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Social Dimensions of Sustainable Agriculture: a Rationale for Social Research in ARGOS

By (alphabetically)

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Preface

In the decades after WWII, New Zealand embarked on a period of intensification of farm inputs which resulted in greatly increased productivity and large amounts of land brought into more intensive production. Resisting the trends evident elsewhere in the developed world – particularly where subsidies or cheap labour made industrial systems more viable – New Zealand became a curious hybrid of intensive input farming, in an unsubsidised production environment, with the social structure of family farming. This 'long boom' lasted from WWII to around 1973. Various crisis in the 1970s and 1980s triggered a series of changes to this pattern, with the establishment of neo-liberal agricultural policies and simultaneous emerging crises in the economic, social and environmental structure of agriculture.

Consequently, in the last 20 years, New Zealand has entered a period of rapid change, social and economic instability and important new experiments in how we conduct agriculture.

If we leave aside the 80% of New Zealand agriculture that has (unsustainably) intensified production in the face of these crises (according to the PCE), New Zealand has become very interesting as the site of a peculiar experiment in achieving sustainable agriculture. Eschewing government regulation, and in the relative absence of any pressure from strong environmental and consumer social movements at home, New Zealand has gone down the market pathway to sustainable agriculture. We have become the global test case for the consequences of pursuing 'sustainability via audit'. Market-driven audit systems, transplanted from far-flung countries, have become a dominant transformative force in achieving new 'sustainable' systems of production in some industries like kiwifruit, wine and pipfruit. Industries operating under these new systems have experienced significant transformation, and continue to undergo important changes.

Coming on the heels of the agricultural crisis of the 1980s, this new experiment is operating across multiple domains of action: social, economic and biophysical. It is taking place at a time of rapid social change in agriculture. It is also taking place when many of the prevailing ideas and practices that held within agriculture since WWII have been destabilised or destroyed.

The causes and consequences of this new experimental pathway in agricultural sustainability cannot be understood as solely social, economic, or environmental. All three are closely linked dynamics within the same process of landscape/farmscape transformation. The social research in ARGOS provides us with the opportunity to both understand the specific social dynamics at play, but also the way in which people, institutions and social processes are central to this period of transformation in New Zealand agriculture. ARGOS is important not only for the details of impacts and consequences to changes in farm management systems. It is even more important for the potential to integrate and assemble a larger case around the potentials and pitfalls of taking the audit/market pathway to agricultural sustainability.

Introduction

As the rationale for the social research objective within ARGOS, this document provides a preliminary discussion of the theoretical and methodological approach being taken by the social researchers in the project. As such, it articulates the 'social corner' of the research and details the approaches and issues that we consider central to a social scientific analysis of agricultural sustainability. We expect the research activities addressed in the rationale to facilitate the acquisition of data relevant to the social objective while allowing ample flexibility to include the interests and concerns of the remaining ARGOS objectives. We are unable to anticipate precisely the expectations of the other Objectives on social research and, therefore, the specific areas and methods of transdisciplinary activity will take shape subsequent to our presentation of the basic case for social research in this document.

The document is divided into five parts:

1) An overview of the existing – and rather limited – social research into sustainability in agriculture, also incorporating a review of prior research results and identification of key themes in the social scientific analysis of sustainable agriculture.

2) A description of the specific broad structuring of our approach in ARGOS as conditioned by the *Greening Food* research programme,

3) Analysis of the specific approaches required to study farm households within Agri-Food systems.

4) Presentation of key themes that arise from past research, *Greening Food*, or the last 12 months of discussion.

5) Presentation of methodological approaches to engaging with these research themes.

Appendices:

1) A tortured introduction to the broad approaches characteristic of social science research. How do we try to derive explanation within social research?

2) What is the Agri-Food approach to analysis. What theoretical antecedents has it turned up and what the are various forms of middle-level theoretical framework that operate within it?

3) If we take the Agri-Food approach, what competing paradigms might rain on our parade?

4) What is unique about the New Zealand pathway to achieving sustainable agriculture? This appendix is the text of the Namkoong Lecture which Hugh Campbell delivered at the University of British Columbia in September 2004. It outlines the basis of why NZ has become such an important site for examining *audit* as a particular to sustainability.

5) A more detailed discussion of Ragin's comparitive case method; as introduced in Appendix 1.

Chapter 1: A Review of Prior Social Science Studies of Sustainable Agriculture

1.1 Orienting Research: Sustainable Agriculture and Agricultural Sustainability

The following review generally follows the engagement of the fields of rural sociology and rural geography with issues around agriculture and sustainability. The main early body of work into the social dimensions of sustainable agriculture was funded through the Land Grant universities of the USA, and therefore operated under the disciplinary rubric of rural sociology. Other disciplines that contribute to this area are rural geography and rural anthropology.

A key distinction for this review resides between prescriptive/normative and investigative/analytical research on sustainable agriculture. There is a vast body of literature (which touches on issues of 'the social') that is strongly within the '*prescriptive/normative*' mode. It is usually strongly critical of conventional agriculture, and what analysis is undertaken is usually lists the failings of conventional agriculture. When alternative agriculture emerges in the narrative it is usually couched in terms of an 'ideal' alternative rather than a real body of agricultural practice. Therefore, in terms of testing or evaluating how sustainable management systems operate *in practice*, this literature is of limited value. Mostly the arguments operate along the lines of self-evident benefits accruing from hypothetical production systems.[1]

This predominant orientation of all this 'social' research (abstract hypothesising without testing) on sustainable agriculture is regrettable, and requires a new approach for social researchers approaching the study of sustainable agriculture *in practice*. Put simply, we need to know how systems claiming 'sustainable' qualities operate in real social and economic contexts. What happens when one of these idealised alternative systems is actually attempted in real farming situations? In this document we draw a distinction between 'sustainable agriculture' and 'agricultural sustainability' to try

[1] The need to move beyond prescriptive approaches to evaluating sustainable agriculture was a key rationale for the initial establishment of ARGOS.

and clarify when the *normative* and when the *analytic* modes are operating. *Sustainable agriculture* as a term is used to refer to any system of agriculture as currently practiced, or which has been deployed, which makes claims about sustainability. *Agricultural sustainability* as a term is used to refer to the normative debates on what constitutes sustainability in agriculture.

In the following reviews, work from within the social science traditions in rural sociology and geography is reviewed. For a more detailed discussion of what is the 'social science tradition', its modes of data-gathering, analysis and explanation, see Appendix 1.

There is some early work within the rural sociological tradition taking the analytical approach. The initial period of sociological research into sustainable agriculture is reviewed by Goreham et al. (1992) who provide a comprehensive review of sustainable agriculture and observe five foci for this initial research: definitions of sustainable agriculture, classification of farmers, factors leading to adoption of sustainable practices, impacts of sustainable agriculture, and articulating different levels of analysis.

This latter point was most strongly influenced in the early 1990s by the work of Patricia Allen (1995,1991, etc). In short, sustainable agriculture might be fine in theory, but to make any impact, it actually had to work in the real world of socio-economic activity. She also argued (and put together an influential book collection) that agricultural sustainability should be conceived of as incorporating social and economic processes that were much wider than the farm itself. Sustainable agriculture needed to be rescued from a sole focus on the natural science of production – focused on the decisions of individual farmers, or, at best, farm households - and instead be analytically embedded within wider social and economic systems. This approach was influential in the rationale behind the *Greening Food* research programmes as originally conceived in 1994.

Since the Gorham (1992) review and the influential work of Allen, rural sociologists and geographers have attempted to a much wider range of scales and levels to

analysis. The following review of subsequent social research relating to sustainable agriculture over the last ten years is organised around:

- Studies of Farmer Ideas/Attitudes/Values
- Studies of conversion to sustainable production
- The Sustainable Agriculture Movement and its Critiques
- Other Sociological Influences
- Sustainability and Gender,
- Indigenous/Local Knowledge and Scientific Knowledge

1.2 Studies of Farmer Ideas/Attitudes/Values

A key area of continuity between research pre-1992 and more recent studies relates to farmer attitudes/ideas/values about sustainability and the environment Much of this research has focused on the detection of farmer characteristics that provide an indication of an individual's proclivity toward conservation or organic management. As such, contributions to this literature are often linked to projects seeking to influence farmer behaviour, especially in regard to environmentally more 'benign' practices. The approaches include more general surveys as well as (more recent) qualitative analyses of smaller groups of farmers. The literature includes surveys: 1) of farmers in general, 2) of those who are the targets of conservation programs, and 3) of groups of organic and conventional farmers with the intent of comparing their responses. A common theme in the results of such studies is to acknowledge the partial explanation afforded given the complexity of farmers' attitudes/ideas/values and of their propensity to pursue stated ideals. These conclusions are reinforced by research relying more exclusively on qualitative methodologies with the objective of exploring the social construction of farmers' understandings of and approaches to conservation and the environment.

An early approach to assessing farmers' attitudes/values/ideas and their relation to more sustainable production strategies argued that attitudes acted as the primary influence on behaviour. The application of 'mental paradigms' was a significant element of this perspective. One approach that has been particularly influential is Beus and Dunlap's (1991; 1994) "Alternative/Conventional Agricultural Paradigm" (ACAP). Beus and Dunlap (1991) propose that viewpoints on agricultural

management be treated as paradigms forming a continuum from alternative to conventional. To that end, they developed a scale (involving 24 bipolar statements) for measuring basic beliefs and values that constitute alternative and conventional as competing perspectives on agriculture. Although influential, the efficacy of the ACAP scale has been challenged because farming practices often occupy a wider range of paradigms. Limitation of research design to two opposing farming paradigms restricts the ability of the approach to capture the diversity of farm management practice in real world conditions (Raedeke and Rikoon 1997).

A further, and substantial, body of literature is available which employs survey methods as a means to examine farmers' attitudes and values (in addition to socio-demographic characteristics) as possible indicators of environmental behaviour. These survey based analyses can be differentiated on the basis of designations of behaviour either as self-reported (Blunden and Cocklin 1995; Vogel 1996), as participation in a given conservation scheme (Battershill and Gilg 1997; Kristensen et al. 2004; Ondersteijn et al. 2003; Wilson 1996), or as adoption of organic production technologies (Fairweather and Campbell 2003; McCann et al. 1997; Schoon and te Grotenhuis 2000). In these studies, farmers are queried utilizing some combination of binary (yes/no, participant/non-participant), Likert-scale (strength of agreement with perspective on 5- or 7-pont scales), and structured (i.e., same question to each participant), open-ended questions. The studies share the use of statistical tests in order to establish significant correlations between attitudes/ideas/values and specific behaviour as a common means of data analysis. While the majority of studies identify significant relationships (although no variable is able to 'explain' more than 20% of variation in data), the factors which exhibit significant relationships with behaviour vary considerably from study to study. These varying factors include, for example: conditions of land eligible for conservation (Wilson 1996); environmental attitudes of farmers (Battershill and Gilg 1997); practical knowledge and past experience (Vogel 1996); age of farmer and duration of ownership (Kristensen et al. 2004); personal values and economic considerations (Schoon and te Grotenhuis 2000). Indicative of the diversity in the explanation of farmer behaviour as measured in these studies is summarized in Kristensen et al.'s (2004: 243) concluding statement: "This suggests that information campaigns, incentives schemes and other initiatives implemented … in order to encourage the improvement and enhancement of the values of the

landscape may be targeted [at] all kind[s] of farm and farmer types." Fairweather and Campbell (2003) further conclude that their analysis identifies significant attitudinal differences among New Zealand farmers but is limited in assessing actual behavioural patterns resulting from these attitudes.

A variety of strategies have been initiated in an effort to more precisely locate relationships between measurable farmer characteristics and their behaviour. One approach, elaborated by Austin et al. (1998a; 1998b), is the development of more complex modelling strategies in combination with more exact survey instruments. Their analysis of extensive survey data (252 Scottish farmers) suggests, however, that non-linear and expert model building approaches fail to increase explanatory power when matched to survey data. This leads to the argument that 'noise' in the data be removed by means of more precise survey instruments.[2]

Burton (2004), on the other hand, directs his criticism at traditional behaviourist approaches which focus too exclusively on attitude without attention to actual effects on behaviour. He similarly recommends the use of more precise survey instruments to establish the influence of social context on behaviour. Although they employ a simplistic operationalisation of social context (participation in organized activities of environmental organizations), Ollie et al. (2001) conclude that social context is a significant factor in explaining farmer behaviour. Attempts to incorporate social context into modelling approaches based in economics include the estimation of transaction costs (to account for constraints associated with regulatory procedures and interactions with government officials, Falconer 2000) and use of the concept of social capital (as a measurement of existing knowledge and that accessible through a farmers' social networks, Mathijs 2003). In environmental education literature, such social context is located in the integral role of access to information and education in forming farmers' attitudes (Petrzelka and Korshing 1996).

A more common approach in rural sociology and rural geography, however, has been to explore alternative qualitative methods as a means of analysing the relationship

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[2] In this manner they tend to ignore the potential for inherent variability among farmers to contribute to such 'noise' in survey data.

between farmers' attitudes/values/ideas and behaviour. For example, Fairweather (1999) identifies the potential utility of decision tree analysis for defining pivotal considerations and choices in the adoption of organic production methods and distinguishing types of farmers according to their attitudes. O'Connor (2000) and Spash (2000) turn to 'orders of justification' as a means of categorizing farmers' valuations of diverse landuses as expressed in open-ended discussions incorporated within a survey format. Oreszczyn and Lane (2000) use a variety of interview methods (semi-structured interviews, self-recorded interviews, etc.) with diverse stakeholders in order to examine the 'meaning of hedgerows' in England. Notably, their approach avoids grouping stakeholders by meaning 'types' in an effort to provide explanations of action. Instead, the authors argue for a more inclusive approach to landscape management that accounts for the diverse array of perspectives. Employing actor network analysis and in-depth discussion groups as a means to identify perceptions of the role of farmers in the design and application of conservation schemes, Burgess et al. (2000) provide a similar conclusion. They suggest that farmers and conservationists develop distinct representations of farmers' ability and desire to implement conservation measures.

As a whole, the literature on farmer' attitudes/ideas/values establishes the complexity of the relationship between attitudes and behaviour. Studies relying exclusively on survey data to determine those characteristics of farmers that contribute to environmentally benign actions provide often contradictory conclusions as results from different places (i.e., social contexts) are analysed. Most significantly, perhaps, is the failure to assign more than weak explanatory capacity to attitudes or socio-demographic factors. Alternative – often more qualitative – means of assessing attitudes and behaviour generally stress the diverse social (including cultural, ethical, political and economic at multiple scales of interaction) context which influences both the attitudes and capacity to act of the multiple stakeholders in environmental behaviour. Thus, assessment of farmers' attitudes/ideas/values provides a partial insight to explanation of behaviour which is subject to further explanation through the analysis of behaviour itself as well as of the social interactions that either promote or discourage the adoption of environmentally sustainable practice.

1.3 Studies of Conversion to Sustainable Production

The substantive results of the review of conversion studies in Fairweather and Campbell (2001) show definite differences for many variables when organic and conventional farms are compared. Two main topics can be seen: the biological or environmental (including the soil, biological and animal aspects) and the economic and social (including the yields, economic and social aspects). For the environmental and biological research the results are by no means univocal and in some case there is wide variability among both conventional and organic farms. The presence of this variability suggests that management could potentially be improved and this would affect future comparisons of performance. It also indicates that there is potential for future research to improve the effectiveness of organic techniques. The economic and social research shows greater consistency in its findings. The economic analyses generally show that while yields decline profits increase under organic production, and the social research finds significant differences between organic and conventional producers.

The research reviewed has been diverse in terms of location, methods, and rigour. There has been a large quantity of research in Europe and North America and some in Australia. A wide variety of methods has been used ranging from studies of a single farm or some farms in conversion, to other studies using either small or large samples. Differing levels of rigour are used so that most of the research uses comparisons of organic to conventional farming and the most rigorous uses paired comparisons. It appears that research costs limit sample size so that the use of detailed and expensive techniques means that the required resources are expended on a small number of farms.

In the conclusion to the report, we took the variability in the results of all the studies reviewed to indicate that the development of organic production in New Zealand must not be premised entirely on conclusions drawn from studies conducted overseas. Therefore it is important to undertake this style of research in New Zealand conditions across a range of sectors. Fairweather and Campbell (2001) also concluded that single-factor studies of organic farms are of limited value. From these conclusions Fairweather and Campbell (2001) argued for BACI design.

1.4 The Political Economy of Sustainable Agriculture and its Critiques

One clearly identifiable new trend in social research into sustainable agriculture has been the emergence of numerous country studies of organic agriculture. This has focused on the development of organic agriculture in specific country contexts. Thise has emerged since 1997 when two benchmark articles in *Sociologia Ruralis* detailed the situation of organic agriculture in Ireland (Tovey 1997) and in California (Buck et al. 1997).

Since then, there have been a range of 'country studies' of organics. These include: Mexico (Nigh, 1997); the UK (Clunies Ross, 2000; Reed 2001; Padel and Foster 1999); Denmark (Kaltoft 1999; Kristensen, 1999; Michelson, 2001; Lynggaard, 2001); Cuba (Rosset, 1998); California (Guthman, 1998); Australia (Monk, 1999; Lyons 1999) and New Zealand (Campbell various).

One of the key themes in the 'country studies' of organic agriculture is the apparent divergence between the long term organic social movement and the emerging industry based around organically defined commodities. This has been described in the literature as the 'bifurcation thesis'. The constellation of key institutions and actors that emerge in these studies are: the organic social movement, organic consumers, organic farmers, industries and policy. Julie Guthman's (1998, 2004) work provides a good example of this style of work; arguing that organic agriculture, when actually practiced in commercial contexts, tends towards the patterns and norms of conventional agriculture. This argument has been dubbed the 'conventionalisation thesis' (and argued against in Michelson et al (2001), including Campbell and Liepins (2001)).

In comparison to organic 'country studies', similar sociological analyses of the development of Integrated systems is almost non-existent. The key English-language study of the sociology of Integrated Farming is Morris and Winter (1999).

A related issue can be found in the work of Lockie in Australia where an analysis of the Landcare movement among farmers showed a higher uptake of Landcare practices by those farm households with involvement in environmental groups.

1.5 Other Sociological Influences

Aside from the influence of the organic Social Movement (and, by implication, other local environmental organizations), some sociological research has been done on other 'sociological' factors as an influence on agricultural sustainability.

The influence of **gender** is considerable and will be discussed further below.

Some research has described the influence of **religious participation** on adoption of sustainable agriculture. A geographer at Waikato (John Paterson) has studied the influence of religious participation in Dutch and Canadian Christian farmer's organisations, along with religious agricultural groups like the Old Order Amish and communal Hutterites, on the uptake of organic agriculture (Paterson 2001a, 2001b). No research in New Zealand has ever established religion as an important influence on uptake of organics, although no one has ever specifically looked into the relevance of religion in this context.

Other issues of sociological interest are the degree to which sustainable agriculture aligns with wider **discursive** or **ideological** movements in agriculture. Examples include:

- ideas of landscape, (see Egoz 2000, 2001)
- political notions of productivism,
- the ideology of agrarianism.
- arcadianism

A similar issue is the influence of **political allegiance** on sustainable agriculture. No research in NZ has ever looked for this connection and it does not appear to be an issue in international literature.

Recent work by Carolan (2002) has examined the impact of **leasehold tenancy** of farmland on the environmental ethics of farmers in the US mid-West. His research certainly showed a lesser tendency for leasees to consider long term land management to be important. But the high level of leasing in the mid-West makes his study difficult to transfer to NZ conditions.

1.6 Sustainability and Gender

Second wave feminist scholarship impacted in three ways on the scholarship in this area:

1) *Farmers* became *Farm Households*. Much of the initial sociological work on farms had actually been the study of 'Farmers' (white, male farm operators). The feminist critique in rural sociology (e.g. Sachs 1983, 1996) and rural geography (e.g. Little 1987, 2002: Whatmore 1991), however, created a more complex vision of the farm as a household where decision-making about farms emerges from complex processes involving multiple farm household members. In an idealised sense, it was suggested that farm decision-making might be more sound in households where men didn't hold the exclusive right to make farm operational decisions.

2) Eco-Feminism then met rural sociology with the hypothetic proposition that women might have a different environmental/stewardship orientation to men in farm households (see Liepins 1995, 1998). There is some evidence from *Greening Food* decision-making research that hinted at farm women having a more developed environmental ethic than men.

3) Masculinity studies. The recent foray of masculinity studies into rural sociology (see Campbell and Bell 2000) has resulted in one provocative article by Peter et al. (2000) on the way in which different constructions of masculinity impact on the potential acceptability of sustainable agriculture.

1.7 Indigenous/Local Knowledge and Scientific Knowledge

One of the first genuinely sociological debates about sustainable agriculture was triggered by Jack Kloppenburg and involved a number of exchanges in the journal *Rural Sociology* between 1991-1993.

The 'Kloppenburg Debate' contested the importance of local/indigenous versus scientific knowledges in creating agricultural sustainability. Kloppenburg asserted that scientific knowledges had rendered US agricultural completely unsustainable, while his various critics argued for the centrality of scientific knowledges in creating sustainable production systems.

The most recent variant of this debate is Neva Hassanein versus Mike Bell. Hassanein produced a book on the primacy of local knowledge in creating sustainable farming practice, while Bell (while on sabbatical at the Uni of Otago) countered with an ethnography of sustainable agriculture that showed farmers (and farm groups like the *Practical Farmers of Iowa*) dynamically welding multiple knowledge sources (including scientific) together to create practical on-farm solutions (Bell 2004).

One attempt to apply the Kloppenburg debate directly to organic farming in New Zealand was Liepins and Campbell (1997). That study indicated that it is fruitful to engage with 'knowledge networks' around growers. Accordingly, where growers find information and how they value it and re-work it provides an important dimension to how they understand and deploy sustainable agriculture.

Chapter 2: Insights from the *Greening Food* Programme

2.1: The *Greening Food* Programme

The Greening Food research programme was organised around a particular approach and body of theorising termed the 'agri-food approach' or 'agri-food theory'. The reasons for using this approach, its characteristics and particular style of analysis, are important, but lengthy. Thus, for those readers wishing to know why an agri–food approach was taken to both the *Greening Food* programme, and also ARGOS, Appendix 2 provides the whole story.

One important advantage for ARGOS is that it is encountering agri-food systems that have already been studied for nine years. It is, therefore, not an entirely abstract task to try and predict the key relations, structures or processes that construct (or restrict) sustainable agriculture in NZ. Briefly reviewing the *Greening Food* programme can provide some key insights into the elements and configuration of agri-food systems around organic and IPM in New Zealand. These, then, establish the key foci of the ARGOS research in the social dynamics of sustainable agriculture in NZ (see Appendix 4 for a much more detailed discussion of the legacy of past work in *Greening Food*).

Greening Food was established to ask the following questions:

- how has sustainable agriculture taken hold in commercial agriculture in New Zealand?
- what are the socio-economic dynamics that have worked for and against the uptake of sustainable systems like organic and IPM in NZ?
- what broad aspects of socio-economic change in NZ (and in global trade) have influenced sustainable agriculture?

As a project grounded within the Agri-Food approach the broad orientation of *Greening Food* was to address these questions in the following kinds of ways:

- What is the appropriate scale of analysis for understanding the development of organic agriculture in New Zealand?
- Who are the participants and parties to the action (what some people call the stakeholders)?
- What are the key sites of action around organics and IPM?
- Identifying the key organising ideas or discourses operating.
- Identifying the 'circulation of ideas' through farms, industry and other networks.
- How is power configured in systems?
- What are the pressure points for change?

The *Greening Food* programme used two broad analytical frameworks to construct an agri-food analysis of the emerging of organic and IPM systems in food production.

First, it used a *regional* focus by conducting case studies of Canterbury (Heinz Watties), Bay of Plenty (Zespri), and Nelson/Golden Bay. These studies showed a range of regional dynamics operating around small scale organic agriculture, and some influence of regional dynamics on the uptake of export organic production (See Campbell 1996; Campbell, Fairweather, & Steven 1997).

The dominance of Heinz Watties and Zespri in their respective areas indicated that there were also *agri-food systems* dynamics operating in single industry sectors. This was confirmed in studies of the pipfruit industry (McKenna & Campbell 1999), honey industry (Bourn,Newton & Campbell (1999) and wine industry (Fairweather, Campbell & Manhire 1999).

Over and above the regional and sectoral dynamics influencing these case studies, the overall *Greening Food* programme indicated a range of important national and global level influences (particularly on the sectoral dynamics of exporters). The first of these was the analysis of 'green protectionism' (Campbell and Coombes 1999) and the study of bifurcation between small scale and export organics (Coombes and Campbell 1998a, 1998b). Later the bifurcation thesis was extended to the split between commercial and social movement goals of organics (Campbell and Liepins 2001).

A second project has been to situate the development of sustainable agriculture in the context of neo-liberal deregulation of the NZ economy and polity. Of particular interest for ARGOS is the retreat of the state from intervention in environmental issues in primary production and the relative importance of audit, standards and certification systems in organic and Integrated production in comparison to other first world countries (with a secondary comparison with Third World producers operating under audit).

2.2: Identifying Key Elements of the Sustainable Agriculture Agri-Food System in New Zealand.

The fields of rural sociology and rural geography are vast. To construct an analytical framework for ARGOS that sought to account for every possible social dynamic of

significance to the wider field would be folly. So, we have decided to concentrate on a limited (albeit still numerous) set of key issues that were identified in the *Greening Food* programme as significant for NZ.

The following diagram represents a first attempt to take the insights of the *Greening Food* Programme and identify the key elements and relationships within the organic and IPM export systems.

Key sites of action include:

Global Markets: trade trends for consumption of organic and IPM produce, retailer strategies, green protectionism and wider market access issues.

Audit cultures: creating the key shared standards and meanings for 'sustainable' production. Including organic standards, EUREP-GAP, also FAO and EU indicators, and other potential sets of indicators that might be identified as important by this project.

New Zealand Government and Agencies: notable mainly for their relative absence as a key site of action. Some legislation influencing regional environmental performance; RMA 1991, and recent biosecurity legislation. It is also a key shaper of science inputs into agriculture.

Vertical Industry Dynamics: strongly influencing New Zealand export sectors. Including Producer Board dynamics, export companies, scale, commoditisation, contract relationships, science relationships, input and supply industries, participant in audit. Key realms of political influence inside the vertical chain.

Horizontal Sectoral Dynamics: pushing sideways from the grower/industry chain dynamics is the related area of sectoral dynamics and politics. Involving grower organisations, political groups, wider network dynamics among growers in the same sector. Also includes the sectoral dynamics of organic organisations.

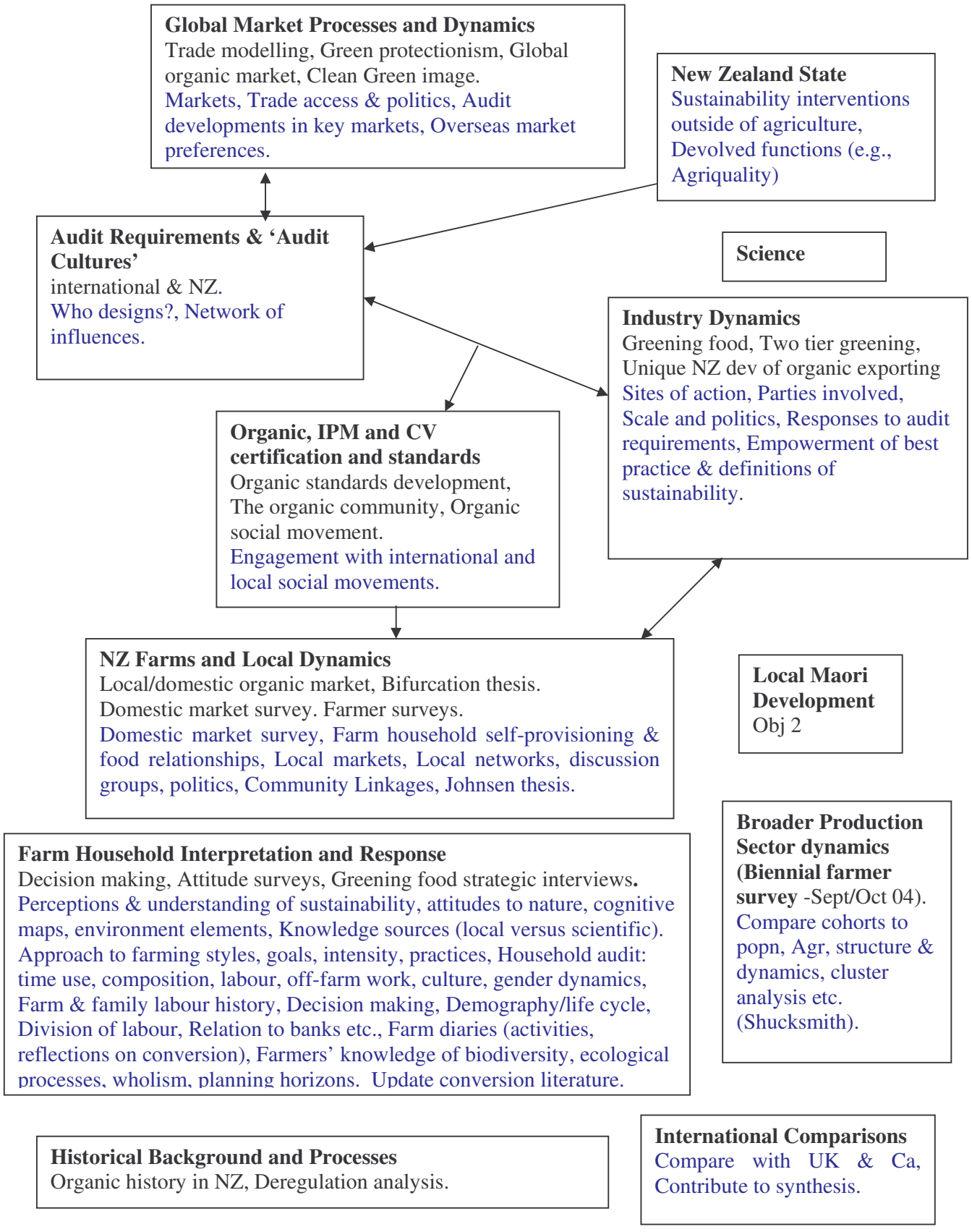
Social Movement and Broad Societal Dynamics: most clearly exemplified by the new networks of action that formed around organic agriculture in the 1940s, 50s, and then again in the 1970s and 80s. Also shown by the anti-GM movement, broader environmental movement influence in society. Wider social dynamics like the 'flight to nature' effect. These influences operate at the level of farmer participation, consumer behaviour, support for local markets/produce, community conflicts over land-use.

Horizontal Locality Effects: situating analysis within wider communities and networks of action in spatial proximity to farms. Local rural communities, labour market relations, knowledge networks, politics. The Johnsen thesis outlines a human geography model for identifying farm/community linkages in NZ.

Farm Households: research within the *Greening Food* programme undertook an analysis of farmer decision making about conversion to Organic or IPM systems. A group of publications by Fairweather (and reported in …) outlined a cluster of processes that underwrote or constrained decisions to convert to organic or IPM systems… (John F to complete)… Since 2000, *Greening Food* also undertook a survey of primary producers which included extensive material on sustainability, organics and agro-ecological concepts. Publications by Fairweather et al… (ditto). ARGOS provides the opportunity to build on this work on farmer attitudes and create a more sophisticated analysis of farm households as relationally connected to all the preceding levels of analysis.

Having established, through the findings of *Greening Food*, how the broad structuring of social research according to a wider agri-food analysis should take place, the rest of this document concentrates mainly on how the farm-level research will contribute to this wider analysis.

Network of Relationships Influencing the Operation of Sustainable Agriculture in NZ



Chapter 3: From *Greening Food* to ARGOS: Key Themes for Analysis

3.1 Key Questions:

In the *Greening Food* programme, an agri-food approach was taken to understanding the transformation of agriculture in relation to three key questions:

- how has sustainable agriculture taken hold in commercial agriculture in New Zealand?
- what are the socio-economic dynamics that have worked for and against the uptake of sustainable systems like organic and IPM in NZ?
- what broad aspects of socio-economic change in NZ (and in global trade) have influenced sustainable agriculture?

ARGOS retains these key questions, but seeks to answer a range of more detailed questions:

- in relation to the 'null hypothesis', are there socially significant characteristics distinguishing organic, IPM , or conventional producers (or other combinations)?
- what are the consequences of conversion to any system in terms of the social understandings, practices and structural relations within and around farms?
- What is the relationship between 'sustainability via audit' and the social characteristics of farm practice?
- can socially coherent and achievable pathways to sustainability take shape in any/many of the different approaches to sustainable production evident in the ARGOS cohorts?
- how does the social practice of agriculture influence key issues for other parts of the ARGOS programme?

3.2: Farm Households within Agri-Food Systems.

The development of the ARGOS programme provides the opportunity to answer these questions, as well as significantly refining the methods and analysis that were deployed in the *Greening Food* Project.

In *Greening Food* a structural account of changing relationships within agri-food systems was generated at a regional and at a commodity system level. This account provided the basis for an analysis of sectoral change within farming agri-food systems over the period from 1990.

ARGOS builds on this work, and the overall design of the social objective in ARGOS is strongly conditioned by the structural agri-food account created by *Greening Food*. However, ARGOS gives us the opportunity to move into much deeper engagement with key aspects of the agri-food system – particularly the farm household. Specifically:

- analysis of dynamics within households,
- individual-level household-level change narratives over time,
- much closer engagement with actual farm practice,
- investigation of the way in which the subjective ideas and practices (discourses) of farming change over time,
- generating a sense of the *habitus* of farming; what creates both the unreflectively *normal*, and the boundaries of the 'thinkable' for farming participants,
- analysis of the key structural constraints that influence the 'capacity to act' of farm participants.

The overall goal of the farm household research in the social objective is to examine the practice of sustainable agriculture as a social concept. This examination approaches agricultural production from several perspectives. From the realm of ideas/values/attitudes:

- the conceptualization and self-definition of "sustainability" within participating farm households[3],

[3] Whereas definitions of sustainability are considered to be highly contested in general, the concept of "social sustainability" is further fraught with challenges of multiple actors (and self-identities) pursuing diverse

• assessments of and propositions regarding the relative sustainability of the social environments inhabited by these households,

• investigation of the pursuit of environmentally sustainable management practices – including the uptake of ARGOS findings and recommendations – on participating farms, and

• influences of broader scale social actors and sites of action (including organizations) on the preceding aspects of sustainability.

The following presentation of proposed themes and methods for the social analysis has been influenced by three things: the general orienting effect of existing literature and research in the field (as summarised in Part 1); the specific research findings of the Greening Food programme (as summarised in Part 2); and the last 12 months of discussion within the ARGOS project team. This guiding framework does not, however, provide the last word on the questions that might be asked, what we might expect to find and how it should be interpreted. ARGOS provides us with the opportunity to pursue both focused and iterative research activities within farm households. We aim to broadly structure our enquiry in alignment with already identified themes, but also to allow iterative analysis to occur: adapting our focus and methods as we gain additional knowledge of and insight to the social environment of agricultural production as experienced on the ARGOS farms. This iterative process must occur both in a research dialogue with the grassroots of on-farm experience, but also through trans-disciplinary dialogue with other disciplines in ARGOS.

The design of our research will be articulated around three explanatory foci; relations, systems/networks and sites of action.

1) Relational Research: The foundation of the social analysis lies in examining the *relationships* in which farm households participate as they pursue day-to-day practices and participate in broader scale activities. Our basic premise is that members of farm households engage in more or less sustainable practices by means of

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production objectives (none of which are necessarily sustainable in the long-term) that potentially entail significant alterations in the conditions of either the social (broadly conceived to include cultural, economic, and political as well as social elements) or physical environment, or both.

the *relations* in which they participate. The term "relations" is used in order to acknowledge the contribution of both (or all) parties or entities involved in the interactions that facilitate social activity. Thus, we can examine relations within farm households and those with other social agents – e.g., other farmers, pack houses, audit producing organizations, etc. – as well as those with non-human elements of the farmscape.

2) Systems/Networks: From this relational approach, wider insights in Agri-Food analysis then come into play. Aggregating clusters of relationships into theoretically meaningful forms is a key part of analysis. Clusters – or ensembles – that can be identified through the research process become important elements in a wider systems understanding of farming (Agri-Food theory tends to use the word networks, but we can substitute 'systems' to assist transdisciplinary dialogue)…

3) Sites of Action: The identification of significant relations and emergent systems is not, however, being methodologically pursued in terms of generative effects at the micro-level. Agri-Food approaches have constantly identified that farmers and farm households live within groups of significant constraining relationships that condition (and are conditioned by) local activity. The research dialogue becomes a process of moving between locally-generated effects and wider sites of action in the agri-food system.

The proposed research agenda attempts to address the diverse relations involved in agricultural production by focusing on three social "scales" – that of the farm household, of the rural community, and of the Agri-Food system.[4] The identification of these scales does not establish them as isolated systems of interaction, rather it is a means of facilitating more detailed analysis of what appear (at this point) to be significant sites of action in agricultural production. The intent is to develop a detailed understanding of each of these dimensions (or sites), while remaining cognizant of the impact of relationships *between* agents (people, things, processes etc.) operating within these different dimensions and their evolution over time. It is possible that

[4] Relating to the earlier: farm household, vertical trajectory, horizontal trajectory approach within Agri-Food analysis.

particular 'ensembles' of ideas/practices will be identified as specific to particular styles of farming (e.g., conventional, Integrated Management, or organic). Likewise, particular configurations of farming relations with other agri-food sites of action might be significant constraining influences on the capacity to act of farm participants. Analysis and findings located within one of the social scales will be continuously related to and informed by knowledge of relations at the remaining two scales.

3.3: Studying the Farm Household

The following research design outlines how research at the level of farm households will integrate with the other scales of community and agri-food system.

Within the Farm: Examination of farm household relations necessarily involves several facets. These facets range from interpersonal relations among household members, to those with non-human elements of the farm, to the decision-making processes of management and resource allocation. The first group of relations requires attention to gender, kinship, age, and succession among other variables (see below for discussion of these factors). Relations with non-human elements include both the specific relationships with the animals and plants that live on the farm (e.g., does the farmer relate to these as beings or as objects; as food or as commodity; as controlled or uncontrollable factors? – see below) as well as the more general conceptions of the environment (e.g., ideas of nature and culture; local knowledge and a sense of place; the farmer's role as manager and steward as compared to exploiter of resources – see below). As a whole, these sets of relations (as well as external influences discussed subsequently) are perceived as significant factors in the construction of land, capital, and labour allocation decisions as well as the selection of farm management practices. Finally, we will also assess social constraints on management and production practices. These will be pursued specifically through the identification of perceptions of the "impossible" in regard to adoption of sustainable practices as well as the accepted definitions of the "good farmer" (see below) with the intent of delineating pathways for navigating the "impossible."

Farm – Community/locality: The intermediate social scale is that of the rural

community/locality. The boundaries of the community are difficult to delimit, but are here defined as those relations which involve human actors outside of the farm household (i.e., not those included at the farm household scale) but not determined by the production of a specific agricultural commodity (i.e., not those included at the scale of the food production system). Further, these relations tend to operate within a specified locality.

In addition, it is at this scale that we maintain the fuzziest expectations as to the specific types of relations that will prove of interest to the ARGOS project. Because the characteristics of rural communities determined to contribute to sustainability (social, economic, or environmental) are often specific to a given locality (reflecting the characteristics of local culture, politics, religion, social life, etc.), Part 1 of this document provided a palette of potentially significant relations as opposed to universally pertinent ones. For the purposes of the ARGOS project, the social research objective will begin with two foci to the examination of the rural community:

- First we will examine the farm household as an active element of the rural community. In this instance we will assess to what extent and in what manner the ARGOS households contribute to their communities – taxes, retail consumption, etc. – and to what extent does the household participate in *networks of association* in the local community and how committed are household members to such participation.
- In order to gain insight to the process through which farmers learn to pursue successful agricultural (commodity?) production, we will further examine the *knowledge networks* (see below) of farmers and farm households – a focus relevant to issues of uptake of ARGOS management recommendations and research findings.

Farm – Agri-Food System: The broadest social scale addressed in the proposed social research agenda is that referred to as the Agri-Food system. An analysis at this scale allows for an examination of relations pertinent to the production of agricultural products and commodities that lie beyond the everyday activities of the farm household. More specifically, at this scale social research can focus on relations involving the industries which purchase and market agricultural inputs and produce, those involving the professional, scientific, and/or academic communities, and those involving demands on management and end product standards originating with consumers and governments (i.e., audits, etc.). This scale is often (although not

exclusively as, for example, in the case of direct marketing of agricultural commodities) one at which relations are mediated by representatives and agents of the actors involved. The greater physical (as well as potential cultural and economic) distance between agents will likely involve social dynamics (e.g., relations of power and levels of participation) that are significantly different from those experienced at the previous two social scales.

3.4 Systems Approaches, Qualitative and Quantitative Methods.

This new research agenda is vastly more ambitious and complex than anything attempted in the *Greening Food* programme. In order to account for the diversity of relations that comprise the social environment of agricultural production, the proposed research strategy for the social objective relies on an approach emphasizing integrated theories and methodologies (discussed in the following sections). In other words, we envision the utilization of a range of theoretical approaches that have demonstrated prior success in the analysis, explanation, and promotion of social (and ecological) sustainability (a position which Midgley (2000) argues is fundamental to systems analysis in that it recognizes the boundaries placed on the systems defined by individual theory, but is not beholden to them). Given the uncertainty surrounding which of these approaches are most likely to prove significant to the ARGOS project, we currently refer to all of them as research themes (below). The diversity of theoretical approaches also propels the use of a broad range of methods, including both quantitative and qualitative analyses.

Quantitative analysis is expected to provide data appropriate to the overall longitudinal perspective of the ARGOS project and will address issues that facilitate comparison across cohorts and/or clusters. Because of the need for repetition and rapid collection of such data, methods for the quantitative research will include structured surveys and relatively more-structured interview techniques such as focus groups, card sorting and vignettes (see below). Issues and concepts that are the focus of quantitative analysis will be addressed annually, except for cases in which change over a longer timeframe (e.g., three years, five years, etc.) is considered sufficient for the purposes of the ARGOS project.

Because social research is very cognizant of the importance of deviations from the generalizations identified by means of quantitative analysis, we also propose to engage in an ambitious program of qualitative research. Qualitative methods – including semi-structured interviews, participant observation, etc. [5]– offer a well-tested approach to examining the breadth of response and the potential to identify alternative (more socially appropriate) means of realizing sustainability. Because of the contact intensive nature of qualitative data collection, we foresee the need to disperse the research temporally (focusing on annual themes) and concentrate it socially (by identifying case studies of selected farms within the wider cohorts that are relevant to environmental and economic – as well as social – research questions). A further advantage of the case study approach is the ability to reduce number of farmers who are subject to the microscope (and associated demands on time and participation) of qualitative analysis.

3.5: Transdisciplinary Dialogue

The task of identifying pertinent themes for the social research will involve an iterative process that allows for definition of sustainability from the perspectives of the multiple shareholders in the ARGOS project (farmers, researchers, communities, industries, buyers, etc.). In addition to the pursuit of the more exclusively social research goals outlined above, we have a specific goal to maintain linkages with the other research objectives. These linkages allow the research findings and directions of the respective objectives to inform, and be informed by, their counterparts. In other words, we expect to contribute information regarding the social relations (of farm households, their communities, and the production systems in which they operate) that potentially influence conceptions of sustainability developed within the environmental, economic, and Maori objectives as well as the design of uptake strategies for ARGOS findings. Of equal importance to the potential input from the social objective, is the necessity of gaining similarly influential information from the other ARGOS objectives. At least three benefits can be expected from such

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5 It is, of course, possible to elicit quantifiable data from such methods. The goal of qualitative analysis is to examine the range and richness of specific social actors as opposed to the general response of a group)

influence: 1) greater understanding among social objective researchers regarding the economic, ecological, and cultural processes as well as the impact of these on management decisions and practices; 2) insight to significant economic, ecological, and cultural elements that may be unknown to or ignored by members of farm households and other social actors; 3) design of research questions and methods that provide information considered of interest to the remaining objectives. For example, it is our intent to ask for a guided tour of each farm. The potential value of this exercise could be heightened by input from members of the environmental team that would increase our awareness of sites (e.g., wetlands) of particular interest to them and to the issue of environmental sustainability. In a similar manner, the members of the economic team could identify "anomalies" of investment (land, labour, or capital) on individual farms, or members of the Maori team could increase our awareness of potentially contrasting perspectives on farm management that are based on different cultural traditions. It is our expectation that continued exchange among research objectives within ARGOS at this level will facilitate the production of collaborative findings and reports as the project progresses.

Chapter 4: Research Themes for the Analysis of Farm Households in ARGOS

The following section provides short introductions to the various (potential) themes through which we expect to gain a greater understanding of the key questions outlined in Section 3.1. As noted above, we are unable to determine precisely which of these themes will prove most significant to the purposes of the ARGOS project. Rather, each theme is one that has been successfully employed to develop insight to particular aspects of agricultural production, often in particular localities. As such, the following is not a laundry list of tasks to be completed and topics to be addressed. The intent of the discussion is to provide an outline of the potential breadth of the social objective as well as indicating those relations which will be considered as focal points for the social research.

4.1 Identity/subjectivity:

That individuals and groups construct ideas about who they think they are and that these ideas drive both their actions and their interpretations of the actions of others are constitutive elements of the concept of identity. These elements inform social relations as actors seek to reinforce and maintain their ideas of self and frequently resist or re-interpret anything(?) that threatens to change their identity. Work and–in the case of the ARGOS project–more specifically farming is a principal site for the construction of identity. Because work takes place in a particular context or environment which is often beyond an individual's ability to control, reactions to the structural impediments encountered while at work reflect additional feelings about identity. Hence in the ARGOS project the study of identity among farmers, growers, their families, and associated labourers (e.g., farm workers, contractors, etc.) is crucial to our understanding of what drives ARGOS farmers to act in the ways that they do. In particular, a focus on identity informs our understanding of farm management decisions with associated economic, environmental and social impacts. The intent of the focus is to identify actions that give meaning to the lives of those who work on the farms as well as their attempts to maintain or rework this meaning when confronted by the changing context in which they make their living and live their lives. We expect that the way participants see themselves and approach the work they do will

influence their treatment of and interaction with the environment. Hence, the life histories and views of the day-to-day working lives of ARGOS farmers as expressed in their recollections of becoming an orchardist or farmer, or of positive and negative work day experiences will provide rich data to aid our understanding of the rewards and feedback from the practice of sustainability. Many of the relationships discussed below contribute to and help to define identity. In addition, we expect to locate characteristics of identity in valuations of personal success and failure in day-to-day activities, responses to challenges, shocks and change, visions of ideal management, and perceptions (self-definitions) of sustainability.

4.2 Gender/Kin/Household Composition:

Gender and family dynamics are a fundamental element of analysis at the scale of the farm household and of identity. From this entry point, relations of interest can be as basic as identifying who is perceived as belonging to the household and who is expected to do what (forms of?) work on the farm. Our interest extends, however, to the rationalization of divisions in responsibility for management of the farm and the household, including differentiation based on gender and/or age. In regard to this latter focus, it is important to determine who in the household makes significant decisions vis-à-vis the farm recognizing that there may be specific areas (which differ by cohort?) in which different household members take on the decision-making role. (Jo Little's work on gender and farming?) As several authors have identified a stronger role for women on organic as compared to conventional farms (see Hilde Bjorkhaug's (2004) paper 'Is there a 'female principle' of farming – and is organic farming a way of expressing it?), it is also important to consider the extent to which gender is a determinant in shaping an individual's approach to and understanding of sustainable farming. One of the principal features of household relations involves conditions of ownership and ideas of succession. There is some evidence that ownership and succession shape the way that farmers approach farm management. For example, are ideas of sustainability more important to those farmers who intend for their children to inherit the farm? (Mark Shucksworth's work on Scottish farms)

4.3 Work/Labour/Resistance

Examination of the activity of work or the contribution of labour as an element of agricultural production and the sustainability of the farm household, involves at least

two perspectives. The first of these perspectives focuses on the concrete nature of farm labour – i.e., the allocation of labour and responsibility for specific tasks. A considerable body of literature is available that has been carried out within a rural sociology framework (e.g., Fairweather et al., Campbell). We are also interested in approaching this aspect of farm production from the perspective of the sociology of work. Traditionally aspects which have been taken account of in the sociology of work are orientation to work (e.g., Goldthorpe et al., 1968, 1969) and different systems of work control or regulation and workers responses or resistance to them (e.g., Edwards, 1979; Rose, 1978). While such systems of work control are often less obvious in the case of farmers, structural constraints to management practices do exist. These constraints may be locally – self imposed or imposed by the seasonal nature the crop cycle – or externally – imposed by the audit requirements of different markets – determined. Constraints will also derive from ethical and moral issues, rules and practices associated with farmers' relationships with non-human elements (including plants, animals, and technology) of the farm. The role of government policy and the part it plays in the normative control of farmer's work is also worthy of study. (Literature in the area of 'political economy' may play a part here.) Issues of work and labour also include farmers' responses to the demands of overseas markets in the form of audits. Understanding the farmers' attempts to negotiate such forms of control is of critical importance in the ARGOS project for which sustainable practice is the end goal.

4.4 Farm practice and the concept of the "good farmer"

Conceptions and rationalizations of "best management" practices are commonly identified in farmer's representations of what being a "good farmer" entails. Thus, it is of particular interest to elicit participants' perceptions of a good farmer. Discussion of good farmers in the context of a semi-structured interview facilitates self-definition of desirable traits and attributes of farmers and of farming practices. The resulting definition of a good farmer provides a means of recognizing the goals and objectives of management for individuals as well as identifying shared conceptions of acceptable practices and, potentially, the social relations that underlie such conceptions. By comparing the activities of a "good farmer" with those in which the participant engages, it is further possible to locate impediments (both in the social and physical environments) to preferred management practices. Such impediments may prove

either beneficial (to the extent that they impede more destructive practices) or detrimental (to the extent that mitigating practices become untenable) to the sustainability of the farm. Here, we also expect to determine to what degree 'good' or 'bad' farming is configured by the 'market' or audit practices/expectations (e.g. Mhairi Jay's research on NZ dairy farms). Finally, it is also possible to discuss the case of the "bad farmer" in order to elaborate additional perspectives on management practices which are perceived to limit the viability or sustainability agricultural production or potentially exert negative externalities on neighboring farms.

4.5 Landscape/farmscape and the farmers' sense of place

Because the agricultural producer (as land manager) is dependent on the resource being exploited, it is common to assume that farmers and pastoralists have a personal interest in maintaining and conserving the productive potential of their land. In pursuing the continued productivity of the farm, land managers develop intimate relationships with and understandings of the landscape of the farm (i.e., the farmscape). The idea of a farmscape, thus, involves the development of a relationship between the landscape, its productive potential, and its exploitation and management. The extent to which the land manager embraces such a relationship with the land can be described as "sense of place." Sense of place refers to an individual's sense of belonging to and in a particular location, which becomes a place as it's physical elements are imbued with meaning, knowledge, and understanding (generally drawn from the cultural or social realm). Because of its association with knowledge of the social and environmental relationships operating in a place, a land manager with a heightened sense of place is arguably better situated to recognize and appreciate the necessary conditions for the sustainable use of that place. The identification and representation of the sense of place of ARGOS participants is, therefore, an important element of the social objective.

4.6 Culture-Nature Binary/Farmers relationships to environment/to animals

In recent times there has been an effort to transcend the organising theoretical framework that constructs nature and culture as a dualistic binary (Franklin 2002). In understanding the attitudes of farmers toward the environment and 'nature', it is important to consider the 'embodied' experiences of farming. These experiences are located in the means through which individuals construct a relationship with the land

and with the animals and plants that exist around them. Conceiving culture as integral to nature – both as an element of nature and as constitutive of nature as encountered by farmers – informs concepts of identity and sense of place. In other words, these 'natural' relationships potentially contribute to the sense of identity of those active on ARGOS farms. One aspect of this identity is the role that farmers assume in the construction of the farmscape. (For example, do they understand themselves as 'belonging' and being intrinsically linked to the land; or maybe they consider themselves to be 'caretakers' of the land and the animals; or perhaps they see themselves as 'managers' with a job of maximising profits). The concept of relations to/with nature can also be extended to farmers attitudes in distinguishing between the wild and domesticated plants and animals on their farm. One attitude that would potentially influence sustainability on the farm is the perception that some species are more deserving of attention and management efforts than others. It would be informative to determine if such decisions were based on pragmatic reasons (i.e. making more money from improving livestock), or if other rewards were gained from putting effort into environment/species development (e.g. developing wetlands can have both practical and less tangible 'aesthetic' benefits).

4.7 Farmers and Food

Farmers' perceptions of the products produced on the farms are a specific aspect of their relations with nature that is potentially of interest to the ARGOS project. This focus relates to our desire to identify any kind of overall pattern connecting farm management (including both practice and philosophy) to wider relationships and lifestyle choices. In pursuit of this information, we will examine the extent of relationships between household decisions regarding the characteristics of food consumed by farm households and the management practices adopted on the farms. The intent of such an examination is to determine if, for example, products perceived exclusively as commodities to be sold, elicit different treatment from those which are potentially consumed on the farm; or, in a similar vein, if organic households also emphasize the importance of consuming organic food.

4.8 Farmers' knowledge and acquisition of skills:

The knowledge that farmers employ in order to pursue productive activities (farm management) is largely founded in their previous experiences with production. As

such, this knowledge is influenced by current and past characteristics of the social and physical environments that they inhabit. Because of the localized nature of the farmers' production experience (involving the peculiarities of local ecological, social, economic, and political relations), this knowledge is often referred to as "local knowledge." In order to avoid the danger of reifying such knowledge (e.g., posing local knowledge in opposition to scientific knowledge and/or assuming privileged access to truth or reality) and to acknowledge the continual influence of extra-local factors on farmers' knowledge, it may be more appropriate to refer to their knowledge as "existing knowledge." Whereas sense of place implies the development of locally relevant and derived knowledge, the social networks in which farmers operate are also expected to influence understandings of agricultural production and sustainability. It will, thus, be important to identify sources of knowledge acquisition (including cohort or geographically based networks, formal education systems, extension services, industry communications, media reporting, and political representations among others) that contribute to the construction of sense of place, conceptions of "good farmers," understandings of sustainability, and perceptions of economic viability.

4.9 Farm/community linkages

As noted in the discussion of farmer knowledge, agricultural production cannot be divorced from the social relations in which the farm household is embedded. Farmers and their households are social entities with relations to actors and organizations in the local and broader communities. In addition to their production and management activities, farm households contribute to the local economy, participate in the education, health, and political systems, may be members of religious organizations or participate in the activities of social movements (e.g., the organics movement), pursue volunteer or service oriented occupations, or engage in other resource use activities (e.g., hunting or fishing), in addition to other social relationships. The households' perceptions of their competency or involvement in each of these arenas, while not directly impacting management practices, potentially influence the sustainability of the existing agricultural production strategies. Furthermore, these social relations may contribute to the farmers' ethical perspectives, their expectations of social equity, or their sense of responsibility for the condition of non-human elements of the farmscape.

4.10 Farm Connections with Wider Agri-Food Structures

An important part of this approach is to understand the relative 'capacity to act' of farm participants. Prior decision tree research showed that all decision-makers on farms faced important structural constraints to undertaking new production systems even if they wanted to do so. Agri-Food analysis points to a series of key structuring relationships:

- Industry pathways to market: with significant differences between the single-desk sellers like Zespri and more competitive procurement chains. Likewise, points of access to international markets.

- structuring features of farm/industry relations: including industry politics, contract relations, input supply and provision of advice.

- positioning of agricultural science in relation to particular farm products and the resourcing and impacts of R&D provisioning on farm practice.

- Regulatory frameworks for production: at regional and national level.

- Audit Systems: A very major theme of the research is that production methods and management practices are increasingly subject to regulation by buyers and retailers in food commodity networks. In order to project a particular image to consumers (and, to some extent, in response to consumer demand), buyers and retailers of food commodities are constructing guidelines for acceptable production methods. These guidelines may be either input driven (e.g., stipulation of allowable levels of specific inputs or types of inputs), outcome driven (i.e., requiring assessment of post-production impact on environment), or both. As such, a given audit system establishes the ultimate criteria for acceptable (and, potentially, good—see discussion on "good farmer" above) agricultural management and production relative to a specific commodity or commodity sector. Because (in the New Zealand case, in particular) the audit criteria are established by actors located outside local social relations, their construction and implementation influence the nature and equity of evolving relationships within food production networks. In other words, the use of

audit systems implies new conditions of power, participation, responsibility, etc. in agricultural production. Farmers can be expected to respond to the production and management criteria of audit systems in diverse manners extending along a continuum of complete acceptance of and conformance to the standards as "best management" practices to contestation of and rebellion against the audit system by means of perfunctory adoption or "cheating." The situation of externally enforced constraints on management – especially where these conflict with established relationships – potentially alters the ethical positions of participants in regard to human and non-human elements of the farmscape. Thus, the social sustainability of agricultural production under more or less strictly enforced audit systems is seen to be dependent on the ability of the farmers and the farm community to negotiate the requirements of the audit.

4.11 But will Henrik talk to us?

As we reach the conclusion of this discussion, perhaps we should hang our heads in shame for so firmly sticking to the traditional social research agenda of analysing the world as it is, rather than proposing how it ought to be… Thus far, this document has retained an emphasis on the social dynamics of *sustainable agriculture*: the body of practices and processes by which some agricultural systems are deployed and which make claims towards sustainability. But what of Henrik's burning question… what about *agricultural sustainability*???

How can social research assist in asking questions and interrogating issues of sustainability as seen from the social point of view. Here are some initial questions and observations towards such a discussion of the *ought* issues in agricultural sustainability (and some basic, and contested, oughts from the liberal humanist view of the social good).

• Should we try to increase the autonomy of farmers as decision makers in their production systems?

• Should we aim to improve the social capital of farms (and wider networks)?

• Should we try to increase social inclusion?

• Should we encourage higher formal education for members of farm households?

• Should we make farmers more skilled, or more compliant with externally determined best practice?

• Should we try to achieve a relative equality of income distribution among members of an industry?

• Is gender equity in farm households linked to positive development of sustainable agriculture?

• Does the pursuit of sustainable agriculture influence wider goals of valuing and restoring ethnic identity, pride and visions of landscape?

• Does the practice of sustainable agriculture lead to less domestic conflict, more cooperation, and more harmonious relations with other community and industry members? (and are harmony and cooperation uncontestedly desirable goals)

• Are their issues of basic human rights for farm family members, and farm workers to be tackled?

• Should we try to prolong farm survival? Do organic farms go broke more often than others?

• Is it more desirable to have smaller, more labour-intensive farms, as against corporate farming and farm amalgamation?

• Is successful inheritance of family farms an indicator of positive social outcomes?

• Is preserving rural population desirable?

• Is ‘true sustainability’ more characteristic of people who adopt the wider organic

philosophy and address sustainability issues across broad areas of the social and economic life?

• Should we try to encourage a more ‘craft’ orientation to farm production and reduce instrumental approaches to farm production? Does this have beneficial outcomes?

• Is the individual pathway, via philosophical conviction, the most desirable pathway to achieving sustainability?

• Should we eschew the commercial pathway as hopelessly corrupted by underlying capitalist principles?

• Is audit a good or bad mechanism for achieving sustainable agriculture?

• Should we promote local food identity and local food systems over distant markets and global products?

Chapter 5: Methods, Research Agenda and Timeline

The methods proposed for the analysis of social sustainability fall into three main categories: interviews, participatory observation, and formal surveys. This mix of methodologies provides the means to capture both highly situated data as well as data that allow for generalization across spatial and temporal frames. The diversity of methods is also necessary in order to address the range of themes identified in the preceding section. The overall intent of the approach is to provide both depth and substance to representations of farmers, of farm households, and of their relations with the social and physical environments that they are actively negotiating. By emphasizing the role of relations, the methods are expected to facilitate coordination and exchange of findings with the remaining objectives in the ARGOS project. (The following presentation of methods should not be understood as a rank ordering according to importance or period of implementation. By contrast, the suite of methods is expected to offer multiple points of entry and facets of perception, thereby providing a more complete examination of the complexity that is farm management.)

5.1 Interviews[6]

Interviews are among the most commonly employed methods in social research. As such, they are considered an appropriate and direct means of eliciting information from participants in the research project. Interviews facilitate the gathering of data that reflects the personal knowledge and experience of the participants in the study. It is understood that the participants offer privileged access to in depth knowledge of the research subject. Because such data reflects the personal perspectives of each of the participants, however, interpretation of the data and application of the results must acknowledge the potential subjectivity of the collected information.

Due to the temporal constraints placed on interaction with study participants by the research design (i.e., large number of participants, spatial dispersion of study sites, etc.), the selected interview methods are all at least partially structured in order to focus response on key topics and relations. More specifically, included methods can

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[6]The discussion of social research methods follows the presentation of methodology in Denzin and Lincoln (1998) and Ragin (1994).

be categorized as either semi-structured or structured interview methods based on the relative latitude of response that they encourage. Two semi-structured interview techniques, namely retrospective accounts of farm management strategies and farm management diaries, are included in the research design. The intent of these methods is to establish a loose framework for the data acquisition while maintaining an open-ended format that encourages self-definition and self-representation. In other words, participants will be asked to address specific themes in their farming experiences, but will also be encouraged to define which aspects of their narratives should be emphasized.

The initial activity for the social objective involves the construction of accounts of the development of farm management strategies for each of the farms included in the study. The expected outcome of these interviews is to establish the processes and relationships incorporated within the evolution of the current structure (social, economic, ecological, etc.) of the farms. Given that personal representations of events generally include omissions and faults of emphasis, the resulting accounts are not interpreted as undeniable truths. (The veracity of the interviews is subject to analysis by means of comparing an individual's narrative with related narratives — that is, within sectors, cohorts, or clusters—and with existing general accounts.) In contrast, they provide insight to those factors that participants perceive as having influenced their management trajectories.

The study participants will also be asked to maintain farm management diaries. In an effort to facilitate collaboration with ARGOS' economic objective, these diaries will include a focus on recording the level of management inputs and production outputs as realized on a daily basis on the farms (i.e., similar to time-budget analysis). The design of this element of the diaries will be subject to interaction with the economic objective researchers. In order to gain insight to the social networks of farm households, the diary design will include sections in which participants are asked to detail and discuss social interactions. The result of the latter diary activity is expected to establish the identity, number, consistency, and relative importance of social relations. This information offers insight for a more incisive follow up interview during which the identified relations can be further assessed.

Once the general processes in the evolution of farm management (and associated impacts on sustainability) have been determined by means of the semi-structured interviews, more focused (and, thus, more highly structured) methods of social data acquisition will be employed. Where the semi-structured methods identify the breadth of (and will continue throughout the full length of the project to provide insight to) the personal experience of ARGOS participants in constructing sustainable production systems, the structured methods facilitate comparison of response either among cohorts (using vignettes or focus groups) or across time (using sorting methods).

Vignettes are a method of qualitative research utilized in order to assess participants' judgments in a less personal and threatening manner. The method requires the researcher to develop hypothetical narratives (vignettes) of scenarios in which portray particular behaviours or attitudes. For example, in the case of the ARGOS project, a vignette might describe a particular management response to a social (quality standard) or ecological (pest outbreak) stimulus. Each participant is then asked to evaluate the response represented in the vignette. Because the same set of vignettes is presented to the all of the project participants, it is possible to compare their responses across cohort groups.

Focus group interviews are a structured interview activity which allow a group of participants (generally chosen on the basis of significant characteristics defined by the researcher) to respond to a restricted set of topics (Barbour & Kitzinger 1999). The intent of the exercise is to elicit greater depth of response as participants incorporate the responses and perspectives of each other through dialogue facilitated by the interview coordinator. As part of ARGOS, participants will come together as groups annually either nationally or in a region. These meetings would provide an excellent opportunity to coordinate focus groups with the participants addressing issues which may produce better information from a group interaction.

The second structured method involves a card sorting exercise. Here, the focus will likely involve relationships between the farm households and the surrounding community. Thus, participants would be supplied with cards listing a set of off-farm relationships and asked to sort them by importance, necessity, etc. relative to the

sustainability of the farm. Blank cards are also provided to allow participants to include relationships not identified by the researchers. (This activity would be roughly equivalent to a visualisation exercise in which participants were asked to evaluate pictures of land use practices.) In addition to the cross cohort comparison, such a sorting activity would allow for annual repetitions in order to examine any temporal evolution in assessments.

In order to account for differences in the ways in which participants view the farmed landscape, we will also conduct a visualisation exercise. In this exercise, we will provide participants with disposable cameras and ask them to document the best,worst, and most 'meaningful' areas of their farm. The farmers will also be asked to document their reasons for including each of the pictures. By means of the visualisation exercise, we expect to gain insight to farmscapes as there are viewed by those who inhabit them. Variation in the selection of significant sites in the farmscape may indicate differences among farming cohorts or farm management types as well as between farmers and researchers.

5.2 Participation:

Because the interview methods rely on the perspective of participants in the data gathering process, they do not necessarily conform to historical truth or the actual practices of the participants. In order to compensate somewhat for this subjectivity, participatory observation methods also form part of the data gathering process for the social objective. Once again, the extent to which such methods can be employed is limited by the research design and resulting limited contact with individual farm households. Thus, observation methods are expected to focus on an introductory farm tour exercise and attendance at key events, both during the agricultural production cycle and in farmer-industry relations.

Farm tours have gained popularity as a method associated with Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal approaches. In the exercise, farmers are asked to provide a walking tour of their farm highlighting its various productive and non-productive elements as well as management practices. (The exercise will be documented through photographs of specific sites and accompanying dialogue (recorded) of participants.) Expected results of the exercise are to establish actual

management practices and compare these to those identified by the interview methods. The two most common frameworks for the tour are that of a transect or that of nodes. The transect method involves selecting endpoints at opposite farm boundaries and walking a straight line (as far as possible) across the farm landscape. Participants are asked to describe the elements encountered with additional specific queries offered by the researcher. This method is arguably more objective in approach, avoiding possible bias against less prominent elements of the agricultural production system. It does, however, potentially miss important elements of the farmscape as well. An alternative approach is to ask the participants to present the various parts (nodes) of the farm. This approach runs the risk of subjectivity, possibly ignoring elements of the farmscape considered less important by the participant. In conjunction, the approaches offer greater potential for inclusiveness and completeness.

Participatory Appraisal is a method developed from Rapid Rural Appraisal. It is a way of ensuring democratic participation in a group process which aims to raise and prioritise problems and issues and develop ways of addressing them. Participatory Appraisal is typically a visually based activity in which members of a group collectively draw or represent symbolically the situation in which they find themselves as well as the problems they face. Then, by a voting procedure, they prioritise the problems the group identified and set about thinking of ways of addressing them by following specially designed group processes. The process is usually very satisfying for the participating group because it develops ownership of significant problems and of ways of dealing with them.

Participatory observation may also include attendance at formal and informal events and occasions between study participants and community members. This could include (but is not limited to) informational meetings with cohort members (including persons from outside the selected clusters) or with industry representatives. The object of such attendance would be to observe the social dynamics and positions assumed by participants while engaging in this type of interaction.

5.3 Surveys

Assessment of the veracity and the representativeness of the data gathered by

interviews and participatory observation is further enhanced through the utilization of broader scale survey methods. Surveys are the principal method for more quantitative social analyses. The value of survey methods lies in the collection of a large body of information from groups of participants. As such, these methods facilitate quantitative analysis (correlation, multi-variate correlation, principal component, etc.). The surveys proposed for the social research are expected to provide insight to sectoral characteristics and will include attitudinal surveys in order to develop a broader understanding of perspectives relative to sustainability, management, and social factors by accessing a cross section of kiwi, sheep, and beef producers.

5.4 Research Agenda

The proposed research agenda for the social objective of ARGOS is (given the stated iterative nature of its design) more accurately a framework of expected research timelines. The basic timeframe for data collection includes two interview periods per year, separated by periods of analysis, write-up, and reassessment of goals, themes, and methods. During the interview periods, two of the three social objective post-docs will share interviewing responsibilities while the third assumes primary responsibility for analysis. It is expected that interviews will take up to two months for a given cohort depending on accessibility among other factors. All three post-docs will be involved in data analysis throughout the annual cycle, with the two interviewers assuming greater responsibility when interviews are completed. Reports to be shared within ARGOS will be prepared under joint responsibility, whereas outside publications will involve a variety of authorship formats.

Introductory interviews have already been initiated with the purpose of establishing initial connections with the AGOS farmers and for eliciting their perspectives on farming, management practices, and environmental awareness. These interviews involve a semi-structured interview instrument including three sections of questioning: 1) self-definition of participants; 2) farm ‘visions’; and 3) environmental awareness and practice. The results of this interview process await the completion of interviews and analysis of the accumulated response data.

A more detailed discussion of the timeline and content of social research activities is the subject of a subsequent document and awaits some constructive dialogue over this general statement of the intent of social research in ARGOS.

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Appendix 1: Undertaking Social Research (aka, *Welcome to Sociology 101)*

(a treatise that Hugh will take responsibility for. Hold no-one else accountable for this)

I never thought that I'd be writing the equivalent of an Introduction to a Social Science textbook, and such Introductions are the bits that I usually tell my students to ignore as they are hopelessly vague and confusing….

Social science research incorporates disciplines like Sociology, Anthropology, Geography, Politics (and specialist areas like Development Studies, Women's Studies… etc…). Broadly understood, it involves research that operates at some level above the individual. It is about society and social relationships:

• *the study of social change-*

The social sciences (including history) have been highly interested in the constantly changing nature of society. Fundamental to a social science approach is an understanding that most analysis is of social change, not of static systems of human existence.

• *studying human behaviour as manifest in social relationships-*

Example: studying the dynamics of farm households, rather than only the actions and thoughts of an individual farmers,

• *the influence of social groups and processes on individual behaviour and lives-*

Example: what is the influence on an individual's actions that are predictable from their participation in wider social groupings like gender, socio-economic class, ethnicity, age, religion, politics, urban/rural…

• *the characteristics and influence of particular forms of society (often at a nation/state level)-*

Example: New Zealand is a capitalist state dominated by neo-liberal policy. This kind of society tends towards competitive economic relationships with only moderate state intervention and a low emphasis on the value of social and institutional forms and a high degree of value placed on individual responsibility…

• The social/cultural dynamics of how the world is perceived by individuals and

how this influences people's behaviour and actions.

Example: I am walking across a paddock and see an isolated plant growing above the grass… What am I seeing? Am I seeing a beneficial species, a weed/pest, a part of nature, an indicator of pasture ill-health, and indicator of ecological good health, something for me to control, something for me to cooperate with, an irrelevant plant that doesn't fit with any of my views of what a pasture should look like so doesn't even register in my consciousness… Or, more abstract issues like: what is the meaning of 'sustainability' for you?

Even when taken at this socio/cultural level, social research operates between the individual and wider social/global processes. Those dynamics that happen 'inside' the thoughts, motivations and behaviours of the individual are the natural terrain of psychology.

Of course, operating *between the individual and global society* leaves a lot of room for analysis.

A.1: Deriving Explanation from Social Research

There are three generally recognised modes of deriving explanation from social research data (starting with the most trendy post-modern stuff, and working our way back to 'reality'…):

1) *Hermeneutic/Interpretative:* the study of meaning, agency and social construction.

2) *Meta-Theory/Grounded Theory/Structural:* the study of power, social structure and social action.

3) *Positivist/Empirical:* the study of descriptive social facts and/or the predictability of social causation.

1) Hermeneutic/Interpretative

The first approach in our discussion is strongly influenced by anthropology and the recent 'post-modern turn' in other social sciences (via 'cultural studies' and deconstructionism). First key assumption: that there is no unproblematic universal

language of texts, signs, ideas and perceptions that are shared by all humans. Rather, our social world organises these around us in ways that make the world/reality comprehensible to all of us. There is no such thing as an 'objective' place where researchers can stand to judge the value and content of other people's views of reality. In short, our social/cultural lives create reality for us (hence the term 'social construction'). The Interpretative/Hermeneutic approach to social science seeks to understand both the content of different socially constructed versions of reality, the prevalence and content of different realities, and the differences between them. Academics working in this analytical mode tend to use qualitative and participatory methods to 'get inside the heads' of their research subjects and try and work out what different concepts and words mean (try, for example, to explain different nuances around words like *kawanatanga* and you quickly move from single concepts to wider clusters of cultural or social meaning). Going one step further, having identified the range and variety of meanings and perceptions of the world, researchers will often try to establish how and why some versions become powerful, how some realities are marginalised, whose version wins, whose is ridiculed, and how do some ideas get accepted as an unquestioned normal and natural part of the backdrop of daily life…

Academic opinion is strongly divided as to how much individuals are able to actively participate in constructing their version of reality. Strongly post-modern academics are in favour of concepts like 'identity politics', reflexivity and positionality in which individuals respond to their version of reality in a variety of ways, sometimes contesting it, sometimes with complicity, sometimes completely unreflexively. A middle ground between extreme post-modern approaches and the rest of the social sciences can be found in Foucault's concept of discourse, which is a complex mixture of individual engagement with wider bodies of signification and practice that construct versions of reality. The point of analysis then shifts from the individual to the discourse itself. Thus, instead of talking about how different individuals and groups construct the meaning of sustainability (the task of the deconstructionist), you would look at different discourses of sustainability that circulate through the media, books, social groups etc… The focus becomes the different discourses themselves not the headspace of the individuals involved.

2) Meta-Theory/Grounded Theory

Surrounding the post-modernists on every side are a group of sceptical social scientists who don't think that the world begins and ends with the perceptions of individual humans (actually, the post-modernists don't think this either, they just don't think you can actually know anything beyond the signifier/text/navel with certainty so they methodologically act as if wider society doesn't exist).

Structural Determinists argue the opposite: that individuals are pretty well irrelevant. Instead, we are unconscious bearers of a view of reality that our individual actions or intentions can't really shift. In three classical versions of this kind of thinking:

- Marx on *ideology* – you can't just stop having middle class values, or, the ideas that rule are the ideas of the ruling class. So, we shouldn't bother studying the dupes of the wicked king, rather get yourself analytically into the throne room;

- Gramsci on *hegemony* – some people gain power through a series of processes (like controlling the media) which result in the masses being persuaded/ brainwashed that the people in power are really the people who should have power. So, I don't really care about you zombies watching TV every day. I'd rather study how the dominant messages on TV are created and reproduced.

- Foucault on *discourse* – Hey, you didn't invent the term sustainability, it is part of numerous wider discourses that you simply reproduce within much active thought on the matter.

Determinists argue that the interpretative/hermeneutic approach is a waste of time because the real forces determining how people think and act lie outside the individual and within the wider forces in society (like class/capitalism, gender/patriarchy, dominant discourses). Thus, we shouldn't bother too much about getting inside people's heads because the explanation as to why people think like they do resides at some *wider social level*.

So how do we study the 'wider social causation' or 'wider social processes' that influence how people think and act? The problem here is that social reality is

complex. Extremely complex. Many attempts have been made to empirically examine the totality of social meanings, actions and structures in some social groups. This was the original task of anthropology – to construct an *ethnography* that described how life all fitted together, made sense and was acted out by one specific group or tribe. Don't get me started on why this turned out to be incredibly difficult (just let the words 'time', 'resources', the impossibility of drawing causal boundaries around tribal groups, and 'anthropologists as God-like superior beings' run through your mind).

Grounded Theory is the next logical step and can be summarized as the following process: Immerse yourself in the detail of everyday life, collect data on what people think and do; simultaneously, engage in theorisation of the potential nature of social life (theorisation being necessary to break out of the swamp of complexity at the ground level and derive some putative causal explanations at a wider social level); then engage in methodological dialogue between the ground level of data gathering and the theoretical level to test and refine the theorisation of the phenomenon; go through however many iterations you wish to further refine and ground the theory. This is a good safe method for social scientists, but is oft criticised for getting too inward looking and ignoring wider causal influences. How about some wider dialogue between theoretical positions? What about those processes in society that are theorised to exist (like the historical emergence of contradictions within the capitalist mode of production) that are just not amenable to a quick check via grounded research?

This moves us to the realm of meta-theorisation. Many social scientists become so enamoured of the process of theorising about social life that they never escape and engage with some actual research. Meta-theorisation allows the theory building process to take place at a slightly more abstract level than is the case in grounded theory. Theories of how society operates, its key causal relationships and determinative processes are proposed and challenged. Refinement occurs through:

- attention to the internal logic of the theory,
- recourse to varieties of social data to prove or disprove ideas (theory driven data collection),

- dialogue between theoretical perspectives.

Theory is the greatest blessing and curse of the social sciences. You cannot answer important questions about social life through the empirical path. But, by turning to theory for explanation, the connection between theoretical dialogue and the possibility of actually proving or disproving theory in a hypothesis building mode is overwhelming. As an analogy, imagine for yourself a complex system like meteorology. National weather forecasting requires enormous theory-building and testing around 20-ish key climatic variables. Local weather forecasting can then take those predictions and ground them in a range of local effects to get a local prediction. Even with this limited number of variables, weather forecasting is a hit and miss process and considers itself to be highly successful if it achieves over 75% accuracy. Now apply the same process to predicting social action. A famous US study of cross-cultural comparison of social life worked around a basic set of 4000 variables in social life (simplified down from an earlier attempt)! Multiply by however many individuals are operating as research subjects… Yes, I would rather be a weather forecaster…

Yet, amazingly, some social scientists use the power of statistical analysis and big numbers to actually predict the social weather…

3) Positivist/Empirical

Abandon hope all ye who enter here… unless some of the big assumptions behind the social sciences actually hold some water. If some of our key assumptions about the importance of human social interactions and relationships, and the constant daily reinforcement of these, are correct, then some interesting effects emerge. Consider the following:

- we are raised in socially-intense family situations (interpret this however you wish) by individuals not too unlike ourselves(!), and whose values we adopt to some extent.
- on a daily basis, most people lead very predictable lives. We generally do the same thing most days of the week.
- our ideas, values and thoughts actually don't randomly change like the weather. With some variation, most people don't change their minds about

> the nature of life the universe and everything on a daily basis (the ones that do get deemed psychiatrically unstable).
>
> • yes, we have very different interpretations of key issues, concepts and meanings in social reality, but we also interact and dialogue with numerous individuals every day who share, reject, reinforce almost all our ideas. Human social interaction both differentiates ideas as well as strongly reinforcing them.
>
> • all of us participate in multiple shared social institutions. We learn how to collectively behave in classrooms, shops, cars, churches, pubs, workplaces…

What does all this mean? Namely, that social life is not randomly generated by numerous individuals inventing social life across 1000s of potential variables. Rather, the processes of *being social* reinforce, amplify, cluster and render normative, almost all aspects of human existence.

Enter the positivists, with survey forms, clipboards and questionnaires. Once human behaviour, established practice, shared ideas or key styles of social interaction become settled, stable and embedded, it is possible to identify statistical norms of behaviour. You can find nice bell-shaped curves of human activity. Then calculate the level of deviation around the norm…

Example: in our recent postal surveys, John F. found that statistical analysis of the 6-700 responses showed statistically significant clustering of the respondent group around three groups of variables. One group we tagged the 'GE Intenders', one the 'Organic' and the other the 'Conventional' group. Each had statistically significant associations across a range of characteristics that both identified each significant cluster and excluded the other clusters (the vaguest boundary was between the Organic and Conventional on some variables). The strength of these associations can then be tested and measured. In the same way, we hope that over the next few years, the cohort structure of ARGOS produces a similar effect.

Such big-number analysis does allow quite a powerful form of social description to take place, and even a broad sense of explanation of the social-level effects influencing human life…

The Scale and Focus of Analysis.

Yes, the numbers do talk, and they do create an impressive sense of being able to explain some kinds of social causation, but no empirical social research takes place in a theoretical vacuum. These kinds of stable norms and associations don't always appear. The key to the above analysis is that stable patterns and associations *have* become established. So, where, when, what, how, and why are some parts of social life stable (and thus amenable to empirical analysis) and others unstable? What if the social world is only partly stable, partly chaotic, partly incomprehensible? The key question is what do we direct our empirical arsenal at in order to find those nice bell shaped curves????

Here are some options among the many contested by social scientists:

- the WORLD! Many anthropologists, psychologists and sociologists just assume that we share some social characteristics as a whole species and thus we should engage in global analysis of everyone and see what happens. (good luck, and I wish I had your budget)

- Society/culture: sociology and anthropology have traditionally used whole societies, national groupings, or whole cultural groups as the natural unit of analysis. Thus, sociologists would study; 'Class, gender and ethnicity in *New Zealand society'*, 'Religious participation among *Tongans*', 'Political allegiance among *Australian* voters'… In each of these, the whole of New Zealand (or Australian) society, or the totality of participants in Tongan culture, form the natural scale of analysis.

- Social groupings: targeting more specific issues and groups, it is common to focus in on smaller discrete social groupings: eg. Tongan migrants in Auckland, working class families in Christchurch, rural versus urban voting patterns, kiwifruit growers, the Mosgiel community etc…

Getting smaller scale than this starts to stretch the power of big-number social research to provide meaningful explanations, and analysis tends towards a different suite of methods. One of these, that may prove useful, is the comparative case method advocated by Charles Ragin. A detailed discussion of this is included in Appendix 5.

This point is an important one to return to after due consideration of the wider body of previous research on sustainable agriculture and the social scientific study of agriculture and agri-food systems. This prior research provides a range of possible

sites and processes around which key empirically detectable norms and processes can be investigated.

Without revealing any State secrets, a sneak preview might suggest the following:

• a major part of social research is simply *descriptive*. No-one knows enough about sustainable agriculture as practised in NZ to be fully confident about how more sophisticated analyses might take shape. We need to do the task of basic description of the social characteristics of the participants in the study and the wider social world in which they are embedded.

• In the *hermeneutic/interpretive* mode of explanation: many of the key ideas and practices in sustainable agriculture are not stable and uncontested. What is organic, what is sustainable, what is nature, who is a good farmer, etc…? These are key concepts for nailing down how our participants view the world, and thus act in it.

• in the more *theoretical* mode of explanation: where does the power to act and the capacity to act reside in the world of sustainable agriculture. How constrained are the participants by structural relationships with wider industry, wider society, or the social conventions of expected or unthinkable behaviour? What are the key sites of action that operate and structure this phenomenon? What is normative, and how do alternatives take shape? How does the structure of socio-economic life become stabilised and configured in particular ways? What is the influence of trans-societal mechanisms like audit systems, contracts, commodity complexes…?

• in the *positivist/empiricist* mode of explanation: once the qualitative and theoretically-driven research has identified key groups, types and clusters of attributes among farmers, farm households, industries etc… what is their distribution, scope, scale and more detailed characteristics? Are our growers representative of wider sectors? What can big number quantitative analysis tell us about the composition of particular farm or farmer types? Are there associations between practices, attitudes, structural constraints that are observable from big number analysis that aren't so obvious to intense qualitative work.

Appendix 2: Taking the Agri-Food Pathway to Analysis

The ARGOS project sets out to study a range of processes that operate within and around farm households, networks, industries. In order to do this, the project is overtly adopting what is termed an 'Agri-Food' approach to analysis. This section will outline both the antecedents to Agri-Food analysis the rationale behind selecting the Agri-Food approach as the most useful for the research being undertaken by

ARGOS. In terms of the discussion in Appendix 1, the Agri-Food approach is firmly rooted in the meta-theoretical approach to understanding broad changes in farming systems, industries and food systems.

A quick history of how to study farmers/farms:

1) Early Days – adoption of innovations: rural sociology concentrated on the individual (implicitly male) farmer and engaged with issues such as the 'adoption of innovations'. Despite the power of describing farmers as 'early adopters' or 'laggards', this approach was strongly grounded in the empiricist/positivist tradition in sociology (see Appendix 1) and thus became rather limited in scope.

2) The Farm Household: a range of criticisms from more theoretically-driven social scientists (see Appendix 1) led to the Farm Household taking centre stage (or alternately, the 'family farm'). A more complex approach to household decision-making (in response to the feminist critique) and power relations within households emerged. This was, in turn, critiqued for reifying the family farm at the centre of analysis. Questions were asked about corporate farming, off-farm work, tenancy, and pluriactivity: all of which suggested that farms were integrated within wider economic and social structural relationships that often determined what was happening on farm.[7]

3) Integrating Farm and off-Farm: during the 1980s and early 1990s, there was considerable discussion about how to locate farms within wider social and economic relationships. The term used for this is *political economy* (as in: What is the political economy of family farming?"). The theoretical dialogue within the political economy movement in rural sociology eventually led to the Agri-Food approach. This broad set of developments is often referred to as the *New Rural Sociology*.

A key set of theoretical debates in the New Rural Sociology resulted in a characterisation of farm relations with wider rural society through the metaphor of

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[7] Despite these critiques, the farm and farm household remain as a very important participant in any Agri-Food analysis. This document will return to discuss the key dynamics within farm households at length.

vertical and *horizontal* relationships (see Appendix 3). Vertical relationships involved the position of the farm in the chain of production – linked to farm technology suppliers and finance suppliers as well as processors of farm products, distributors and market actors. Horizontal relationships linked farms to the rural (social) space they inhabited – linked to local communities, labour markets, other industries, rural cultures (see Share et al. 1991).

2.1 Agri-Food Analysis

Commencing with the vertical trajectory outlined above, the agri-food approach dominated 1990s rural sociology. Agri-Food analysis is interested in the changing nature of whole agri-food systems. Initially, this could be described as involving the 'Paddock to Plate' in analysis: usually incorporating the farm level, processors, distributors, retailers and consumers. Lately, Agri-Food analysis might be argued to have expanded to 'Seed to Sewer' approaches, incorporating a more sophisticated analysis of farm inputs and agricultural science, and moving beyond consumers to understand household consumption dynamics, food preparation and food disposal. Generally, the Agri-Food approach recognises that pressures and powers to change things reside at many points of the whole food chain. Key questions included:

- how do we structure our analysis to supercede the 'New Rural Sociology'?
- what key elements need to be included in the 'agri-food system'?
- what kind of relations operate between the elements of the system?
- are there particular types of agri-food system that characterise different countries and historical periods?

Agri-Food analyses also interrogate different styles of system from small boutique markets, local markets, regionally integrated production chains, to the largest scale of trans-national dominated system involving companies like Nestle and CPK in Thailand.

The *Greening Food* programme was centrally located in the Agri-Food approach. Starting with the explicit attempt to design a Commodity Systems Approach for organics in New Zealand, this programme was characteristic of the Agri-Food

approach in its attention to the entire production chain from farm to consumer, the politics operating within industry sectors, the regional and national character of specific food sectors, and the changing politics of food and agricultural within international trade.

2.2: Theorising within the Agri-Food Approach.

Appendix 1 outlines the importance of theorising within social research. For this research it is particularly important to engage with prior theory in order to structure the scope, scale and focus of the research activities. There are a considerable number of competing theoretical perspectives operating in this area (summarised in Appendix 3). A quick review suggests;

• *Food Regimes Theory:* which sought to argue that global capitalism went through periods of stability and periods of crisis. At two key times, a regime of linked relationships around food and agriculture underpinned stable growth in the world economy (The First Food Regime – 1845-1890; the Second Food Regime – 1945-1973). For individual countries like New Zealand, integration into a global division of labour around agriculture changed drastically in the two regimes. This approach tended towards the historical, as it was uncertain whether a Third Food Regime is currently organising food relations at a global scale.

• *Commodity Systems Approach*: was very influential on the Agri-Food approach. Advocated against using the family farm as the central organising construct in rural sociology and argued that instead of following farmers, or farms, we should follow commodities through their entire production and consumption cycle – thus moving across the key domains of the food system.

• *Food Networks Theory*: argued (following Bruno Latour and ANT) that a pervasive nature/culture binary in academic analysis tended to overplay the role of human actors and ignore the role of bio-physical processes and realities. Discussion of the impact of this approach on Agri-Food theory is in Appendix 3. While pushing the Agri-Food approach towards more network-based approaches, food networks are sometimes critiqued as being

simply 'well elaborated description' rather than posing an alternative explanatory models within the Agri-Food Approach. One important subset of the food networks approach has been the work of Busch and Tanaka on food standards. This is an important new area of work that supports the emerging interest in audit, inspection, certification and standards in Agri-Food systems.

• *Social/Knowledge networks*: influenced by either Foucault (knowledge) or Granovetter (social networks), this work brings to Agri-Food analysis a deeper sense of how power can be organised around ideas/meanings (discourses) rather than simply embodied in legal, economic, political and other formal social structures. Discourses organise how we see the world and how we understand some practices and courses of action to be legitimate (also tending towards Bourdieu's habitus).

• *Conventions Theory*: incorporates insights from several French social theorists (including Thévenot, Bultanski, Sylvander, and Valceschini and presented in English in Storper and Salais 1997, Storper 1997, and Wilkinson 1997) regarding the role of negotiated and mutually adopted rules of economic exchange in agri-food systems. These authors argue that, as an inherently social activity, economic production requires individual actors (e.g., farmers, buyers, retailers, consumers, etc.) to develop conventions – that is, mutual means of navigating its uncertainties – governing economic interactions. As an approach to Agri-Food analysis, conventions theory has been utilized to provide an explanatory framework for marketing strategies attached to agricultural products relying on quality differentiation based on geographical or cultural characteristics (Barham 2003; Guthey et al. 2003; Marsden et al. 2000; Murdoch et al. 2000; Renard 2003), for categorizing the production chains of agricultural firms within countries or the distinct systems of production among countries (Murdoch and Miele 1999; Parrot et al. 2003; Raynolds 2004; Stræte 2004), or to examine the construction of audit systems in response to consumer or environmentally driven quality demands (Friedberg 2003; Holloway 2002; Wolf et al. 2001). In general, these authors cite the ability

of a conventions theory approach to acknowledge the active role of a variety of actors in the process of agriculture production as the principal justification for its utilization.

Appendix 3: Alternatives within the Agri-Food Approach

By overtly attempting to move away from the Marxist-inspired New Rural Sociology, agri-food theory sought to find some framework for understanding the vertical trajectory of food systems, without resorting to crude structural models of capitalism (or corporations versus farms). In particular, the French Regulation School (often referred to simply as the Regulationist approach) moved towards a less structurally

overdetermined, and more historically and spatially contingent analysis of particular epochs of capitalist stability and crisis.[8]

Much of the New Rural Sociology had focused on questions like: 'How does capitalism exploit farmers'. Given the widespread farm crisis of the 1970s-80s, sociologists instead began to question: 'Why doesn't capitalist agriculture work very well most of the time?' and 'Why does it work better in some places than others?' and 'Is there a normative model for agriculture under capitalism, or should we be looking many variable constructions of agriculture under capitalism?'.[9]

Much of the focus of Regulationist work was directed towards what they term 'modes of regulation'. These are particular configurations of society, culture and economy that succeed in stabilising periods of capitalist growth. When a mode of regulation becomes established, things stabilise and economic growth occurs. When the mode of regulation starts to unravel, things move into crisis.[10] An important hybrid of Regulationist thinking and the New Rural Sociology provided the idea of Food Regimes.

Position 1: Food Regimes Theory and the Commodity Systems Approach

Harriet Friedmann and Philip McMichael's (1989) paper launched the idea of food regimes as historically specific configurations of food relationships that underpinned the rise (and fall) of the imperial and fordist (an important Regulationist term) phases of capitalist history. In that publication, Friedmann and McMichael used the regulationist approach – which looked for periods of institutional stability in global capitalism following by periods of crisis and recomposition – to posit the existence of two historically demarcated food regimes. Each regime was characterized by a key

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[8] In other words, it was no longer acceptable to simply describe global phenomena as 'typical of capitalism'. Instead, capitalism was unpacked into specific configurations and forms in different places and epochs. Harriet Friedmann's work on the survival of the family farm was thus no longer considered to be representative of a broader abstract construct called 'family farms under capitalist agriculture' and was reinterpreted as a particular configuration of capitalist agriculture (Simple Commodity Producers) in a particular space (the mid-West) at a particular time (Frontier to present).

[9] Interestingly, still missing a key question: 'Why aren't you interested in the Third World?'.

set of relationships within the global capitalist market, and the first food regime (FFR) carried within itself the contradictory relationships that eventually led to its destabilization and reconfiguration into the second. The FFR comprised the trading system that became institutionalized around different imperial blocs during the latter stages of the Industrial Revolution. Each Empire regulated a global division of labour in food production and consumption. For example, agricultural-producing colonies like Australia, New Zealand and Canada emerged economically and became strongly incorporated into the global division of labour that was centred around burgeoning demand for food in the industrial core of the empires.

The competitive and protectionist impulses of many nation states increasingly destabilised the world economy leading to a collapse of many economic institutional forms and the Great Depression. From this emerged the Second Food Regime (SFR), which prioritized food security needs in core countries, and reversed the prior flows of agricultural products from the ex-colonies. The Second Food (or Food Surplus) Regime saw industrial core countries that had previously been food deficit zones, establish surplus food production at home, and then, through aid-leveraged distribution, increasingly become the dominant agricultural exporters that would be protected through complex layers of subsidization. The terminology of First Food Regime (Imperial) and Second Food Regime (post-WWII Fordist) became important ideas for organising the explanation of trading linkages and a global division of labour around food production and consumption in recent history in the New Rural Sociology. While Friedmann and McMichael (1989) ceased their historical narrative at this point, the mid-90s were taken up with a number of attempts to posit the decline of the SFR and the potential recomposition of a Third Food Regime (or, alternatively, an ongoing state of crisis).

An alternative, but compatible, venture to Food Regimes theory was the Commodity Systems Approach (CSA) by Friedland. In the CSA, analysis shifted from looking at farms and capitalism (the New Rural Sociology) in dualist form, towards looking at the configuration and power relations within whole commodity chains. This

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[10] Campbell (1994) wrote his Ph.D. about the collapse of the old Mode of Regulation in NZ agriculture around 1984.

included: science/technology, labour, farms, processors, distributors and retailers. Later elaborations of this concept brought an increasing number of players into the framework of CSA.

The combination of CSA and Food Regimes provided a terminology that informed what Buttel (1996) and McMichael (199*) described as Agri-Food Theory. This ambitious new research agenda posited that agri-food systems were interesting in a number of ways: as a better means of understanding the internal dynamics of agriculture and change within commodity sectors; as exemplars of wider new institutional forms and global food linkages (like contracting, cooperatives and North/South food relationships); as potentially propulsive commodities conforming and reforming global food systems (like organic or biotechnologically derived foods); or as empirical exemplars of the composition and de-composition of broader food regimes (like the potential for fresh, green or healthy foods to signify an emerging Third Food Regime). In short, Agri-Food Theory provided an interesting middle ground for linking the specificities of agricultural change to broader shifts in global economy and society.

The Food Regimes approach began to lose traction in the latter part of the 1990s. Increasingly, some form of refined CSA took hold at the centre of analysis, and agri-food systems advocates began to elaborate the different structures within agri-food systems: farms, processors, distributors, consumers. Each began to develop its own dynamics and politics and particular agri-food analyses emerged for key commodity types. This approach has been strongly adopted by researchers in Australia and New Zealand – which is considered to be the most advanced region in developing this style of analysis. This is partly because Australia and New Zealand are export-dependent countries, and the long chains formed by export products are clearly evident to Antipodean researchers. At last count, the Agri-Food Research Network in Australasia involved analyses of: organics, wine, sheep/beef, wheat, sugar, shrimps, tomatoes, fresh fruit, export pipfruit, dairy and others.

The Food Regimes and Commodity Systems Approach had different foci – the regime and the commodity – but they nevertheless shared a common theoretical heritage. They were both products of neo-Marxist theory within the New Rural Sociology.

Both were undertaking the task of providing a more nuanced account of global capitalism.

Dispute 1: Structural (neo) Marxism versus Discourse

The New Rural Sociology was strongly influenced by neo-Marxist thinking. While abandoning the crude structural models of classic Marxist theory, it still retained a strong sense of the 'structuring' effects of power. Power over participants was understood as a series of zero-sum processes operating between parts of the agri-food system. Ergo; farmers versus processors (via production contracts), small business versus corporations, processors versus retailers, conglomerate retailers (like McDonalds) versus small retailers, with ignorant consumers soaking whatever muck came out the other end. The realm of ideas was important to this analysis (unlike classical Marxism) but tended to be bound up in concepts like ideology and hegemonic ideology.

The Agri-Food approach is vastly more complex than the New Rural Sociology, but still retains a sense of the structuring power of institutions. Businesses and companies are powerful, growers are potentially vulnerable, concentration and vertical integration of food systems by corporates has power implications etc… In short, power (the key issue in any sociological enquiry) resides in structures, institutions and broad economic processes.

Against this, the Foucault-inspired alternatives saw power in ways that was not so specifically 'structural' (hence why they are called post-structuralists). To Foucault, power is diffuse, and resides in discourses. Discourses become the centre of the equation. Discourses are sets of ideas and practices that are produced, reproduced, and contested by multiple parties to create 'authentic' or socially 'legitimate' versions of reality. Hence, one can talk of an organic discourse versus a conventional discourse. People operating inside these discourses are really using different understandings of what is real about agriculture. Each have their own set of questions, each their stock answers, each have established notions of what practice is acceptable or normal, and each have their key boundaries where conflict occurs between discourses. Hence, in post-structuralist terms, GM became a key boundary area of

conflict between organic and conventional agriculture. This had an influence on Agri-Food Theory in that researchers stopped talking about ideologies (and attitudes) or hegemonic ideas, and started talking about discourse (discourses of sustainability, discourses of productivism, discourses of neo-liberalism, discourses of masculinity).

Two examples of post-structuralist work in the *Greening Food* Programme are Campbell's work with Liepins. In one study (Liepins and Campbell 1997), growers' knowledge networks were investigated to see where growers picked up various ideas; how, where and who circulated these ideas; and also the possible role of standards in solidifying and reproducing discourses about organic production. A later work (Campbell and Liepins 2001) more specifically examined organic standards and the certifying agencies as a site where discourse was created and solidified. In short, organic agriculture made the transition from loose discourse (in the organic social movement) to tight text-bound discourse through formal standards. Campbell and Stuart (2004) talk about this process using the concept of 'disciplining' organic production under standards.

While this approach has tended to supercede older foci on ideologies or hegemonic ideas within agri-food theory, it also clearly moves away from the farmer-centred idea that individual farmers possess 'attitudes' or 'values' that can be analysed in isolation from the wider discourses that circulate in the farming world.

Dispute 2: Regulation Theory versus Food Networks

The Food Regime concept was critiqued at two levels. First, the analytical power of French Regulation Theory as well as the scope, scale and structure of the posited food regimes and their accompanying institutional forms were questioned (see Goodman and Watts 1994). Second, the whole venture of positing middle-level political economy at the level of the nation/state was called into question. The political economy approach in general experienced a sharp challenge from 1994-1997. From this point, divergent paths emerged between the continuation of the political economy

and regulationist inspired agri-food approach, as against what has been termed the food networks approach.[11]

Goodman and Watts (1994) initiated this divergence with a widely cited critique of the value of French Regulation Theory to agricultural political economy and, in particular, critiqued the notion that regulationist analysis could sustain inference of new institutional forms in agriculture. At the same time, Marsden and Arce (1995) proposed the food networks approach as an alternative to classical political economy. By 1997, Goodman and Watts had assembled an alternative theoretical paradigm based on the work of Bruno Latour and Actor Network Theory (ANT). Predicated on the need to collapse the distorting nature/culture binary in analysis, ANT assembled an alternative middle ground approach comprising food networks that sought to analyse networks of action around food. These actions were represented as generating the significance and negotiation of meaning between parties to the network (including the active influence of natural and biophysical non-human actors). The analysis shifted focus to nodes, intermediaries and sites of translation and ordering in networks where meaning is created, stabilised, contested and re-fixed (see Lockie and Kitto 2000). The food networks approach, therefore, formed an alternative way of constructing analysis of agri-food systems.[12]

While there are disputes are ongoing, it is important to note that the general framework of Agri-food analysis remains intact. All sides operate on a paddock to plate basis. Their differences are in emphasis, and in the explanatory power of social structure versus a more ground-level generation of networks of action.

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[11] Ben Fine's work on 'systems of provision' provided an earlier, and less popular, alternative to the main theoretical influences in the Agri-Food approach.

[12] The mid-90s saw a similar, if less contentious, engagement between political economy and Foucauldian-inspired discourse analysis in agri-food analysis.

Appendix 4: The Namkoong Lecture

In September, 2004, HC was asked to deliver the Namkoong Lecture at UBC. It provides a summary of several arguments as to why NZ is unusual, and why the NZ experiment around 'sustainability by audit' is so significant.

Lecture in Honour of Dr Gene Namkoong

The Commercialisation of Sustainability: Transforming Primary Production in New Zealand.

Assoc Prof Hugh Campbell[13],

Director, Centre for the Study of Agriculture, Food and Environment,

University of Otago,

New Zealand.

Lecture delivered at the invitation of the Namkoong Lecture Committee, 22nd September, 2004, Forest Sciences Centre, University of British Columbia.

Abstract

This lecture provides a socio-political analysis of recent changes in primary production in New Zealand with the intent of revealing wider trends in the emerging global trade in goods claiming *sustainable*, *environmental* or *food safety* qualities. New Zealand has become a site of considerable interest for analysts of global trade due to a series of radical political and economic reforms in the 1980s which left New Zealand as the least subsidised primary products exporter in the OECD. The New Zealand state, furthermore, has withdrawn from any significant regulatory responsibility for the environmental consequences of primary production. Following this process of deregulation, grave concerns have been expressed about the ability of 'the market' to deliver outcomes that enable the long term sustainability of primary production in New Zealand. The socio-political analysis presented here demonstrates that two starkly contrasting trajectories of change have emerged in New Zealand. Within pastoral production – predominantly sheep, beef, and dairy – market liberalisation has led to significant intensification of production with direct negative consequences for the production environment. In contrast, within horticultural industries, a significantly different dynamic has emerged, with industries like

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kiwifruit, apples and wine becoming deeply involved in the elaboration of international environmental audit systems like EUREP-GAP or certified organic production. This lecture concludes with a discussion of the characteristics of these opposing trajectories and an analysis of the relative benefits of 'sustainability via audit'.

Introduction: The New Zealand Case

When speaking to an international audience, many academics in New Zealand encounter a common problem. Why is New Zealand relevant? What qualities are there in a country of 4 million people, situated between the Pacific Rim and the South Pole, that can speak to global problems or processes?

In my field, the answer is often that New Zealand provides us with a case study of what happens when successive governments adopt a hard line neo-liberal approach to policy, economy, and society. In 1987, for example, *The Economist* magazine dubbed New Zealand 'Adam Smith's other islands'. By 1997, moreover, New Zealand had achieved equal status alongside Singapore as the OECD's most open economy. Also, given that New Zealand is a country founded on, and deeply enmeshed in, the primary production of meat, dairy products, fruit, fish, wool, and timber, every other nation relying heavily on primary production has looked to us to provide evidence of what might happen if the safety net of subsidies and state intervention disappeared.

This particular, and somewhat dubious, uniqueness in the New Zealand case has often been my own topic of research - as a rural sociologist, I have viewed with alarm the destruction of rural industries, communities, farm sectors, and environments. Today, however, I want to look – at least a little - beyond New Zealand's great experiment in economic deregulation and ask a series of questions about the fate of sustainable primary production in a de-regulated environment. While my main expertise is in the adoption of organic[14] and Integrated[15] systems in food export industries, I will also aim to pepper the narrative with glances across at New Zealand's forestry sector.

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[14] The term organic will be used to indicate 'certified organic'. New Zealand's organic certification standards are closely aligned to the wider guidelines of the world organic body IFOAM.

In examining sustainable agriculture - and, by implication, other systems of sustainable primary production - I am particularly interested in looking at what we might call key 'pathways to sustainability' in these industries. The international literature tends to address three of these 'key pathways' to the encouragement or uptake of sustainable production systems: via the *market*, via *regulation*, or via the *individual* (which in my terms also includes the actions of social groups and activist social movements[16]). Typically these three pathways have constituted a core organisational model by which many people understand the routes towards greater sustainability. My urgent concern is that structuring these pathways into an immutable triad has led the sustainable agriculture movement and its allies into a series of futile and dangerous debates. Given the parameters I outlined above, the New Zealand case provides us with ideal terrain upon which to understand these tensions and their consequences.

New Zealand is central to this debate because it provides us with the 'purest' example of what happens when there is no regulation, and very little individual support for 'greener' production systems.[17] Can a country successfully move towards more sustainable production down the commercial market-driven pathway? This question is clearly relevant not only for New Zealand alone, but for all countries that see themselves as globally exporting primary producers.

But we cannot answer this question without taking into account two important assumptions commonly held within the sustainable agriculture social movement (and its associated political allies). First, that de-regulation of agriculture inevitably leads

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[15] 'Integrated' is used here to indicate systems of Integrated Pest Management or Integrated Crop Management as developed by European and North American crop scientists to reduce or eliminate pesticides, increase the presence of beneficial pest predators, and (more recently) encourage environmentally responsible soil, water and energy management on farms and orchards.

[16] Sociologists use the term 'social movements' to refer to post-industrial political groupings that collect around issues like the environment, food safety or nuclear disarmament. They differ from older political movements like labour organisations or citizenship 'rights' movements.

[17] 'Green' is a purposefully broad descriptor. The purpose of this lecture is not to argue the relative merits of different environmental or sustainable production systems (like organic or Integrated) but to trace the development of a broad trajectory comprising many variations on such systems.

to unsustainable intensification; and second, that sustainability and commercialisation are fundamentally incompatible. In this lecture I want to play devil's advocate to these two assumptions. As a long term supporter and propagator of sustainable agriculture I want to pose the question: how can good things sometimes happen in bad economies?

The Neo-Liberal Revolution in New Zealand.

There is no real need for me to rehearse the extensive history of New Zealand's position as a colonial food production zone for the industrial North. New Zealand became known as Britain's 'farm' in the South Pacific with over a century of privileged market access to Britain. This access ended, however, with Britain's entry into the EEC in 1973. The result was not only restricted to a catastrophic decline in New Zealand's agricultural export markets, but also prompted a deepening crisis in all agricultural sectors.

This crisis eventually prompted the neo-liberal revolution in New Zealand. First, all agricultural subsidies were removed in 1984. These subsidies were negligible anyway, and therefore this move did not have as much impact on New Zealand as might have occurred almost anywhere else in the Western world. To shift the economy away from its reliance on agriculture, a neo-liberal prescription of tariff removal, free-floating currency, slashed government spending, and privatisation of state assets proceeded at a breathtaking pace. The government also enforced monetarist policies to control inflation and abolished financial lending controls. The theory was that investment would flow to new sectors and foreign capital would find New Zealand a suitable home for new ventures. Instead, however, monetarist policies raised interest rates, and a speculative run on the New Zealand dollar pushed the value of the dollar to spectacular heights. The newly liberalised finance sector funded highly speculative property and share-market investment, while a plunging current accounts deficit was only disguised by rapid sales of state assets. The whole venture collapsed in the stock-market crash of 1987, in which New Zealand experienced the worst level of share losses and the highest per capita number of bankruptcies in the world.

Undaunted the state's experiment in de-regulation continued. One specific move is of particular relevance to this lecture: in 1991, the government finalised its new approach to regulating the environment by passing of the Resource Management Act (RMA 1991). In short, this Act determined that the government would not as a matter of course actively intervene into environmental policy and strategy. National parks were formed, providing legitimate sites where the government could manage 'wilderness' areas. On the inhabited, farmed, mined, and forested landscape, the RMA 1991 (after considerable lobbying by industry) applied some sanctions on point source pollution, but generally turned its attention away to industrial water and air pollution. Farming was thus virtually allowed a free hand as the government retreated from any direct involvement in the environmental attributes of managed landscapes. The result was that by 1997, New Zealand was judged to be the most 'open' and unregulated economy in the OECD. Against all economic expectations, however, the country was still heavily reliant on exporting primary products.

In an attempt to gauge the effects on rural New Zealand during this period, between 1984 and 1992, I engaged in an in-depth study of 30 farm families and 30 small rural businesses. The dizzy currency speculation of the mid-80s, high interest rates due to monetarist policies, removal of subsidies, and the flight of investment from agriculture were very damaging, as was a major drought in 1989. However, by 1992, a cooling dollar and the return of investment into agriculture after the corporate failures of the 1980s meant that most farmers felt that the next ten years would see New Zealand agriculture rebuilt in some way. In the interim, agricultural communities suffered negative impacts due to loss of employment, the removal of state services, and privatisation of infrastructures such as post offices and local bank branches. Communities in forestry areas suffered even more significant declines due to removal of state employment in the forestry industry after widespread privatisation of state forestry assets and science. New Zealand propagated aggressive new forestry corporations, that fed upon hot investment money to leverage buy-outs of forestry assets in countries like Chile and Canada. At the same time investment in forestry infrastructure in New Zealand post-corporatisation became almost non-existent.

Dire – and significant - as these combined social and economic effects have been, the rest of this lecture addresses the effects and responses from within New Zealand to

the sense of an emerging environmental crisis in agriculture – both globally and locally. There are several reasons why this question has become compelling for the future of primary production in New Zealand. First, as has already been suggested, it is hard to regulate to control negative environmental impacts in primary production, when the key regulator – the state – has abandoned this arena. Is the 'market' an adequate and reliable advocate for the needs of the environment? Second, just as the state in New Zealand has withdrawn from an interventionist role in primary production, many of New Zealand's key markets have started asking tough questions about the environmental qualities of food and fibre production from New Zealand. Many exporters have discovered that there is good money to be made out of products that can make claims about sustainability, naturalness, environmental qualities, or food safety. Thus the question remains: can we have sustainable agriculture in a free market?

The next section of this lecture examines the responses of New Zealand exporters to environmental issues. The key aspect of this argument is that there are two clear trajectories emerging in New Zealand which indicate contradictory paths for the sustainability of primary production in this country.

Trajectory One: Intensification

There is very little mystery about the overall direction of this first trajectory. A constant criticism of neo-liberal reform and the globalisation of de-regulated trade and production in agriculture is that potentially harmful environmental effects can accumulate unchecked by regulation or civil society. For some industries in New Zealand, the most gloomy of these forecasts are, regrettably, true. These case studies form an important benchmark of how not to achieve sustainability in primary production.

As a rural sociologist, I see in many New Zealand primary production sectors two extremely negative tendencies: either to intensify production on what we term the 'technological treadmill', or to maintain economic viability by mining the natural capital of the resource base.

One clear example of the technological treadmill is the New Zealand Dairy industry. Previously, the Dairy industry in New Zealand appeared to be a successful exemplar of high levels of productivity achieved from a reasonably non-intensive, pasture-based system of production. In short, New Zealand dairy cows ate grass, didn't receive any bovine growth hormones, and generally relied on superior genetics to produce more milk than their competitors in Australia, Canada, the USA, or Europe. But de-regulation of the industry, aggressive competitors in the world market, and no state assistance have triggered a wave of intensification. Dairy headed strongly down the technological treadmill. In Dairy production over the last ten years, therefore, we see a:

- 34% increase in the number of cows;
- significant increase in cows per hectare;
- 34% increase in milk solids produced per hectare;
- 162% increase in nitrogenous fertilisers per hectare.

Trade economists understandably fear that this extra productivity, particularly in an already oversupplied world market, simply drives down the price of dairy goods. Indeed, ask any dairy farmer and they will tell you that the farm-gate returns for dairy products are currently the worst they have been for decades. But they have no alternative: all they can do is continue to intensify to stay level with the market.

Things are even worse in some other livestock sectors. If we take urea fertiliser as an indicator of nitrate applications to land, the following sectors have all dramatically increased their urea applications since 1994 (in per hectare percentages):

- 162% for dairy,
- 244% for deer,
- 600% for sheep,
- 650% for beef,

To contextualise this trend, most livestock sectors in the Western world have moved from pasture to purchased high-protein stock food to increase productivity. This shift

is entirely possible in the USA and Europe where, due to subsidies, large supplies of cereal grains or soybeans are produced well below the cost of production. New Zealand has no such alternative source of stock food. Instead, our farmers just use more and more fertiliser to squeeze maximum grass growth out of pasture. One clear result of this intensification of pasture management is significant nutrient run-off and nitrate contamination of surrounding waterways.

In forestry, the dynamic of intensification has taken the form of mining natural and human capital resources. The post-1984 neo-liberal revolution first moved the state forest into a model of 'corporatisation' – that is, state-owned enterprises. The negative effects of turning state forests into strict revenue-generating enterprises were numerous: the new companies stopped investing in tending (the consequences of this are now apparent in poor quality wood supplies), and started to overcut forests. Numerous staff were made redundant. The average rotation age was also decreased (from 32 to 28 years for radiata pine). These actions certainly reduced costs and increased immediate revenue - but at the expense of the long term sustainability and timber quality of the whole industry. The significant rise in corporate profits in forestry in the 1980s were achieved primarily through mining the resource. Other forests were simply sold to cover government deficits. Government employees who had built up the forest resource watched in amazement as forests within 5 years of coming on-stream were sold at bargain prices. The taxpayer who had invested 75 years in growing these trees watched in equal astonishment as corporate raiders arrived, cashed in and then distributed the profits to shareholders rather than reinvesting to maintain the resource base. Currently, the state of the forestry industry in New Zealand is more complex than the stark excesses of the 1980s and early 1990s - I shall return to this in due course.

The consequences of such rapid intensification and resource mining have quickly become apparent. Even leaving aside questions about the economic and social sustainability of such trends, the environmental consequences have already led to direct conflict within New Zealand. The most recognisable example is an escalating conflict between livestock industries and recreational fishers. New Zealand's recreational trout fishery has an international reputation. Yet anglers are now arriving at waterways degraded by choking weed growth, declining insect life, increased water

turbidity and loss of the once legendary clarity of New Zealand streams: and, of course, disappearing trout.

In conclusion, once opened up to the power of global food and fibre markets, many of New Zealand's primary production sectors have intensified production systems, eaten into natural capital, and moved rapidly away from any model of primary production that could be described as exhibiting social, economic, or environmental sustainability. This will come as no surprise to many critics of neo-liberal reform and globalisation, and, in fact, many such critics would simply expect the lecture to finish at the end of this lamentable narrative. *Quod Erat Demonstrandum*.

In contrast, this is the point where this lecture ventures into interesting territory concerning sustainable agriculture in deregulated economies. New Zealand's horticultural exporters, in striking contrast to its livestock industries, have been moving in a completely different direction.

Trajectory Two: Greening Food

For a nation that had prospered for so long in protected and lucrative markets abroad, the doctrine of productivism ran deep. In numerous OECD surveys - and despite our trading image as 'clean and green' - New Zealand ranked as one of the least environmentally conscious nations in the world. Our levels of concern about food safety were minimal; our aversion to pesticide residues almost non-existent; and as I speak we are the second to worst OECD nation on energy efficiency.

One good example of such (mis)management practice is the New Zealand kiwifruit industry. During the 1970s, its basic production system found it necessary to spray up to 17 applications of pesticides per year at a time when our most chemically intensive competitor – California – was using only 3 such applications. Doggedly, New Zealand felt that it was better to be safe than sorry, and abundant and pest-free harvests of kiwifruit were evidence of the 'wisdom' of this management system. At the world expo in Seville in 1992, however, the kiwifruit industry proudly (if ironically) stood under a banner declaring that New Zealand food was clean and green. The first hint of a crisis was more of a shout than a hint. In the same year -

1992 - Italian authorities seized and dumped New Zealand kiwifruit for significantly exceeding newly legislated Maximum Residue Levels (MRLs) for agrichemicals. Officials not only appropriated 3 million trays, but even billed the New Zealand industry for their disposal.

A similar trend quickly became apparent across a number of industries. Apples, pears, sweetcorn, peas, carrots, squash, and onion exports encountered the same new criteria as kiwifruit. In an incident worth recounting to this audience, Canadian authorities tested one New Zealand wine and found that it exceeded WHO recommendations for fungicide residue levels by 600%.

For these industries, a sudden crisis in 'food safety' was a cruel blow. It seemed unjust that, having experienced deregulation, they should additionally face a potential loss of access to their best markets. Such regulation also deeply compromised the ability of these industries to take the dairy path and simply intensify production in the face of this crisis.

What commenced in 1992 as a realisation that 'food safety' was now an important concern in world markets later evolved into a much wider agenda demanding not only 'food safety' but also 'environmental qualities', health, and even incorporating overt claims about sustainability in production. To fast-forward 12 years, a rapid transition was taking place by which key consumer markets demanded that food be free of residues, environmentally sound, GM free, culturally safe, and even regionally appropriate. The same impetus was also appearing outside the food export industries. In 1997, a problem arose with New Zealand timber supplied for household products sold in British B & Q stores. Customers were starting to ask exactly how clean and green New Zealand wood products were. According to industry legend, the question was raised specifically about wooden toilet seats. Similarly, in 1999, the US Home Depot chain responded to a vigorous campaign by environmental groups to also move towards environmental certification of timber.

The kiwifruit industry (and through the 1990s numerous other important exporters) faced a decision in 1992 to either relinquish their best markets and become bulk

commodity producers, or to try and meet these new environmental and food safety requirements. Very reluctantly they chose the latter course.

In 1994, my research centre – CSAFE[18] - began studying the transition of New Zealand food exporters towards green production.

The first stage of this experiment took food exporters towards organics. Represented by less than 100 farmers in New Zealand's 64,000 farms, organic agriculture has nevertheless had a long - if highly marginal - history in New Zealand. European migrants, alternative lifestylers and some dissident agricultural scientists alone had kept a tiny niche of organic farming and experimentation alive in New Zealand during the 1970s and 80s. Imagine their surprise when one of New Zealand's largest fruit exporters announced it was going into organic production.

Zespri[19] encouraged growers into organic production between 1992 and 1997. By 2000, it had converted 5% of production into certified organic systems. Tellingly, a similar process was taking place in the apple, processed vegetables, wine, and honey industries. The effect of this shift meant that while in 1994, organic exports were valued at US$1m, by 2000 they had exceeded US$40m. Almost all of this production had grown up under the aegis of corporate exporters. In 2004, over a 1000 producers are operating under certified organic systems.

In light of this movement, New Zealand developed some celebrity status as the quintessentially corporate-driven organic exporter. This reputation did not exactly thrill the long term traditionalists of organics in New Zealand. Yet, despite some dire prognostications about the corrosive effects of export-driven organics, domestic organic markets sprang up and small scale organic production began to flourish. In 2004, the value of domestic organic consumption actually overtook the value of organic exports for the first time. The organic experiment had reached some form of maturity, if not without some heartache for all its participants.

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[18] The Centre for the Study of Agriculture, Food and Environment at the University of Otago. (www.otago.ac.nz/nzpg/csafe).

[19] Zespri International Ltd. - formerly the NZ Kiwifruit Marketing Board.

Organics, however, was not the only option. Integrated Pest Management (IPM) in particular provided an alternative pathway towards 'greener' food production. Scientists in New Zealand had long participated in international debates on Integrated production systems or Integrated Pest Management, but had found little place for their technologies prior to the 1992 crisis in market access. IPM proffers a set of scientific techniques to produce fruit with zero chemical residues. Eliminating hard sprays, it uses a combination of soft sprays and good entomological science to eliminate troublesome pesticide residues from fruit. In 1994, the kiwifruit industry developed an IPM system called KiwiGreen. After successful trials on a group of orchards, a stampede of growers signed up as KiwiGreen. By 1998, the entire kiwifruit industry was KiwiGreen or organic. Stunningly, in only six years, New Zealand's kiwifruit had gone from being the most intensively produced in the world to the most pesticide free.

The Integrated pathway continued to strengthen and now exerts a huge influence across horticultural industries. The production system that commenced life as IPM in the KiwiGreen system has now moved strongly towards a much broader and heavily audited system of production including soil, water, and energy audits. Key industries, like kiwifruit and apples, have simultaneously integrated themselves with emerging new international environmental audit alliances. The biggest of these is called EUREP-GAP, operated by the 30 largest supermarkets and cooperatives in Europe.[20] EUREP-GAP protocols for sustainable production of fruit and vegetables are enormously dense and wide-ranging, yet provide the key to elite market access for food exporters. In only four years, since 1999, EUREP-GAP has signed up over 200 companies as suppliers (including the entire kiwifruit and apple export industries in New Zealand) and has certified over 12,000 fruit and vegetable producers as fully compliant to the challenging EUREP-GAP protocols.

Whether via certified organic production, homegrown IPM standards, or now through international audit systems like EUREP-GAP, the result is a strikingly different trajectory of sustainable production in New Zealand that contrasts with the

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[20] Euro Retailers Produce Working Group (EUREP), protocols on Good Agricultural Practice (GAP).

intensification of production in sectors such as dairy. The significance of this should not, however, be overstated. Of New Zealand's total food export value (between US$9-10b), less than 20% is produced under these new green systems.

For some industries, the forces behind this shift were gathering through the early 1990s. It is important to note, however, that these are food exporters, and that the pressures mounting over food safety in lucrative markets differ from those experienced by other primary production sectors (such as wool and wood). Nevertheless, forestry in New Zealand, following the UK toilet seat crisis, began to experience similar pressure to move towards certifying wood products as sourced from sustainable systems. The subsequent narrative of greening in the timber industry is less clear-cut than in horticulture. Currently, in that industry, 34% of production is certified by the international Forest Stewardship Council. The uptake of sustainable forestry has not matched the 100% uptake record of horticultural exporters. Unfortunately, some of the worst corporate abusers of the forestry resource over the last 20 years have been reluctant to contemplate the greener path: unless they get to design and implement the audit themselves.

The Commercialisation of Sustainability

These industry case studies demonstrate the degree to which New Zealand has chosen to follow the commercial path towards sustainable land-use. My intent thus far has been to position this particular development pathway alongside the simultaneous trend towards intensification and resource mining in some sectors (with both trends being apparent in sectors such as forestry). I now want to dig deeper into the trajectory towards sustainable agriculture and pose some questions about the relationship between commercialisation and sustainability.

'Sustainability' is a very slippery term, and many academics have tied themselves into knots trying to figure out, at an abstract level, what all the multiple facets and dimensions of 'real' sustainability should be. Few of these abstract attempts consider that commoditising sustainable products within capitalist markets appears to be worth considering as one viable solution.

I now want to assemble an argument that outlines the pitfalls of making a strong and categorical normative assumption about the incompatibility of commercialisation and sustainability. To do this, I need to describe the economic and social practices that aim to stabilise and regulate one particular set of ideas (in this case, 'being sustainable'). Sociologists describe these as systems of 'governance'.[21]

There are generally thought to be three broad systems of governance[22] that stabilise particular versions of sustainability and/or outline a particular pathway to achieving sustainability:

• through *regulation*,
• through *individuals* (and social groups or social movements),
• through the *market*.

Put simply, industries move towards more sustainable practices because either a regulator compelled them to, or individuals within the industry decided it was a good idea and did it voluntarily, or because someone offered a better price for a product from a sustainable system. These three systems of governance form an essential triad which lies at the heart of the rest of the discussion in this lecture. Further, there is clearly a moral hierarchy to these options. Regulation is seen as a necessity. Individual and social movement actions are good. Market mechanisms are undesirable or outright bad.

First, let us discount *regulation* as an option in New Zealand for creating a system of governance that might promote more sustainable practices.

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[21] Governance is a sociological term that tries to be flexible enough to recognise that the act of *governing* is not always solely the activity of *governments*. Rather, global life is governed by many different processes controlled by complex alliances of groups or organisations. There is even 'self-governance' by individuals over themselves.

[22] In New Zealand there is also an emerging fourth pathway, which is through the processes of *kaupapa Maori*, in which cultural mechanisms operationalised by our indigenous people define a particular pathway to sustainability. One Maori organisation *Te Waka Kai Ora* has mobilised a particular definition and process for defining organic production among indigenous communities and for small scale producers, but does not, as yet, have many actual producers or communities operating under their principles.

I have already argued that, for unique reasons relating to our recent political history, New Zealand is not operating any significant manifestation of the first of these governance pathways. New Zealand, after all, is interesting precisely because of the absence of government regulation in such areas.

But, I don't want to entirely discount the second option – the potential for governance prompted by individual voluntary action or the wider actions of social groups and social movements. The entire trajectory of this lecture actually pivots around a set of key interactions between the individual (and social movement) and market governance systems.

The interactions I wish to highlight are particularly clear in relation to organic production, and the greening of the New Zealand kiwifruit industry.

During the crisis of agricultural deregulation in the 1980s, organic agriculture achieved a high profile advocating a return to local food systems and biological husbandry. As it transpired, what actually eventuated was a rapid influx of big business and export-driven expansion of organic activity.

At the heart of this period of growth, a debate smouldered within the organic social movement about the place of food exporting and large corporations in organic agriculture. Some argued that the true place of organics was local, and that the 90% of farmers engaged in exporting were already doomed to an unsustainable future. Others more pragmatically suggested that if all farmland in New Zealand was to become organic then the export industry must, at some stage, be brought into organic production. Similarly, dramatically rising consumption figures for organic produce in wealthy countries indicated a market that was unlikely to be filled by local suppliers.

Such debates within the organic agriculture movement mirrored wider discussions in the environmental movement over the role of industry and markets in trying to achieve sustainability. Clearly, much of the environmental movement maintains the normative assumption that sustainability and capitalism are incompatible. Given that industrialisation, resource exploitation, environmental destruction, and many other woes are the direct result of the industrialisation of Western societies, isn't this

assumption self-evidently true? And if this assumption is true, then it is patently highly unlikely that the market, or commercial mechanisms overall, might comprise an acceptable pathway towards sustainability.

Within the context of such clear assumptions about how we should become sustainable, the organic agriculture movement viewed the arrival of corporate exporters wanting to go organic as something akin to supping with the devil. Even more galling, the arrival of the organic export industry triggered a massive upsurge in the number of organic growers and the amount of land area under organic management.

A tortured series of debates followed: were new organic growers in the kiwifruit or vegetable industries 'real organic' growers, or were they just after quick money? Flashpoint incidents occurred as, for example, one organic certification inspector refused to certify a new organic grower because, while technically compliant with every aspect of organic production, he failed to show sufficient respect for broader organic philosophy. More confusion between categories arose as, in the opposite scenario, growers who by their own admission attempted organic production only to gain a market premium, then became converted to the wider goals of organic philosophy and became zealous evangelists of the organic way. Even more chagrining, despite all the visibility and passion of the organic sector, the Integrated approach to sustainable agriculture quietly took over many industries. Without as much as a single publicity campaign, anti-GM protest or annual conference, KiwiGreen engulfed the kiwifruit industry, leaving organic production with a feisty, but frustrated, 5% of production.

As I have argued in many publications, while such confusion reigned inside the organic social movement, over the period from 1990 to 2000 some clear underlying trends were nevertheless emerging. Organics was becoming much less local and much more export-oriented. Large organisations and corporations were taking over leadership roles in developing the industry. In the early days of the organic movement, there was no organic certification system. You knew who was authentically organic because they belonged to the organic social movement. Consequently, the food they grew also could be considered to be authentically

organic. By 2000, this sense of trust had entirely vanished to be replaced by complex systems of organic inspection and certification. Last but not least - and the specific trend I have singled out for this lecture - the organic social movement became a less and less powerful voice in defining what the standards for organic production should be. In its place, sets of international organic standards emanating from Europe or the USA became the international benchmark that exporters tried to meet.

This development allows us to locate something curious: both the crisis within the New Zealand organic social movement, and the rapid rise of KiwiGreen and the Integrated approach to sustainability start to point towards something unusual in the system of governance defining organic agriculture.

On one side, the organic social movement attempted to sup with the devil by keeping the devil well tied into his chair. By creating the system of organic certification, organic organisations sought to control the worst excesses of commercialisation: using strict audits to protect the key goals of the social movement. As the above example shows, exactly how to make this audit stick proved quite challenging. At the same time, the Integrated systems embraced audit almost immediately. The more dense and challenging international audit systems like EUREP-GAP became, the more some export industries prospered. Those like kiwifruit - that were able to comply with relative stringent requirements - found themselves in the happy position of securing the status of being elite suppliers with privileged access to lucrative markets. In short, they didn't mind being tied to the chair, if it meant that all their key competitors got no seat at the table.

Thus for both organic and Integrated systems, systems of audit emerged as either a defensive mechanism against the evils of capitalism or a wonderful tool for securing premium market access.

So, in the end, what I have described here as governance type 2: governance by individuals and social movements became less significant in the New Zealand organic industry. While not disappearing altogether, the organic social movement ended up in a form of compromise system, hand-in-hand with the commercial forces of markets, international standards, and commercial audit organisations in defining 'organic

agriculture'. My next section articulates more clearly the consequences of this kind of compromise – or hybrid – form of governance for sustainability. In this section, I move on to discuss the politics of 'sustainability via audit'.

The Politics of Sustainability via Audit

I started this lecture by outlining the basic claims that New Zealand is not only an exemplar of a particularly de-regulated economy, but has also moved towards sustainable production down the commercial path. My previous section, however, has suggested that perhaps there is also now a third issue in the equation: that New Zealand very clearly demonstrates a hybrid form of governance created by compromises between social movements and commercial forces: the pathway of sustainability via audit. This pathway is by no means unproblematic. Nevertheless, it holds the key to why New Zealand has experienced highly promising degrees of uptake in sustainable systems (particularly in the light of the alternative pathway of unsustainable intensification and resource mining).

This section will now pull back from the New Zealand case and try to examine the politics of sustainability by audit in a more global context. As will become clearer, New Zealand is not the only exporting country facing increasing systems of audit around food and fibre exports. Put simply, audit seems to be taking over the world.

To understand the problems of legitimacy experienced by sustainability via audit, let me introduce some key assumptions that guide the proponents of sustainable agriculture around the world.

1. That social movements alone can save the world (occasionally assisted by governments).

Social movements are essential to the ongoing struggle over resource depletion, environmental degradation, industrial pseudo-food, and rural decline. The organic agriculture movement is not alone in confronting the problems of agriculture; alongside it we can site notable other important social movements such as the Fairtrade movement, the Save the Farm movement, the Slow Food movement, and

Via Campesina - not to mention many wider manifestations of the environmental movement which led to activities like Dolphin-Friendly Tuna, or the Nestle Boycott over infant formula in the Third World. At events like the Seattle protests - or more recently at Cancun - social movements and friendly governments have lined up and pushed the important case that environment and labour standards must be central to world trade. But in these examples also lies the problem of Cancun: is all business evil and all global trade despicable? Clearly, no. What many social movement fail to recognise is that one of the most powerful expressions of social movement ideas comes through the market. For the millions of citizens who can't make it to the protest, who live in a state of the USA where their vote won't change the president, or whose passion for the cause is a little more muted than their more zealous peers, everyday purchasing decisions at the supermarket or co-op become their most powerful expression of political intent. What has driven a significant revolution in some of New Zealand's food export sectors had nothing to do with local social movements or green politics, but has everything to do with market demands for greener products. Even toilet seats.

2. That the commercialisation of sustainable production systems is automatically bad.

Market driven change has significant problems. Historically, the industrial integration of global markets means that products are stripped of their meanings when traded over large distances. The Slow Food movement, most notably, attacks this fundamental condition. Further, the conditions under which products are produced can be obscured under clever advertising. This can strip away the crucial sense of place that can motivate individuals to reduce, re-use, and recycle. That is to say, markets are open to manipulation and thus they distance us as consumers from the consequences of our actions. How many of us would think twice before eating a hamburger if we could see the cattle it came from munching happily on some Latin American grass growing where once there was forest? Or purchase some unusually cheap garden furniture if we were fully aware that the wood came from devastating forestry practices in Indonesia?

Yet, markets do also link us in strangely enlightening ways. The green sentiments of European consumers provided the opportunity that opened up the possibility of green production in New Zealand. Effectively, such sentiment opened up the possibility of dialogue between our small and marginalised organic movement and some big and powerful production sectors. It provided the market incentive needed to move mainstream producers into experimenting with more sustainable production systems, many of whom then became totally convinced by their new organic life. It opened the window for a number of scientists interested in sustainable systems - like IPM - to gain a foothold of credibility within a highly market-driven regulatory structure for science investment. It brought together government officials, businesses, input suppliers, science providers, and the organic social movement into an alliance – albeit an uneasy one - that eventually had major benefits. It created space for the Forest Stewardship Council to begin operating in New Zealand.

The most compelling evidence – which even convinced me that I should tone down my own scepticism - was that the New Zealand domestic market for organic food began to flourish. Farmers' markets have proliferated. Local supermarkets are stocking more local organic produce. Communal gardens and school gardening schemes are emerging. Even if the export catalyst for growth in sustainable agriculture did not directly create all these local effects, we certainly cannot argue that it has destroyed them either.

3. That de-regulation of agriculture and agricultural markets automatically leads to intensification.

When we contemplate the sad vision of cattle chewing grass where once there was rainforest, it signifies the worst possible outcomes of market liberalisation and the race to the bottom in agricultural intensification. I feel the same way when looking at a polluted trout stream in New Zealand - a victim of absent government regulation and significant intensification of dairy farms upstream in response to global market pressures.

But this assumption unarguably reifies something called 'the market', as well as reifying the process called 'de-regulation' at the level of the nation-state. In a

situation of de-regulation, the New Zealand case clearly shows that different agro-commodity chains[23] themselves take on the primary role of governance over food production. I have presented evidence that in some agro-commodity chains (like Dairy) an absence of global trading standards, severe price competition by volume, and heavy demands for efficiency improvements in production have taken place. Consequently, the predicted equation of deregulation resulting in unsustainable intensification holds true. But in agro-commodity chains where consumer power, retailer strategies, or end-market government regulations impose considerable food safety and environmental requirements on food products, the result is often the opposite. Put simply, it seems to make an enormous difference whether systems of sustainability by audit are operating in agro-commodity systems.

Now, in 2004, New Zealand kiwifruit faces a comprehensive 224 point audit system under EUREP-GAP to gain entry to European supermarkets. The protocols for EUREP-GAP are created by technical standards committees who include representatives from consumer groups, retailers, environmental groups, scientists, and farm producers. It is a system strongly endorsed by European governments, but actually run by a not-for-profit organisation. It has been responsible for moving KiwiGreen production of kiwifruit even further away from intensification and towards more sustainable production.

Clearly the politics of regulation and governance in agro-commodity chains differ enormously. Kiwifruit, for instance, face a completely different set of governance structures to get to market compared to dairy production. Kiwifruit faces comprehensive systems of sustainability by audit.

How, then, do the three normative assumptions survive in the New Zealand case?

I have a problem of evidence with Normative Assumption 3: *That de-regulation of agriculture and agricultural markets automatically leads to intensification.* New Zealand demonstrates that this simultaneously is and isn't the case. To answer this

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[23] 'Agro-commodity chains' is a term used to describe the whole system of commodity production, distribution and consumption; in the case of export commodities, crossing potentially several national boundaries.

conundrum it must be pointed out that this assumption reifies the nation state as the key site of governance over primary production. One significant development amongst the complex outcomes of the New Zealand state retreating from regulating agriculture was that important new sites of governance became apparent – the complex politics and outcomes of sustainability by audit in agro-commodity systems. I would go further and argue that agro-commodity chains as sites of governance do not emerge as some form of regulatory compensation when the state withdraws from the regulation of food systems. Rather, they are powerful (and becoming increasingly more powerful) throughout the global trading system, but are generally disguised in countries where, unlike New Zealand, state activities are still in operation.

Seen through the lens of New Zealand, the equation that regulation equals the governing activities of states is vastly too simplistic. Even in the absence of state regulation, other systems of governance are strongly operating in agro-food systems. This explains why some sectors in New Zealand have moved in such different directions to each other.

Similarly, Normative Assumption 2: *That the commercialisation of sustainable production systems is automatically bad*, also eliminates the potential positive impacts of audit systems through denying the possibility that the commercial path to sustainability can exist – or, indeed, prosper. Categorical denial of any commercial mechanisms disallows the hybrid form between markets and social movements from making a positive contribution. If all commercial paths are categorically bad, then we lose the ability to argue that some commercial paths in New Zealand are clearly vastly better than others.

Which brings us back to Normative Assumption 1: *That social movements alone can save the world (occasionally assisted by governments).* It is a massive exercise in denial that social movements and the market are not intricately involved with each other. The vast trends of green consumerism that have driven markets for products like organic food and environmentally-friendly toilet seats are driven by the politics and media profile of social movements. Likewise, powerful audit systems like EUREP-GAP are succeeding not because they dupe consumers into thinking corporate products are greener than they really are, but because social movements

have actually been at the table designing the audit itself. Mechanisms of audit - such as organic certification or the Forest Stewardship Council – have, from their inception, been the secret hybrid that exists between social movements and the market.

So, the guilty secret is out. Markets do have a role to play in moving us towards sustainable primary production: a role consisting of particular hybrid forms of market and social movement governance. The triad of *regulation*, *market,* and *individual* that has structured the thinking of how we should (and shouldn't) become sustainable cannot correctly interpret what has happened in New Zealand because it structures away the possibility of good things happening in such an extremely neo-liberal, market driven and privatised country as New Zealand.

My conclusion, drawn from the fifteen years research that I've summarised here, is that the trajectory towards audit-driven sustainability in New Zealand's horticultural industries is vastly preferable to the devastating intensification happening in our other primary production sectors. The evidence presented in this lecture clearly demonstrates that sustainability by audit was the mechanism that shifted the horticultural export industries (and parts of the forestry industry) out of the dangerous spiral of intensification and resource mining.

If normative assumptions about regulation, market and individual actions blinds us to the value of sustainability via audit, we run the risk of failing to see where the new politics of sustainability are taking shape. Yes, it is important to engage politically with your local national and regional regulators; it is important to denounce the worst excesses of corporate greed and short-sightedness; it is important to turn up at Seattle and Cancun and demand a fairer and more environmentally-conscious set of global trade rules. But all of these actions reside comfortably inside the structuring and normative triad of regulation, market, and individual. What all these actions miss, therefore, is the powerful politics unfolding in hybrid governance forms. Particularly around the technical committees of audit systems like EUREP-GAP; committees that have been strongly influenced by European social movements and which have, in turn, strongly influenced a turnaround in the environmental performance of some export sectors in New Zealand.

The reason why good things can happen in bad economies is because even in bad economies there are other sites of governance (like audit systems in global agro-food chains) where good sustainability outcomes can still happen.

Appendix 5: The Qualitative Comparative Analysis Method

Introduction and overview

Qualitative Comparative Analysis (QCA) is a relatively new research approach in social science that attempts to bridge the gap between qualitative and quantitative research methods (Ragin 1987, 1989, 1994a; Ragin and Hein 1993; Griffin and Ragin 1994). The method is designed to overcome the limitations of qualitative research techniques that often use only a single case study or a number of cases to draw general conclusion, but without resorting to quantitative research techniques that include large numbers of cases. QCA attempts to achieve this compromise by treading a middle road between qualitative 'narrow depth' and quantitative 'shallow breadth' by including holistic information on a moderate number of cases, about 50 or so. The QCA method attempts to maintain both the case-oriented approach of qualitative techniques and the variable-oriented approach of quantitative techniques by gathering multi-case information on a wide range of selected variables and transforming this into nominal data using a yes/no or presence/absence binary code dichotomy. Ragin describes his approach as providing tools for comparing cases as configurations of set memberships and for elucidating their patterned similarities and differences (Drass and Ragin, 1992: 120). Causation is not seen as linear and additive but as either necessary or sufficient, conjunctoral or multiple.

Ragin sets out three types of research strategies, as shown in the table below

Table 1: Three types of research strategies

Aspects of Cases	Many	Qualitative Research		
			Comparative Research	
	Few			Quantitative Research
		Few		Many
	Number of cases			

Typically, QCA is used for about 50 cases and the goal of the researcher is to examine patterns of similarity and difference among the cases and to identify causal links, that is, how different configurations of causes produce different outcomes across the range of cases included in a study. There is a dialogue between ideas and evidence to develop a meaningful representation of the research topic. The focus is on configurations: a configuration is a specific combination of attributes that is common to a number of cases. Configurations are then compared and it is accepted that there may be several combinations of conditions that generate the same general outcome. It is possible to eliminate irrelevant causes. Causal conditions are not studied separately as in studies focusing on covariation, but in combinations.

The key steps of QCA are:

1. Select causal and outcome conditions using existing social science literature and substantive knowledge to guide selection.
2. Construct a sorted table showing the scores of cases on these causal and outcome conditions.
3. Construct a truth table from the data table making sure that cases with the same causal conditions actually have the same score on the outcome.
4. Compare rows of the truth table and simplify them eliminating one condition at time from pairs of rows.
5. Examine the coverage of the simplified terms to see if there are any surplus terms that ca be eliminated.

Outline of method

Selecting the variables to be included in a QCA research project is the critical starting point of the method's implementation and should be guided by the literature on the topic and supplemented by considerable forethought. The literature shows four approaches to the selection of variables. First, a comprehensive approach includes all the existing theoretical perspectives on the subject at hand (Wickham-Crowley, 1991). Second, a perspective approach would limit the variables included by using only the main theoretical approaches found in the literature (Ragin, 1987). Third, a significance approach includes only those variables that proved significant in already completed statistical analyses (Amenta et al., 1992). Finally, a "second look" approach also includes insignificant variables from previous analyses (Griffin et al., 1991).

The binary data coding step constructs 'data tables' that present each case's combination of yes/presence and no/absence responses, coded '1' on the former and '0' on the latter, to the selected variables. Each case is then given an overall rating, also coded according to the presence (1) or absence (0) of the particular outcome under investigation, in this example the success of new industries in New Zealand. The selected variables used to characterise each case are therefore 'independent variables', while the overall rating for each case is the 'dependent variable'. The binary codes for the independent variables are hereafter referred to as 'input values' and the binary code of the dependent variable is hereafter referred to as the 'output value' (note that the former is plural and the latter is singular).

Regardless of which of the four means of selecting the independent variables described above is used, a general problem still exists of how to code both the input values and output value. Decisions on how to transform the probably substantial information on each independent and dependent variable into binary form is a major requirement of the QCA method, because in doing so some degree of case information detail will undoubtedly be lost. Moreover, the transformation of variables with different types of data measurement into the universal form of binary dichotomies means that some advanced coding procedures have been developed (Ragin, 1994b; Hollingsworth et al., 1996). Very clear criteria, therefore, are needed

at this data reduction point of the QCA method in order to determine the actual data coding procedure. This coding system should be explained, where necessary, as part of the detailing of the method implementation in each research project. Thus the QCA method forces the researcher to give serious consideration to the selection of the independent variables and how these will be coded as input values. The researcher is also required to have a sound understanding of the general features of each case included in the comparative analysis before gathering detailed information that responds to each of the independent variables.

The next stage of the QCA method employs Boolean algebraic analysis as the analytical tool to identify critical configurations of input values associated with particular output values. The preparatory step for this operation involves converting the input values on the data tables into algebraic form, whereby each independent variable is given a letter code and presence (1) is signified by the upper case and absence (0) is signified by the lower case. Each case's letter codes for all independent variables are then amalgamated into a Boolean algebraic code comprising as many letters (in either upper or lower case, depending on the presence/absence binary code for each independent variable) as there are independent variables. These initial Boolean codes are known as 'primitive expressions'.

The amalgamation of all the letter codes into a primitive expression uses Boolean multiplication, which "differs substantially from normal multiplication" (Ragin 1987:91). Boolean multiplication represents logical AND, which means that if an output value, S, is associated with the primitive expression 'Abc', then this does not represent A x b x c, but the presence of variable A in combination with the absence of variable b in combination with the absence of variable c. In other words, S occurs when A is present AND b is absent AND c is absent, expressed as S = Abc. In instances where an output value has more than one primitive expression, these are linked by Boolean addition, which represents logical OR. For example, if S also occurs when a is absent, B is present, c is absent, and D is present, then S will occur with Abc OR aBcD, and its equation of primitive expressions will read S = Abc + aBcD.

An output value's primitive expression(s) are then used to construct a 'truth table', where identical primitive expressions are grouped together and the number of each identical primitive expression is entered alongside. The truth table also records the frequency of the presence and/or absence of each primitive expression's output value. Some groups of primitive expressions may be homogenous in that all cases have the same input values and output value, whereas other groups may be contradictory in that while all cases have the same input values there is difference on output value. These contradictory groups can be dealt with in a number of ways, which are discussed in detail in Section 3.3 below.

Thereafter, the minimal number (i.e., a number smaller than the total number of cases, as a primitive expression that is common to two or more cases is only included once on the truth table) of primitive expressions on the truth table are then subjected to the Boolean algebraic analysis proper. The first step in this analysis is a procedure known as Boolean algebraic minimisation, which involves comparing the input values of primitive expressions that have the same output value. Primitive expressions that differ only on the presence and absence of only one and the same variable (i.e., the upper and lower case of a particular letter code) are simplified by eliminating the corresponding letter code altogether. This omission is justified by Boolean logic, which holds that in such instances the presence or absence of that particular letter code does not affect the output value, and therefore it is irrelevant as a possible cause of that specific outcome. These minimised primitive expressions are known as 'prime implicants', for they contain only those upper or lower case letter codes that cover all critical causal combinations that result in each output value.

The second step of Boolean minimisation is to reduce these prime implicants to 'essential prime implicants'. This reduction is achieved by constructing 'essential prime implicant charts', which include the original primitive expressions and the list of prime implicants. The Boolean logic of this exercise is that two or more primitive expressions may form a subset of the same prime implicant, therefore rendering a second prime implicant unnecessary. This procedure is necessary because the first step of Boolean minimisation does not enable the identification of those prime implicants that form a superset incorporating two or more primitive expressions. In other words, some prime implicants are more important than others, hence the

nomenclature of essential prime implicants. The objective of these two steps of Boolean minimisation is to reach a logically minimal number of essential prime implicants that incorporate or 'cover' all the original primitive expressions.

Such parsimony eases the final stage of the Boolean algebraic analysis, which seeks to (a) identify similarities in input values between cases with the same output value and (b) differences in input values between cases with different output values. These similarities and differences will pinpoint the critical independent variables, now referred to as causal conditions, that are associated with a particular output value, in this case the success (or, equally as important, the non-success) of new land-based industries in New Zealand. The QCA method recognises, however, that causal conditions are more likely to operate in combination with others, either their presence or absence, and therefore the impact of a causal condition should be discussed in the context of the presence or absence of other conditions. QCA also allows for the probability that any output value may have more than one essential prime implicant; that is, this method acknowledges that a number of different combinations of independent variables may generate the same dependent variable. Indeed, in advanced studies with large numbers of independent variables the expectation should be of multiple causes of the same effect.

After this last step in the Boolean algebraic analysis all independent variables will fall into one of four categories. The first group includes those independent variables that are not closely associated with any output value; that is, they are not causal conditions on their own or in any particular combination with other independent variables. These independent variables are known as neither 'necessary', because they are not present in all of an output value's essential prime implicants, nor 'sufficient', because in no output value's essential prime implicant(s) does one independent variable appear by itself. An independent variable is 'necessary', therefore, only if it appears in all of an output value's essential prime implicants, for in no instances without this critical causal condition (in either its presence or absence form) does the dependent variable occur. Alternatively, an independent variable is 'sufficient' if it appears by itself in one of an output value's essential prime implicants. For in such instances this critical causal condition (in either its presence or absence form) is enough to precipitate the dependent variable of its own accord. The fourth and final category includes those

independent variables that are both ‘necessary’ AND ‘sufficient’, a rare occurrence where just ONE independent variable appears by itself in an output value’s ONLY essential prime implicant. Such independent variables are especially critical as causal conditions, for in no other circumstances, either in combination with other independent variables or by other individual independent variables, does that particular output value occur.

This identification of necessary and/or sufficient conditions offers deterministic causal explanations for the presence or absence of a particular output value. It is probable that in sophisticated, multi-variate applications of the QCA method (such as the one that follows here) combinations of critical causal conditions will be prominent, rather than individual independent variables. As a consequence it is likely that all critical causal conditions will be necessary rather than sufficient, nor will they be necessary and sufficient.

Boolean algebraic analysis includes one last minimisation step to simplify, as much as possible, the essential prime implicants of any particular output value. This step is Boolean factoring, which contrary to Boolean multiplication, “does not differ dramatically from standard algebraic factoring” (Ragin 1987:100), and can help to identify necessary conditions and those that are causally equivalent. As Ragin goes on to explain, if S = AB + AC + AD, then these essential prime implicants for S can be factored to produce S = A(B + C + D), which shows that A is a necessary condition and B, C, and D are causally equivalent with regard to outcome S. Boolean factoring, therefore, may not necessarily simplify a set of essential prime implicants, but it may ease the identification of necessary causal conditions.

Finally, the QCA method also enables the analysis of the causes of ‘absent’ or ‘negative’ output values, which in this research project constitute the non-successful new land-based industries in New Zealand. This identification of critical causal conditions of non-success can be achieved by two means. First, and most in keeping with QCA, is the application of de Morgan’s Law to the critical causal conditions resulting from the Boolean algebraic analysis of ‘present’ or ‘positive’ output values. In essence this technique simply inverts the presence or absence of critical causal conditions for success to provide a ‘mirror image’ of critical causal conditions for

non-success. Second, it is also possible to analyse critical causal conditions for 'absent' or 'negative' output values in conjunction with the analysis for 'present' or 'positive' output values. This technique treats both 'success' and 'non-success' equally, and looks to the essential prime implicants of the latter for critical causal conditions, rather than merely inverting the results for the former. Again, in complex, diverse variable analyses this second means of determining the critical causal conditions for 'absent' or 'negative' output values appears as though it will yield stronger results of more utility.

The key steps of the Qualitative Comparative Analysis method can be summarised as follows:

1. Select and code independent variables (input values) associated with the dependent variable (output value) to prepare data tables
2. Convert data tables to algebraic form using Boolean codes to generate primitive expressions and then construct the truth tables
3. Analyse the truth tables using Boolean algebraic minimisation to identify prime implicants and then reduce these further to essential prime implicants
4. Examine essential prime implicants to find critical causal conditions and combinations thereof that correlate with a particular output value, identifying either necessary and/or sufficient conditions

Using fuzzy logic to improve QCA

Recently, Ragin (2000) has published a third book on QCA in which he applies fuzzy set theory to the process of deciding on how well a case matches a characteristic. Instead of making a decision that the case is either has or has not that particular feature (that is, that there are 'crisp' boundaries between sets) the idea is to establish 'grade of membership'. For example, a given country is democratic or it is not, compared to making a case that the country is 0.7 democratic. Using crisp sets requires definite decisions about inclusion or exclusion and this makes it difficult when the case is not clear cut. Fuzzy set theory allows these less than clear cut cases to be handled. The reviews of Fuzzy Set Social Science (Ragin, 2001) are generally positive but make the point that there are still demands in using QCA.

Conclusion

QCA has potential to provide and important type of analysis in our ARGOS study because it is well suited to moderate numbers of case about which there is good information. It promises to provide depth but move to causal analysis and not just dwell on the rich information available on each case. Our design implies, if the null hypothesis is rejected, that sustainable management system can be causally studied.

The method is not widely used and can be demanding in that it requires depth of knowledge about cases and hard decision have to be made about the characteristics of the case. Fuzzy logic may help in this regard.