the best in a country at a particular farming activity is likely to produce more prestige than being the best in the region.

Third, researchers may psychometrically assess the individual's subjectively perceived skill (embodied cultural capital) in particular enterprises. Admittedly, this may not concur with the opinion of others, however, as with the measurement of 'subjective' rather than 'social' norms in cognitive-behavioural models in psychology (e.g. Fishbein and Ajzen, 1975; Ajzen, 1985), it is the perceived level of skill (and others' assessment of the skill) that is likely to determine behavioural choices.

Fourth, given that embodied cultural capital is "acculturated in a social milieu in which they [individuals] engage continually the material rigors of everyday life" (Holt, 1997: 109), it could be measured simply as the amount of time engaged in a particular commodity production relative to time spent in other activities. This assumes that, in the process of production, skills are continuously accumulated and social networks based around that form of production strengthened – for example, through meeting other farmers at sheep sales, breed society events, and so on (e.g. Coughenour, 1976).

Fifth, we could measure objectified cultural capital as the possession of equipment associated with the production of a particular commodity. For cereal farmers this may be new machinery (e.g. Dessein and Nevens, 2007) or size of grain silo (e.g. Dalton, 1967; Rogers, 1983), or for dairy farmers it may be the type of milking shed or the year the shed was installed. The only difficulty with measuring capital in this form is that, as objectified capital only generates symbolic capital in accordance with the individual's level of embodied cultural capital, the measure of objectified cultural capital would need to be adjusted for cultural competency. Without accounting for embodied cultural capital (the established cultural position of the farm/farmer), the presence of new equipment may simply reflect the investment of economic capital.

Any measure of cultural capital should choose a combination of these measures – preferably using at least one measure of the embodied, institutionalised and objectified forms. Further, as cultural capital can be passed through generations, the measure should consider not only the cultural capital of the incumbent generation, but also the combined capital of previous generations. Researchers have noted that family history influences the commitment that farmers have to the farm and, in particular, to continuing the work begun by previous generations (Bryant, 1999; Villa, 1999; Johnsen, 2003). Although this is often seen as a moral issue (a sense of obligation), in cultural capital terms the accumulated reputation of the farm in a particular enterprise may also provide an incentive for maintaining a form of production. As Burton (2004) observes, because of its intergenerational workforce, the farming identity is built around the reputation of the farm – and not necessarily around individual family members.

4.2. Generating cultural capital: radical changes to agri-environmental scheme construction?

As discussed above, one of the key reasons agri-environmental schemes are unable to generate cultural capital is the nature of the WTO 'green box' requirements – the prescribed nature of the measures and limits of compensation to loss of economic capital. While we could take greater account of cultural capital by measuring it and incorporating it in economic models, this approach tackles the policy end of the problem and, at best, may provide adequate compensation for the loss of cultural capital to ensure greater participation of farmers. If we accept that scheme participation alone can lead to changes in attitudes towards the environment (Bager and Proost, 1997; Fish et al., 2003; Morris, 2004) then by encouraging more reticent participants, we may ultimately see limited cultural or at least attitudinal change as a result. However, creating culturally sustainable attitude/behavioural change requires the removal of a major block to the generation of cultural capital, specifically, to allow farmers to develop 'skills' in conservation provision and for these skills, in turn, to contribute to social status generation within the community.

To this end, we propose four key means of enhancing the cultural embeddedness of the outcomes promoted by voluntary agri-environmental schemes.

The first (and critical) recommendation is to cease paying farmers for prescribed activities on their farms and, instead, pay them for reaching set targets of conservation production, e.g. regionally or geographically appropriate indicator species or particular species mixes. Such pay-by-results schemes would have two key advantages. First, and most importantly, by ceasing to direct land management through a rulebook farmers would be able to develop unique and innovative solutions to reach scheme targets. Those who are successful in securing the maximum payout (or minimising disruption to the farm) would then have knowledge of economic value to others in the farming community, creating prestige (symbolic capital) and enhancing social capital as other farmers seek to learn the practices employed. Second, in order to produce agri-environmental goods, farmers would need to learn about the connection between their land management practices and the environmental outcomes. Consequently, a knowledge culture based around the production of agri-environmental goods could begin to emerge. At the moment, there is no real incentive for this as scheme 'success' is measured (if at all) by whether they have stuck to the regulations or not – the regulations providing the management requirement and the outcome of the management being essentially irrelevant.

This approach would have the advantage of allowing experimentation in achieving objectives, providing tangible indicators of the success of management practices, and allowing an easy comparison of results between farmers. In a sense, this could be seen as 'productivist agri-environmentalism' – creating symbols of 'production' that fit into the same kinds of productivist social symbolic exchanges referred to by Burton (2004). Ideologically, this may seem contradictory to contemporary multi-functional objectives, however, there is no getting around the issue that status is achieved by comparison and without meaningful (and simple) points of comparison between farmers (such as production numbers or payment levels achieved), it may be difficult to engage production oriented farming cultures.

While there are clear potential advantages to the pay-by-results approach, designing such schemes would not be easy. In particular, the scheme would need to operate in a manner that prevented farmers simply producing unbalanced ecosystems that favour only those species that are specifically targeted by the policy. As Hodge (2000) notes, identifying indicators and linking appropriate

payments to them is problematic, and the monitoring costs of this type of approach are high and invariably imperfect. Further, he observes that interdependencies between land uses across farm units would increase the likelihood of free-riders. However, if, as we contend, the behaviours are likely to become culturally embedded, this problem should be minimised as economic free-riders would lose cultural and social capital, eroding any overall advantage.

The second suggestion, assuming a pay-by-results based approach is employed as above, is to try to create the institutionalised cultural capital in agri-environmental provision by helping to establish formal certification qualifications, for example, a hierarchical acknowledgement system to divide those who are high achievers from low achievers, or awards to recognise exceptional performances. The success of this approach would depend on establishing a high level of credibility (trust) for the awarding organisation.

Third, we suggest that however the scheme is devised, compensation should be paid, at least in part, for the loss of cultural capital (and therefore social capital) in addition to income foregone. The loss could be estimated using some or all of the measurement approaches outlined above. Compensating farmers in this way would have the effect of encouraging farmers with high levels of agricultural cultural capital into the schemes rather than favouring those who are already in agreement with the scheme's objectives.

A fourth (although not essential) possibility would be to pay farmers for collective behaviours rather than individual actions. Bogetoft and Olesen (2002: 197) note of collective payments

"Where the total payment to a group depends on the performance of the entire group, group incentives motivate the producers to monitor one another and perhaps impose some kind of social penalty (e.g. a bad reputation in the neighbourhood)",

i.e. non-compliance will result in lower cultural and social capital. While this may be considered a divisive approach, essentially it uses social sanctions that are already operating, but would ensure that they work in favour of environmental objectives rather than against them. Thus, untidy landscape that contributes to group agri-environmental payments may be seen as good farming practice, rather than being derided as an example of bad farming (for more about collective behaviour and the generation of social capital see Pretty, 2003).

The implementation of policy based on these principles would not be unproblematic. Clearly the biggest obstacle would be to devise a means of ensuring that agri-environmental payments are not trade-distorting while, at the same time, allowing farmers the ability to innovate to meet environmental goals. In particular, the key requirement of fulfilling specific conditions relating to production methods or inputs would have to be removed from the WTO requirements for 'green box' measures. A second issue would be public acceptance of changes. In order to promote innovation in environmental management practices, we need to provide farmers with the opportunity to fail as well as to succeed – particularly in the initial stages of the scheme when the cultural capital related to environmental provision is still low. The question is whether the public would be prepared to accept a reversal of initial or existing environmental gains for a potential, but unproven, long-term improvements? Third, the same question may be asked of the acceptability in the farming community. An Australian study indicated that farmers are reluctant to apply peer pressure to promote compliance with agri-environmental programs (Marshall, 2004). This raises the question of whether environmental behaviours will ever be able

to deliver symbolic capital (peer esteem) in the same way that production behaviours currently do in conventional farming communities.

Schemes that promote cultural embeddedness must also be seen only as part of a broader response to agri-environmental provision. While family farming continues to dominate agriculture in economically developed countries, there is a gradual move towards more corporate structures in agriculture (Johnsen, 2004), and these are likely to respond to an entirely different set of drivers. For these farms, cultural embeddedness is likely to be less of an issue as they are embedded not so much within local farming cultures, but within the cultures represented by consumers and shareholders.

Finally, it is important to note that the provision of financial reward for environmental activities would still be an important part of any scheme. Getting culturally sustainable policies to a position where regulation and payments can be withdrawn (or, more probably, minimised) is likely to be a very difficult task requiring the cooperation of ecologists (to set environmental targets such as species mixes and monitor outcomes), economists (to get pricing correct and set payment levels for tiers of delivery) and social scientists (to monitor human response). Even if the mix is correct, cultural change is unlikely to be rapid. In the case of biodiversity provision, farmers need to learn what good biodiversity outcomes are and the connection between skilled management practices and outcomes (i.e. develop the knowledge cultures), to develop systems for evaluating and transferring symbolic capital that are not dependent on viewing practices from a distance, and to develop 'institutions' to provide institutionalised cultural capital.

5. Conclusion

In this paper, we have argued that in order to make environmental improvements on farms culturally sustainable, policy-makers need to start thinking beyond economic rationality and utility maximisation, and, rather, think towards how we can create policies that encourage attitudes and behaviours to become culturally embedded. In this respect, we need policies that focus not only on immediate economic incentives for performing behaviours, but that also facilitate the development of other forms of non-economic capital – specifically cultural and social capital. Economic incentives may be able to financially motivate behavioural change but the assumption should not be made that in performing the behaviour the farmer will develop the ethos, beliefs and knowledge that underlie the policy instrument. There is no guarantee that the payment will have any long-term impact on attitudes or voluntary behaviour (Adger et al., 2009).

That said, it is important to recognise here that it is generally not the intention of environmental policy to permanently change farmers attitudes or the culture of agriculture. Rather, as Burton et al. (2008) point out of regulation 2078/92/EEC, the main purpose of Europe's voluntary agri-environmental approaches was initially to reduce negative externalities on the environment and, latterly, to increasingly to promote positive externalities – while at the same time operating within the requirements of the WTO's green box specifications. The role of policy in changing attitudes is thus more an assumed (e.g. Lowe et al., 1999; Wilson and Hart, 2001; Directorate General for Agriculture, 1998) than prescribed one.

There may be only a narrow window of opportunity available for instituting cultural change through the approach we advocate. In 2007–2008 a commodity price bubble emerged, driven by increased consumer demand, high energy prices, speculative trading, and problems with the supply/demand system

(Alexandratos, 2008; Piesse and Thirtle, 2009). While researchers have queried the ecological efficiency of agri-environmental programs in Europe and Australia, there is little question that without them the environment would be in a worse state than it currently is. However, if, in the future, prices rise again to the point where the balance tips heavily in favour of agricultural commodities, there is a risk that the positive gains of two decades of environmental subsidies in Europe will be quickly reversed as farmers return land to production. Embedding environmental behaviours in the conventional farming culture may be the only non-regulatory means of limiting this scenario.

There is also a question as to whether environmental policies will be necessary at all in the future. In the 1992 GATT agreement the argument was forwarded that market-liberalisation alone would lead to environmental improvements as a result of the removal of trade distortions (GATT, 1994). However, in New Zealand – one of the 'test cases' of market-liberalisation (Haggerty et al., 2009) – evidence suggests that initial environmental benefits from the destocking of heavily subsidised sectors (primarily sheep) were later reversed as market forces simply took over from government subsidies as the driver of environmental degradation (Hall et al., 1999). Rather than creating a more environmentally sustainable farming culture, liberalisation has (as should have been expected) led to a culture with strong ideological leanings towards market freedoms: farmers in countries with neo-liberal approaches (e.g. New Zealand and Australia) now expect to be able to do what they want with limited government interference (Liepens and Bradshaw, 1999; Lockie and Higgins, 2007; Bjørkhaug and Richards, 2008).

In addressing the failure of voluntary agri-environmental schemes to change the farming culture, it is important to acknowledge that 'farmers' do not comprise a homogeneous group with standardised attitudes and behaviours. The existence of multiple "agri-cultures" with different attitudes and approaches to farming has long been acknowledged in the literature (Morris and Evans, 1999) and can be readily observed in the context of organic agriculture where researchers have noted that 'committed organic' producers hold different attitudes and values than conventional farmers (Fairweather, 1999; Darnhofer et al., 2005).

Darnhofer et al. (2005) observes that committed organic farmers in Austria are rooted in the founding philosophy of organic farming (closed nutrient cycles, rejection of synthetic fertilisers and pesticides, etc.) to the extent that organics comprises not only a way of farming, but also a social statement. What is culturally important to 'conventional farmers' thus may not be important to organic farmers. For example, Fairweather (1999) contends that, moving to organic farming requires that farmers have accepted that "untidy" farms can be healthy and economically viable. Nevertheless, it is evident from the persistence of the (global) 'tidy farming' ethos in conventional agriculture, and the widespread failure of voluntary agri-environmental schemes to change attitudes in Europe and Australia, that the bulk of farmers (axiomatically) continue to farm within a conventional framework and it towards these farmers that "culturally sustainable" agri-environmental policies need to be addressed.

We believe it is time to begin thinking about how to create schemes that do more than pay unenthusiastic participants to perform tasks that are seen as unnecessary and even morally questionable, but rather are structured in a manner that enables their embedding within farming cultures to produce long-term change. While this paper has outlined the theoretical basis for such schemes, we have not yet engaged in the necessary empirical research to support this theory nor considered more specific policy details – which, we acknowledge, is a critical next stage to the research.

Acknowledgements

This work was supported by a research grant from the Foundation for Research Science and Technology, New Zealand, and the Research Council of Norway as part of the AGRIPOL project (in association with the Centre for Rural Research).

References

- Adger, N.W., Dessai, S., Goulden, M., Hulme, M., Lorenzoni, I., Nelson, D.R., Naess, L.O., Wolf, J., Wreford, A., 2009. Are there social limits to adaptation to climate change? *Climatic Change* 93 (3–4), 335–353.
- Ajzen, I., 1985. From intentions to actions: a theory of planned behaviour. In: Kuhl, J., Beckermann, J. (Eds.), *Action Control: From Cognition to Behaviour*. Springer, New York, pp. 11–39.
- Alexandratos, N., 2008. Food price surges: possible causes, past experience, and longer term relevance. *Population and Development Review* 4 (4), 663–697.
- Aughney, T., Gormally, M., 2002. The nature conservation of lowland farm habitats on REPS and non-REPS farms in County Galway and the use of traditional farm methods for habitat management under the Rural Environment Protection Scheme (REPS). *Tearmann: Irish Journal of Agri-environmental Research* 2, 114.
- Bager, T., Proost, J., 1997. Voluntary regulation and farmers' environmental regulation behaviour in Denmark and the Netherlands. *Sociologia Ruralis* 37 (1), 79–96.
- Bell, C., Newby, H., 1974. Capitalist farmers in the British class structure. *Sociologia Ruralis* 14, 86–107.
- Bjørkhaug, H., Richards, C.A., 2008. Multifunctional agriculture in policy and practice? A comparative analysis of Norway and Australia. *Journal of Rural Studies* 24, 98–111.
- Blaug, M., 2001. Where are we now on cultural economics? *Journal of Economic Surveys* 15 (2), 123–143.
- Bogetoft, P., Olesen, H.B., 2002. Ten rules of thumb in contract design: lessons from Danish agriculture. *European Review of Agricultural Economics* 29 (2), 185–204.
- Bourdieu, P., 1984. *Distinction: A Social Critique of the Judgement of Taste*. Routledge, London.
- Bourdieu, P., 1986. The forms of capital. In: Richardsun, J.E. (Ed.), *Handbook of Theory of Research for the Sociology of Education*. Greenwood Press, pp. 46–58.
- Bourdieu, P., 1998. *Practical Reason*. Stanford University Press, Stanford.
- Brookfield, H., 2008. Family farms are still around: time to invert the old agrarian question. *Geography Compass* 2 (1), 108–126.
- Bryant, L., 1999. The detraditionalisation of occupational identities in farming in South Australia. *Sociologia Ruralis* 39 (2), 236–261.
- Burton, R.J.F., 2004. Seeing through the 'good farmer's' eyes: towards developing an understanding of the social symbolic value of 'productivist' behaviour. *Sociologia Ruralis* 44 (2), 195–216.
- Burton, R.J.F., Kuczera, C., Schwarz, G., 2008. Exploring farmers' cultural resistance to voluntary agri-environmental schemes. *Sociologia Ruralis* 48 (1), 16–37.
- Cochrane, P., 2006. Exploring cultural capital and its importance in sustainable development. *Ecological Economics* 57, 318–330.
- Coughenour, C.M., 1976. A theory of instrumental activity and farm enterprise commitment applied to woolgrowing in Australia. *Rural Sociology* 41 (1), 76–98.
- Curtis, A., De Lacy, T., 1996. Landcare in Australia: does it make a difference? *Australian Journal of Environmental Management* 46 (2), 119–137.
- Dalton, G.E., 1967. The application of discounted cash flow techniques to agricultural investment problems. *Journal of Agricultural Economics* 18, 363–374.
- Darnhofer, I., Schneeberger, W., Freyer, B., 2005. Converting or not converting to organic farming in Austria: farmer types and their rationale. *Agriculture and Human Values* 22, 39–52.
- Daugstad, K., Rønningen, K., Skar, B., 2006. Agriculture as an upholder of cultural heritage? Conceptualizations and value judgements: a Norwegian perspective in international context. *Journal of Rural Studies* 22, 67–81.
- Deci, E., Ryan, R., Koestner, R., 1999. A meta-analytic review of experiments examining the effects of extrinsic reward on intrinsic motivation. *Psychological Bulletin* 125(6), 627–668.
- Dessein, J., Nevens, F., 2007. I'm Sad To Be Glad'. An analysis of farmers' pride in Flanders. *Sociologia Ruralis* 47 (3), 273–292.
- Deuffic, P., Candau, J., 2006. Farming and landscape management: how French farmers are coping with the ecologization of their activities. *Journal of Agricultural and Environmental Ethics* 19, 563–585.
- DiMaggio, P., Mukhtar, T., 2004. Arts participation as cultural capital in the United States, 1982–2002: signs of decline? *Poetics* 32, 169–194.
- Directorate General for Agriculture (DGVI), 1998. DGVI Commission Working Document VI/7655/98: State of Application of Regulation (EEC) No. 2078/92: Evaluation of Agri-environmental Programmes. DGVI, Brussels.
- Dobbs, T.L., Pretty, J., 2008. Case study of agri-environmental payments: the United Kingdom. *Ecological Economics* 65, 765–775.
- Egoz, S., Bowring, J., Perkins, H., 2001. Tastes in tension: form, function, and meaning in New Zealand's farmed landscapes. *Landscape and Urban Planning* 57, 177–196.
- Erickson, B.H., 1996. Culture, class, and connections. *The American Journal of Sociology* 102, 217–251.
- Fairweather, J., 1999. Understanding how farmers choose between organic and conventional production: results from New Zealand and policy implications. *Agriculture and Human Values* 16, 51–63.
- Fish, R., Seymour, S., Watkins, C., 2003. Conserving English landscapes: land managers and agri-environmental policy. *Environment and Planning* 35, 19–41.
- Fishbein, M., Ajzen, I., 1975. *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Addison-Wesley, Reading MA.
- General Agreement on Tariffs and Trade Secretariat (GATT), 1994. *The Results of the Uruguay Round of Multilateral Trade Negotiations. The Legal Texts*. GATT, Geneva.
- Georg, W., 2004. Cultural capital and social inequality in the life course. *European Sociological Review* 20 (4), 333–344.
- Goulder, L.H., Parry, W.H., 2008. Instruments choice in environmental policy. *Review of Environmental Economics and Policy* 2 (2), 152–174.
- Gowdy, J.M., 2007. Towards an experimental foundation for benefit-costs analysis. *Ecological Economics* 63, 649–655.
- Haggerty, J., Campbell, H., Morris, C., 2009. Keeping the stress off the sheep? Agricultural intensification, neoliberalism, and 'good' farming in New Zealand. *Geoforum* 40 (5), 767–777.
- Hall, M.H., Morriss, S.D., Kuiper, D., 1999. Privatization of agricultural extension in New Zealand: implications for the environment and sustainable agriculture. *Journal of Sustainable Agriculture* 14 (1), 59–71.
- Herzon, I., Mikk, M., 2007. Farmers' perceptions of biodiversity and their willingness to enhance it through agri-environmental schemes: a comparative study from Estonia and Finland. *Journal for Nature Conservation* 15, 10–25.
- Higgins, V., Lockie, S., 2002. Re-discovering the social: neo-liberalism and hybrid practices of governing in rural natural resource management. *Journal of Rural Studies* 18, 419–428.
- Hodge, I., 2000. Agri-environmental relationships and the choice of policy mechanism. *The World Economy* 23 (2), 257–273.
- Hodge, I., 2001. Beyond agri-environmental policy: towards an alternative model of rural environmental governance. *Land Use Policy* 18, 99–111.
- Holloway, L., 2005. Aesthetics, genetics, and evaluating animal bodies: Locating and displacing cattle on show and in figures. *Environment and Planning D: Society and Space* 23, 883–902.
- Holt, D., 1997. Distinction in America? Recovering Bourdieu's theory of tastes from its critics. *Poetics* 25, 93–120.
- Holt, L., 2008. Embodied social capital and geographic perspectives: performing the habitus. *Progress in Human Geography* 32, 227–242.
- Jay, M., 2005. Remnants of the Waiako: Native forest survival in a production landscape. *New Zealand Geographer* 61, 14–28.
- Jay, M., 2007. The political economy of a productivist agriculture. *New Zealand Dairy Discourses. Food Policy* 32, 266–279.
- Johnsen, S., 2003. Contingency revealed: New Zealand farmers' experiences of agricultural restructuring. *Sociologia Ruralis* 43 (2), 128–153.
- Johnsen, S., 2004. The redefinition of family farming: agricultural restructuring and farm adjustment in Waihemo, New Zealand. *Journal of Rural Studies* 20, 419–432.
- Kahneman, D., 2003. Maps of bounded rationality: psychology for behavioural economics. *American Economic Review* 93, 1449–1475.
- Kaljonen, M., 2006. Co-construction of agency and environmental management. The case of agri-environmental policy implementation at Finnish farms. *Journal of Rural Studies* 22, 205–216.
- Keohane, N.O., 2000. Evaluating instruments of environmental policy: a comment on Professor Richards. *Duke Environmental Law and Policy Forum* 10.
- Kleijn, D., Berendse, F., Smit, R., Gilissen, N., 2001. Agri-environment schemes do not effectively protect biodiversity in Dutch agricultural landscapes. *Nature* 413, 723–725.
- Kleijn, D., Berendse, F., Smit, R., Gilissen, N., Smit, J., Brak, B., Groeneveld, R., 2004. Ecological effectiveness of agri-environment schemes in different agricultural landscapes in the Netherlands. *Conservation Biology* 18 (3), 775–786.
- Lamont, M., Lareau, A., 1988. Cultural capital: allusions, gaps and glissandos in recent theoretical developments. *Sociological Theory* 6 (2), 153–168.
- Lareau, A., Weininger, E.B., 2003. Cultural capital in educational research: a critical assessment. *Theory and Society* 32, 567–606.
- Latacz-Lohmann, U., Hodge, I., 2003. European agri-environmental policy for the 21st century. *The Australian Journal of Agricultural and Resource Economics* 47 (1), 123–139.
- Lee, J., Arnason, A., Nightingale, A., Shucksmith, M., 2005. Networking: social capital and identities in European rural development. *Sociologia Ruralis* 45 (4), 269–283.
- Liepens, R., Bradshaw, B., 1999. Neo-liberal agricultural discourse in New Zealand: economy, culture and politics linked. *Sociologia Ruralis* 39 (4), 563–582.
- Lockie, S., 1997. Beyond a 'Good Thing': political interests and the meaning of landcare. In: Lockie, S., Vanclay, F. (Eds.), *Critical Landcare. Key Paper Series, No 5*. Charles Sturt University, Wagga Wagga, pp. 29–43.
- Lockie, S., 2009. Agricultural biodiversity and neoliberal regimes of agri-environmental governance in Australia. *Current Sociology* 57, 407–426.
- Lockie, S., Higgins, V., 2007. Roll-out neoliberalism and hybrid practices of regulation in Australian agri-environmental governance. *Journal of Rural Studies* 23, 1–11.
- Lowe, P.D., Ward, N., Potter, C., 1999. Attitudinal and institutional indicators for sustainable agriculture. In: Brouwer, F., Crabtree, B. (Eds.), *Environmental Indicators and Agricultural Policy*. CABI, Wallingford, pp. 263–278.

- Lundqvist, L.J., 2001. Games real farmers play: knowledge, memory and the fate of collective action to prevent eutrophication of water catchments. *Local Environment* 6 (4), 407–419.
- Macdonald, D.W., Johnson, P.J., 2000. Farmers and the custody of the countryside: trends in loss and conservation of non-productive habitats 1981–1998. *Biological Conservation* 94, 221–234.
- Madsen, L., Adriansen, H., 2004. Understanding the use of rural space: the need for multi-methods. *Journal of Rural Studies* 20, 485–497.
- Marshall, G.R., 2004. From words to deeds: enforcing farmers' conservation cost-sharing commitments. *Journal of Rural Studies* 20, 157–167.
- Mathijs, E., 2003. Social capital and farmers' willingness to adopt countryside stewardship schemes. *Outlook on Agriculture* 32 (1), 13–16.
- Mazzanti, M., 2002. Cultural heritage as multi-dimensional, multi-value and multi-attribute economic good: toward a new framework for economic analysis and valuation. *Journal of Socio-Economic* 31, 529–558.
- Morgan, K., Murdoch, J., 2000. Organic vs. conventional agriculture: knowledge, power and innovation in the food chain. *Geoforum* 31, 159–173.
- Morris, C., Evans, N., 1999. Research on the geography of agricultural change: redundant or revitalised? *Area* 13 (4), 349–358.
- Morris, C., 2004. Networks of agri-environmental policy implementation: a case study of England's countryside stewardship scheme. *Land Use Policy* 21, 177–191.
- Nassauer, J.I., 1997. Cultural sustainability: aligning aesthetics and ecology. In: Nassauer, J.I. (Ed.), *Placing Nature: Culture and Landscape Ecology*. Island Press, Washington D.C., pp. 67–83.
- Nassauer, J.I., Westmacott, R., 1987. Progressiveness among farmers as a factor in heterogeneity of farmed landscapes. In: Turner, M.G. (Ed.), *Landscape Heterogeneity and Disturbance*. Springer Verlag, New York, pp. 199–210.
- Nerlich, B., Doering, M., 2005. Poetic Justice? Rural policy clashes with rural poetry in the 2001 outbreak of foot and mouth disease in the UK. *Journal of Rural Studies* 21, 165–180.
- Ostrom, E., 2000. Collective action and the evolution of social norms. *Journal of Economic Perspectives* 14 (3), 137–158.
- Pannell, D.J., 2008. Public benefits, private benefits, and policy intervention for land use change for environmental benefits. *Land Economics* 84 (2), 225–240.
- Piesse, J., Thirtle, C., 2009. Three bubbles and a panic: an explanatory view of recent food commodity price events. *Food Policy* 34, 119–129.
- Portes, A., 1998. Social capital: its origins and applications in modern sociology. *Annual Review of Sociology* 24 (1), 1–24.
- Portes, A., 2000. The two meanings of social capital. *Sociological Forum* 15 (1), 1–12.
- Priear, A., Rosenlund, L., Skjott-Larsen, J., 2008. Cultural capital today: a case study from Denmark. *Poetics* 36, 45–71.
- Pretty, J., 2003. Social capital and the collective management of resources. *Science* 302, 1912–1914.
- Pritchard, B., Burch, D., Lawrence, G., 2007. Neither 'family' nor 'corporate' farming. Australian tomato growers as farm family entrepreneurs. *Journal of Rural Studies* 23, 75–87.
- Putnam, R., 1993. The prosperous community: social capital and public life. *The American Prospect* 13, 35–42.
- Richards, R.K., 2000. Framing environmental policy instruments choice. *Duke Environmental Law and Policy Forum* X (2).
- Robson, K., 2009. Teenage time-use as investment in social capital. In: Robson, K., Sanders, C. (Eds.), *Quantifying Theory: Pierre Bourdieu (2009)*. Springer, Dordrecht, pp. 105–124.
- Rogers, E.M., 1983. *Diffusion of Innovations*, third ed. The Free Press, New York.
- Rogge, E., Nevens, F., Gutlinck, H., 2007. Perception of rural landscapes in Flanders: looking beyond aesthetics. *Landscape and Urban Planning* 82, 159–174.
- Schenk, A., Hunziker, M., Kienast, F., 2007. Factors influencing the acceptance of nature conservation measures: a qualitative study in Switzerland. *Journal of Environmental Management* 83, 66–79.
- Schmitzberger, I., Wrba, T., Steurer, B., Aschenbrenner, G., Peterseil, J., Zechmeister, H.G., 2005. How farming styles influence biodiversity maintenance in Austrian agricultural landscapes. *Agriculture, Ecosystems and Environment* 108, 274–290.
- Schneider, F., Ledermann, T., Fry, P., Rist, S., 2010. Soil conservation in Swiss agriculture – Approaching abstract and symbolic meanings in farmers' life-worlds. *Land Use Policy* 27, 332–339.
- Schoon, B., te Grotenhuis, R., 2000. Values of farmers, sustainability and agricultural policy. *Journal of Agricultural and Environmental Ethics* 12, 17–27.
- Schulze, G., 1999. International trade in art? *Journal of Cultural Economics* 23, 109–136.
- Seabrook, M.F., Higgins, C.B., 1988. The role of the farmer's self concept in determining farmer behaviour. *Agricultural Administration and Extension* 30, 99–108.
- Setten, G., 2004. The habitus, the rule and the moral landscape. *Cultural Geographies* 11, 389–415.
- Short, D., 1997. Traditional-style farming and values for sustainable development. *Tijdschrift voor Economische en Sociale Geografie* 88 (1), 41–52.
- Shortall, S., 2008. Are rural development programmes socially inclusive? Social inclusion, civic engagement, participation, and social capital: exploring the differences. *Journal of Rural Studies* 24, 450–457.
- Sobels, J., Curtis, A., Lockie, S., 2001. The role of Landcare group networks in rural Australia: exploring the contribution of social capital. *Journal of Rural Studies* 17, 265–276.
- Stock, P., 2007. 'Good Farmers' as reflexive producers: an examination of family organic farmers in the US Midwest. *Sociologia Ruralis* 47 (2), 83–102.
- Sullivan, A., 2007. Cultural capital, cultural knowledge and ability. *Sociological Research Online* 12 (6).
- Swartz, D., Zolberg, V., 2004. Introduction: drawing inspiration from Bourdieu. In: Schwatz, D., Zolberg, V. (Eds.), *After Bourdieu: Influence, Critique, Elaboration*. Kluwer Academic Publishers, Netherlands, pp. 1–13.
- Throsby, D., 1999. Cultural capital. *Journal of Cultural Economics* 23, 3–12.
- Towse, R., 2003. Farewell editorial. *Journal of Cultural Economics* 27, 3–7.
- Tsouvalis, J., Seymour, S., Watkins, C., 2000. Exploring knowledge-cultures: precision farming, yield mapping, and the expert: farmer interface. *Environment and Planning A* 32, 909–924.
- Valentine, I., Hurley, E., Reid, A., Allen, W., 2007. Principles and processes for effecting change in environmental management in New Zealand. *Journal of Environmental Management* 82, 311–318.
- van Deth, J., 2003. Measuring social capital: orthodoxies and continuing controversies. *International Journal of Social Research Methodology* 6 (1), 79–92.
- Venkatachalam, L., 2008. Behavioral economics for environmental policy. *Ecological Economics* 67 (4), 640–645.
- Villa, M., 1999. Born to be farmers? Changing expectations in Norwegian farmers' life courses. *Sociologia Ruralis* 39 (3), 328–342.
- Wacquant, L., 2008. Pierre Bourdieu. In: Stones, Rob (Ed.), *Key Contemporary Thinkers*, New Edition. Macmillan, London and New York, pp. 261–277.
- Whittingham, M., 2007. Will agri-environment schemes deliver substantial biodiversity gain, and if not why not? *Journal of Applied Ecology* 44, 1–5.
- Wilson, T., 1988. Culture and class among the 'large' farmers of eastern Ireland. *American Ethnologist* 15, 678–693.
- Wilson, G., 2004. The Australian Landcare movement: towards 'post-productivist' rural governance? *Journal of Rural Studies* 20, 461–484.
- Wilson, G.A., Hart, K., 2001. Farmer participation in agri-environmental schemes: towards conservation-oriented thinking? *Sociologia Ruralis* 41 (2), 254–274.
- WTO, 1994. Agreement on agriculture. http://www.wto.org/english/docs_e/legal_e/14-ag.pdf accessed 05.05.10.
- Yarwood, R., Evans, N., 2006. A Lleyen sweep for local sheep? Breed societies and the geographies of Welsh livestock. *Environment and Planning A* 38, 1307–1326.