Conversations with Farmers: Agri-cultural practice change and the 'eco-innovator'

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Conversations with Farmers: Agri-cultural Practice Change and the 'Eco-Innovator'

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Abstract

'Conversations with Farmers' opens a reservoir of information regarding the past, present and future face of farming in Australia by documenting the first-hand experiences of farmers across a region of NSW. Whilst covering a spectrum of issues that affect contemporary farming, the mythological image of the 'innovative' farmer emerged from within the farming sub-culture. This thesis documents the 'eco-innovator's' change journey into regenerative farming practice, and ultimately, a new story for agriculture.

The future of farming in Australia requires the integration of production and conservation, via eco-innovation, for sustainable farming systems to be realised. Sustainable change requires farmers to adapt their practices to local environmental conditions and instil conservation into their decision-making processes. The concepts of change and control have been utilised to frame the focus of this thesis; transforming farming practice requires personal transformations. The frontrunner in this change process is known as the 'innovator'. 'Who' an innovator is and whether they embody sustainable agriculture is defined and debated in contrasting tones by academics and agriculturalists alike. This research, via a participatory rural appraisal and a micro-ethnographic study, identified then (re)defined peer and self-acknowledged 'eco-innovators' who were practicing successful, regenerative and adaptive farming techniques in NSW.

Eco-innovators in this particular landscape were proponents of Holistic Management, Grazing for Profit, and Biodynamics, as well as other farmer-driven movements. These innovators were championing certain integrative practices, including regeneration of native grasses, adaptive/strategic grazing, and pasture cropping/no-kill cropping. These eco-innovators were ultimately redefined by their journeys of change, which navigated from a traditional/productivist paradigm to a 'new', alternative paradigm. Their experiences were shaped by major transitions in management and practice, as well as emotional, psychological and philosophical changes. Eco-innovators also discussed the socio-cultural, economic and environmental benefits of their current farming practices, and the role that irrationality, intuition and creativity played in their transformations. In most cases, these innovators were part of a network, or community of practice, of other innovators, consultants and independent scientists. In tandem with the regeneration of the land, this community of eco-innovators was

also experiencing a revitalisation of their passion for farming and the traditions of the farming sub-culture, including succession planning and a strong sense of active stewardship. Eco-innovators realigned their locus of control by developing interdependent relationships with farm externalities, and employed a philosophy of diversity to generate choice.

This research argues that eco-innovators who are achieving results are a valuable resource for both researchers and extension professionals, and have a vital role to play in motivating and supporting widespread practice change within agricultural innovation systems. Recognising that 'farmers' are 'innovators' is fundamental to reframing agricultural issues and finding resolutions which fine-tune the integration of conservation and production. This thesis ultimately acts as a beacon for local farming knowledge, offering crucial insights into the revolutions needed to sustain the family farm, rural communities, rural landscapes and a national food production system to nourish current and future generations.

ORIGINALITY STATEMENT

‘I hereby declare that this submission is my own work and to the best of my knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the award of any other degree or diploma at UNSW or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by others, with whom I have worked at UNSW or elsewhere, is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.’

Signed …….....

Date …….....

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(Cover Picture: Sarah Doornbos, '*Native Grasses'*, 2010)

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
ABARE	Australian Bureau Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACC	Australian Conservation Council
AIS	Agricultural Innovation System
AKS	Agricultural Knowledge System
ANT	Actor-Network Theory
BGGW	Box-Gum Grassy Woodlands
CANFA	Conservation and No-till Farmers Association
CfoC	Caring for our Country
CiL	Communities in Landscapes
CMA	Catchment Management Authorities
CoP	Communities of Practice
CWCMA	Central West Catchment Management Authorities
DPI	Department of Primary Industries
ECC	Endangered Ecological Community
FSR	Farming Systems Research
GFP	Grazing For Profit
HM	Holistic Management
I&I	Industry and Investment NSW
LoC	Locus of Control
LCMA	Lachlan Catchment Management Authority
LFA	Landscape Function Analysis
MCMA	Murrumbidgee Catchment Management Authority
ME	Micro-ethnographic
NAP	National Action Plan for salinity and water quality
NFF	National Farmers Federation
NHT	National Heritage Trust
NLP	National Landcare Program
NRM	Natural Resource Management
NSF	Natural Sequence Farming
NVAC	Native Vegetation Advisory Council
OEH	Office of Environment and Heritage

PAR	Participatory Action Research
PRA	Participatory Rural Appraisal
PUTTI	Partnership and Understanding Towards Targeted Implementation
RCS	Resource Consulting Services
RD&E	Research Development and Extension
RRA	Rapid Rural Appraisal
SGSL	Sustainable Grazing of Saline Lands
TINA	There is no alternative
ToT	Transfer of Technology

CHAPTER 1 – INTRODUCTION

'If we don't get Sustainability in Agriculture first,
Sustainability will not happen[1]*'*
Wes Jackson (2000)

'Farmers are Stewards of the Soil, Water and Environment.
Farmers are Caretakers of their fellow Human Beings.'
Dr Arden Anderson (in Harvey 2011: 3)

1.1 The quest for sustainable practice change

'To realise the synergistic and synchronistic potential of this radical approach, we will need to more fully embrace an integrated, local-to-global, whole-of-society, long-term process of fundamental personal and cultural transformation'
(Hill, 2005: 1)

In light of the insurmountable body of research conducted over the last several decades documenting the monumental impact humans have had on the earth's ecosystems, there is no question that our food and fibre production systems need radical change. Major upheavals in current paradigms and practices are necessary in order to face the future complexities of achieving a sustainable and equitable level of operation. To fully comprehend the current operational mode of Australian agriculture and the myriad issues and problems visible in current farming systems, there is an undeniable need to evaluate the philosophies and ideologies that underpin food production processes. Enlightenment thinking is at the forefront of Western ideologies of progress; this paradigm is often deemed to be superior to Indigenous philosophies of biocentrism, as it positions the 'self' as a vessel able to conquer and control living and non-living entities (Catton & Dunlap, 1980; Horkheimer & Adorno, 1987). While this 'human-centric' view of the world has delivered us to the modern-day age of technology and industrialised agriculture, the persistent conquering and destruction of ecosystems has evoked issues of social-justice and polarisation, as well as issues of ecological integrity; 'enlightenment, in the service of the present, is turning itself into an outright deception of the masses' (Horkheimer & Adorno, 1987: 34). Shiva (1993: 5) argued that systems created within the Western ideology

[1] Acceptance speech, The Right Livelihood Award, for more visit http://www.rightlivelihood.org/jackson_speech.html

of control or progress are about simplification, and do not account for diversity; 'monocultures of the mind make diversity disappear from perception, and consequently from the world'. Shiva (1993: 5) further argued that due to rigid linear constructions of time and space in this paradigm, our systems are fragmenting; without diversity we lose alternatives, and 'give rise to the TINA (there is no alternative) syndrome.'

Change and control are both concepts that can be used to explore the illusive realities of Western philosophy and epistemology in the farming arena (Pretty, 2002; Stuart, 2008; van der Ploeg, 2010). Modern-day agriculture is a most poignant example of the societal costs incurred due to reliance on these ideologies – whilst numerous anthropocentric systems have aligned to disconnect us, seemingly inconsequentially, from the natural environment, agricultural food production, a cornerstone of our essential needs, is entrenched and cannot be disconnected. Therefore social, ecological and economic fragmentation is most obvious within rural landscapes, where livelihoods and farming practices are fundamentally changed by shifts in these systems (Cocklin & Dibden, 2005; Dunn et al., 2000; Duram, 1997; Pretty, 2002; Pritchard & McManus, 2000; Röling & Wagemakers, 1998; Rothwell, 2000; Sinclair, 1991; Vanclay 1992, 1997; van der Ploeg, 2010).

The rate of environmental degradation in Australia continues to be increasingly alarming. Coupled with a similar rate of social rural decline, the trends are heading towards a crossroads where urban Australians will not be able to ignore the implications. Laurance et al. (2011) reported that many Australian ecosystems are so highly degraded that they are either fast approaching 'tipping points', or have already 'tipped', due to fundamental and permanent modifications of their ecology. Widespread contemporary environmental issues such as salinity, erosion, acidification, deterioration of water quality, and the decline of native biodiversity have been produced, in part, for agricultural expansion, but consequently, affect the future viability of farming (Lawrence et al., 2004; Nelson et al., 2004; White, 1997). Our 'ecocidal[2]' trajectory is leading us towards a crisis point brought on by, ultimately, self-destructive practices. To deal with the complexities of these 'future dilemmas' or 'wicked problems[3]', building sustainability into these systems is proposed as the resolution (Bouma et al., 2011; Foran, 2008). A change towards more sustainable

[2] 'Ecocide' explained by Falk (1973: 80); 'just as counterinsurgency warfare tends to lead toward genocide with respect to the people, so it tends towards ecocide with respect to the environment'.

[3] While this term 'wicked problems' is utilised in current literature, it is acknowledged that it utilises a negative adjective, which evokes a sense of pessimism or hopelessness in the face of complexity. The authors who originally coined the term 'wicked problems' explained that the use of the term 'wicked' was not meant to incite a sense of 'malicious intent', but rather, to describe the 'trickiness' of planning for these types of issues (Rittel & Weber, 1973). Peterson (2009: 71) described 'wicked problems' as 'complex and messy, characterised by several features: no definitive formulation of the problem exists, its solution is not true or false, but rather better or worse; stakeholders have radically different frames of reference concerning the problem; constraints and resources for solution change over time; and, the problem is never solved'.

practices is argued to be fundamental in securing future ecosystems, farmers, food, citizens and the biosphere (Lawrence et al., 2004). A dramatic shift towards sustainable practices, however, requires not only behavioural and habitual changes, but a fundamental transformation of current dominant paradigms that are based on linear notions of profit, production and prosperity (Pretty, 2002; Shiva, 1993).

Farmers are at the crux of these fragmentary systems; they are at the frontline in terms of dealing with the realities of 'wicked problems' in attempting to shift to sustainable agricultural practice. Farmers are the largest group of Australia's natural resource managers, managing approximately 60% of Australia's arable land (Dickenson, 2008). These same landscapes also belong to some of Australia's most fragile ecosystems (Laurance et al., 2011). The shift towards sustainable practice is significantly reliant on individual farmers changing and adapting via a renewal of their attitudes, behaviours and philosophies (Cary et al., 2002). In Australia, there have been many governmental efforts to induce community-level sustainability and natural resource management (NRM). In NSW this has been most notable via federal support for Landcare and the introduction of regional Catchment Management Authorities (CMAs). However, the ability for these bodies to effectively enable and realise widespread sustainable practice change has been limited (Prager, 2010). The rate of change is currently not sufficient enough to negate predicted future trends of degradation from occurring (Nelson et al., 2004).

As Bellamy and Johnson (2000: 266) argued, systemic degradation, due to heavy reliance on traditional agriculture, is a major barrier to sustainable agricultural change. Being on a 'production treadmill' has meant that many farmers commonly cite perceived economic constraints to changing practices (Barr & Cary, 2000; Lawrence et al., 2004; Richards et al., 2005; Rodriguez et al., 2009). However, changing from the dominant paradigm which is entrenched in Western philosophies, to an 'agro-ecological' paradigm (Altieri, 1989) requires deep reflection on the embedded cadences in our current thinking. There is a widespread and strongly entrenched perception that farming and ecology, or production and conservation, are opposing objectives (Barr & Cary, 2000; Lindenmayer, 2008; Ampt, 2013). There is also the perception that public benefit is opposed to private benefit, and that these therefore, need 'balancing' (Cocklin et al., 2007). However, understanding that these constitute the same objective and that 'their harmony is key to our survival' (Cullis-Suzuki, 2008: 13), is the intended integrated or 'multifunctional' change that is drastically required in agri-culture[4] (Argent, 2011; Holmes, 2006; Pretty, 2002; Wilson, 2008). The quest for sustainable practice change is hindered by existing fragmentation in the macro-systems, dictating food

[4] Agri-culture has been hyphenated to emphasis the cultural dimension of food and fibre production (following Pretty, 2002)

production, which has been caused by cultural persistence of out-dated ideologies (Pretty, 2002; Shiva, 1993).

To induce sustainable practice change, government and industry bodies, private consultants and associated practice change extensionists are focussed on finding sustainable solutions by promoting the 'adoption' of sustainable practices with 'top-down' and 'bottom-up' approaches to knowledge transfer (Cotching et al., 2009). Many studies have therefore focussed on the sub-cultural, psychological, educational, economic and environmental factors that influence farmers 'adoption' or 'non-adoption' of conservation and production innovations and have aimed to quantify principles that direct these behaviours (Barr & Cary, 2000; Carruthers & Vanclay, 2012; Cary et al., 2002; Diederen et al., 2003; Greiner & Gregg, 2011; Pannell et al., 2006). However, as McKenzie (2013) argued, this type of research posits 'innovation' as an off-farm, science-based process, and has resulted in a lack of focus on farm-based innovation and innovators. Therefore, this thesis takes a similar approach to McKenzie (2013), in that it rejects linear models of technology adoption and diffusion, and recognises innovation as a process of knowledge combination and recombination (Klerkx et al., 2010; Reed et al., 2013).

In terms of agro-ecological practice change, innovation is also positioned as a process of personal transformation, as farmers inherently have to integrate innovative ideas into their natural environments, their management, businesses, lifestyles, and essentially their own consciousness, all of which are context specific. This is the reinvention and therefore 'innovation' of a localised farming system, rather than, innovation as an 'invention' of a new idea, technology or management process; albeit in cases they overlap heavily (Nielsen, 2001).

The form of farming practice that actually constitutes 'sustainable practice change' is contestable and undefinable outside of context (Ikerd, 1997b; Pretty, 1995; Pretty, 1998; Rigby, 2001). Utilising a specific geographic landscape in NSW (spanning the Murrumbidgee, Lachlan and Central West Catchments, see Chapter 3, Figure 3.5 for a map), Australia, this body of research investigates the current quest for sustainable practice change. This was achieved through multiple stages of interviewing and attendance at functions, a process instigated through my involvement in the Federally-funded, Communities in Landscapes (CiL) (for more see Chapter 3, Sections 3.2.3 and 3.2.4). The intention of this thesis is to first develop contemporary understandings of the identity and definition of the farming 'innovator' within the framework of sustainable practice change, and secondly, to explore and analyse the lived-experiences and narratives of 'agro-ecological-innovators' to discern their perceived success with sustainable practice change.

1.2 Theoretical underpinnings of this thesis

The following sections detail the core theoretical foundations of this thesis. Utilising the concepts of change and control in agriculture as lenses for analysis, this thesis is honed into examining new paradigms for agriculture, the attitudes, behaviours and philosophies of farmers and 'innovators'. The emergent research properties and the ontological and epistemological foundations of this thesis are also discussed as they influence the methodological approach to research and analysis.

New paradigms for agri-culture

The quest for viable sustainable practice change is a journey of refined integration between human-nature relationships and food/fibre production; a renewal of 'agri-culture' (Pretty, 2002). A paradigm shift away from Western views and conceptualisations of 'nature' and the 'environment', as separate from humans, has long been called for; 'this disconnect between ourselves and that eternalised thing, the environment is really at the heart of the environmental mess we are in' (Cullis-Suzuki, 2008: 14). As Pretty (2002) asserted, this requires a change in the focus of our agricultural debates and interactions;

> *'Strangely, most contemporary debates on human-nature interactions focus on how nature has been shaped by us, without fully accepting the second part of that equation: that we, too, must be shaped by this connection, by nature itself…'*
>
> (Pretty, 2002: 11)

> *'We feel ourselves to have escaped the limits of nature…food is often highly processed and comes in packages, revealing little of its origins in the soil or tell-tale signs of blemishes, blood, feathers or scales. We forget the source of our water and energy, the destination of our garbage, our sewage. We forget…'*
>
> (Pretty, 2002: 17)

Western industrialised agriculture is consistent with the 'Human Exemptionalism Paradigm' and is often theorised, by various academics, to be in opposition to sustainable agriculture, which embodies the 'New Environmental Paradigm' (Catton & Dunlap, 1980 in Lapka et al., 2012; Dunlap; 2008; Dunlop & Van Liere 1978 in Shanahan et al., 1999). While these paradigms are multidimensional, and the boundaries often vague; there are two distinctive modes of thought: 'man dominating over nature' (referred to as 'human-centric') and 'harmony with nature' (Lapka et al., 2012; Lund, 2006; Taylor, 1986; Washington, 2013), in

this study referred to as 'eco-centric[5]'. Table 1.1 summarises terms used in contemporary literature on practice change, which differentiate between the 'old' human-centric philosophy and the 'new' eco-centric philosophy in farming:

Table 1.1 Terms used in the literature to differentiate between 'old' and 'new' agri-cultural philosophies/paradigms

'Old' (Human-centric)	'New' (Eco-centric)
• Conventional	• Innovative
• Traditional	• Alternative
• Productivist	• Post-productivist
• Industrialised	• Organic[6] / Eco-farming
• Specialised	• Multifunctional
• Top-down diffusion	• Grass roots
• High input	• Low input[7]
• Domination of nature	• Harmony with nature
• Exploitation	• Restraint
• Monocultures	• Diversity
• Control	• Supervision
• Rigid	• Flexible
• Dependent	• Interdependent
• Western epistemologies	• Indigenous epistemologies
• Disconnected	• Connected
• Controlled by external	• Controlled by internal
• Centralised	• Decentralised
• Recipe management	• Adaptive management
• Ecological degradation	• Ecological regeneration
• Egoistic values	• Biospheric values
• Quantity	• Quality
• Linear	• Cyclic
• Fragmentation	• Holism
• Competition	• Community
• Economic	• Social

[5] Lund (2006) differentiates between 'biocentrism' (regard for life) and 'ecocentrism' (regard for all systems of life). This study considers life to be broadly definable and therefore uses biocentrism to encompass both these meanings.
[6] The meaning of 'organic' is defined using the principles outlined by Rigby and Caceres (2001: 25); organic farming also encapsulates issues of biophysical injustice and responsibility.
[7] Some farm operations which are 'low input' require intensive labour.

• Adopter • Receiving • Complexity • Static • Disempowerment	• Expert • Sharing • Simplicity • Dynamic • Empowerment

While dichotomous thinking can be problematic and oversimplify complex realities (Argent, 2002; Evans et al., 2002; Wilson, 2001), differentiating between these paradigms generates a broad spectrum of thinking in farming. The 'human-centric' philosophy is dominant in agriculture, with profit and production the primary objectives (Shiva, 1993). Increasing demands for food, due to population growth, are often used to justify the anthropocentric motive for this focus; however this argument ignores the inherent need for these systems to survive beyond current demands and therefore these systems have been deemed 'unsustainable' (Karami & Kesharvaz, 2010; Pretty, 2002; Shiva, 1993; van der Ploeg 2010). Hence sustainability is integral to operationalising an ecocentric paradigm based on the *integration* of production and conservation.

The concepts of change and control have been appropriated to explain aspects of the eco-centric-human-centric continuum and the attempt to successfully marry production with conservation. *Changing control* refers to transforming human intervention in systems towards more 'eco-centric' behaviours. *Controlling change* refers to managing transformation in terms of sustaining the human-centric values, which are essential for our survival – for example food production. Change (eco-centrism – italicised below) and control (human-centrism – bolded below) are sewn intrinsically into landscape management vernacular, for example:

- *Natural resource* **management**
- **Agro**-*ecology*
- *Sustainable* **agriculture**
- **Practice** *change*
- *Post*-**productivist**
- **Farming** *Systems*

To overcome these dualities, integration has been central to crossing divides in paradigms, for example Integrated Natural Resource Management (IRM) (Bellamy & Johnson, 2000; Morrison et al., 2004; Park and Alexander 2005) and Integrated farming systems (Röling & Wagemakers, 2000).

Integration as a concept is multifarious, and there are problems in its conceptualisation. Lapke et al. (2012) used the example of sustainability to expound the variations in 'integration' between the economic, social and environmental spheres (see Figure 1.1). This diagram demonstrates three 'versions' of sustainability; the traditional 'balanced' sustainable development model, the 'mickey mouse' sustainability where economics dominate, and the 'bullseye' model where economy is recognised as a product of society, and society a product of the environment.

Figure 1.1 removed due to copyright restrictions

Figure 1.1 Alternative sustainability models (borrowed from Lapka et al., 2012: 18)

This 'bullseye' model will be taken one step further with a constructivist view positioning culture as the all-encompassing sphere which shapes and conditions our perception of the dimensions of sustainability. This will recognise the 'soft-systems' or the emotional, psychological, mental and socio-cultural aspects of sustainability, as fluid and multi-interpretable concepts (Röling & Wagemakers, 2000). These agri-cultural paradigms are heavily utilised throughout this thesis to frame sustainable practice as a *process of paradigm change* through transforming *perceptions of control* and anthropocentric dependency.

Farmers' attitudes, behaviours and philosophies

To realise sustainability in a new paradigm, Doppelt (2008) argued for new ways of living in, being in and constructing our world. In investigating the manifestation of dominant paradigms in farming lives, most of the research in agriculture has focussed on farmers' individual and collective environmental 'attitudes' and 'behaviours'. In terms of psychology, attitudes are often positioned as 'predictors' of behaviours; however, attitudes and behaviours are neither static nor separable in analysis (Ahnstrom et al., 2008; Duerden & Witt, 2010; Maybery et al., 2005). Therefore, the strength of the relationship between pro-environmental farming attitudes and pro-environmental farming behaviours is tenuous and contestable (Gosling & Williams, 2010; Lawrence et al., 2004). Furthermore, attitudinal-behavioural studies need to be inclusive of values, beliefs and knowledge to comprehend reasoning and rationale for decisions (Cary et al., 2002; Karami & Mansoorabadi, 2008; Pannell et al., 2006; Richards et al., 2005). In this research, 'values, beliefs and knowledge' are collectively referred to as philosophies. Three aspects of people, the way they do (behaviour), see (attitude), and think (philosophy) framed the approach of this research as these are the aspects of the farmer which are transformed during practice change (Karami & Mansoorabadi, 2008; Pretty, 2002).

Much of the research on farmers' attitudes, behaviours and philosophies is focussed on identifying reasons for resistance to change towards sustainable farming practice (Lawrence et al., 2004). Rather than forming an academic perspective on what is 'wrong' with farmers' attitudes, behaviours, philosophies and what 'barriers' these impose on sustainable practice change, this research focuses on re-telling the story of change from the perspective of the contemporary farming sub-culture[8]. Focussing on what is working, where, how and why is deemed far more worthwhile (McKenzie, 2013). These understandings then frame the 'who', the attitudes, behaviours and philosophies of innovators at the centre of the innovation process. These are the farmers that have experienced change, and in hindsight, can offer meaningful reflection on their experiences. This analysis of innovators' attitudes, behaviours and philosophies, is not intended as a comparative model of 'right' and 'wrong' farming, but rather to document journeys of practice change, by exploring the ironies and paradoxes within.

[8] The 'farming sub-culture' refers to a sub-set of 'rural culture', and is based on socio-cultural networks of farming families and the associated norms, beliefs and traditions that have evolved in these communities. Farming 'sub-cultures' can also refer to more specific groups within 'farming culture', which can be differentiated by enterprise for example 'wool-grower' groups and communities (Howden & Vanclay, 2000). For more on the farming sub-culture, see Chapter 2, Section 2.2.3.

Innovators and innovation

'Time is the greatest innovator'

Francis Bacon

The Oxford definition of 'innovation[9]' is the process of introducing new methods, ideas or products. This definition can therefore be applied broadly to include large or small scale 'introduction' of new concepts. Furthermore, this definition is determined by the historical, social and cultural conditions from which it arises, and is forever in a state of flux. The definition of the 'innovator[10]' is therefore any actor who 'innovates' and introduces or generates 'novo' knowledge as part of an 'innovation system'.

Actor-Network Theory (ANT) is a key concept for unpacking and analysing innovation systems in agriculture. This theory acknowledges that knowledge generation, new ideas, and the development of methods and products are based on a collective network of 'actants', rather than one 'inventor' or 'innovator'. Callon (1991) and Callon and Latour (1992) developed the term 'actant' to describe nodes within a network of knowledge generation. Actants can be both human and non-human, and are the products of their surroundings, influenced through their participation in eco-social semiotics and intersectional networks of interactions (Lemke, 2000). Applying ANT to innovation allows for focus on the interactions and translations, which produce and identify the 'innovators' and 'influencers' amongst heterogenous networks of innovation (Miettinen, 1999; Noe and Alrøe, 2003).

Community of Practice (CoP) theory also focuses on networks of innovation, learning, knowledge, people and behaviour/practice. CoP theory provides a conceptual framework for understanding situated social learning systems and a contextual framework for understanding how individuals innovate socially and develop identities (Handley et al., 2006; Lave and Wegner, 1991; Wegner, 2000). The concept is closely aligned with the definition of entrepreneurial function as defined in social innovation theory: it 'need not be embodied in a physical person… the entrepreneurial function may be and often is filled cooperatively' (Schumpeter 1949: 71-72 in Neumeier, 2012: 50).

Unearthing networks of innovation is a subjective process; 'the problem is that basic concepts like the definition of an innovation are neither clear nor widely agreed upon. Each researcher must therefore come up with his or her own working definitions' (Neilsen, 2001: 94); concept of the 'innovator' is a subjective

[9] http://oxforddictionaries.com/definition/english/innovation (Accessed 12/06/13)
[10] http://oxforddictionaries.com/definition/english/innovator (Accessed 12/06/13)

category or stereotype. This research highlights the innovativeness process, rather than innovative products, to frame 'practice change'. It also aims to recognise as a principle, that all farmers are innovators of their farming systems. As Neilsen (2001: 94) explained to farmers during his fieldwork in Africa, '…an innovation is anything new you are doing on your farm'. Simultaneously this research explores the many different definitions of farming 'innovators' from the perspectives of academic research, farming communities , and farmers identified as 'eco- innovators'. While the farming 'innovator' is widely regarded to be the first adopter of technology within agricultural research, this thesis specifically identifies innovators who are 'agro-ecological' and 'sustainable' in an attempt to renew agricultural definitions embedded within traditional paradigms.

Emergent research properties

This research adopted a transdisciplinary approach, developed an emergent methodology (for more see Chapter 3) and is based on the operational principles of human geography. The elements of place, perception, identity, sense of belonging and difference are best analysed from a geographical perspective, which takes nuances in human-environment relationships into account. In addition to this, research was guided by an ethos of exploration – to chart the on-ground, socially-constructed reality of practice change and become part of the context in order to unravel detail and complexity. In this way, this thesis adopts a critical realist approach, which moves beyond empirical or positivist understandings of the world (see next sub-section). The literature utilised to analyse these explorations evolves in-step with the thesis and is derived from a multitude of disciplines and sub-disciplines, including: human geography, rural sociology, psychology, innovation studies, and environmental and agricultural science, management and policy.

The research adopted a purely qualitative approach in order to comprehensively investigate 'soft' systems in farming. With much research being focussed on quantifying farmers 'attitudes' and 'behaviours', this investigation bridges the gap by building a qualitative narrative of practice change. Thus, analysing a geographic and socio-cultural perspective of the 'ethnosphere', as explained by Cullis-Suzuki (2008: 18); 'I recently learnt about a concept called the ethnosphere. It's a beautiful, beautiful idea – a web of human stories, of culture and knowledge'. Vanclay (1997) has argued for the inclusion of the humanities in this approach to truly comprehend farmers' philosophies, attitudes and behaviours. Shiva (1993), employing insights from Kuhn (1970), explained that modern day research in sociology and philosophy has challenged positivist assumptions, but unfortunately not the framework of Western ideologies, in which this science was created. This is where science and the humanities must be integrated to explain phenomena relating to change and control in individual and communal efforts to achieve sustainability through integration; research in this realm is currently scarce.

As emphasised previously, change and control are the two core concepts that guided this examination into sustainable practice change. However, throughout this thesis, these concepts evolve into multi-dimensional layers as depth and meaning are added to the ever-complex narrative. This thesis aims to take the reader on the journey of sustainable practice change through an evolution of perspectives, arguments and diverse literature. Perhaps, this analysis will produce more questions than answers - reflecting the spirit of exploration in human geography.

Epistemological and ontological foundations

To address the aims of this research, this thesis utilised a critical realism approach, which acknowledges that there is a reality independent of human perception (i.e. the positivist view), but that our experience, interpretation and communication of 'reality' is shaped via social and cultural constructions of physical phenomena (Sayer, 2004). It recognises that people can experience the same 'reality' but interpret, and have it affect their consequent attitudes, behaviours and philosophies, in multiple ways. In other words, it recognises that reality is relative to circumstance and the availability of cultural resources; 'the nature of reality and how we come to know it are inextricably bound together' (Layder, 1998 in Massy, 2013: 47). In this way, realism accepts that there is no 'certain' knowledge of the world, but rather, that there are multiple, alternative, and valid ways of attributing meaning to the world in an attempt to understand it (Sayer, 2004).

Realism also accepts that 'reality' can be developed via interactions removed from phenomena; 'construal and construction may emerge in acts of communication, such as conversations, but even then there is an iterative process developing over time in which what has been constructed is re-construed by others' (Sayer, 2004: 7). This statement is extremely relevant in social research, which demands that researchers interpret then re-construct social phenomena, including phenomena removed from their own direct experience and/or interpretation (Danermark et al., 2002). Winchester (1996: 119) similarly argued that the causes of social phenomena can be obscure; 'the underlying structures are complex and may be different from the observable events and discourses to which they give rise'. The latter statement is especially true in terms of the historic context that led to land degradation and agricultural production issues that are observable in current times (for more, see Chapter 2). Critical realism seeks to understand and challenge socio-cultural constructions; the emphasis is not on the cause, but rather, on the processes that generate meaning and the consequences of different meanings attributed to socio-cultural phenomena (Danermark et al., 2002). Therefore, this thesis adopts the position that all knowledge and experience is legitimate, and explores the notion of farming 'innovators' through a realist ontology that employs epistemological relativism.

1.3 A systems approach

'The systems approach begins when you first see the world through the eyes of another'
(C. West Churchman 1968a: 231, in Midgley, 2006: 21)

This section pulls together theories reviewed previously and provides a basic theoretical framework for this thesis. Utilising an approach from a systems perspective, this thesis builds on revelations in agricultural extension theory and practice and psycho-social studies on environmental attitudes and behaviours. These approaches have been combined with the theoretical concepts that have been previously mentioned throughout the introductory sections of this chapter.

At its most basic, 'systems thinking' is the study of interconnected sets of things, which over time produce characteristic patterns of thought and/or practice and interaction (Meadows, 2008). This theory takes into consideration temporal and spatial feedback loops, and rapid and unpredictable changes that shift, dissolve or transform systems (Checkland, 1981). A systems approach provides a framework for understanding how we see the world and our connectedness to all aspects of the world; in basic terms, how the world shapes us and vice versa and the relationship between actions and reality (see Checkland, 1981; 1999; Churchman, 1968a; Flood, 2010; Senge, 1990). In terms of agriculture, this thinking encapsulates everything from soil carbon, to alternative food networks, to farm succession, to changes in land-use policy for example.

Agricultural extension, the traditional conduit for 'innovation transfer', is founded on the Transfer of Technology model (ToT) or the adoption-diffusion model that has dominated practice change thinking and assumes adoption of technology is 'rational' (discussed further in Section 2.2.1). In contrast, Farming Systems Research (FSR), which was developed due to the lack of technology uptake in 'developing' or 'poor' countries, assumes farmers work on the basis of 'rationality', no matter their choice to adopt or not (Darnhofer et al., 2012). FSR takes into account the other dimensions of that influence farmer adoption behaviour, including political, financial, social, environmental, psychological and cultural influences. FSR is founded in systems thinking, and deals with the complex and dynamic cause and effect relationships in agricultural systems (Maani & Cavana, 2007).

Overtime, the FSR approach has evolved and shifted; firstly away from a focus on farming to a focus on knowledge and information i.e. Agricultural Knowledge Systems (AKS), and second to a focus on innovation to replace and encapsulate knowledge and information i.e. Agricultural Innovation Systems

(AIS). The AIS perspective on agricultural systems has been adopted by this research to focus on processes of innovation; these conceptual shifts are depicted in Table 1.2.

Table 1.2 Shifts in agricultural systems thinking from an extension perspective (Adapted from Klerkx, 2013)

	Adoption-Diffusion Transfer of Technology (ToT)	**Farming Systems Research (FSR)**	**Agricultural Knowledge and Information Systems (AKIS)**	**Agricultural Innovation Systems (AIS)**
Model	Supply	Learn constraints to uptake of supply	Collaborate	Co-innovate
Approach	Single discipline	Multi-disciplinary	Inter-disciplinary	Trans-disciplinary, holistic
Role of Science	Innovators	Experts	Collaborators	Partners, inventors
Role of farmers	Adopters/laggards	Sources of information	Experimenters	Partners, innovators, entrepreneurs
Innovators	Scientists	Extensionists and scientists	Farmers, scientists and extensionists	Multiple actors, innovation networks and platforms
Changes	Farmers' behaviour change	Removing farmers' constraints	Empowering farmers	Broader institutional change, creating innovation capacity
Outcomes	Technology adoption	Farming system fit	Co-evolved technologies	Capacities to co-innovate, learn and change

This thesis adopts an AIS perspective and focuses on 'farmers as innovators, partners and entrepreneurs' and explores, from their perspective as embedded actors in the system, the rest of the AIS and its influence

on farm practice change; how does the Australian AIS inhibit and/or encourage change? In doing so, this research loosely draws on Actor-Network Theory (ANT) and Communities of Practice (CoP) theory to determine key innovation networks/platforms and their agency in the landscape as identified by, and in relation to, innovators.

Socio-ecological systems, in the context of this thesis, represent a sub-set of the agricultural system; the dynamic relationship between the earth, food and human systems. Folke (2006) defines socio-ecological systems as analysis of the structures and behaviours of ecosystems, and how people and institutions are organised and behave around them. To explore the interaction between society and ecology from the perspective of farmers as innovators, this thesis explores issues in conservation and production in the context of the farming-subculture in a Box-Gum Grassy Woodland (BGGW) landscape (for more explanation see Chapter 3, Section 3.2.1). It explores these issues in relation to a variety of concepts, including sense of belonging and place, stewardship, and farming styles, scripts, parables and myths, to determine which dimensions of the local socio-cultural and ecological system allow for or inhibit change.

The micro aspect investigates 'mental modes' or psychological systems; the relationship between attitudes, behaviours and philosophies relative to practice change. Cary et al. (2001) developed a framework via Stern et al. (1995) to explore environmental concern via the relationship between social norms/institutional constraints/incentive structures (external) and attitudes, behaviours and philosophies (internal) (see Figure 1.2). Environmental concern is a catalyst for propelling a new paradigm for agriculture through renewed relationships with not only nature and society, but with ourselves, as explored throughout the thesis via the concepts of an 'ecological self', the locus of control and biocentrism. The research presented in this thesis loosely adopted the framework of environmental concern, but does not accept the linear relationships presented in Figure 1.2; rather, a systems approach is utilised to acknowledge the interrelatedness of these human foundations.

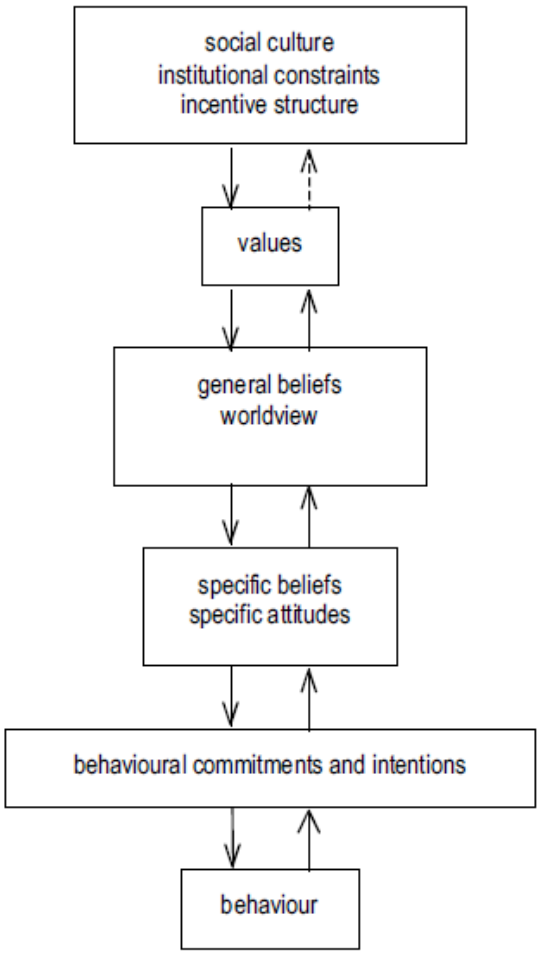

Figure 1.2 Framework of Environmental Concern (Cary et al., 2001: 36, adapted from Stern et al., 1995)

Utilising on these three interrelated systems from the perspective of farmers; the AIS, the local socio-ecological system and the mental system provides a framework for this investigation. Each perspective attributes meaning differently to the agricultural system, which as a whole is understood and defined based on multiple realities. Flood (2010) defined difference between *systems thinking* and *systemic thinking*, the former being based on quantitative or qualitative modelling to help *explain or predict* social behaviour regarding 'real' social systems that are assumed to exist. The latter, systemic thinking, assumes social constructions of the world are systemic and based on *process and experience*. This approach is consistent with the epistemological and ontological approach of this thesis;

> '*A systems approach therefore will employ concepts like emergence and interrelatedness to interpret social phenomena, rather than attempt to represent systems as if they exist in the world.*

> *Such a systems approach might be particularly empowering in this endeavour of meaning construction if the world is indeed systemic. That is, such a systems approach promises to construct meaning that will resonate strongly with people's experiences within a systemic world*' (Flood, 2010: 270)

Focussing on farmers experiences from multiple sources and perspectives to explore multiple constructions of innovation and innovators can provide insight into the AIS in a holistic or even spiritual sense. Systemic thinking helps us reflect on our own existence and the mystery of human understanding (Checkland, 1999; Churchman; 1968a; Flood, 2010); we all see and know things differently. Ultimately, this thesis aims to define constructions from multiple realities and explore the detailed processes involved in construing these constructions. Many of the theories discussed in this introductory chapter are implicitly addressed in Chapters 3, 4 and 5 not formally revisited again until Chapter 6.

1.4 Reflexive rationale

This research was guided by my own values, beliefs, philosophies, experiences and attachments to place. Agriculture and farming are in my blood - with a multi-generational/lateral current family connection to dairy farming in the lush Hannam Vale valley, on the mid-north coast of NSW, I have always felt the desire to return to my farming roots and leave the urban environment I was raised in. I have become increasingly aware that farming lifestyles are being threatened and hope the future of farming, which is dwindling amongst rural communities, can be resurrected. I decided to enrol in environmental science - but relatives would joke that I was 'going to the dark side' and that I would 'start dictating about what to do on the property'. I was perplexed by this attitude; how could knowing more about the environment and science be a negative thing for our family's farming legacy? Could I secure that legacy with academic knowledge? I decided to look at the attitudes/behaviours and constraints/motivations of dairy farmers with regards to their interaction with NRM during my honours year (Cross, 2007). In contrast, I had no experience with graziers or croppers and their respective farming practices, and rarely visited the greater central western region of NSW prior to the research conducted for this thesis.

This research opened my eyes to the impact culture plays on farmers' self-perceptions affecting their ability to change and adapt farming practices, and break away from unsustainable habits. I realised that the only way to understand how sustainable change can happen, would be to locate and enter into dialogue with farmers who had found alternatives to the norm. As will be discussed in Chapter 3, without having preconceived ideas, I attended my initial interviews with an open mind, where I quickly realised a gulf

existed between the academic literature on practice change and the on-ground realities of practice change. It was through this experience that I decided to focus the vital research questions towards the journey experienced by innovators and how these journeys can be utilised to expand knowledge (explained further in Chapter 3, Section 3.1.5).

1.5 The research questions

To condense the previous sections, some key understandings and guiding principles include:

- Radical transformation of the dominant agricultural paradigm is required
- Widespread sustainable practice change is necessary to develop sustainable food production systems
- Farmers are at the crux of the changes that are required
- Sustainable practice requires integration of production and conservation
- Sustainable practice change requires personal transformation
- Farmer 'types' and 'identities' are socially and culturally constructed
- 'Experiences' of 'processes' are fundamental to understanding social phenomena

These principles guided the formation of the following research questions:

- How is the farming sub-culture positioned towards sustainable practice change/a new paradigm for agriculture?
- Who are innovators and what do they do?
- What is the story of their journey of innovation or change?
- What can we learn about sustainable practice change from their stories?

These questions designed the following research aims:

- Aim 1: To expand the definition and consequently re(define) the farming innovator based on insights from the farming sub-culture.
- **(Main) Aim 2: To expand the definition and consequently re(define) the innovator based on experiences of change.**
- Aim 3: To reflect on the implications of the innovator's change journey for future sustainable transformations.

With a long-term decline in the number of farmers and family-farms[11], this thesis is positioned to explore those farmers who have had successful experiences with sustainable practice change and their revitalised passion for sustaining the family-farm tradition. The ultimate aim is to (re)discover a new story for agri-culture, specifically, a message wrought from innovative ideologies that are reshaping Australian agricultural landscapes.

1.6 Thesis outline

This thesis has been structured into seven chapters. Chapter 2 introduces literature focussed on change and control in farming practice. This literature influenced and shaped the trajectory of this thesis, forming an identity of the farming 'innovator' by engaging academic definitions and constructions, which are added to in Chapter 4. Chapter 3 provides an explanation and justification for the qualitative methodologies employed to explore sustainable practice change and the current farming innovator. It also details the analysis of the data generated and assesses its limitations.

Chapter 4 uses the grounded anecdotal evidence collected, to generate a snapshot of the current farming sub-culture, and positions the concepts of change and control within farming systems. The chapter then readdresses definitions of 'traditional' and 'sustainable' agriculture. Through this lens, the socio-culturally identified mythological 'innovator' is (de)constructed to form a multi-dimensional portrait of the innovator. Through this (de)construction process, peer and self-identified 'living' innovators emerge and address the first aim; to (re)define the innovator based on the contemporary farming sub-culture.

Chapter 5 then provides a complex narrative of practice change from first-hand experiences expressed by 'living innovators'. This chapter further details the agro-ecological attitudes, behaviours and philosophies of these innovators to investigate their journeys of sustainable change. Ultimately, this chapter re(constructs) the innovator based on their collective story. This chapter concludes with a more refined and contemporary definition of the innovator, achieving the second aim of this thesis.

Chapter 6 draws on insights provided in Chapter 5 and is split into two parts. Part 1 develops the conceptual understandings of the change process based on innovators' emotional, psychological, and sustained drive towards change. This discussion is then used in Part 2 of this chapter to translate insights from the

[11] See Chapter 2, Section 2.1.3 *The not so simple life*

innovators' change journeys into lessons for Change Agents[12] whose purpose is to support, enable and encourage sustainable practice change. This chapter, therefore, addresses the third aim of this thesis.

Chapter 7 combines and summarises this 'new' narrative of agri-cultural change, coloured through the eyes of the farming sub-culture and the farming innovator. The utility of the exploratory research approach, used in investigating the details of change phenomena to form a socio-cultural overview, is then evaluated.

The following diagram (Figure 1.3) illustrates the structure of this thesis, as connected sections, which expand and contract to frame each subsequent layer of discussion. The thesis structure is also cyclic in nature, with the conclusion laying the stage for new beginnings; in terms of re-addressing the need for understanding change processes in sustainable farming, as perpetual and dynamic journeys.

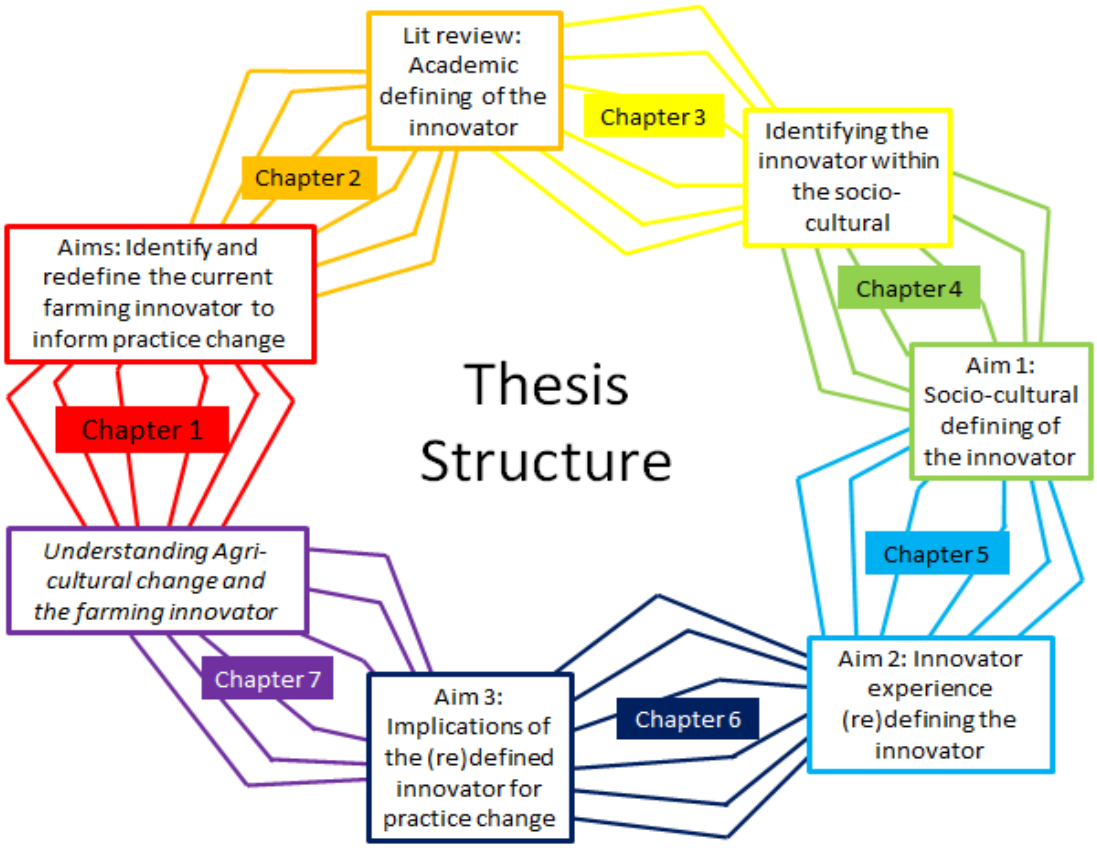

Figure 1.3 Thesis Structure

[12] 'Change agents' include extensionists, consultants, scientists and researchers who are involved in farming practice change.

CHAPTER 2 - LITERATURE REVIEW

Agri-cultural Practice Change

This chapter is focussed on framing the broader trends and issues in agriculture and Natural Resource Management (NRM) which influence sustainable practice change in the local farming arena. The majority of this literature was engaged with in the initial stages of this project and guided the focus of this research. A literature review was employed after interviewing rural landholders during the Participatory Rural Appraisal (PRA) (for more see Chapter 3 Section 3.2.3). Diagrams have been developed from personal insights throughout the PRA, and are included in this review of the literature. This canvasses the central indicators of practice change and control in the Australian farming context, and academically defines the 'innovator'. Constructing the 'innovator' via varying contexts (including an academic context) is the aim of this thesis, with the definitions provided in this chapter framing consequent (re)definitions in Chapters 4 and 5.

2.1 The past, present and future of agriculture in the Australian context

2.1.1 Our agricultural past

When Australia was first colonised by the British, it was believed that the uncultivated land would soon be supplying Sydney Town with adequate provisions, towards full self-sufficiency. However, the first rural settlers were instantly overcome with the 'alien harshness' of the environment, yet fuelled with the unflinching confidence of European ideology, saw the agrarian conquest of Australia as one of the most exciting and ultimate challenges for Western civilisation (Main, 2005). The colonial perception of the land as a beast to be tamed and owned by the 'self' was in direct opposition to Aboriginal philosophies, which celebrated interconnectedness, selflessness and mutual respect for living systems (Graham, 1999; Main, 2005). This opposition was realised with brute force and land removal into the hands of the new occupiers (Main, 2005). While Australia's 'dry climate and thin soils' were ultimately deemed unsuitable for intensive agriculture (Davison, 2005: 41), break-throughs in cropping machinery, plant-breeding, and irrigation technologies in the late 1880s meant that land was quickly settled and 'improved' for agriculture via ring-barking and land-clearing policies (Flannery 1994; Main, 2005). European farming methods changed the face of the Australian landscape, as Main (2005: 40) explained, 'a handful of shallow-rooted, annual pasture species replaced a diverse matrix of native annual plants and deep-rooted perennial grasses, shrubs and trees'. Fast-forward to the 1900s; farming had largely exhausted Australian soil health, coupled

with the exacerbated problems of drought, flood, depression and the demand for food production, farming systems were under pressure (Davison, 2005). Chemicals and new technologies were developed and promoted in industrialised countries as new ways to 'regain control' over nature (Main, 2005; Russell & Ison, 2000). However, the widespread use of these new products and technologies led to a more mechanised form of farming which triggered systemic environmental degradation (Altieri, 1989). Landholders were now contending with a range of environmental issues, including soil erosion, salinity, acidity, compaction and fertility loss, loss of biodiversity, noxious weed and pest invasion, issues with water run-off, water quality, and access to water (Trewin, 2003). Agricultural practices which have triggered and/or exacerbated these problems, and continue to do so, include, land clearing, persistent land cultivation, high-stocking rates, inefficient use of pesticides, herbicides and fertilisers and diversion of natural water courses (Ampt, 2013).

Off-farm pressures also began to materialise for farmers who were now reliant on high amounts of inputs, in their struggling production systems. Since the 1950s, the implementation of global commodity markets, the removal of agricultural protection tariffs, the increase in technology reliance and complexity, and the ever-increasing demand for growth in production, has seen the Australian agricultural industry undergo major restructuring (Lawrence, 2005). Agricultural and regional restructuring via the advent of neo-liberalist policies, have encouraged farmers to adhere to the productivist regime, and at the same time, opened up rural space for other non-agricultural enterprises. These national and global changes have altered the local rural social fabric; some authors call this the rural transition towards 'post-productivism' (Argent, 2002; Holmes, 2006; Lawrence, 2005). These changes were instigated by high interest rates in the mid-1980s, the deregulation of the banking industry in 1984, and tariff reductions throughout the 1980s, leaving farmers vulnerable to both increasing debt and fluctuations in global market commodity prices (Lawrence, 2005). The 'free market' philosophy of neoliberalism, based on privatisation, deregulation and competition, saw a withdrawal of state support for farmers and an increased reliance on farmer entrepreneurship to increase productivity, improve environmental performance, and remain financially viable (Dibden et al., 2009; Higgins et al., 2008; Lockie & Higgins, 2007).

In Australia, these changes have meant an overall decline in the number of farms and farmers, and at the same time, an increase in farm size and levels of farm capital, input and output. In other countries with industrialised agriculture, the state has maintained a certain amount of influence, for example, across Europe and in Northern America, farmers are still provided with subsidies to afford them an amount of protection from the global market (Dibden et al., 2009). Farmers who survived these neo-liberalist changes in Australia entered into production contracts with food and fibre companies, which in most cases, meant the economic future of the farm was vulnerable to and externally controlled by multi-national companies.

Lawrence (2005: 109) explained this situation, 'the company gains flexibility, while the individual farmer, who is locked into production of commodities specifically for one contracting company, loses negotiating power.' Neo-liberalist policies have also seen a shift in on-ground support provided to farmers; state-sponsored extension services, such as those once provided via the Department of Agriculture, have dwindled, while the private consultants and advisors have increasingly filled this space in extension. Marsh and Pannell (1998) provide further discussion on the issues resulting from increased privatisation of agricultural extension. These compounding, political, economic, and environmental changes, have put increased pressure, risk and demands on farmers, and have resulted in the restructuring of farming vocations and the rural socio-cultural context (discussed further in Section 2.1.3) (Black et al., 2000; Garnaut & Lim-Applegate, 1998; Hugo, 2005; Trewin, 2003).

2.1.2 Natural Resource Management within the institutional setting

Integrating sustainability back into our interactions with Australian environments has been on the Australian government's agenda since the 1980s, when the realisation of the extent and seriousness of environmental degradation came to light (Baker, 1997). Agricultural farming lands in Australia have been the pivotal focus for 'intervention', as this is where the most widespread and serious land degradation has occurred (Lawrence et al., 2004). Until recently, consensus viewed agricultural production and land conservation as two separate entities, which could not be merged or integrated (as previously discussed in Chapter 1, Section 1.1); however, the 1987 UN Brundtland Report into 'our common future' supporting integrative and collective approaches, focussed government programs towards synthesising this supposed paradox (Bellamy & Johnson, 2000; Black et al., 2000; Marshall, 2011). New policies often contradicted their intended outcomes, as they were constructed and highly influenced by global markets, political agendas, and the wants and needs of consumers and environmentalists. As Singleton (2000: 1) explained; 'competing perspectives are nowhere more evident than in environmental policy, where overlapping boundaries, complicated relationships between public and private goods, and a lack of agreement about how environmental resources should be valued create problems that confound simple institutional design'.

Federal and State NRM initiatives

Across Australia, NRM policies employed since the 1980s have focussed on 'community based' approaches to realise synthesis between stakeholders and encouraged the adoption of conservation practices (Marshall, 2011). Citizen-led community groups who were instigating cooperative land rehabilitation were supported through the introduction of 'Integrated Catchment Management' (ICM). Landcare was a citizen-led movement which originated in Victoria with the Victorian Government formalising groups through their 'LandCare' program in the mid-1980s (Baker, 1997). The success of these groups triggered the devolution

of environmental governance to local communities via the National Landcare Program (NLP) (Baker, 1997). This national strategy was developed based on an unprecedented partnership between the National Farmers Federation (NFF) and the Australian Conservation Council (ACC) to formalise support for community-based environmental groups, with federal funding channelled directly for investment in on-ground conservation practice (Marshall, 2011). While Landcare was successful in many respects (Cary et al., 2002; Mues et al., 1998; Robins & Dovers, 2007), it did not fulfil its aims in negotiating the public/private domain of environmental policy, as both complex socio-cultural issues and changes in funding arrangements side-lined efforts (as discussed in Section 2.2.5) (Lockie & Vanclay, 1997). Ribot (2003: 59) argued that devolution of governance is always controlled by the state bureaucracy and therefore, control never reaches the local audience. Similarly, 'as observed in the early 1940s in the US grass-roots development efforts; national environmental objectives often conflict with national objectives for establishing local democratic governance.' However, as Singleton (2000) and Wallington & Lawrence (2008) asserted, the individual, the local community and the state have all succeeded and failed at successful NRM depending on the context.

While the NLP continued until 2009, in 1997 the Federal government introduced the National Heritage Trust (NHT) program in two stages. The NHT provided funding at the national and local level and mandated the regionalisation of NRM across Australia, which led to the introduction of Catchment Management Authorities (CMAs) in NSW (discussed further in the next paragraph) (Ampt, 2013). The National Action Plan for salinity and water quality (NAP) was then introduced in 2000 in order to prioritise the rehabilitation of widespread land degradation[13] (Robins, 2007). In 2008, these national programs were amalgamated into the Federal government's Flagship NRM program, Caring for Our Country (CfoC). This program centralised NRM funding for key priority areas with the aim of coordinating and integrating activities and producing measurable outcomes. However, Robins and Kanowski (2011) have argued that the introduction of CfoC has hailed the return of a 'top-down' NRM governance model. These authors argue that the CfoC framework is based on a recentralisation of control over NRM, and that it has undermined the role of CMAs and the NLP.

At the state level, the Office of Environment and Heritage (OEH) and the Department of Primary Industries (DPI) have historically focussed on different objectives. The OEH is a conversation –orientated department and enforces the Native Vegetation Act 2003, while the DPI has a more technical focus on production (Ampt, 2013). The introduction of Local Land Services (LLS) to take over from CMAs in NSW represents a formal partnership between these two ministries.

[13] For a comprehensive review of these programs see Robins (2007)

The role of the Catchment Management Authorities

Catchment Management Authorities were introduced by the Federal Government in the late 1990s as it became evident that a regional delivery system for NRM was needed to coordinate funding, government programs and policy research. These bodies were implemented as intermediaries between local, state and national authorities; however, their success with engaging local communities has been disputed (Robins & Dovers, 2007). In the *Partnerships and Understanding Towards Targeted Implementation* (PUTTI) preliminary report, Bates et al. (2008) reported that across locations in NSW, there was a lack of trust from farmers in the CMAs, which were negatively perceived to be regulatory bodies. Due to this Bates et al. (2008) recommended that CMAs needed to focus more on face-to-face relationships with farmers and individual, on-ground assistance. However, Ampt et al. (2010) and Bartel (2013) interestingly found that trust in CMAs was higher than in other government bodies. In 2012 it was announced that in NSW, the CMAs would be transformed into Local Land Services (LLS) to include an agricultural advisory service, in an attempt to navigate both conservation and production issues (Ampt, 2013).

The role of Local Government

Local governments should be major players in NRM interactions within agricultural locations, as changes in zoning and subdivision has substantial policy influence on the management of farms (Black et al., 2000). Pini and McKenzie (2006) and Mckenzie and Pini (2007) studied the involvement of Local government in local NRM initiatives, and discovered that whilst local governance is the most geographically accessible and logical form, it does not deal with issues of NRM, but primarily, rates, roads and rubbish. Bartel and Barclay (2011) similarly found Local Government was considered by farmers to be the least responsible body for NRM issues in comparison to Federal and State governments and CMAs. However, Local Governments are geographically proximal to local communities and therefore have the potential to play a larger and more effective role in NRM activities (Pini & McKenzie, 2006; McKenzie & Pini, 2007). As Pini and McKenzie (2006) and McKenzie and Pini (2007) asserted, local government effectiveness with NRM would be in long-term strategies, as these bodies do not change and restructure every four years, like every other level of government, to adapt to changing circumstances.

2.1.3 The not so simple life

The rural social fabric

Agricultural and regional restructures, as well as the focus on increasing production through technology adoption have impacted on the social make-up of rural spaces and communities. As discussed previously in Chapter 1, with the advent of industrialised farming, farmers had to factor the increased cost of higher inputs, for example machinery, technology and bio-chemical inputs, into budgets. With the terms of trade for produce remaining relatively stagnant in comparison with input costs over the past 50 years, farmers have found themselves on a 'production treadmill', dictated by the need to produce more and more to stay afloat financially. The 'production treadmill', or the 'technological treadmill' as discussed by Cochrane (1965, cited in Black et al., 2000), has burnt out smaller operations, which have been absorbed into larger farms (Bjorkhaug & Richards, 2008; Oakeshott, 2007) with this trend continuing in the future (Black et al., 2000; Cullen, 2007a). The total sum of productive land has also decreased due to environmental degradation (Lawrence et al., 2004). The increasing economic pressure placed on farming has seen droves of people leave the land; the total number of farms in Australia has halved since 1950 (Black et al, 2000), while ABS data indicates that between 1986 and 2001, there was a steep decline of 22% in farming families (Trewin, 2003), with future trends predicting an alarming and desperate reality for farming families and their communities (Sinclair, 1999). Prolonged cycles of drought and flood, boom and bust, have only increased the cost/price squeeze and subsequent stress on farming families into the new millennia.

Farm debt has increased, resulting in an increase in off-farm sources of income, as people in farming take part-time or full-time work in regional towns; debt levels have also seen an increased involvement of women and other family members in farm management (Black et al., 2000). Farmers are already estimated to be working an average 49 hours per week in all jobs in comparison with 36 hours per week for all persons employed (ABS, 2012). With an increase in off-farm income, farmers are spending increasing amounts of time away from the farm, resulting in increased pressure to carry out farm work with time constraints. Farming families are still in sharp decline with farmers opting or being forced to exit agriculture; in many cases getting too old to continue effectively and lacking a successor to assume control (Reeve, 2001; Wheeler et al., 2012).

The average age of farmers rose from 50 in 2001 (Land and Water Australia, 2001) to 55 in 2010 (Millar & Roots, 2012). Traditionally, a culture of succession ensured farm continuance, via the ancestral passing down of the vocation of farming, however due to a multitude of factors, including 'globalisation', increased mobility, improved communication and the instability in farming, young people in rural Australia are opting for alternative careers in urban centres (Tonts, 1998). According to the Australian Bureau of Statistics,

from 1986-2001 half of all people aged 15-24 across rural and regional Australia moved residence, with close to two thirds moving to a capital city (Trewin, 2003). The impact of internal migration from country to city on farming people in Western NSW has been discussed at length by Main (2005) and analysed in case studies by McKenzie (1994), Sorensen (1993) and Tonts (1998) (all cited in Black et al., 2000). With a decline in rural population, services and access relating to education, finance, health etc., have also declined. This has also seen the isolation of many landholders who have continued farming, which has added to the increase in incidences of rural depression and suicide (Black et al., 2000). Local community breakdown has also occurred due to the instability caused by changes in occupancy, drought, land-use, sub-division, regulation, and decreasing land value (Black et al., 2000; Main, 2005; Millar & Roots, 2012).

The rural exodus has also led to population growth around regional centres, as 'tree/sea-changers' mingle in rural communities, mainly for the lifestyle improvement. These migrations have led to an increase in hobby and absentee farmers, which has had a range of diverse effects on the socio-cultural fabric of rural places, Sinclair (1999: 2) explained further that, 'land-use conflicts may arise in such situations through noise, odour, farm chemicals, light, visual amenity, dogs, and stock damage and weed infestation, to name just a few'. Holmes (2006) discussed these alterations in the rural culture and claimed that as we move towards a multifunctional rural reality, there are seven distinctive modes of occupation: productivist agriculture, rural amenity, small farm (or pluriactive), peri-metropolitan, marginalised agricultural, conservation and indigenous. These modes have differing needs and aspirations regarding their natural resource use, and therefore, conflict negotiation efforts must occur alongside landscape scale conservation efforts (Kelly, 2005). This restructuring in rural and regional Australia has added further pressure to farmers, as a multifunctional reality has unravelled, which does not give priority to agricultural activities or the farming sub-culture.

The city/country divide

With the well-documented out-migration of people from rural communities to urban areas, the geographic and socio-cultural gulf between country and city has widened (see Cocklin & Dibden, 2005). This increased polarity is influencing cultural constructs; for example, the rural views the urban as being 'superficial', 'busy', and 'ignorant', while the urban views the rural as 'backward, 'lazy', 'whinging farmers', 'ignorant' and 'environmental vandals[14]' (Bell, 2005; Main, 2005; Wilson, 2001). These divisions have meant that consumers and producers have become increasingly separated, with city people not in involved in and

[14] The opposite is also true, with farmers and the rural viewed as 'idyllic', 'friendly' and representative of 'Australian values', while the urban is typified by pollution and crime. In contrast, the rural is also portrayed as 'uncivilised', 'homophobic' and 'racist', while the urban is portrayed as 'multicultural', 'modern' and 'intelligent' (for more see Bell, 2005).

therefore not understanding the dynamic processes entailed in food production. This is argued by Main (2005: 67) who explained that food production in today's society is driven by 'geographic and cultural divides between city and country, (consumers) maintain demand for uniform products, not diverse seasonal produce...(consumer) denial of connectivity and the impeding of responsive relationships promotes the ecological disorders present today across Australian farming regions.' Lawrence et al. (2013) further implicated supermarket dominance over food chains, in exacerbating and exploiting this disconnect in agriculture[15]. This resonates with arguments made by Marsden (1997:170; in Burch & Lawrence, 2005: 3), who explained the control the retail sector has over agri-food chains;

> '*Aspects of control, power and dependency in agro-food networks are not only based upon input-oriented corporate capital (i.e. agribusiness firms and their relationship to the farm-based sector). Increasingly, they are associated with the control and construction of value from the point of production. This serves to empower near-consumer agencies. This reflects the common point that 'value-adding' in food has tended to be associated downstream of the point where it is primarily produced*.'

Alternative/organic food campaigns and movements have aimed to put consumers back in touch with producers; by conveying the extent to which their consumption choices affect farmers. Increasingly, consumers and producers are finding new pathways to overcome unsustainable food production practices (Kneafsey et al., 2008; Lockie, 2009). Local farmers' markets and delivery services are, based on direct farm to consumer transfer of goods, are attempting to close this divide and promote awareness within cities (Lockie, 2002). As this awareness expands, emergence of new demands from consumers have begun to change agricultural practice; 'public environmental consciousness and values placed on 'healthy food' have legitimised organic farming and are effectively moving it into mainstream food production and marketing' (Rickson et al. 1999: 282). Contrary to this, Burch and Lawrence (2005) also discuss the growing consumer demand for cheap, frozen pre-packaged meals and the impact this has on producers. In sum, the legitimisation and accreditation of agro-ecologically produced food must be realised at an accelerated/widespread rate to ensure sustainable food production for the future (Lawrence et al. 2013).

2.1.4 The future of agriculture – the importance of studying the innovator

The cyclical demands on future agriculture flavoured by metropolitan are complicated by the shadow of climate change, waiting to 'rub salt into the wound'. While there is little evidence of an increase in corporate farming in Australia, this mode of land occupancy is predicted to grow in the future with the

[15] For more on supermarkets and agri-food chains, see Burch and Lawrence (2005; 2007)

decline of farming families and communities (Garnaut & Lim-Applegate, 1998; Sinclair, 1999). Pritchard et al. (2007) discussed the growing trend for family farms to morph into businesses with corporate links in order to maintain productivity, via capital intensive agriculture. They offer three trajectories for the future of family farming; 'farmers are progressively replaced by corporate ownership…family farms persist as a social formation, albeit increasingly subsumed by off-farm interests… [or] the family unit remains at the social and economic heart of farm ownership and operation, but in the context where they relate to their land-based assets through legal and financial structures' (Pritchard et al., 2007: 75). The latter case indicates the increased employment of farm managers and increased prevalence of farm leases, where the original farming family is not involved in the day-to-day operations. However, some have argued that this represents a shift away from the ideals of sustainability, which means maintaining small-scale family farms that are embedded in the socio-cultural rural fabric (see Pretty, 1995; 2002). In order for this to be realised, there has long been a call for a 'paradigm shift' in agriculture towards sustainability (Packham 2011; Röling & Jiggins 1994). Similarly, Röling and Wagemakers (1998) refer to this psychological change as 'making the flip', which refers to the recognition of unsustainability in current paradigms, eventually triggering a 'flip' back towards a more sustainable mode of agriculture. It is this 'flip' or 'shift' that innovators have reportedly made, with philosophies based on 'limits to growth' and holism to manage their land and production. As Main (2005:9) summarised;

> *'Understandings of people as fundamentally separate from living systems enabled efforts to erase and silence the life of the land. Inevitably, disruption and loss brought disorder and rebellion. Resistance shown by land and people to the monological power of modern industrialisation offers hope. Despite the widespread erasure and silencing of dynamic and diverse biological communities, actions based on intimacy with the life and particularities of places are today bringing regeneration'.*

Adaptive change is required across all systems of food production in order sustain Australia's agricultural future. Understanding must be garnered from the perspective of the innovator, as to how and why these changes must take place and importantly, recognising them when they do.

2.2 The Socio-Cultural issues in Agricultural Practice change

'The only person that likes change is a wet baby'

Margaret Mead (in Hunter-Lovins, 2006: 93)

Change and control in NRM are concepts which can be used to explore the philosophies, attitudes and behaviours of farmers. Change, in this regard, refers to transforming traditional, unsustainable farming practices via innovative sustainable practices. Vanclay (2004) argued strongly for this migration in thinking, however, asserted that reliance on hard science and top-down technology transfer has not made the changes necessary in agriculture. Vanclay (2004) argued that we are not focusing on the mind-sets of individual farmers enough, nor recognising farming as a socio-cultural practice. There are many self-perceived social, environmental and economic 'controls' that inhibit innovation/creativity and so the process of change is often slow; farmers, often opt to make incremental changes to their philosophies, attitudes and behaviours when transforming conventional paradigms into alternative paradigms (Rickson et al., 1999). The following diagram (Figure 2.1) depicts the adoption-diffusion of innovative practices, attitudes and philosophies.

Figure 2.1 removed due to copyright restrictions

Figure 2.1 – Diffusion model for both traditional and alternative innovation paradigms (adapted from Gerber and Hoffman, 1998: 141)

This process of change has been highly regarded as a proliferating/self-sustaining progression and counters the majority of literature focussed on farmers as merely 'end-users' (as identified by McKenzie, 2013). The proceeding review of the socio-cultural issues that affect agricultural change and control will be discussed using key social principles, which Vanclay (2004) identified and outlined to elucidate key weaknesses in the way extensionists and policy-makers stereotype farmers and handle practice change. These principles have been used to structure the following sections as they represent the philosophies underpinning this thesis and they contradict traditional, 'top-down' assumptions of farmers' adoption behaviour. Vanclay (2004) originally developed 24 principles, however the following discussion only utilises a selection of the most relevant principles for understanding practice change.

2.2.1 Farmers' attitudes and behaviours

Principle 2 – Farmers are not all the same (Vanclay, 2004)

Diversity is related to the dynamic nature of farming (Vanclay, 1997), but as Vanclay (2004) noted, NRM frameworks are largely standardised and based on simplicity. While most farmers are middle-aged males (Garnaut & Lim-Applegate, 1998), other demographic factors such as education, income, land size, and enterprise are very diverse. In studies investigating the psychology of farmers, a broad spectrum materialised, noting contrasts in personality, attitudes, values, beliefs and world views (Black and Reeve, 1993; Cross, 2007; Pannell et al. 2006; Reeve 2001; Vanclay, 2004; Vanclay & Lawrence,1995; Willock et al. 1999). Furthermore, across a wide range of geographic, socio-cultural and ecological locations, many studies have found extreme heterogeneity in farming practices /behaviours at farm level (Bates et al., 2008; Willock et al., 1999). This range in diversity suggests the inherent need to understand the farmer at the individual level, as Vanclay (2004: 214) elaborates, 'different farmers have different priorities, different understandings, different values...and different problems'. Farming is a vocation, lifestyle and business are closely related; who the farmer is and how they think, physically manifests in the landscape via their land management practices (Pretty, 2002).

Some studies have categorised farmers based on shared aspirations. Parbery et al. (2008) investigated differences in Melbourne Hinterland farmers' land management, in two specific ways, emotional and financial attachment to the farm, and the aspects of the property most valued as 'green wedges'. They found that based on these categories, four distinct types of farmer emerged: the part-time farmer, the hybrid farmer, the struggling farmer, and the green commercial farmer. Parminter and Nelson (2003) similarly unearthed four differing types of farmers, in their dairy farmer study, conducted in south-west Victoria. These categories were defined by differences in the perceived benefits of adopting biodiversity practices,

descriptions include: conservationist farmers, production farmers, future builders and cosmopolitan farmers.

However, merely drawing a line between being a conventional/traditional and alternative/conservation farmer, is a rather simplistic approach. Duram (1997), who studied 'conventional' and 'alternative' farmers in Colorado, USA, argued that distinctions are not clear and that farmers operate along a continuum of attitudes and behaviours that range from conventional to alternative. However, there are key individuals identifiable at both ends of the spectrum; the extremes 'book-end' the continuum.

Principle 14 – Farmers' attitudes are not the problem (Vanclay, 2004)

Vanclay (2004) stressed that environmental attitudes do not result in the adoption of environmental behaviours, but rather, stem from a myriad of influencing factors affecting properties and the larger sociocultural landscape. As the individual farmer and their land management practices are inherently connected, any desired change in management towards ecologically sound practices will require a change in the farmer. Traditionally, when non-adoption of conservation practices was chosen, industry and academia alike, assumed this was related to a problem with farmers' attitudes towards the environment (Lawrence et al. 2004; Vanclay, 1992; Vanclay & Lawrence, 1995). This inspired research that focussed on looking at the relationship between farmers' environmental attitudes and behaviours (Cary, 1993; Reeve, 2001; Reeve and Black, 1993); meanwhile, extension efforts based on improving landholders' environmental knowledge and raising awareness were underway, in an attempt to change attitudes (Lockie & Vanclay, 1997). The research, however, explained that these attempts to drive adoption were futile. Reeve (2001) found that Australian farmers had a greater understanding of the complex and uncertain nature of environmental problems than 10 years before. Further studies reported positive attitudes towards the environment and a strong stewardship ethic for the land; however, neither endeavours increased knowledge nor provided concrete evidence of environmental ethics being translated into the widespread adoption of sustainable practices (Barr and Cary, 2000; Cary et al, 2001; Cross, 2007 Lawrence, et al. 2004).

Principle 4 – Profit is not the main driver of farmers (Vanclay, 2004)

Vanclay (2004) argued that assuming economic rationality guides farmers' attitudes and behaviours is not conducive to change. Farmers' attitudes towards the environment did not explain their adoption behaviour; however it was found that farmer's attitudes towards the perceived benefits of adoption was a stronger indicator. It has been well-documented in the literature that the perceived profitability of a conservation practice is strongly linked to adoption (Barr & Cary, 2000; Bennett et al., 1999; Cary & Wilkinson, 1997; Cross, 2007; Mues et al., 1998; Parminter & Nelson, 2003; Vanclay & Lawrence, 1995). However, profit

is not the main driver of farmers, and extensive research into the variables which motivate farmers to adopt environmental practices has been conducted. The main motivations in the literature are as follows: levels of informal and formal education (Barr and Cary, 2000; Guerin & Guerin, 1994; Kilpatrick, 2002; Mues et al. 1998; Pannell et al., 2006), perceived on-farm management benefit (Pannell et al, 2006), awareness of local environmental problems (Cary et al. 2001; Kilpatrick 2002; Lawrence, et al. 2004; Vanclay, 1992; Vanclay & Lawrence 1995), and reliable information access (Kilpatrick, 2002; Vanclay, 2004). Whilst these motivations have been found to affect practice adoption, it is the philosophies behind these motivations which need to be analysed. Much literature has since emphasised the need for research to explore the values, beliefs and ethics/philosophies of farmers, the real drivers of adoption or change (Cary et al., 2002; Karami & Mansoorabadi, 2008; Pannell et al., 2006, 2011; Richards et al., 2005).

Principle 17 – Farmers have legitimate reasons for non-adoption (Vanclay, 2004)

In traditional 'top-down' extension models, non-adoption is associated with irrationality. However, Lawrence et al. (1994) found that the most frequent restrictors to be human rationality itself and related to 'conflicting information, risk, implementation costs and capital outlay, intellectual outlay, loss of flexibility, complexity and other aspects of farm management and farm and personal objectives'. Private versus public interests are often taken into account by farmers, and for most the risk/rewards need to be balanced across society (Barr & Cary, 2000). Further studies have shown that the practical technicalities associated with adopting specific environmental practices, such as, increased complexity, trialability, compatibility, observability and measurability, can affect farmers' perceptions of viability and consequently their adoption (Barr & Cary, 2000; Pannell, 2001, Pannell, et al., 2006). Understandably, farmers have rational decision-making processes, evident in the literature, acknowledging this facet moves the debate away from the paradigm that blames farmers for non-adoption of conservation practice (Pannell et al., 2006; 2011; Rodriguez et al., 2009; Wauters & Mathijs, 2013).

Principle 9 – Sustainability means staying on the farm (Vanclay, 2004)

Vanclay (2004) argued that increased stewardship of environmental practices is only going to occur at desired levels if future strategies are conducted on-farm. Beedell and Rehman (2000) found that intensive farming or exits out of agriculture were more likely to occur on farms without heirs in their study of 100 farmers in Bedfordshire, United Kingdom. In contrast, it was more likely for farmers with successors to base decisions on long-term outcomes, incorporating NRM principles (Barr & Cary, 2000; Kilpatrick, 2002; Land and Water Australia, 2001; Pannell et al., 2006; Vanclay, 2004). Similarly, Inwood & Sharp (2012) found that farmers from US Mid-western counties without successors entered 'static mode', while farms with successors were implementing various vertical and horizontal growth strategies.

The diversity in farmers' attitudes/behaviours towards land management practices is also further complicated by the external pressures of the rural socio-cultural fabric. A hypothesised model to explain land management decisions within the socio-cultural context has been devised by Bates et al, (2008) who researched landholder motivations in NSW, Australia (see Figure 2.2). This indicates the extent external pressures play on farmers' individual attitudes, behaviours and philosophies, and how this interplay impacts land management.

Figure 2.2 removed due to copyright restrictions

Bates, L.E., Bishop, B.J., Dzidic, P.L., Green, M.J., Leviston, Nicol, S.C., Price, J. and Tucker, D. I. (2008)
Partnerships and Understanding Towards Targeted Implementation – (PUTTI): Indentifying factors influencing land management practice in the Lachlan Catchment, CSIRO, Canberra, Australia.
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Available at:
https://publications.csiro.au/rpr/pub?list=BRO&pid=procite:ba92a48d-9041-418e-a9a5-880a34d5b74a

Figure 2.2 Estimated model of factors influencing land management (borrowed from Bates et al, 2008: 13)**.** The different colours are used to illustrate the differentiation between preliminary variables (orange), moderating or secondary variables (blue), and dependent variables (green)

2.2.2 Community and the Farming Sub-Culture

Community, in the sociological sense, is transient and defined by the 'hive-minds' of its members; as Cohen (1985, cited in Jones, 1999: 7) argued, 'the distinctiveness of communities and thus, the reality of their boundaries, similarly lies in the mind, in the meanings which people attach to them'. Therefore, the distinction between 'insiders' and 'outsiders' is based on perceptions of social cohesion both internally and externally (Jones, 1999). The three most important sub-cultural networks that rural inhabitants participate in are 'communities of place', 'communities of interest' (Jones 1999; Kelly, 2005) and 'communities of practice' (theory, see Chapter 1, Section 1.2). Traditionally, rural communities presented the strongest are bound via the notion of collectiveness to place; however contemporary influences have allowed rural people to become increasingly involved in communities of interest, as Kelly (2005: 10) explained;

> *'Communities are taking on new roles and forms. Some are becoming more like networks, sometimes existing only in cyberspace, with geographical boundaries becoming less relevant. Groups of like-minded people with similar interests are emerging as prominent communities. It is in communities that micro-moral relations are forming, and different kinds of arrangements and alignments are influencing people's actions'*

Communities of place, the austere rural village, were traditionally assumed to cover a small spatial unit, have a homogenous social structure, and act under a philosophy of shared norms (Agrawal, 1997). However, these assumptions meant differences within communities, differences between communities, power relations and layered alliances between both internal and external social actors, were often overlooked (Agrawal and Gibson, 1999). Related literature explores the rural social class structure and the impact this has on the power relations within/between communities, however in terms of NRM, the majority of studies have been conducted in 'developing' nations where differences are exacerbated via socio-economic poverty (Kellert et al., 2000; Ribot, 2003).

NRM issues, such as land degradation, tend to be viewed as a lack of synchronicity between the environment and society; to achieve a resolution, communal environmental stewardship via the transfer of responsibility to the people at 'ground zero' (Leach et al, 1999), as in the case of Landcare. This devolution is based on notions of community participation, collaborative action, and responsibility for natural resources as commons (Leach et al, 1999). However, communities have distinctive cultures, especially in terms of farming and agriculturally orientated communities. In rural sociology, the recognition of farming as a culturally bound 'way of life' (Silvasti, 2003) is reflected in work defining 'countrymindedness' (Aitkin, 1985; Share, 1995), and more broadly, through the cultural dimensions of agrarianism (Share, 1995; Vanclay, 1997) or 'yeomanry' (Mesiti & Vanclay, 2006; Salamon, 1992). The differentiation of the

farming sub-culture from rural culture is explained by Dunn et al. (2000: 21) who stated, 'there can be no doubt that the values, norms and beliefs associated with farming differentiate farm life from other lifestyles'; while Shrapnel and Davie (2001: 177) claimed farmers and farming families were a 'special breed'. The farming sub-culture, as a concept, first emerged in Australia by academic Vanclay (1992). This sub-set of rural culture recognises farming as the art and philosophy of growing and harvesting food/fibre, which manifests itself and exists within spatial 'places' and related socio-cultural climates (Dunn et al., 2000; Gray et al., 2000; Phillips, 2000; Thomson, 2001). Like all cultures, the farming sub-culture operates along invisible and imagined socially, culturally and psychologically constructed boundaries (Vanclay, 1992) which are 'governed, informed and regulated by socio-cultural processes' (Vanclay 2004: 213).

Principle 1 – Farming is a socio-cultural practice (Vanclay, 2004)

The attitudes and behaviours of farmers with regards to NRM are distinctively carved via the farming sub-culture (Black et al., 2000; Vanclay 1992; Vanclay & Lawrence, 1995). As Pannell et al. (2006: 3) elucidated; the farming sub-culture includes 'laws, social norms, and ideologies', which greatly influence the attitudes and behaviours of individuals and groups within the sub-culture. Vanclay (2004) argued that because farming is a vocation, it is a socio-cultural practice which concerns the community as a whole, and therefore is largely affected by perceptions of social desirability.

Principle 6 – 'Doing the right thing' is a strong motivational factor (Vanclay, 2004)

'Good farming', or accepted social norms regarding the environment and farming practice can guide farmers' NRM decisions (Dunn et al., 2000; Gray et al., 2000; McGuire et al., 2013; Vanclay, 2004; Vanclay & Lawrence, 1995). Farming communities, understandably, are tight-knit groups that collectively identify themselves through the use of the terms such as 'stewardship' and 'guardian' (Beedell & Rehman, 2000; Lawrence et al., 2004). United through groups like Landcare, landholders work to change current practices, as Vanclay (1992: 118) explained, 'encouragement of conservation farming strategies through Landcare… is likely to lead to greater acceptance of these ideas within the farming sub-culture, and will lead to greater adoption'. The conforming influence of the farming sub-culture is evident in Parminter and Nelsons' (2003) study of Victorian dairy farmers, which identified a group called 'cosmopolitan farmers' who based their farm management on socially accepted practices. This farming sub-culture can influence farmers' decisions towards NRM positively, but inversely, can also inhibit adoption through steadfast and stubborn adherence to out-dated traditions and paradigms (Barr & Cary, 2000; Kilpatrick, 2002; Pannell, 2001; Vanclay, 2004).

Principle 2 – Adoption is a socio-cultural process (Vanclay, 2004)

Sustainable farming practices can be perceived by farming communities to be in conflict with the practice of 'good farming' (Dunn et al., 2000), as Pannell et al. (2006: 10) stated, 'the social stigma of having an untidy farm… delayed the adoption of zero-till [in Australia]'. Farmers who are changing grazing and cropping practices are being perceived by traditional farmers as 'nutters', 'lazy farmers', or as 'radicals' and 'greenies' (Dunn et al., 2000). This social condemnation can halt sustainable practice change and cultivate misinterpretations of alternative pathways in farming (for more see Chapter 4, Section 4.3.4).

Further studies report that generational influence within the farming sub-culture is also a factor that can inhibit or motivate the integration of production, conservation and the alignment of attitudes and behaviours (Black et al, 2000). As Black et al. (2000: 131) explained in an Australian context, 'some older farmers who were brought up at a time when tracts of land were being cleared for agriculture are averse to the suggestion that some land should now be revegetated with trees'. Changes in paradigms can cause polarisation between generations and can generate conflict/tension within farms; especially in cases of family run partnerships, or successional management as found amongst Victorian farmers (Stephens, 2011). Vanclay (1992) argued that farmers often succumb to peer/parental pressure, their behaviours may result from community, policy and extension expectations, rather than their own attitudes and beliefs. Vanclay & Lawrence (1995: 63) reasoned that this 'must be considered [a legitimate aspect] of human behaviour and not [a deficiency] in the behaviour or attitudes of those farmers'.

2.2.3 Information and knowledge systems

Identifying/disseminating knowledge is essential in influencing sustainable practice change. Information that is introduced to the farmer via external sources can act as an inhibitor to change or conversely to the very instigator of change depending on agenda, content and presentation (Lawrence et al. 2004; Vanclay, 2004; Vanclay & Lawrence, 1995).

In most studies, 'other farmers' have been perceived as the most trusted sources of information (Barr and Cary, 2000; Bates et al., 2008; Cross, 2007; Guerin & Guerin, 1994; Lawrence et al., 2004; McKenzie, 2013; Vanclay, 2004). There are three general behaviours of information collection, these being; receiving, seeking, and sourcing. Receiving is passive and describes behaviours such as subscribing to general newsletters or magazines. In a study on dairy farmers in NSW, Cross (2007) found that the seeking stage is often overwhelming, as without direction, trawling through information can prove frustrating due to the sheer amount of data available and the contradictions evident between different sources. At the other end of the spectrum, Veríssimo and Woodford (2005) found that those who sourced specific, tailored and needs-

based information were the most innovative farmers amongst sheep and cattle farmers on the South Island of New Zealand. The following diagram (Figure 2.3) conceptualises these information gathering processes:

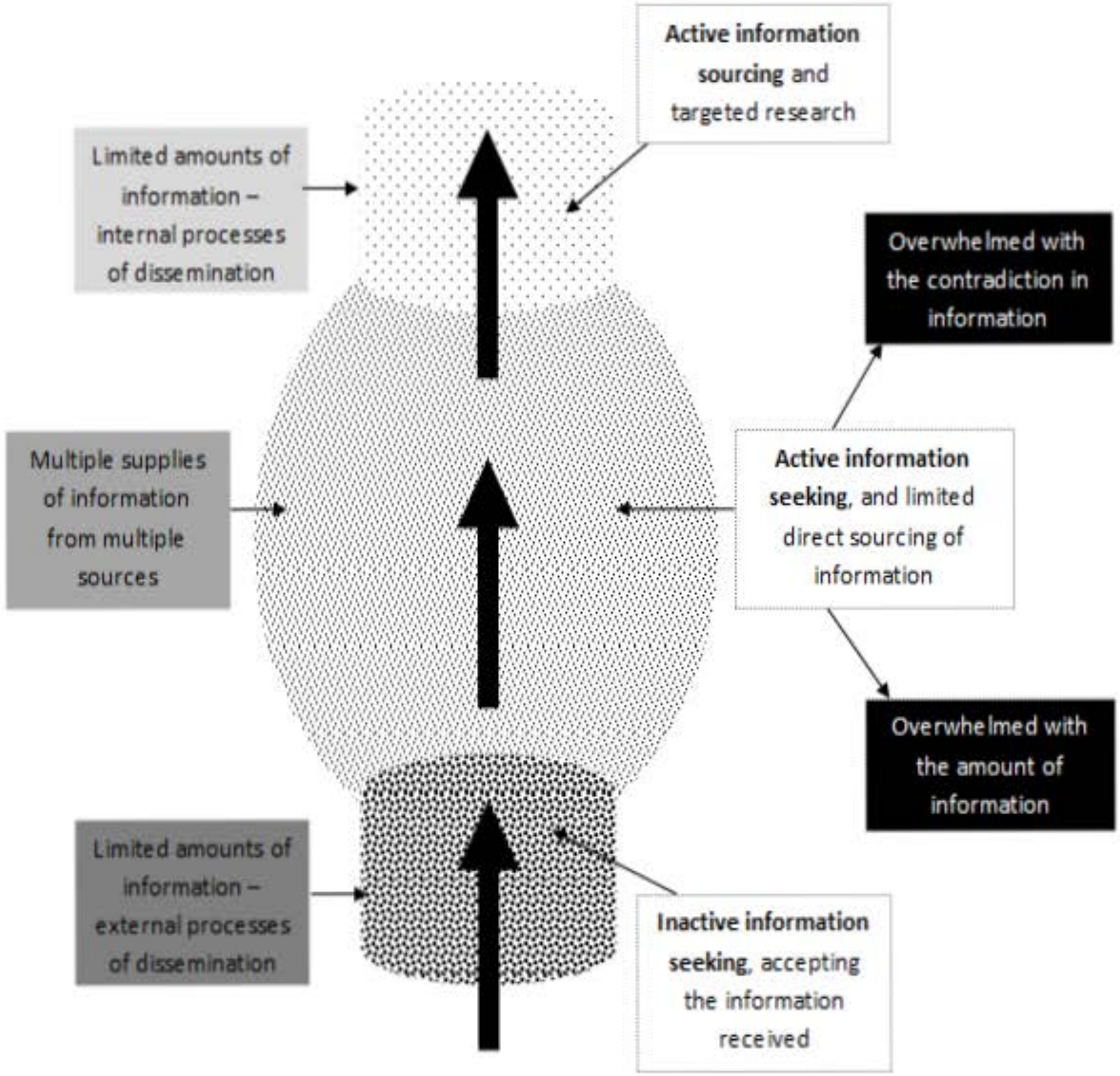

Figure 2.3 The information seeking behaviour of farmers: the information filter

Principle 15 – Farmers construct their own knowledge (Vanclay, 2004)

Utilising intimate local knowledge is at the heart of making logical change. Local knowledge is often ironically considered as 'outside', 'indigenous', or 'informal' and is juxtaposed against 'expert' knowledge (Blaikie, et al. 1997). While the importance of local knowledge is incorporated in NRM, it is still widely considered to be circumstantial and inferior across the globe (Pretty, 2002; Raymond et al., 2010a; Shiva; 1993). Local knowledge is produced through hands-on experience, interaction and tacit knowledge of individuals, groups and communities; it is intergenerational knowledge, generated from 'grass roots'. In terms of influencing change, the dynamic nature of social, environmental, cultural and economic patterns in rural Australia mean that local knowledge is vital for on-farm occurrence of change. Raymond et al. (2010a) and Shiva (1993) similarly discussed commercially viable sources of local knowledge, which can instigate change when 'scaled up' and repositioned as 'expert knowledge' in order to utilise and disperse innovative ideas. Local knowledge is fundamental in Participatory Action Research and can empower local farmers to instigate and manage sustainable change (Fortmann, 2008).

Understanding the essence of knowledge production is important to investigating how it influences change. Ison and Russell (2000) discuss second-order systems of information transfer and highlight that with each communication, insight, interaction, experience and novo knowledge is generated. Therefore all farmers have developed unique, context-specific knowledge relative to their farm, extended landscape and surrounding community. Morgan and Murdoch (2000) discuss the four kinds of knowledge generation that are most relevant in agriculture: know-what (facts), know-why (scientific principles and laws), know-how (skills and capabilities) and know-who (social skills); however the 'know-what' and 'know-why' are often top-down introductions of expert knowledge into the local knowledge domain.

Principle 18 – Top-down extension is inappropriate (Vanclay, 2004)

Traditional extension

Agricultural extension is widely used in Australia and can be defined as 'public and private sector activities relating to technology transfer, education, attitude change, human resource development, and dissemination and collection of information' (Marsh & Pannell, 1998 cited in Black, 2000:493). The literature on agricultural extension discusses the binary forms of extension: 'top-down' extension (traditional extension, embedded in traditional learning epistemologies) and 'bottom-up' extension (the participatory approach, embedded in innovative learning epistemologies) (Black, 2000; Vanclay & Lawrence, 1995). This leads to two contrasting models of control in complex knowledge exchange situations, according to Schwartz (2002, cited in Proost and Leeuwis, 2007). The first of these is the 'unilateral control' model or traditional model

which reduces learning options and assumes that those in control are the experts, whom therefore, understand the issues better than the local farmer. The second model, or the bottom-up grass root model, is called 'mutual learning' or 'social learning'. This is where the power is dispersed and the farmer is recognised as the expert. It is based on three assumptions: 'I have relevant information and so do other people', 'each of us may see things that others do not', and 'differences are opportunities for learning' (Proost & Leeuwis, 2007).

Agricultural extension, from a traditional lens is the top-down approach for innovation diffusion/ technology transfer. Traditional extension, however, is widely contested as an effective tool for NRM based on its limited adoption rates, when promoting NRM (Black, 2000; Dunn et al., 2000; Vanclay & Lawrence, 1995). Within the top-down approach, Rogers' (1962, 2003) 'adoption-diffusion' model, was conceived to make sense of the social aspects of technology transfer. This model defined classes of adopters as being; innovators, early adopters, early and late majority, and laggards; categories which have persisted in research, literature, policy and local discourse for over 50 years. It is assumed that the 'innovators' in the farming community will eventually influence other farmers to follow by example (Black, 2000); and that the laggard is externally resistant to change and, therefore, backwards (Pretty, 2002). This is because the model assumes that adoption would be economically rational, and therefore those farmers who do not adopt are irrational (Dunn et al., 2000; Pannell, 2001; Vanclay & Lawrence, 1995).

Black (2000) argued that the top-down approach has not been successful in promoting widespread adoption of NRM, because of its inability to incorporate long-term socio-economic and the environmental impacts of technology transfer. Vanclay & Lawrence (1995) also argued that top-down approaches marginalise and trivialise local 'indigenous' farmer knowledge. However, NRM adoption does not usually involve the adoption of financially beneficial technology, and therefore, the use of a top-down model of extension alone is not applicable (Barr & Cary, 2000).

Rural extension in farming was initially introduced to help farmers increase their outputs through influencing their fundamental attitudes and behaviours (Jennings, 2011). Over time, the extension profession has evolved due to recognition placed on the value of local knowledge, farmer empowerment, and engagement and has adopted more grass-roots methods of extension based on collaboration, shared learning and capacity building (Coutts & Roberts, 2011).

Principle 24 – The best method of extension is multiple methods (Vanclay, 2004)

Grass Roots extension

While extension at the grass-roots level is essential, it needs to accommodate for individual differences and communities through the use of multiple learning and participatory methods (Vanclay, 2004). During this process, there are social learning programs that have been created in order to pass knowledge and processes onto farmers; the 'new extensionist'. However, these programs are not universally applicable and are mainly successful for those participants who are ready or open to change. Traditional farmers can attend these programs and find no use for them through the constructions they have built, based on their previous knowledge (Röling and Jiggins, 1998). As Proost and Leeuwis (2007: 25) summarised, studies in the Netherlands have shown that the following preconditions are needed for successful social learning: 'a sense of urgency, feelings of interdependence among stakeholders, stakeholders organise themselves for negotiation (via community meetings), a degree of confidence that a negotiated outcome satisfying to all parties will be reached, a degree of institutional space to implement outcomes, accepted leadership of the process, process facilitation, and reflection built-in from the start'. Other aspects of power and representation in the farming sub-culture can also influence the success of grass-roots extension efforts (discussed further in Section 2.2.5).

2.2.4 Local Environmental Groups

The formation of community environmental groups has been extensively researched by Carr (2002) in the Australian context. She explored the various underpinnings of varying groups across different locations, detailing their philosophies, specifically those related to stewardship, their attitudes and motivations, and their behaviours with regards to NRM. Within this investigation, Carr (2002) found that differences between the genesis of groups, why they were created and who were involved, made distinctive. There were common problems associated with micro and macro power relations, participation, leadership and leadership turnover, struggles with governance (i.e. 'red tape'), lack of resources and social/environmental/economical capital, and lack of long-term survivability. However, Carr (2002) also found that whilst differences in group formation and organisation produced problems, these groups also instigated noticeable change when they could coordinate and manage their prospective projects.

Studies have shown that farmers who belong to these local groups have adopted more environmental practices (Beedell and Rehman, 2000; Carr, 2002; Kilpatrick, 2002; Nelson et al. 2004). For example, Beedell and Rehman (2000) found that farmers who belonged to the Farming and Wildlife Advisory Group, in the UK, were more environmentally aware, had more formal qualifications, and utilised more off-farm

information resources; while Mues et al. (1998) found that in Australia, membership in Landcare was positively related to adoption of conservation practices. Similarly, McKenzie (2013) found that farmer groups were instrumental in supporting innovation and practice change in the landscape.

Principle 21 – Representation is not participation (Vanclay, 2004)

Vanclay (2004) identified that participation in a 'community group' may only be representative of a sub-group within a community. Representation rather than participation may happen in the form of social rule (mirco-micro power relations), or in terms of group formation towards particular styles of farming or group interaction and activity (Vanclay, 2004). These questions as to how effective local groups are in changing farmers' attitudes and behaviours, support studies that found positive correlations between conservation adoption and group membership, however analysis of these studies showed that the conservation 'theme' of the group often attracted people who already held those values (Mues et al., 1998; Reeve & Black, 1993). It is due to some of these socio-cultural issues that Landcare did not achieve widespread improvement in NRM across rural and regional Australia.

Principle 22 – Group extension is not a panacea (Vanclay, 2004)

Landcare case study

Participatory, 'grass-roots' extension, is based on farmers' willingness to adopt NRM initiatives. In Australia, this agricultural extension process is largely implemented in the form of Landcare (Land and Water Australia, 2001). As previously mentioned, the National Landcare Program was introduced in the mid-1980s as a response to local environmental problems (Baker, 1997). Landcare is a voluntary process involving local communities who collaborate to devise solutions for land degradation; it is supported by both federal and state funding and technical help (Martin & Halpin, 1998; Reeve & Black, 1993). Landcare represents a bottom-up model of extension as it 'places great value on local environmental knowledge' and was locally initiated (Baker, 1997: 61).

The Australian Government spent over $1 (AUS)billion on the 'Decade of Landcare' (1990-2000) with the aim of invoking a collective, 'land stewardship ethic' (Reeve, 2001: 1). Rickson et al. (1999: 269) summed up the Landcare movement as one that 'increased awareness…and encouraged adoption of appropriate soil conservation measures'. Despite this praise, Vanclay (1992) identified weakness within the inherent structure of Landcare, and claimed that farmers already had a sense of stewardship but were handicapped by the lack of financial resources and social structures needed to implement landscape scale NRM (Baker, 1997; Vanclay, 1992). This argument is reflected in practice as only a minority of farmers are members of Landcare (Barr & Cary, 2000; Reeve & Black, 1993). Mues et al. (1998) and Reeve and Black (1993)

implied that Landcare groups have occasionally been formed for exploitative reasons, other than environmental problem-solving, because of the financial incentives offered. Baker (1997: 62) also noted that people perceived Landcare as being 'too radical', or as 'not making fundamental changes to a system of agriculture unsuited to [Australia]'. Barr and Cary (2000:12) and Prager and Vanclay (2010) have argued that these statements are based on the structure of Landcare, which was designed for public rather than private benefit – the state's interests were embedded in the framework of Landcare, more so than local people.

Power relations also affected Landcare groups, with the 'rural elite' taking advantage of the program and funding opportunities. A lack of representation prompted some groups to form for various reasons, such as salinity and erosion (and valuable communal work had been achieved), and then fading out with lack of direction (Campbell, 1995; Lockie & Vanclay, 1997). Groups that still had direction 'burnt out' in cases due to increased restraints on their time and money. This was often due to drought conditions, lack of membership and/or lack of turn-over in leadership (Lockie & Vanclay, 1997). Landcare has further been criticised for implementing off-farm, 'band-aid' practices, rather than considering real and sustained change through integration of conservation and production. Landcare, however, has had some successes where other local environmental groups have not, and in many cases have connected people across the landscape and inspired collective action (Carr, 2002; Prager & Vanclay, 2010).

2.3 The academic farming 'innovator'

Innovators are agents of change and creators who transform their practices, behaviours, attitudes, beliefs, values, aspirations, and essentially, their philosophies. This epistemological change is not recognised in traditional definitions of the innovator as the mere 'adopter'. As alternative ways of farming have become available and accessible, certain innovators have broken from traditions that position agriculture as a controlling force over nature and are making the desired 'flip' to a sustainable paradigm. Relinquishing control over to nature and tapping back into organic cycles is associated with strengthening a farmer's sense of control over their farm management, and ultimately their lives (Bates et al., 2008; Rickson et al., 1999). The following section aims to academically define the innovator through a review of specific attitudinal and behavioural traits which are attributed to this type of farmer.

2.3.1 Defining the innovator

As previously discussed, in a traditional extension model, 'innovators' are defined within an adoption-diffusion framework as the 'first adopters', and 'innovation' is defined by advances in technology and science. Contemporarily, 'innovators' refer to farmers who have adopted practices for production purposes but also for the associated conservation benefits (Hodges & Goesch, 2006; Nelson et al. 2004; Oliver et al., 2009). It will be argued that innovation in sustainable agriculture is not based on a simplistic and linear adoption, but on a process of integrating conservation and production and transforming philosophies, attitudes and behaviours. This follows arguments made by Garud et al. (2013), Van de Ven et al. (1999) and Denning (2005a; 2005b), all of whom study business innovation, who argued that as a concept, innovation is a process or a journey, and is not based on outcomes, order or sequence, but on dynamic processes of change. Denning (2005a: 4) conceptualised innovation as a long-term 'commitment to transformation via disruptive growth…a strategy few companies [sic] survive', highlighting the paradoxical nature of sustaining change whilst maintaining permanency[16].

In agriculture this contradiction can be found in the farmscape, where the need to maintain profit and a stable farm business is negotiated with the need to experiment, innovate and take risks. This contradiction is also evident in a socio-cultural context, where farming innovators are disrupting the status quo and revolutionising the traditions of the farming sub-culture (for more see Chapter 4, Section 4.2.2.1). Innovators essentially face a journey of up-hill battles as they threaten pre-existing ideologies, identities, and rationales, and need to expect discouragement or even punishment for their 'new' ideas and actions (Denning, 2005b). Therefore, successful innovators are those that can persuade others and generate support for the changes they envisage whilst navigating the perils, pitfalls and dangers of an untrodden path; Soosay and Hyland (2008) express this as the balance between exploitation and exploration, which they argued, are necessary for innovation.

The skills needed to navigate uncharted territory are therefore akin to that of an 'explorer', who quests and takes the risk of ending up either fruitless or fruitful. It is also necessary to have the skills of an 'exploiter', who uses their own previous and experiential knowledge, as well as knowledge held by other people, to make the journey. Tether (2001: 16) has identified the two skills that define successful innovation: **organisational skills** (including taste for and mastery of risk, internal and external cooperation, involvement of every aspect of the farm in the process of change, investment in self-reflection) and **strategic skills** (including a long-term view, ability to identify and even anticipate trends, and a willingness

[16] Denning (2005) is referring to the work of Christensen (1997), who discusses this paradox as the 'innovator's dilemma'. See Chapter 6, Section 6.2 for further discussion of this paradox in relation to farming eco-innovators.

and ability to collect, process and assimilate information). In relation to agriculture, the definition of innovation has been more widely debated than the definition of the innovator in academic literature. In the literature on adoption, the status of the innovator is often overlooked and instead the focus is on barriers and issues associated with farmer adoption of innovations (as discussed previously in Section 2.3). Of the studies that have explored the farming 'innovator', a plethora of definitions based on various attitudinal and behavioural traits and/or skills has emerged (see Table 2.1).

Table 2.1 The status of innovators in the literature and research

Innovator status	Literature/Research
Adopter of a production based technology	Attanandana et al. (2007) Diederen, et al. (2003)
Forward thinker as opposed to a laggard	Diederen et al. (2003) Guerin and Guerin (1994) Rogers (1962, 2003)
Risk-takers, opportunists	Smit (2004)
Farmer as a leader – example to others	Attanandana et al. (2007)
Adopter of a production/conservation based technology	Hodges and Goesch (2006) Nelson et al. (2004) Oliver et al. (2009)
Organic farmers	Padel (2001) Rickson et al. (1999)
Adopter of a conservation based practice	Cary and Wilkinson (1997)
Changes in farmer epistemologies	Proost et al. (2004) Proost and Leeuwis (2007) Röling and Jiggins (1998) Weperen et al. (1998)
Farmer independence	Beus and Dunlap (1991) Beus and Dunlap (1994)
Farming as a way of life rather than a business	Beus and Dunlap (1991)
Farmer with locus of control and Biospheric values rather than egotistical values	Bates et al. (2008) Beus and Dunlap (1991) Duram (1997) Pannell et al., (2006)
Farmer decentralisation of all systems	Beus and Dunlap (1991)
Expert ecological farmers	Röling and Wagemakers (1998)

Farmers with knowledge adopting conservation practices	Pannell et al. (2006)
Applying innovation to their own situation	Abadi Ghadim & Pannell (1999) Tsur, et al. (1990) (Both cited in Pannell et al. 2006)
Propensity to adopt new ideas	Vanclay (2004)
Laggards in the traditional paradigm becoming the innovators in the new paradigm	Leeuwis (1993)

Inherent in the adoption-diffusion categorisation of farmers, there are major issues concerning the static nature of these stereotypes, as Pannell et al. (2011: 18) stressed; 'the concept of adopter categories suggests that innovativeness is a personal characteristic that people apply equally to every adoption decision they make. This is not so. People who adopt one innovation early are not necessarily early adopters of all innovations.' 'Not-adoption' for rational reasons is also not factored into this traditional spectrum. As summarised in the last row of Table 2.1, the 'non-adopter' of technologies and inputs is considered a 'laggard' in the 'old' traditional agricultural paradigm. In the 'new' sustainable paradigm, these 'laggards' who aren't reliant on technology and inputs are reframed as 'innovators' (Leeuwis, 2003).

In 'making the flip' towards a sustainable paradigm, innovators have transformed their philosophies, attitudes and behaviours (Röling & Jiggins, 1998). As referred to in Chapter 1, Section 1.2, Röling and Jiggins (1998) discussed the difference between traditional farming philosophy (or human-centric paradigm) and integrated or 'innovative' farming philosophy (or the eco-centric paradigm) as revealed below in Table 2.2.

Table 2.2 Comparison of farming philosophies (adapted from Röling and Jiggins, 1998: 243-244)

The Traditional Philosophy	The Alternative Philosophy
Epistemology: 'Human –centric' Positivist – reality exists independently of human observer, it can be objectively known if discovered or uncovered by scientific methods.	Epistemology: 'Eco-centric' Reality is socially constructed, acceptance of multiple perspectives
Ecology: The bio-physical environment serves to satisfy human needs. It can be made productive through inputs which make it yield wanted outputs	Ecology: People are part of the bio-physical environment. They can amplify the human biotope by knowledgeable use of natural processes and cycles
Practices: (new) technologies are applied to enhance the productivity of components of the agro-ecosystem	Practices: Applying general principles to the low-input management of locality specific, diverse and variables ecosystems
Learning: Adoption of add-on innovations, farmer is the receiver	Learning: Farmer is the expert on his/her own farm and makes decisions based on knowledgeable inference from observation and analysis, and relies on his/her ability to anticipate
Facilitation: Transfer of uniform technology packages developed by science for large recommendation domains	Facilitation: Creating conditions for discovery learning, training in observation, experimentation and collective decision making

These differences between traditional and innovative philosophies have also been quantified by a CSIRO led project in Western NSW; *Partnership and Understanding Towards Targeted Implementation*[17] (PUTTI) (Bates et al., 2008) modelled the factors that influence innovative management (see Figure 2.4).

Figure 2.4 removed due to copyright restrictions

Bates, L.E., Bishop, B.J., Dzidic, P.L., Green, M.J., Leviston, Nicol, S.C., Price, J. and Tucker, D. I. (2008)
Partnerships and Understanding Towards Targeted Implementation – (PUTTI): Indentifying factors influencing land management practice in the Lachlan Catchment, CSIRO, Canberra, Australia.
Page 44

Available at:
https://publications.csiro.au/rpr/pub?list=BRO&pid=procite:ba92a48d-9041-418e-a9a5-880a34d5b74a

Figure 2.4 Estimated model of factors which influence innovative land management practice
(borrowed from Bates et al. 2008: 44)

This study concluded that these five attitudinal and behavioural variables explained 35% of the variance between traditional and innovative land management. The locus of control (LoC) refers to whether farmers feel they are in charge and resilient to pressures from external structures, systems and forces (Pannell et al.,

[17] For more on the PUTTI project, visit http://www.csiro.au/en/Organisation-Structure/Flagships/Water-for-a-Healthy-Country-Flagship/Integrated-Water-Resources-Management/PUTTI.aspx

2011). Trust in and influence of information and knowledge, either through dissemination, interactions, or personal experience was positively correlated with innovative land management. Figure 2.4 suggests the strongest indicator of innovative management was property planning in both the short-term and long-term contexts; intergenerational and intra-generational planning was taking place. Farmers' values also helped explain much of this variance. Positive biospheric values were attributed to having a conservation ethos (biocentric values) as opposed to egoistic values (human-centric values). The PUTTI study concluded that 'innovators' had negative egoistic values, in other words they viewed themselves as part of nature rather than controllers of nature (Bates et al., 2008: 48).

2.3.2 The locus of control

Farmers navigate within a number of macro and micro systems due to the dynamic nature of farming. These systems, developed within Western epistemologies, can act as inhibitors of change if perceived by the farmer as controlling their social, economic, and environmental well-being. To understand the difference between farmers who operate in conventional or traditional versus alternative or innovative spheres, Duram (1997: 202) explained;

> *'Individual agents, acting within the broader structural framework of policy incentives and commodity markets, may choose to adopt conservation methods or agricultural innovations even while continuing with their basic conventional production goals. More uniquely, individual farmers may choose to adopt alternative farming methods...that are somewhat outside the current structures of the conventional agricultural system but that reflect society's increasing concern with rural environmental degradation.'*

Rickson et al. (1999) discussed farmer dependence on inputs from large organisations. In their study comparing organic and conventional farmers in Australia, they found that organic farmers had higher levels of satisfaction, which in some cases was related to 'escaping' from multi-national corporations. Farmer participation in global networks can breed reliance and a resulting sense of control loss. This inflexibility in farm management can affect land managed for conservation or production purposes (Lawrence, 1987; Rickson, 1999; Rickson and Burch, 1996). Pannell et al. (2011) explained farmer dependence on off-farm systems as farms with an 'external locus of control'. In contrast, farmers who feel they have control over their circumstances and decisions have a farm guided by an 'internal locus of control' (Pannell et al., 2011). The range of external systems that can impose a sense of control over farmers and farming systems have been summarised in 2.5.

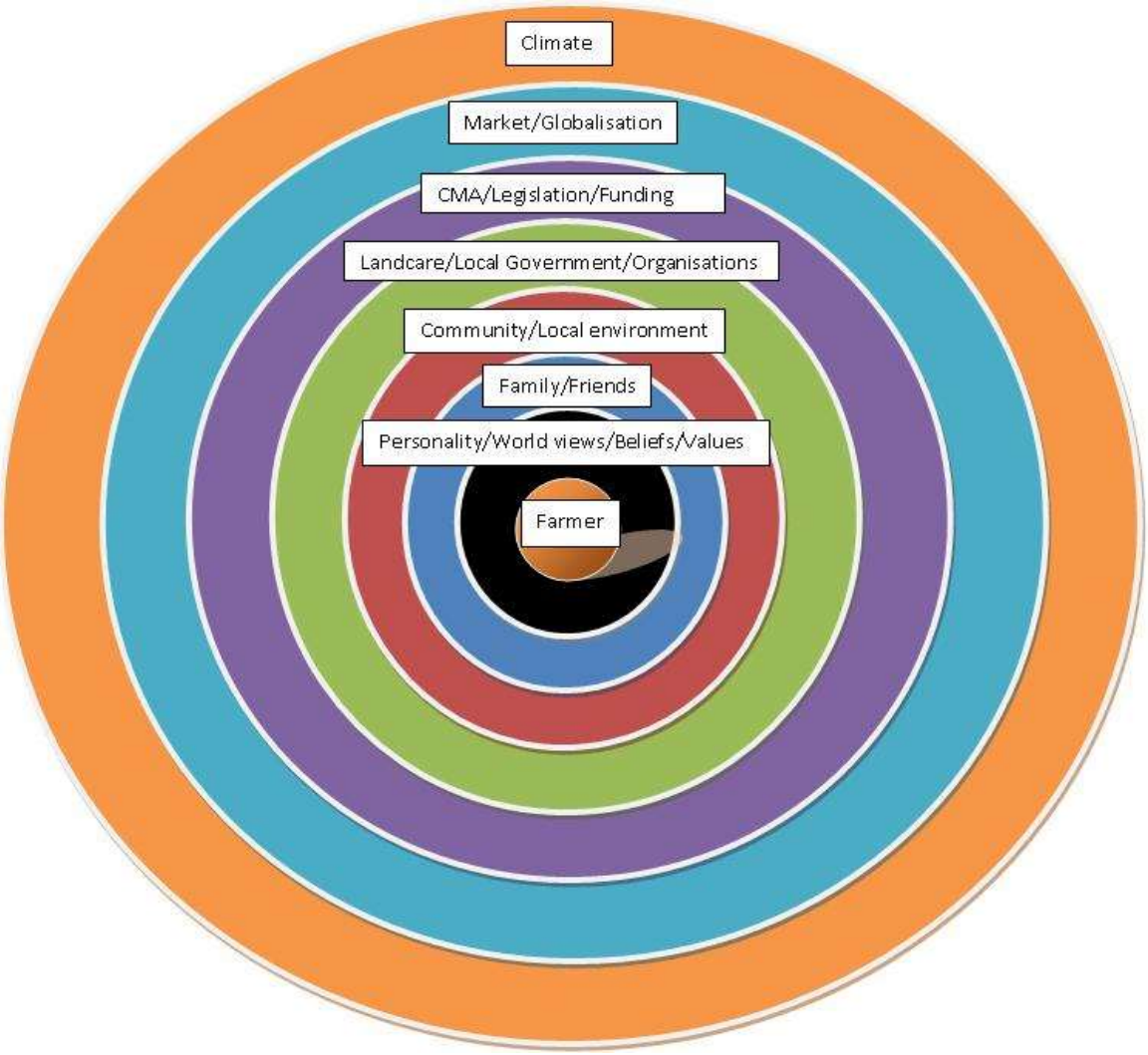

Figure 2.5 Farmers and potential external sources of control over farm management

(Interactions that take place between external factors also affect the farmer and farm management. Concentric circles were developed to conceptually illustrate the macro to micro proximity of these systems to the farmer)

It is farming innovators who have made changes to more effectively manage external controls through changes in their philosophies, attitudes and behaviours; they have begun to detach their farm management from dependency on the externalities represented in Figure 2.5. The transformations towards building independency and an 'internal locus of control' are discussed extensively by Beus and Dunlap (1991: 598) who compared alternative and conventional agricultural paradigms in the context of the US agricultural industry:

- With increased decentralisation there is: more local /regional production, processing and marketing, dispersed populations, and dispersed control of land, resources and capital.
- With increased independence there is: Smaller, low-capital production units and technology, reduced reliance on external sources of energy, inputs and credit, more community self-sufficiency, and a primary emphasis on personal knowledge, skills and local wisdom.
- Highlighting community rather than competition there is: increased cooperation, preservation of farm/rural culture, a satisfaction and rewarding sense from farming, an understanding of farming as a way of life versus a business, a focus on permanence, quality and beauty.
- With an increase in natural harmony there is an increased understanding that: humans are part of and subject to nature, ecosystems are more valued, life cycles and the balance of growth and decay are essential, and natural ecosystems are imitated.

A sense of control evolves in the innovator as they perceive less dependence on external systems and encourage interdependence within their social and environmental systems. Rickson, et al. (1999) investigated farmers' perceived dependency on external controls in Australia and concluded, that conventional farmers felt less in control of their farm management decisions in comparison to organic farmers. Farmers with positive attitudes who want to practice sustainable farming, often cite reasons for inaction as 'out of their control', such as fluctuations in weather, markets etc. (Lawrence et al., 2004). In contrast, innovators are described as having an 'internal locus of control', however this has rarely been investigated (Pannell et al., 2006; 2011).

2.3.3 The characteristics of farming innovation

Characteristics of sustainable innovation adopted by farmers vary widely; however, they are all based on regenerating natural lifecycles and diversity. Beus and Dunlap (1991) developed a set of principles that reflect these innovations: reduction of inputs, a broad genetic base, more plants grown in polyculture, multiple crops and diverse stocking rates in complementary rotations, integration of crops and livestock, and re-introduction of locally adapted production systems. Amongst graziers in NSW, this has seen the increased use of native perennial pastures that are resilient to drought conditions, the decreased use of chemicals and pesticides and inputs in general, and increased diversity in stock management. A comprehensive analysis of the principles and practices for grassland management is discussed in '*Farming Without Farming'* Cluff (2003).

These ‘innovative’ agro-ecological practices have been developed via certain programs founded on social-learning principles. In an atmosphere of social learning, Proost and Leeuwis (2007) have spotlighted various principles that help inspire innovation; building networks, which can inspire active watershed scale management (see Carr, 2002; Proost & Leeuwis 2007; Proost et al., 2004), negotiation or collective alignment, learning by doing or cyclic interaction between thinking and action (Kolb, 1984 cited in Proost and Leeuwis, 2007). These programs are focussed on developing farmer capacity for decision making and self-reflection, coupled with an integration of agro-eco practices. Therefore, innovation in these programs ‘depends essentially on effective collaboration, including new forms of coordinated action , in a network of interdependent societal actors, and is a collective achievement rather than the result of individual adoption’ (Proost and Leeuwis, 2007: 21). The following programs and processes have been ‘diffused’ through social-learning paradigms in NSW, Australia (these are discussed further in Chapter 4, Section 4.3.4):

- Holistic Management – based on the principles of Holistic Resource Management developed by Alan Savory, (1988)
- Grazing for Profit – based on cell-grazing developed by Stan Parsons (McCosker, 2000)
- Organic farming or Natural farming (Early proponent Fukuoka,1978)
- Biodynamic farming (Developed by Steiner 1958; Steiner, 2004)
- Natural Sequence Farming (Developed by Andrews, 2006; 2008)

These programs are based on reducing reliance on inputs, technology and external systems, but are not to be misinterpreted as ‘anti-technology’ movements. As Pretty (1998: 32) explained, ‘had the original technologies been poorly selected? It would appear not, as many that had been dropped by farmers were still successful elsewhere. The explanation would appear to be that changing external and internal circumstances had reduced or eliminated their usefulness’. Proost and Leeuwis (2007) also argued that these types of context-specific innovations can only be up-scaled up as innovative ideas rather than recipes for definite management practices. Whether these agro-ecological practices are new, and therefore innovative, is also contested. As Vanclay (2004) explained, some of these supposed ‘innovative’ and ‘new’ changes in practices were recommended 2,000 years ago by Virgil in his manual of practical instruction for farmers as presented in Box 2.1, an excerpt on rotational cropping:

Box 2.1 Excerpt from Virgil on rotational cropping (adapted from Vanclay, 1997: 14)

Now to business:
As soon as the first months of the year begin, your strong bulls
Should turn the fertile loam and leave the clods lying
For the full suns of summer to bake into a fine dust:
But if the land's not heavy, you'll find enough at the North Star's
Rising to ridge it out in shallow furrows: - the one
Lest weeds should check the corn's exuberance, the other
Lest lack of moisture turn your soil to a sandy desert.
See, too, that your arable lies fallow in due rotation,
And leave the idle field alone to recoup its strength:
Or else, changing the seasons, put down to yellow spelt
A field where before you raised the bean with its rattling pods
Or the small seeded vetch
Or the brittle stalk and rustling haulm of the bitter lupin.
For a crop of flax burns up a field, and so does an oat crop,
And poppies drenched in oblivion burn up its energy.
Still, by rotation of crops you lighten your labour, only
Scruple not to enrich the dried up soil with dung
And scatter filthy ashes on fields that are exhausted.
So too are the fields rested by a rotation of crops,
And unploughed land in the meantime promises to repay you.
(Virgil, *Georgics* Book 1, lines 63-83)

This places sustainable practice change into a deep historical context and suggests that 'innovation' today is based on a biocentric philosophy that is not 'new', but has been prevalent, lost and rediscovered throughout the ages. It is only 'innovative' in comparison to traditional industrial/productivist paradigms, which have silenced biocentric paradigms in the contemporary climate.

2.3.4 Risk, stress, resilience and adaptation

The issues of risk, stress, resilience and adaptation are all concepts that are used to describe the state of both farm and farmer. These concepts are highly interrelated and can both inhibit or trigger sustainable practice change. Farmers' philosophies are reflected in these concepts; 'the situation is complicated by the fact that, even when making ''rational'' judgements about scientific or risk issues, people relate risk estimates to their entire web of beliefs' (Shanahan et al., 1999: 409). Risk and stress can be interrelated, or they can act independently. For instance, there are farmers who are very reliant on high inputs and have much debt, but do not experience stress as a negative factor but rather a positive challenging factor. Inversely, there are also farmers who are stressed by extensive working hours, isolation, succession planning etc., but don't partake in high-risk decision-making. However, there are also farmers who are both stressed and exposed to high-risks on the production treadmill, which constitutes with an external locus of control. In contrast,

there are farmers who report both low levels of risk and stress. These farmers are the 'innovators' who have developed an internal locus of control and therefore reduced their risk and stress levels. Pannell et al., (2006; 2011) have stated that people with an 'internal locus of control' experience less stress in their decision-making.

A systems approach acknowledges the intrinsic dynamics of socio-ecological interactions (as mentioned in Chapter 1, Section 1.2). Systems have been described as 'adaptive cycles', as explained by Holling (1986 in Folke, 2006: 225) in his formulation of ecosystem principles; 'some of the key features of ecosystems popped out…non-linearities were essential. Multi-stable states were inevitable. Surprise was the consequence.' Adaptive management of systems refers to the implementation of flexible governance with the capacity to react to environmental feedback (Churchman, 1968b; Olsson et al., 2004). Disturbance of systems, usually caused by stressors, is viewed as opportunity for change, and how well a system bounces into a new stable state while maintaining some level of complexity, is termed resilience (Olsson et al., 2004)). Resilience is usually associated with renewal, regeneration and reorganisation rather than recovery and recuperation following a disturbance (Folke, 2006). There is strong evidence that adaptive management builds resilience into socio-ecological systems (Berkes & Folke, 1998; Folke, 2006; Folke et al., 2003; Gunderson and Holling, 2002; Olsson et al, 2004; Norton, 2005); it is posited that innovative farms and farmers must be adaptive to survive increased risk and stress resulting from increasing economic, socio-cultural and environmental pressures, and to learn from and redevise strategy based on current experience and circumstance.

The marriage of adaptive and resilient farming management is strongly associated with the sustainable paradigm, especially in terms of climate change preparedness (Adger et al., 2003). However, employing 'adaptive' management to build 'resilience' is a concept utilised in both the sustainable and traditional paradigms. Traditional thinking dictates adaptation to changing environmental conditions, via the adoption of new technologies to enhance resilience to environmental change. Innovative or sustainable management however, defines adaptation as a symbiotic relationship with the environment, which increases resilience of socio-ecological networks (Adger, 2000). Efforts to increase 'resilience' in farming are often viewed within the 'human-centric' framework as 'overcoming adversity' by 'surviving' the tough times. As Cullen (2007b: 1) explained with regards to 'drought resistance';

> *'While we are brought up with a poem that tells us we live in a land of droughts and flooding rains, we seem unable to understand the variability of our climate. Every drought is called a one in a hundred-year drought, even when they seem to happen every couple of years. We seem to believe the odd good year is the normal rather than the unusual, and the rest is some dreadful act*

of God. As historian Michael McKernan has commented, every drought is greeted with indignant surprise.... By now we should have learned that praying for rain is no substitute for good planning if we are to cope with the variability in our rainfall that seems to be likely to increase.'

Pannell et al. (2006; 2011) stated that the locus of control is key to understanding farmers' perceptions of stress and risk. An internal locus of control indicates reduced risk and stress, resulting from increased resilience to external control factors. In regards to the innovator, it is purported that these factors manifest as positive stress, risk aversion, and successful sustainable or maintainable adaptation and resilience.

2.3.5 Empowerment/Enlightenment

'In everyone's life there is a book of revelations'

Anne of Green Gables (L.M. Montgomery)

Farmer empowerment has been discussed by academics in terms of NRM; however this body of work is largely based on empowering disempowered farmers in a 'developing world' context (Shiva, 1993). In 'developed' nations, empowerment has been discussed in terms of driving knowledge and innovation generation, an inner locus of control, and successful adaptation/resilience. In this thesis the term 'empowerment' will be bonded with literature from the humanities. Referring to growth of understanding in the 'self' through the realisation of simple 'truths' (Horkheimer & Adorno, 1987), enlightenment thinking is founded in personal experience of perceived empowerment. Integrating conservation and production in sustainable agriculture is based on empowerment through an inner locus of control; 'personal experiences, rather than technical experts, often guide organic farming' (Blake et al., 1997 in Rickson et al. 1999: 268). These experiences can lead to new levels of awareness, a sense of being in harmony with nature, and a sense of having control over one's fate. As Rickson et al. (1999: 281) found, organic farmers were more 'confident in their knowledge, thought that they were working more in harmony with nature, and felt more environmentally competent.' This thesis is an investigation of these 'eco-enlightening' and 'eco-empowering' aspects of practice change. As innovators represent the 'flip' to an eco-centric paradigm of thinking, they presumably experienced moments of enlightenment and empowerment. A conceptual (and admittedly overly simplified) model of the empowered innovator vs the disempowered traditionalist is presented in Figure 2.6. This diagram was influenced through insights during the PRA process; these stylised depictions of the difference between the 'innovator' and the 'traditionalist' were also developed through reflection on social constructions and local rhetoric.

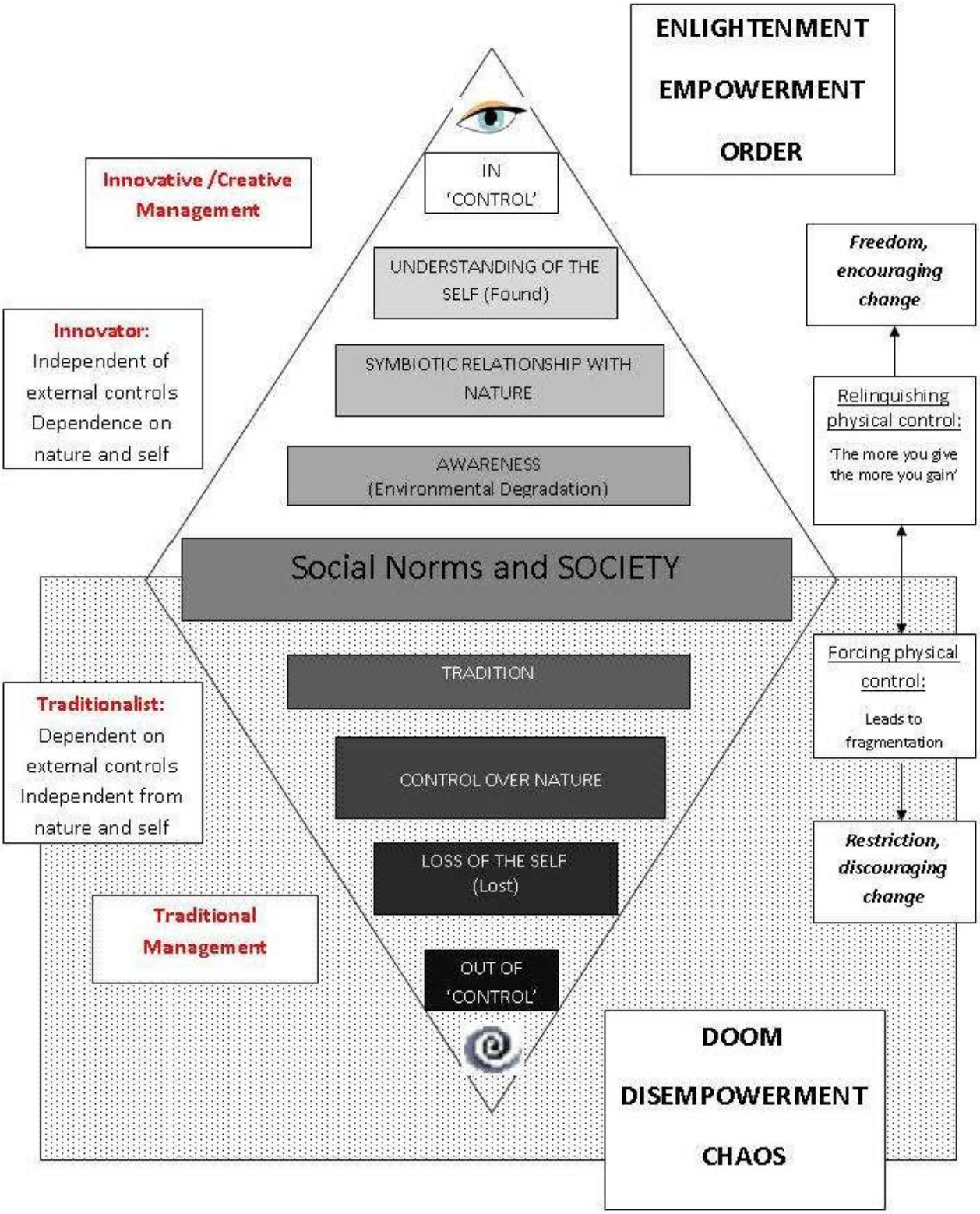

Figure 2.6 Constructing the 'innovator' and the 'traditionalist'

2.4 Chapter Summary

This literature review has engaged with most aspects of the Australia agricultural system; from the macro (e.g. global markets, national policies, national ecological issues), to the intermediary (e.g. the farming sub-culture, regional issues, extension issues), to the micro (e.g. personality traits of the innovator). This chapter canvassed the main body of literature that engages with sustainable practice change from an academic perspective, and utilised the concepts of change and control to express the inherent complexity. The context of Australian agriculture and the range of socio-cultural issues that influence practice change were summarised; these sections provided context for the subsequent investigation into the academically defined innovator. Defining the innovator through this lens was required for the subsequent (de)construction of the socio-culturally defined innovator in Chapter 4. This extensive literature review was included to provide an academic perspective of practice change, but also to provide an academic context for further literature, introduced and employed throughout the thesis. This review also informed the formation of the research questions (see Chapter 1, Section 1.4) and the methodological inquiry (see Chapter 3).

CHAPTER 3 - METHODOLOGY

Axiology: To better understand sustainable practice change and to (re)define the farming innovator

3.1 Introduction to the methods of inquiry

The aims of this thesis are to explore the current nature of change and control in agri-culture. The alleged farming 'changer' or the 'innovator' is a cultural construct, a mythological figure who reflects the virtues of the farming sub-culture (Howden & Vanclay, 2000). Therefore, innovators first needed to be (de)constructed and re(defined) within the farming sub-culture in order to peer-identify 'living' innovators. These 'living' innovators were then (re)constructed and (re)defined through personal and critical reflection on their own journeys of change. Figure 3.1 depicts the placement of this Chapter in relation to the thesis structure.

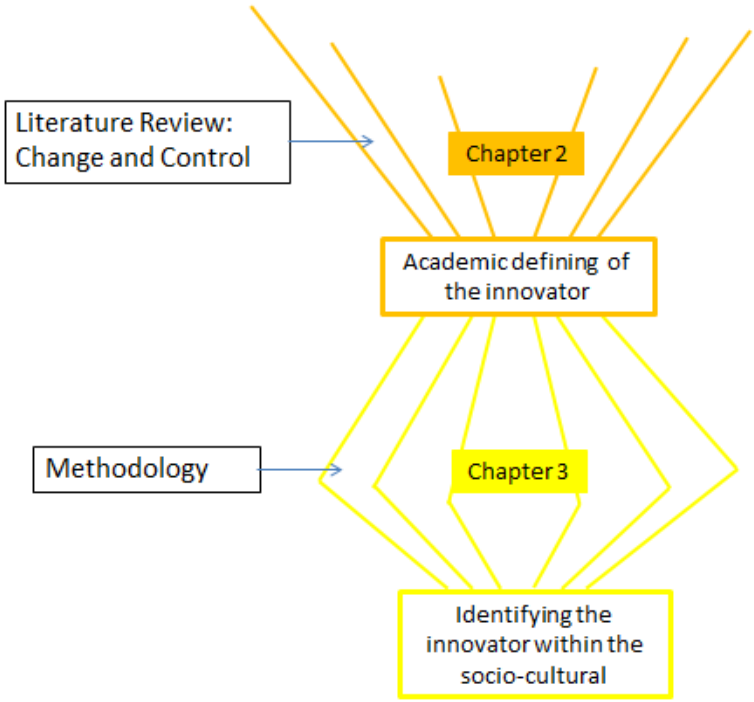

Figure 3.1 Thesis structure: linking chapter 2 and 3

In order to examine these sub-layers of knowledge in the farming landscape, two main approaches were undertaken, the Participatory Rural Appraisal (PRA) of the farming sub-culture (see Section 3.2.3) and the Micro-ethnographic (ME) study of the innovators (see Section 3.3). Complementing this data, research suggested or generated by farmers was utilised to flesh out my own knowledge and the discussion (see Section 3.3.6). Informal discussions with 'Agents of Change' were also employed to enrich the discussion on practice change (see Section 3.3.7). Semi-structured interviews and 'conversation' (informal interviews) were employed to generate the qualitative data set. Figure 3.2 depicts the rationale for the thesis and for the multiple methodologies employed to examine the phenomena of the forerunner in sustainable practice change, the 'innovator'.

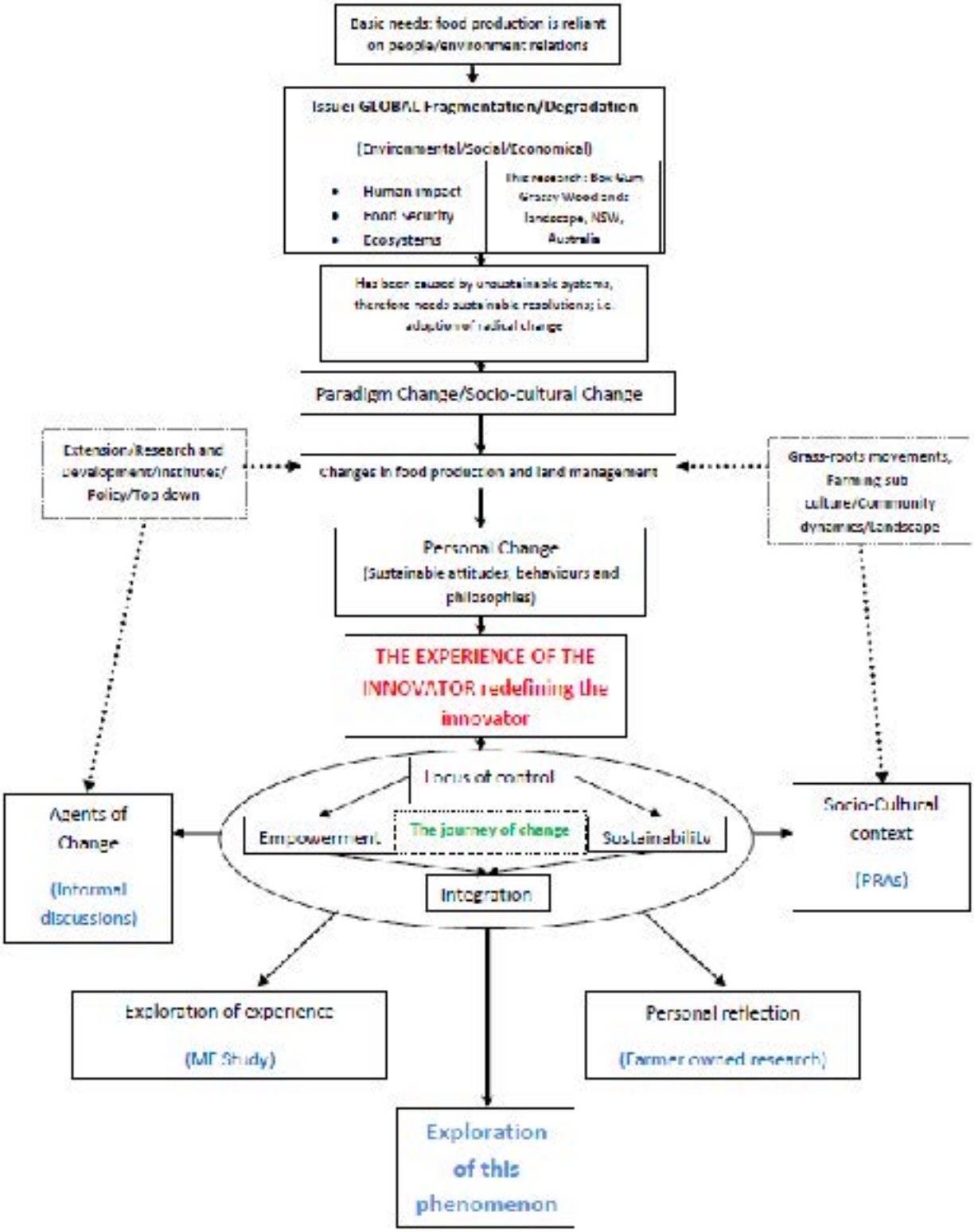

Figure 3.2 Methodological rationale based on thesis rationale

This chapter aims to explain the methodological approach employed in this research and its evolution in both the wider context of 'science' and my own journey which led to the appropriation and execution of these techniques.

3.1.1 Preliminary positionality

To precede an explanation of methods, as a geographer there is a need to first acknowledge personal biases due to the exploratory and self-interpretive nature of this research. Ultimately, this is an examination of agriculture within a male dominated world, produced through western male thinking and epistemologies, which forces the writer, as a female of 'Generation Y', to reflect on my own interpretation of these phenomena (McDowell, 1992). Are there inherent feminist biases in my overall approach and analysis? Or am I unconsciously using methodologies which have been born out of male-dominated thinking potentially counteracting the broader aims of this research in terms of data? The gendered nature of farming paradigms, with the 'westernised/industrialised/human-centric' paradigm epitomising the dominant male, and the 'indigenous/organic/biocentric' paradigm epitomising the mother earth paradigm is well documented (Keith, 2009; Massy, 2013; Saugeres, 2002). While many have studied the gendered aspects of farming and the implications of this for sustainable practice change (Chiappe & Flora, 1998; Coldwell, 2007; Peter et al., 2000; Price, 2010; Laoire, 2002; Massy, 2013; Saugeres, 2002; Silvasti, 2003), this work aims to acknowledge gender where relevant, but it is not the focus of this research. Perhaps this is a weakness, however it was decided that the focus of the thesis would not do justice to the inclusion of a gender analysis.

With previous exposure to farming, farmers and the farming sub-culture, and a passion for rural landscapes, I was prepared for these understandings to be expanded upon through this research. To conduct this research, I knew it was essential to talk to all people involved in practice change about practice change at the ground level, and read everything that was currently being written about sustainable farming change in both the 'local' and 'scientific' knowledge arenas (Fortmann, 2008; Raymond et al., 2010a; Reed et al. 2013; Shiva, 1993). This research and the techniques used to execute it were developed through my own personal experience, exposure, and passions related to understanding people and their many relationships with nature. This helped develop the methodological aim – to explore this detail in-depth through conversations with farmers (primarily). Conversations with various academics, researchers, extensionists, consultants, government staff and other rural people connected to farming in general influenced the direction of this research and the resulting methodologies. As alluded to in Chapter 1 Section 1.3 and further described in Section 3.1.5, specific methodologies were derived from these conversations.

3.1.2 Defining the research

As discussed in previous chapters, the broader issues related with farmer 'adoption' of NRM relate to food production, environmental change and sustaining rural communities. The complexity of these issues on the macro-scale and the consequent manifestation of these in the farmer and farm environment on the micro-scale are framed within a dynamic and multi-layered socio-cultural context; meaning that conducting an in-depth interdisciplinary investigation of the 'innovator' had to be an inductive and emergent process. A flexible and reflexive approach was adopted from the outset of the project with the aim of positioning the mythological and living innovator at the centre of the methodological approach.

Steins (2001:23) argues that research related to Natural Resource Management (NRM) should not just result in a snapshot describing the state of affairs, but should also address 'How and why this outcome was achieved? How did it evolve?' To address these questions whilst not leading the research towards pre-defined hypotheses, a qualitative rather than a quantitative approach was taken. Quantitative approaches are based on categorising and counting to understand broad concepts, however in order to generate the in-depth insights desired for this research, and in order to maintain the overall epistemology of this thesis (see Chapter 1, Section 1.2), qualitative methodologies evolving from human geography (and related fields such as anthropology) were adopted and appropriated. As Jacobs (1993: 830) argued, critical realists 'advocate combined intensive/extensive methodology to highlight the link between broader structures and processes in local settings …and suggest a commitment to a range of qualitative approaches'.

The ultimate guiding purpose of this research was exploration; 'exploration is a journey into the world in search of the new: it is a preparedness to physically encounter the world and study and learn from it' (Bonnett, 2008: 81). Exploration responds to the call for geographers to return to their 'geo' roots and 'imaginatively or literally' travel to find the subject of their inquiry (Bonnett, 2003; 2008). Exploration was integrated into this research to unearth stories of change, and a new story for agriculture (Pretty, 2002) within geographic context. Exploration was also adopted to discover the 'networks of multiple bonds' and the 'lattice of relationships' (Serres, 1995: 111 in Murdoch, 2006: 96) which directed and shaped these stories. This idea draws from Actor-Network Theory (ANT) and theories of science and technology innovation networks (as introduced in Chapter 1 Section 1.2). Fieldwork and travelling are integral to exploration; having conversations with people *in* their landscape was also mandatory for achieving the aims of this thesis. In order to garner these grass-root perspectives, and tackle the epistemological divide between 'expert' knowledge and 'local' knowledge of sustainable practice change, the research methodology naturally took a 'bottom-up' participatory approach and therefore adopted the overall principles (if not practices) which dictate Participatory Action Research (Fortmann, 2008).

3.1.3 Participatory Action Research

Participatory Action Research (PAR) evolved from the term 'action research' which was first coined by Kurt Lewin in 1946. This was in regards to community problem-solving after World War II, where 'as a social psychologist, he felt that the best way to move people forward was to engage them in their own enquiries into their own lives' (McNiff 1988: 22 cited in Walter 2009: 1). PAR was born as a response to a historical lack of incorporating local knowledge into scientific research; as Shiva (1993: 11) explains:

> *'Thus, Kuhn, who has shown that science is not nearly as open as popularly thought, and is the result of a commitment of specialist scientists to presupposed metaphors and paradigms which determine the meaning of constituent terms and concepts, still holds that modern 'pragmatic knowledge', is superior to pre-paradigmatic knowledge which represents a kind of primitive state of knowing'.*

Therefore PAR is based on the philosophy that in social research it is essential to understand that we are all creators of knowledge, and therefore can all be creators of 'good' science (Fortmann 2008). PAR recognises that all actors involved in the process; the researchers, the researched and the research are produced through collaboration in order to generate understanding. In this methodological paradigm researchers are no longer the experts; they become part of the community and an equal participant in developing and executing the research (Petit et al., 2011). This contrasts to a 'top down' approach, which relies on pre-conceived understandings or assumptions, lending the research to be placed superficially 'on top' of its participants who are objects to be categorised (Baum et al 2006). In these cases, the researched become passive participants; they become powerless in the data interpretation processes stemming from their encounters with researchers (Fortmann, 2008).

PAR is based on an action and outcome based process of co-facilitation and implementation of an on-the-ground project; a change process (Gregory et al 2009). Further to this, Black et al. (2000: 7) states, 'PAR...emphasise[s] community empowerment, and [is] based on the assumption that communities themselves have the ability to develop solutions to their problems'. In the case of this research aligning with the ethos of PAR, this is translated into the researched helping guide the next stages in the process complimented with the use of co-reflection along the way. However, while this research does not have an action or practice focus and was not developed in direct collaboration with participants, it instead adopted an exploratory focus and therefore embodies the human geographer's adaptation of PAR; 'it offers a...means of exploring materialities, emotionalities, and aspects of non-representational experience to inform progressive change...through attention to language, representation and subjectivity' (Kindon et al

2008: 90). This is achieved through adoption of PAR's fundamental guiding principle, that all knowledge is legitimate.

3.1.4 Ethics of positionality/reflexivity

As previously explained, a researcher who explores is required to accept that they are not a mere objective collector of knowledge and mechanical producer of results, but in fact their own world-views, beliefs, values, attitudes and philosophies are embedded in and shape the whole research process (England, 1994; Liamputtong & Ezzy, 2005; Maher, 1997; McDowell, 1992a; 1992b; Rose, 1997). The dynamism of the research necessitates the need for the writer to consider the personal relationships involved in the interviewing and observational processes (Gregory et al, 2009), and in effect exemplifies the principles of PAR. These relationships affect the communication channels and mutual understandings, and therefore the information that is shared is in part a product of the immediate interaction. This process of reflexivity involves a conscious attempt to constantly reflect through writing, on aspects of the research and thesis related to authorship, audience, language and power (Winchester, 2000).

However, there are criticisms related to this process of reflexivity in academia, as Rose (1997: 311 cited in Gregory et al, 2009: 627) argues, 'we may be performing nothing more than a goddess-trick uncomfortably similar to the god-trick', whereby the researcher and research is positioned as being validated and therefore faultless. Instead, Rose (1997) suggests we should practice 'performative reflexivity', which acknowledges and details differences, uncertainties, bias, power relations, and apparent failures during the construction and execution of the research. Therefore whilst not all complications and upsets within the research process can nor should be discussed, the writer will endeavour to outline any main issues which changed the direction of the research. To complement this, processes of self-discovery and insight will be included and discussed at each stage of the methodology (Sections 3.2.5 and 3.3.5) and intermittently throughout the body of the thesis where appropriate.

3.1.5 Designing the research

The aim to develop a qualitative approach to explore complex issues that are constructed through socio-cultural understandings meant that it was crucial to develop a layered understanding of the contexts in which these exist. As 'social landscape values are subjectively experienced, place-related and contextual, and tend to vary spatially' (Fagerholm & Kayhko, 2009: 43), it was decided that this research would be location-based case studies with the researcher conducting *in situ* research with farmers on their properties. However, the research does extend past the boundaries of place, as it focussed on processes in the location, rather than the location itself (in line with a critical realist approach). This research also adopted a grounded

approach to access socio-cultural constructions of farming change and the farming 'innovator', and to detail journeys of change and innovation.

Grounded theory has its roots in sociology (for more see Glaser & Strauss 1967; Strauss & Corbin, 1990) and it both recognises and assumes that 'through detailed exploration [and] with theoretical sensitivity, the researcher can construct theory *grounded in* data' (Morse & Richards, 2002: 54). Grounded theory is of particular import in this research, as it is used to explore particular processes in particular places and is used to develop concepts and theories resulting from (mainly, but not exclusively) qualitative data sets (Morse & Richards, 2002). Therefore, theories that are generated are based on the words and actions of individuals within the research (Goulding, 2005). When it comes to fieldwork, Knigge and Cope (2006) summarised the grounded approach;

> '*The methods of grounded theory are iterative, reflexive and inductive; that is, they involve multiple stages of data collection, coding and analysing them, reflecting on emerging themes, collecting more data targeted to initial theories, and constantly comparing the insights that evolve.*'

This approach was adapted to this research, which, as explained below, adapted concepts from grounded theory. Firstly, an inductive approach requires 'immersion in the field' in the initial stages of research to begin conceptualising phenomena without exhausting the existing literature first. Goulding (2005) argued that it is a common misperception that an inductive approach requires ignorance on behalf of the researcher regarding existing literature on the phenomena being researched. Instead, it is an 'interactional' process and literature is consulted throughout the data collection, analysis an interpretation stages (Goulding, 2005). However, Glaser and Strauss (1967) stressed that having no pre-conceived ideas or hypotheses is crucial to a grounded approach, which complements the explorative philosophy underpinning this research. The first stage of field work presented in this chapter, the Participatory Rural Appraisals (PRAs), is representative of an inductive approach, as this methodology was utilised to 'audit' the landscape to expose current experiences, issues, relationships and phenomena with regards to farming and natural resource management; I had also never visited these part of NSW. Therefore, rather than the researcher deciding the focus or agenda of the research from desk-top studies on sustainable practice change, it was thought that immersion 'in the field' and subsequently 'in the data' would help guide the research towards a specific focus. The PRAs orientated this work and led to a focus on sustainable innovators and journeys of practice change (as discussed further below).

Secondly, the use of 'coding' to both analyse and reduce data, and to add rigour to the process of analysis, is a major aspect of the grounded approach (Knigge & Cope, 2006). While some advocate the use of 'micro-analysis' or word-by-word coding (see Strauss & Corbin, 1990), this has been criticised as a time

consuming process which leads to the production of 'over-conceptualisation' (see Glaser, 1992 in Allan, 2003). While 'key point' coding is offered as an alternative by Glaser (1992), this thesis instead focused more on the next stages of grounded analysis, the emergence of common experiences, concepts and theories. This thesis adopted an interpretive and thematic approach to analysis to avoid the disciplined, cumbersome and formulaic process of 'coding' transcripts, which was largely unnecessary due to the many workshops and informal discussions held throughout the research process that aided in the development of major themes (for more see Section 3.2.3, Section 3.3.3 and Section 3.3.7).

A grounded approach also allowed for flexibility in data collection via the use of multiple methods. A 'field induction' was carried out in the form of the Participatory Rural Appraisals (PRAs) (explained further in Section 3.2.3). During the PRA process, I encountered a self-identified 'innovator' and we conversed for four hours, shared stories and literature. This experience decided the research focus and developed the methodology that would be employed in the Micro-Ethnographic (ME) phase of inquiry and also sparked the collection of 'farmer-owned' research. Themes which emerged out of the PRAs also helped narrow the focus to the 'innovator' and identified living innovators for subsequent research. To add further dimensions to these stories, informal discussions with 'change agents' and other professionals involved in or mentioned by participants during fieldwork were conducted. This research, due to its grounded approach, also generated opportunities for collective data interpretation through multiple interactions with participants. Opportunities for further structured and unstructured 'in-the-field' contact with farmers/landholders, practitioners, change agents and general community members (explained further in Section 3.2.4) helped forge stronger networks, broadened the researcher's understanding of the myriad of rural issues at hand, and also advised the methodological framework and data interpretation. Petit et al. (2011: 396) explained this technique as 'building as you go' which 'produce[s] new knowledge, i.e. the stories and the collective analysis of those stories', a central aspect of grounded theory. As Allan (2003: 36) asserted,

> '*The researchers' mind-sets are used to waiting until all the data are collected before starting analysis and all analysis is completed before drawing conclusions. In grounded theory, this is not the case and this needs to be understood and appreciated. Analysis can start with the first interview*.'

The concepts and theories which are developed throughout Chapters 4, 5 and 6 are entrenched in the data garnered through both the PRA and ME processes.

The congruent use of these multiple methodologies embodies the principle of methodological triangulation; where various sources and methods are used to cross-check insights and provide a degree of coherence in the data through back solving and comparative analysis (Pearce & Pretty 1993; Bradshaw & Stratford,

2000; Steins, 2001). Bloor (1997, cited in Campbell, 2001) however argued that triangulation has pit-falls in assuming that the other techniques employed can be validated unproblematically through the addition of other methodological processes. To overcome this, Bloor (1997) and Campbell (2001) both reinforce the argument for transparent reflexivity during the entirety of the methodological process highlighting the research limitations (which are summarised in Section 3.5). Figure 3.3 illustrates the triangulation of methodologies employed in this study.

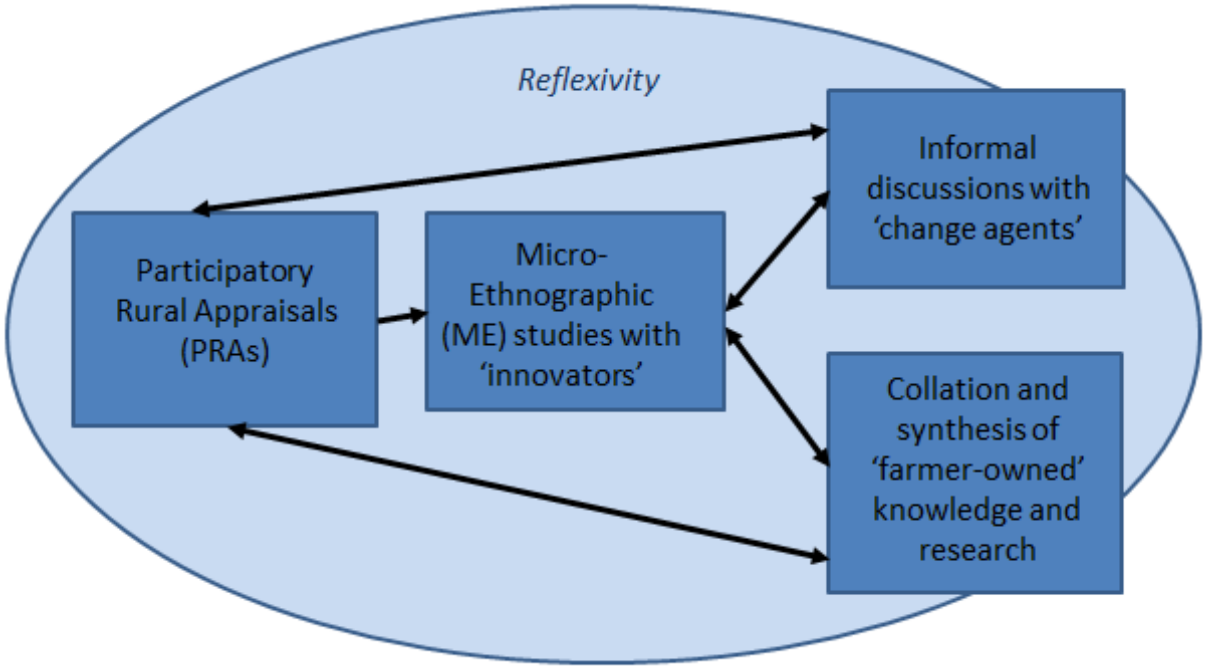

Figure 3.3 Outline of the methodological framework

3.2 Preliminary Investigation

3.2.1 The Communities in Landscapes project

The location of the case studies was based upon Peter Ampt's involvement in the *Communities in Landscapes* (CiL)[18] project run by Landcare NSW Inc. and funded by the Federal Government's Caring

[18] For more detail on the CiL project - its objectives and outcomes, visit http://cil.landcarensw.org.au/

For Our Country program. CiL had nine (9) project partners with varied production and conservation orientations ; *Landcare NSW Inc, Grassy Box Woodland Conservation Management Network, Stipa Native Grasses Association, CSIRO, Sydney University, Industry & Investment NSW(I&I), Office of Environment and Heritage (OEH), and Greening Australia-Flora Bank.* The purpose of this project was to increase native habitat and foster landscape-scale conservation of the Endangered Ecological Community (EEC) White-Box Yellow-Box Blakely's Red Gum Grassy Woodland and Derived Native Grasslands, or the abbreviated version, Box-Gum Grassy Woodlands (BGGW) through engagement with landholders and community members. This change in the landscape was to be brought about through efforts to co-create with farmers and landholders' context specific methods to integrate production and conservation on their properties (Ampt et al, 2010). Peter Ampt's interest in the project was related to developing a research plan to identify the socio-cultural context, as well as identifying innovators and analysing the biophysical characteristics of their farms to test assumptions of environmental improvement (more on Peter Ampt's work is discussed in Chapters 4 and 5).

3.2.2 Case Study Location

The CiL priority area was decided on based upon existing remnants in NSW of BGGW and existing networks and relationships formed by members of the project who had a history of working and living in the landscape. As shown in Figure 3.4 the estimated distribution of the BGGW covers much of the Murray-Darling Basin. Working within production based landscapes was also an aim of the CiL project and so to achieve these objectives, three key locations based around major regional centres across three Catchment Management Authorities were agreed upon by the partners and associated researchers (as depicted in Figure 3.5).

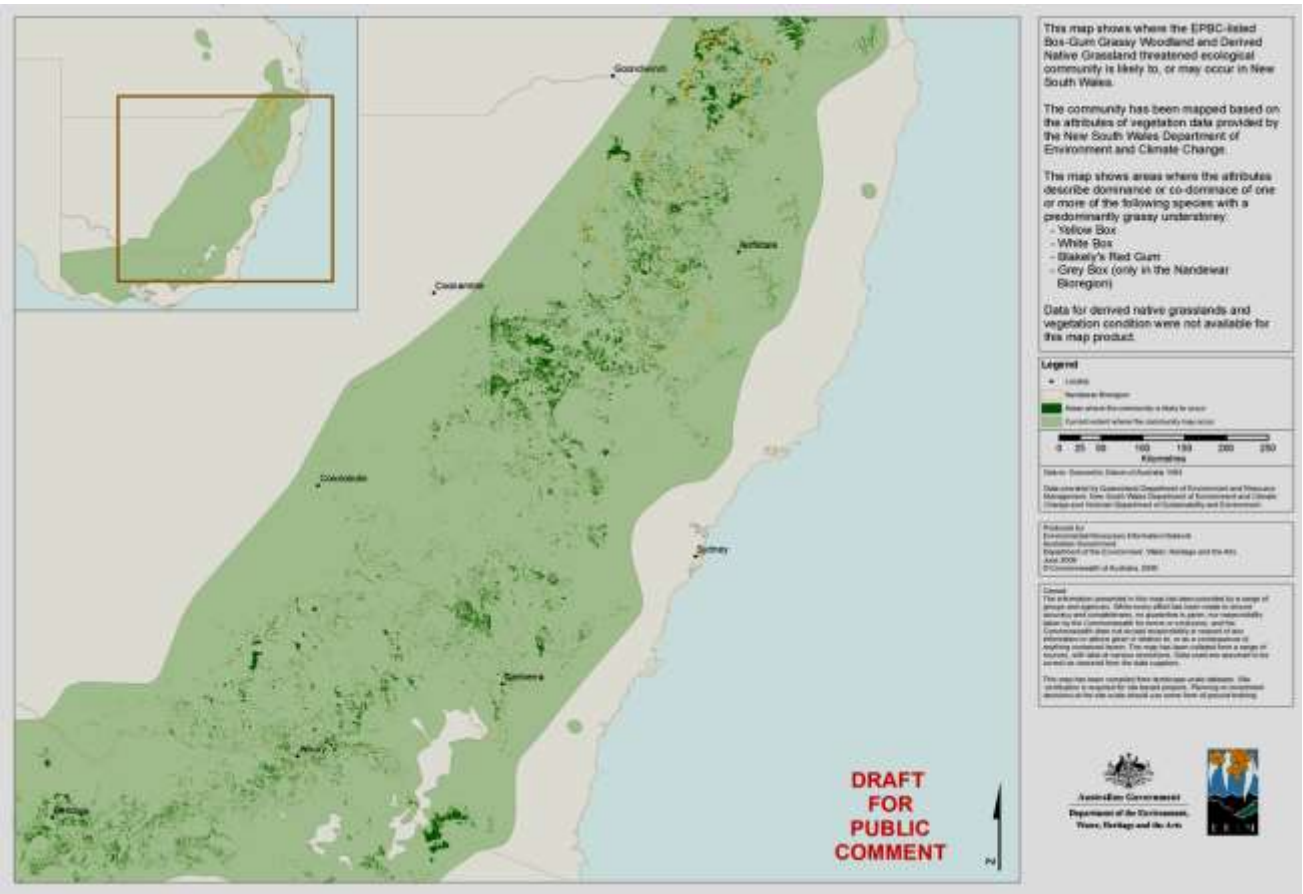

Figure 3.4 Box-Gum Grassy Woodland and Derived Native Grassland distribution in NSW

(Map from Department of Environment, Climate Change and Water, 2010: 70)

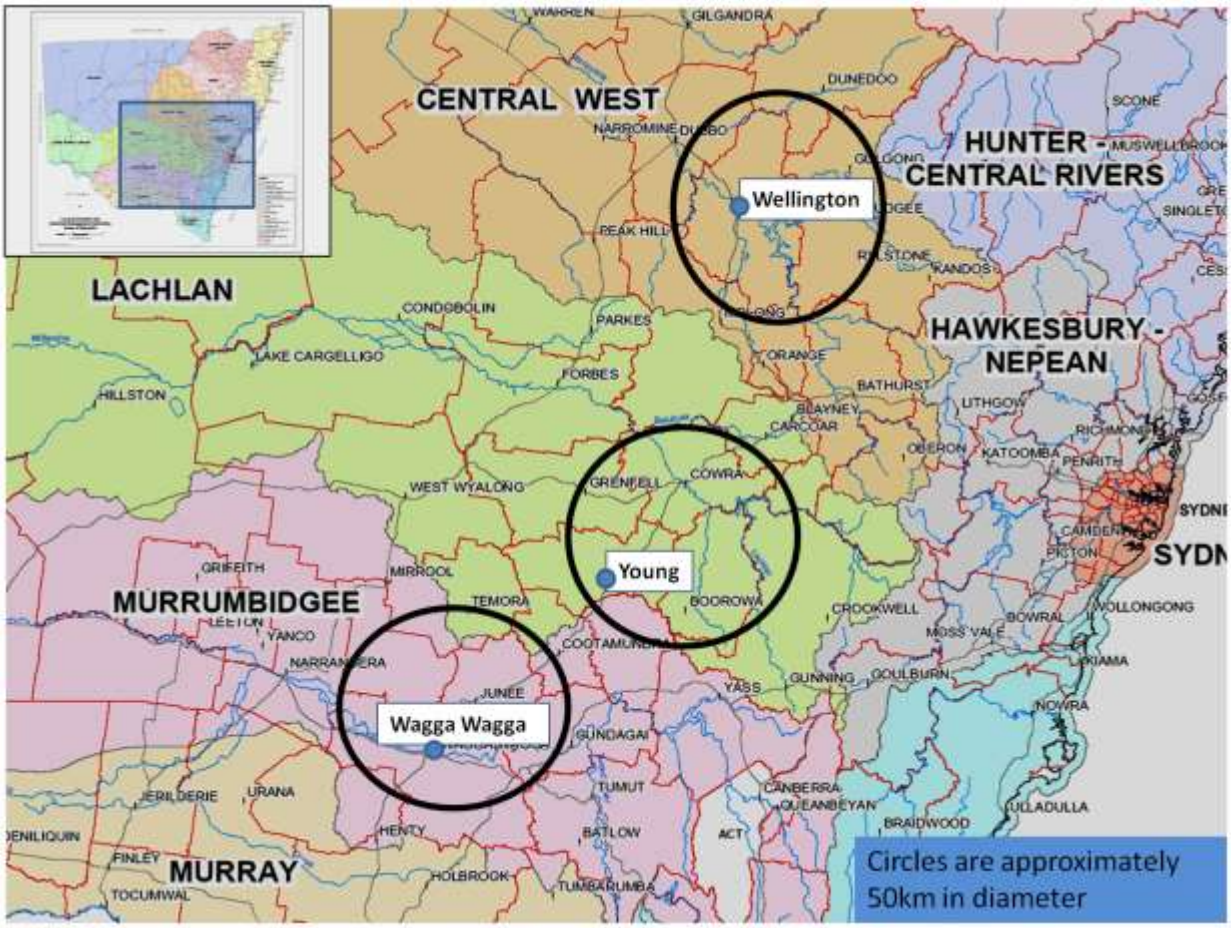

Figure 3.5 Map of NSW with CMA boundaries depicting the three case study locations used for the PRA (Base map: Office of Environment and Heritage, 2009)

3.2.3 Participatory Rural Appraisals[19]

Participatory Rural Appraisal (PRA) is an interviewing method used in PAR as a short-term scoping technique to help frame the socio-cultural fabric; the current issues, attitudes and opinions, and to help build networks of people across the landscape. This process was developed through the Rapid Rural Appraisal (RRA) method which was developed in the 1980s in a rural developing world context (Pretty, 1998), and was first explored in Australia in Central Western NSW (Ampt and Ison, 1989 cited in Ison and Russell, 2000). Campbell (2001: 381) states that the PRA owes its existence to the merging of programs related to agroecosystem analysis, applied anthropology, and field research on farming systems.

[19] University of Sydney Ethics Committee approval – 09/2010/18

It involves a short-term spate of interviewing across a landscape using a theme based interview without targeting certain interviewees, but at the same time maintaining diversity. It is argued that this approach differs from RRA as 'PRA represents a paradigm shift that combines empiricism, the examination of diversity, improvisation, and personal responsibility in a manner that embraces and affirms multiple realities and local diversity' (Chambers, 1994: 1449, cited in Campbell, 2001: 381). Pretty (1998: 241) discusses some of the basic principles that underlie PRAs which were adopted by the CiL team:

- Fosters collective and cumulative learning – the methodologies are semi-structured and context-specific, and encourage interaction.
- Process is user-friendly and quick – creates enthusiasm amongst researchers and participants alike.
- Diversity is represented – external actors who are local members of the community are positioned as researchers (therefore the 'participatory' nature of the appraisals) (Chamber, 1994, cited in Campbell, 2001). Individual interviews and group workshops provide diversity in discussion and adopt principles of triangulation.
- The process emphasises self-assessment; 'farmer's histories and present circumstances were used as a basis for them to identify potential actions which might sustain their involvement in farming. Later, in a community setting, farmers were able to join with others in the community who shared common enthusiasms for future action' (Ison & Russell, 2000: 28).

CiL adopted this approach during the preliminary stages of project construction and conducted three PRAs with the aim of using insights from this process to help focus and refine the plan of action, and in part set the agenda for the long-term goals and conservation aims of the project. A semi-structured proforma (see Appendix A) was developed which canvassed information relating to five basic themes (which were derived from my preliminary literature review):

- Personal history and farm history
- Community involvement
- Future visions
- Sources of information
- Environmental management

Sourcing participants was initiated through existing networks through the CiL partners which further opened up opportunities for contacts and a snowballing process of enlistment was carried out. This initially involved contacting landholders who were involved in local groups, for example Landcare, Stipa Native Grasses Association and grazing groups. These participants were then asked for contacts; including their

neighbours and other community members. Farmers and landholders involved in agricultural production were targeted and represent the majority of the sample, with a few 'hobby' farmers and small-block owners also included. Regional centres in these locations were avoided. The aim was to achieve a degree of diversity in participants, and so a mix of smaller and larger rural landholders with various orientations towards conservation across a range of agricultural industries was aimed for throughout the sampling process. The majority of people were telephoned and agreed to be interviewed for the project. However, this selection is potentially biased due to the role of Landcare NSW Inc. in CiL, and the fact that CiL was funded for conservation purposes. Further to this, bias in snowball sampling is inevitable, as Biernacki and Waldorf (1981: 143) explained, 'the researcher must actively and deliberately develop and control the sample's initiation, progress, and termination.'

The interviewers were a mix of researchers, professionals, change agents and local community facilitators with the majority being members of the CiL partnership. Interviewers were split into teams of two, sometimes three, and were purposefully paired to balance different knowledge and expertise. Interview teams visited farms and properties to interview participants with the interviews taking approximately 1-1.5 hours, therefore conducting approximately 3 per day. No recordings were taken, only handwritten notes with a total of 85 interviews conducted.

Workshops were also an integral part of the process, with nightly unstructured meetings of interviewers to discuss interviews, insights and develop themes. These would then be collated to present findings of the process at a final workshop with all interviewers, key participants involved in the PRAs, and various regional and local government and non-government representatives involved in a range of production and conservation based programs (sourced through CiL networks). These round table discussions were used to further validate insights and to help elaborate on details of local socio-cultural values and perceptions, whilst further strengthening networking within the CiL project.

The following table (3.1) details those involved in the execution of this methodology across the three locations and are presented in chronological order:

Table 3.1 - Details of the CiL PRAs

Month	Location	Interview teams	No of interviews	Workshop participants
Nov 2009	Lachlan CMA (Young)	• Rebecca Cross (RA) and Local Landcare Rep Young • Sarah Doornbos (PO - USyd) and Local Landcare Rep Canowindra • Peter Ampt (CI - USyd) and I&I Rep1 • BGGW CMN Rep (CiL) and Local Landcare Rep Boroowa • NPWS Rep (CiL) and Landcare NSW Inc. Rep1 (CiL)	26	• All interviewers • DECCW Rep/Lachlan CMA • 2 interviewees (ME 4, LCMA) • Lachlan CMA Rep 1 • Lachlan CMA Cowra Rep 1 • Lachlan CMA Cowra Rep 2 • Lake Cowal Conservation Rep
Nov 2009	Murrumbidgee CMA (Wagga Wagga)	• Rebecca Cross (RA) and Local farmer/Landcare Rep Tarcutta • Sarah Doornbos (PO – Usyd), Local Government Biodiversity Rep Wagga Wagga, and Greening Australia Rep (CiL) • Peter Ampt (CI – Usyd) and CiL Media Rep • BGGW CMN Rep (CiL) and Stipa NSW Rep (CiL) • Landcare NSW Inc. Rep1 (CiL) and I&I Rep1	28	• All interviewers • I&I Rep • Interviewee/ HM farmer • CSU researcher • Murrumbidgee CMA Rep 1 • Murrumbidgee CMA Rep 2

Jan 2010	Central West CMA (Wellington)	• Rebecca Cross (RA) and Community Woodlands Officer (CWO) Rep1 (CiL) • Sarah Doornbos (PO – Usyd) and Landcare NSW Inc. Rep2 (CiL) • Peter Ampt (CI – Usyd)and CWO Rep2 (CiL) • BGGW CMN Rep (CiL) and CWO Rep3 (CiL) • Landcare NSW Inc. Rep1 (CiL) and I&I Rep2	31[20]	• All interviewers • DECCW Rep/Central West CMA • Interviewee/Carbon Coalition Rep • 2 Interviewees (ME 10, CWCMA) • Central West CMA Rep Mudgee • Central West CMA Rep Wellington • Little River Landcare Rep
	TOTALS:	20 interviewers	85	19

3.2.4 Data collation and analysis

The PRA interview and workshop notes were collated, translated, transcribed and themed. Handwritten notes can provide bias; on behalf of the interviewer and the quality and quantity of information documented during the interview, and in terms of my translation of these notes. However in this case I had been an attendee at all the nightly summaries and workshops which meant much of the information was clarified during these interactions. A final report for each PRA was produced and circulated to the CiL team, all interviewers, workshop attendees, and all interviewees. A further report was also generated discussing the themes in detail and comparing and contrasting the results from the PRAs across all CMAs (see Ampt, Cross and Doornbos, 2010).

In terms of this research, my own insights and a collation of others' insights I was exposed to during the PRAs led me to develop diagrammatical explanations of certain phenomena which were incorporated and developed into a literature review (see Chapter 2). Key overarching themes were also established for this research – the concepts of change and control which subsequently provided a socio-cultural framework for

[20] The 31st interview was conducted a week later via telephone, as the participants were unavailable for a field visit, but were eager to take part in the project.

the further exploration of ‘innovators’ philosophies, attitudes and behaviours, and the development of a broader aim to link these with notions of enlightenment. As previously mentioned, this process also led to the formation of the focus on the innovator.

Innovators were therefore also explored during the PRAs and interviewees were asked to identify ‘innovators’, or ‘someone doing something differently’ with their land management. Innovators were also identified through the original sourcing of participants, and during workshops; the term ‘innovator’ was merely defined as a farmer who was integrating production and conservation within the CiL glossary, however a range of definitions were used by participants. Therefore a final list of innovators either involved in or mentioned during the PRA process was generated through socio-cultural consensus and identification of living examples of innovators.

3.2.5 Positionality during the PRAs

Working with the CiL team was a great experience as they are a group of ‘people people’ but with differing expertise and focuses within the overall project. This provided much opportunity for discussion with practitioners of my own understandings and helped further define this project – these experiences constituted some of the informal discussion with ‘Change Agents’.

My aim to have participants help build the research was evident throughout this process. On each trip I was paired with a local conservation facilitator, and in one case, one who was also a farmer. These trips included much travel between interviews, and so allowed for much talk and deliberation on local rural and agricultural issues as well as discussion about the interviews themselves. Some of my interview partners had a previous connection with interviewees and understood the issues they were discussing and so could provide more depth and different perspectives to add to the interviews. They also enlightened my knowledge on the various relationships and connections between people across the landscape.

A most insightful realisation that was provoked during the PRAs was discovering that the devil really was in the detail. Many of the issues throughout the interviews were discussed candidly, but there were often requests for parts to be ‘off-the record’ , this included information relating to cliques, scandals, affairs, deaths, illnesses, family tragedies, debt levels, neighbours, sibling rivalry, family rifts, divorce, crime, etc., and sometimes just general gossip that had been overheard. These offered much insight for me into many of the underlying personal issues which impacted heavily on communities and their socio-cultural dynamics. However, ethical issues associated with qualitative research and anonymity and the right to an interviewee’s wishes of privacy to be respected have been adhered to. This meant that in designing the

next ‘in-depth’ level of field work I would have to strive to maintain anonymity whilst also conveying the deeper personal messages and stories of interviewees.

3.2.6 Further involvement in related fieldwork

Concurrent to this research, other fieldtrips into the case study locations and meeting with PRA participants occurred through other aspects of the CiL project. Peter Ampt was also involved in the identification of innovators across this landscape for the purposes of conducting a benchmarking study looking at biophysical aspects of ‘unconventional’ farming and comparing it with ‘traditional’ methods of farming. Vegetation, soil and insect surveys were conducted on an ‘innovative’ property and a neighbouring ‘traditional’ property using Landscape Function Analysis (LFA)[21] to analyse the results (for more see Chapter 5). I was involved as a field research assistant on some of these trips, and when certain landholders were also interviewed about their management, I was a co- interviewer. Other CiL guided field trips to properties and research stations were also attended to further this exposure and experience of the field and to strengthen relationships between myself and people within the landscape[22]. The extent to which these extra interactions involved the Micro-ethnographic innovators is detailed in Section 3.3.3.

3.3 Micro - ethnographic studies: a pragmatic approach

Exploring *innovative responses to existing or emerging situations*

3.3.1 The Micro-ethnographic approach

Micro-ethnographic research evolved from the field of ethnography which is most closely associated with the field of socio-cultural anthropology (Gregory et al., 2009; Liamputtong & Ezzy, 2005). Ethnography is used in anthropological research mainly to determine social and cultural structures within a given ‘community’ and the main goal as coined by Geertz (1973, cited in Morse & Richards, 2002) is to provide a ‘thick description’ of all features of a culture. This approach is pragmatic and exploratory, and invites the researcher into their case study through behavioural observation and study (Gregory et al., 2009). Traditionally this approach has been used to understand without hypothesising, ‘different’ cultures based

[21] For more on this research see the CiL Benchmarking Report, Ampt and Doornbos (2011)

[22] Further involvement in field work focussing on other areas of NSW which influenced my understanding of the rural include being a part-time research assistant on a Cotton CRC funded project documenting the history of cotton farming in Northern NSW and Southern Queensland; as an interviewer on two other rural/regional projects related to agroforestry and aspects of regional development; and as an interviewer on a Sydney University Carbon Farming Project (2013).

on long-term interactions, however Morse & Richards (2002: 53) argue that 'ethnography may take several forms, depending on the type of research question, its scope, and the researcher's perspective'. In this research, an ethnographic approach has been embedded within a grounded approach, and both approaches have been adapted to suit the nature of enquiry. The grounded approach dictates the overall focus on occurrences and processes of sustainable practice change, while the ethnographic approach was adapted to study the phenomena of practice change within the sub-culture of innovators born out of these processes. Pettigrew (2000) argued that these two approaches can be compatible as they are both forms of naturalistic enquiry (carried out *in situ*), which rely on participant observations, emergent sample selection and emic (participant) accounts of behaviour.

Therefore the 'Micro-Ethnographic Studies' (MEs) are a downsized and appropriated version of traditional ethnographies, utilised for a quicker and more specific purpose (Beach and Finders, 1999). Traditional ethnographic studies are conducted from a semi-permanent position of 'living in the field', whereas MEs are short term studies over time based on 'visiting the field periodically' and are based on understanding sub-cultures rather than cultures. MEs also adopt many of the principles of more innovative forms of ethnography, including aspects of PAR, 'focused ethnography', 'autoethnography', 'critical ethnography' and 'visual ethnography' (Morse & Richards, 2002). 'Focused Ethnography' is defined by Morse and Richards (2002) as entering the field with a pre-determined specific topic of interest or shared experience to explore; and further, to be analysing a subculture not far removed from the position of the researcher. Morse and Richards (2002) also argue that only some of the data generated needs to be included in analysis unlike traditional ethnography, for instance it may only consist of interviews. 'Autoethnography' refers to the reflexive approach discussed in Section 3.1.4, whilst 'critical ethnography' refers to aiming towards resolving a specific issue. 'Visual ethnography' is based on participant observation and record making throughout the process which is discussed further in Section 3.3.4. It is these aspects of ethnography which have been drawn upon in order to frame the micro-ethnographic approach used in this research to explore innovators' journeys of change.

The execution of an ME aims to build a 'rich picture' of the socio-cultural fabric and personal narratives circulating a specific issue. This is carried out through research into the day-to-day interactions and behaviours which shape social norms, group structures and relationships. ME was first utilised within the American educational system to study the 'silent languages' and complexities of classroom behaviour (Smith & Geoffrey, 1968, cited in Streek & Mehus, 2005), and many contemporary researchers still utilise this method to analyse aspects of educational systems (eg. Antonijevic, S., 2008; Beach and Finders, 1999; Hellerman, J., 2006; Milligan, 2001) as well as aspects of health systems (eg. Ebright et al., 2003; Panya & Gingerich, 2002; Powers et al., 2011). The 'micro' aspect of this work is based on the investigation of a

classroom or ward rather than a society (Streek & Mehus, 2005). Streek and Mehus (2005) also argue that further trademarks which define the development of micro-ethnography include conversation analysis, however traditionally this has been carried out with cameras and recordings of situations, rather than direct interaction with research participants.

In the case of this thesis, this approach has been reappropriated to explore the 'micro' level of agricultural change through direct and multiple interactions with participants and a reflexive approach to analysis adopted. With an 'innovator sub-culture' emerging from the farming sub-culture, a micro-ethnographic study was implemented to understand this sub-culture through the shared behaviours and experiences of its members; a central tenet of traditional ethnography (Goulding, 2005). This type of research is largely absent in the field of sustainable practice change in farming (McKenzie, 2013; Wilson 2008). As McCarthy (2005: 780 in Wilson, 2008: 380) argued, 'we are in urgent need of ethnographies of multifunctional rural areas', while Wilson (2008) argued for more case studies to take place at the farm level to assess the nature and pace of farming transitions. The ME approach was therefore adopted in order to investigate the journey of the innovator and to unearth understandings related to how innovators think, see, sense and construct the world; the information and knowledge upon which their attitudes, behaviours and philosophies are based (Dunn et al., 2000). As Pettigrew (2000: 257) acknowledged, while ethnographic research is emic in design (it describes processes and phenomena as experienced by participants), there is a lack of objectivity, further highlighting the importance of reflexivity during the MEs; 'by acknowledging the subjective, partial, and local nature of the analysis, ethnography claims only to provide one interpretation of the phenomenon of interest; potentially one of many.'

3.3.2 Defining the Innovator – targeting participants

As previously discussed in Section 3.2.4, 'innovators' emerged from the PRA process through socio-cultural consensus and were further defined by a consequent management criteria set by Ampt & Doornbos (2011) (see Chapter 4, Section 4.3). These innovators were incorporating aspects of production and conservation in a holistic manner, and were eager to be involved in further research. A final list of thirteen innovators was decided upon (limited due to the intensive nature and amount of data generated through this approach) – nine of whom were also participants in Peter Ampt's Benchmarking study (as mentioned previously). A further aim was to have a spread of innovators across this landscape. However, certain areas were heavily populated with innovators and seven of the thirteen ME innovators were located in the Central West CMA (refer to Figure 3.5, Map of PRAs). Of the rest, three were located in the Lachlan CMA and two in the Murrumbidgee CMA. The thirteenth innovator was an anomaly, but was part of the innovator

network (explained further in Section 3.3.3) – she was included in limited aspects of the analysis as she was outside of the geographic context being from Tasmania[23].

3.3.3 Execution of the micro-ethnographic studies[24]

The micro-ethnographic studies were used to explore on an in-depth level, the philosophies, attitudes and behaviours of innovators within the landscape with the aim of using this dialogue to further understandings of change and control in sustainable agriculture. The formal aspect of the ME studies were a series of interviews with eco-innovators (for more on identification of 'eco-innovators' see Chapter 4, Section 4.4). Interviews were considered the most appropriate method for eliciting narratives of change due to the personal and intimate nature of face-to-face conversations. As Stuhlmiller (2001) asserted, retelling a story is an emotional process and the richness of the data gathered is based on familiarity generated throughout interviews and interactions. In order to retrieve these personal stories, a proforma was developed which outlined the main themes of the interview; these being the past, present and future (see Appendix A for the proforma and cover letter). The aspects discussed during these on-farm visits include inspirations, influences, personal circumstances and personal understandings, insights, beliefs and values. These participants were then revisited (after analysis of initial interviews) for follow-up interviews to help clarify and explore a) collective themes which emerged from the initial stages of the ME process, b) personal details elicited in previous interviews, c) new tangents, which upon reflection, the interviewee adds to the original narrative and d) to document any new transitions or endeavours. The micro-ethnographic studies were carried out in two stages, with 9 months in between most interviews. In the first stage, three separate trips were carried out to conduct interviews, whilst the second stage required 2 trips. During the first ME stage, 9 of the 13 innovators were accessible for interviews, whilst during the second stage 12 of the thirteen were interviewed. In cases where only one stage of the ME took place with an innovator, further opportunities for interaction and clarification were found in other aspects of 'being in the field'. To complement the formal component of the MEs (the interviews), a range of more in-formal interactions (some opportunistic, some at related functions and events) also informed the ME studies. Importantly, my attendance and presentation at the *2011 Stipa Native Grasses Conference* allowed for further interaction and feedback with some of these innovators. For a full list of my interactions with ME innovators, including their participation in the CiL project's PRA interviews and Peter Ampt's benchmarking interviews, see

[23] While ME 13 sits outside of the study area, she was closely linked to innovators in the Central West (see Figure 3.6). She met the first two criteria of 'living innovators' as discussed in the re(construction) in Chapter 4, Section 4.3. Her insights were included in limited sections of Chapter 5 (where further information, especially on animal welfare practice, was required). An ME was conducted on the phone with her after an initial face-to-face conversation.

[24] University of NSW Ethics Approval No 09/2010/18

Table 3.2. This table indicates with black crosses, interviews which generated data but not via my first-hand experience (i.e. other PRA interviews which I did not attend, but utilised data from and Peter Ampt's benchmarking interviews from which no data was utilised), and with red crosses, where data was derived from my personal interaction.

Table 3.2 Interactions with the ME Innovators throughout the entirety of the study

Innovator	PRA interviews 2009	PRA work-shops 2009	(Peter Ampt) Benchmarking study (plus interview) 2010	CiL Field Trip 2010	ME study Stage 1 2010	ME study Stage 2 2011	Stipa Confer-ence 2011	Stipa Carbon Farming Project 2012	CiL Evaluation day 2012
ME 1 CWCMA	X		X		X	X (via phone)			X
ME 2 CWCMA	X		X	X		X	X		X
ME 3 LCMA	X		X		X	X (via phone)			
ME 4 LCMA	X	X	X	X	X	X			
ME 5 MCMA	X		X		X	X			
ME 6 CWCMA	X				X				
ME 7 LCMA	X		X		X	X			
ME 8 CWCMA			X	X		X	X	X	
ME 9 CWCMA	X		X	X	X	X			X
ME 10 CWCMA	X	X	X	X	X	X	X	X	
ME 11 CWCMA	X		X			X	X		X
ME 12 MCMA	X		X		X	X (via phone)			
ME 13 TAS						X (via phone)	X		
PRA 8 CWCMA	X						X		

During all of the MEs, a colleague, friend or relative accompanied me, and they were involved in the overall interaction and discussion. Having an unrelated third party present often helped further build personal relationships with farmers through unpressured and casual conversation during the interview process. Throughout most interviews, interaction and input from innovators' immediate family members was also a feature, as well as sharing meals; I also stayed with one family for 2 days. The interviews were a mixture of ad hoc conversation and purposeful discussion, and lasted anywhere between 2 hours or whole days, with the majority of conversation (for example, during the interview, during farm tours, during meals, at the pub) recorded for the sake of keeping interaction fluid – however, note-taking was also utilised to highlight key points and to complement recordings.

The nature of these interviews is explained in Figure 3.6. This diagram illustrates the relationships and connections between the ME innovators as a network – only 2 were not associated with the other innovators in the study. It also describes each ME interview and the number of active interviewees. Two of the MEs were a partnership, a husband and wife in one case and a father and son in the other. In other cases, rather than having two consistent participants, the diagram explains the presence of an interviewee who added to the conversation, but was not predominantly answering questions (in most cases these were the wives of male farmers).

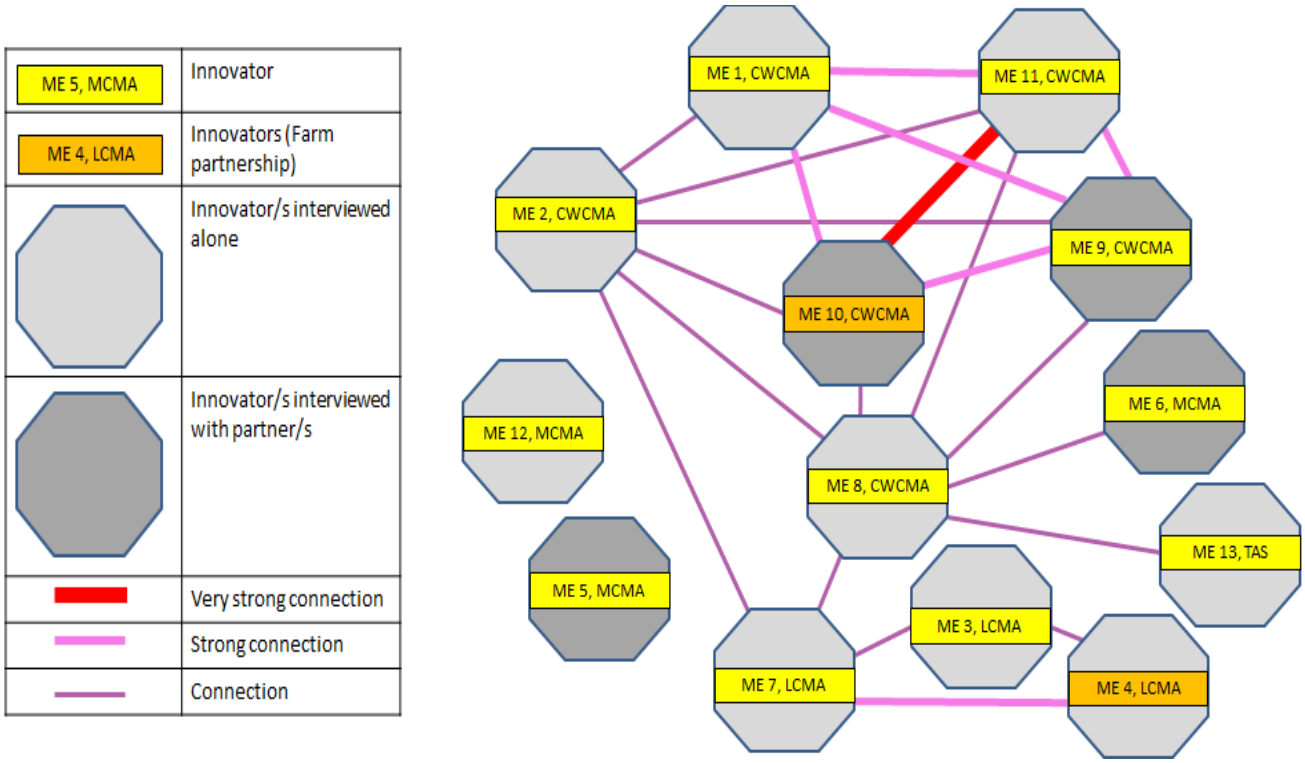

Figure 3.6 Micro-ethnographic study: interviewees and the innovator network

3.3.4 Participant Observation

Another key element of micro-ethnography is the inclusion of visual methods of observation, or 'visual ethnography' which was crucial to documenting and understanding the context from the grass-roots perspective. This technique was not part of the formal methodology, but was adopted as an informal process collecting complementary data (Kearns, 2000). All PRA and ME interviews were conducted on the farm[25], which allowed for farm tours, interaction with extended family, observation of day to day activities, access to documents, an understanding of the physical farm environment and wider regional environment, and most importantly, to foster a relationship of open discussion and trust. Photos were also taken during some interviews as a way of documenting the experiences[26]. Observing the farming landscape and practice was crucial in interpreting the local knowledge derived from farmers.

[25] Except ME 13, as she was from Tasmania (as explained in Section 3.2.2)
[26] These were not formally included in this thesis in order to maintain anonymity of participants.

3.3.5 Positionality during the micro-ethnographic studies

The ME process became a personal process of enlightenment regarding sustainable agriculture and farming change – I was the student and the innovators the experts. While a proforma was developed, I aimed to generate conversation throughout the interviews so that my positionality was known to the farmer. This also allowed the conversation to go off on tangents which enriched my learning. This approach allowed for trust, respect and an interpersonal relationship to develop. During interviews we shared intimate stories over beers, tea, dogs I fell in love with ('Rolled-Oats'), family meals, moving sheep, operating harvesters, kicking the dust, and at local meetings and conferences. My colleagues were also involved in many aspects of these interactions. During the ME process, as mentioned I almost always had a co-interviewer. These included a colleague/friend, two personal friends and my mum. Having these people also partake in the experience was in retrospect, invaluable for translating and interpreting interviews, for adding questions in interviews, and for creating a bond based on trust with farmers – I also shared parts of my life with them. This was also a great experience for my friends and mum who were eager to discover more about agriculture and become exposed to innovative farmers. Being involved in many other experiences with innovators, as expressed in Table 3.2, also strengthened these relationships and allowed for more informal conversations and knowledge sharing to take place.

3.3.6 Collecting farmer-owned research

Farmer-owned research refers to material suggested and provided by innovators. During the PRA process, as mentioned, one innovator offered to provide documents he had written both published and unpublished, data he and other research bodies had collected on his farm, marketing material, and a power-point presentation he had put together for a farming seminar. This further information helped provide further insight into the practices and philosophies of this innovator and helped clarify interview content. Therefore it was decided that throughout the ME process, this research would be requested from other innovators. In addition to this sort of information, innovators also supplied news articles which they featured in, and forms of artwork they had generated to express their philosophies[27]. This innovator, (PRA 8, CWCMA), also recommended some literature which had inspired his thinking, so consequently ME innovators were also asked for this information during interviews. The books which most inspired were acquired and are included throughout discussions in Chapters 4, 5 and 6 (a full list of these is provided in Appendix B). The inclusion of farmer-owned research complements exploration of the change process and offers insight into messages entailed in these stories. The purpose for this methodology was to keep within the principles of

[27] Published works and artworks acknowledge certain innovators by name in Chapters 5 and 6, as requested – however quotes remain anonymous due to the requirements of Ethics Approval

PAR and synthesise farmer research and knowledge with academic research and knowledge to produce a collation of perspectives.

3.3.7 Informal discussions with key 'agents of change'

Informal discussion with key 'agents of change' was also included as a complementary methodology. For the purposes of this study, 'agents of change' are identified as anyone who advises farmers and landholders on sustainable practice change from the public to the private sector[28] (Cerf et al., 2011). An opportunistic and informal approach was taken to document these discussions, with the main opportunities being interactions with CiL partners, during the PRA process, and at local conferences and field-days. These discussions were related to the broader issues of sustainable practice change, innovative farmers, and their own observations of and experiences with practice change. Their experiences with other change agents and their reflections on how people learn, adapt and transform were also elicited. These discussions were utilised to broaden my own knowledge, understand the position of the 'Change Agent', and to add insight to the discussion presented in this thesis.

3.4 Data Analysis and Synthesis

Shanahan et al. (1999) discusses the way in which narratives can provide important insights into NRM through assessing the 'rational' and 'non-rational' ways in which people perceive the environment. With relation to triggering enthusiasm, Shanahan et al. (1999: 417) explains; 'most importantly, individuals' reactions to particular situations may well depend upon how the situation is framed, and framing is very often a narrative issue.' The focus of this research is on farmers who have experienced radical and sustainable change in their farming practice; hence interviewees relayed their narratives in a chronological order, replete with a beginning, middle and end. This analysis therefore adopted an 'interpretive approach' to explore and retransmit these individual narratives as a collective narrative, highlighting both common and unique experiences of individuals along the way. Using interpretation is most appropriate when the data relays 'subjective experiences of a social world', experiences which are at the heart of a micro-ethnographic approach (Owens, 2007). Interpretive analysis of qualitative data allows individual cases to be 'decontextualised' into units of meaning and subsequently 'recontextualised' through reintegration into key themes which span the narratives of multiple research participants (Tesch, 1990 in Ayres et al., 2003). This is executed to reduce the dataset, to explore process relationships, and to avoid a case-by-case approach

[28] Similarly, 'Change Agency' encapsulates any institute, company or corporation which employs Change Agents.

which focuses on specific individual details and circumstances; Ayres et al. (2003) argued that stripping away detail of individual context in an interpretive approach is consistent with the goal of exploring collective themes amongst narratives.

The qualitative data collected throughout the entirety of this project, both hand-written notes and recordings, was transcribed, themed and analysed manually. It was deemed inappropriate for the analysis of this data to be carried out through the use of a statistical software program (such as NVIVO) as these individual stories needed to be hand-crafted into a collective journey; 'an unforseen outcome of the reliance on code and retrieve techniques [computer-assisted techniques] is the loss of the many layers of meaning…' (Wiles et al., 2005: 90). As Petit et al. (2011: 399) outlined, stories are not linear, they are woven from anecdote, coincidence and surprising revelations, they focus on strengths and weaknesses, and they 'must reveal the bizarre, focus on the new, and allow transitions, twists and turns'. Furthermore, Petit et al. (2011: 394) explained the agency of narratives; 'story-telling is often criticised as being a trap, but we see it as a creative means to explore the relationships and meaning created in the action-research collectives'. This story of agri-culture has been structured around the PRA and ME data, and where appropriate, other data collected has been inserted into discussion. This thesis aimed to espouse an interpretive approach to narratives by engaging with data analysis and writing as a hand-crafted *process* of transmitting knowledge rather than as a *product* of the methods (Wiles et al., 2005). The concepts and theories, which emerged from the data, are represented diagrammatically throughout Chapters 2, 4, 5 and 6.

The narrative of change in the farming sub-culture is discussed in Chapter 4 and is based predominantly on data resulting from the PRA process. This data was analysed for evidence of both agricultural change and references to the 'innovator', the mythological stereotype of the 'hero' farmer. The consequential categorisation of the 'innovator' implies that the 'non-innovator' exists – however this research was not positioned as a comparative study and so as Jones (2009: 174) argued, 'boundaries of categories should be understood as always inchoate – only partially formed and incomplete'. Therefore, Chapter 5 which is based on the current categorised 'innovator', does not aim to differentiate this story from others in the farming sub-culture, but rather embed it in the farming sub-culture. Due to this, there is a lack of quantitative demographic and farm-specific data included in the analysis. Correspondingly, stories have been woven into a collective narrative to avoid being entrenched in individual detail and circumstance. As Cunningham (1998: 15) argued, 'in order to think clearly about adults learning at the edge of social movements, I believe we should divorce our thinking from the cultural and hegemonic blanket of individualism which almost unconsciously frames our thinking'. Therefore, participants remain

anonymous[29] and are identified in discussion as a PRA or ME participant with the CMA they were located in. Anonymity was also upheld as a requirement of ethics approval for fieldwork; hence the interpretive approach taken to analyse and present data 'across-cases'.

This analysis is a subjective process which occasions inherent bias, especially in interpretation of thematic content. To overcome this to some extent, all content in interview notes were completely deconstructed into themes. The themes which best represented the collective voices were then pieced together to construct the narratives in Chapters 4 and 5. Chapter 5, which focussed on the ME data and the main aim of this thesis, intended to retain as much information from interviews as possible to limit discrimination and exclusion of themes. The self-positioning and reflexive aspects of this thesis aim to inform the reader of the nature of these biases.

3.5 Summary of the methods

The limitations of this research which have been previously mentioned throughout this chapter include; a lack of quantitative data, potential bias with participant selection in the initial development of the PRA process and the interviewer's inherent bias as relationships were formed with participants. These potential limitations however are offset by the richness of the data collected and the complexity of story that unfurled through the narrative construction. The focus on the 'practical' and objective aspects of sustainable farming is also limited; however literature which details these approaches has been incorporated into discussion. Triangulating the methodological approaches aimed to strengthen the Micro-ethnographic study by providing many avenues of analysis and discussion to help re(define) the innovator through collective experience. In adopting an exploratory approach through interviews and conversations with people living on the land, this thesis broadens the discussion on sustainable practice change, and aims to impart a story of change in agriculture.

[29] Excepting certain instances when innovators wanted to be named and acknowledged for an original idea or concept (usually depicted as diagrams see Chapter 5).

CHAPTER 4 - The Farming sub-culture and Identification and (De) construction of the Farming Innovator

4.1 Chapter introduction:

This chapter shapes the socio-cultural context of farming within this landscape in NSW (see Chapter 3, Figure 3.5 for a map) via an analysis of the interviews and workshops conducted throughout the PRA process, as well as utilising some material collected during the MEs. A narrative of the farming sub-culture and agricultural change is constructed to socio-culturally (de)construct and (re) define the innovator and achieve the first aim of this thesis. This chapter explores and discusses the broader socio-cultural dimensions which exist within this landscape; the psycho-socio-cultural 'sub-atmosphere' or 'sub-climate', in which farmers, farming and innovators are positioned. The following chapter provides a temporal and spatial snap-shot of the constructed imaginings and realities which exist in this current farming sub-culture.

With the exploration of practice change underpinning this research, investigation of the socio-cultural norms, values and traditions of the farming sub-culture within this landscape (Vanclay, 1992) is crucial to understanding the context in which personal transformations take place. The discussion in this chapter is periodically supported by literature regarding the role farming 'scripts', 'styles' and 'parables' play in constructing the farming sub-culture(Silvasti, 2003a; Silvasti, 2003b; Howden and Vanclay, 1998; Howden et al., 1998; Vanclay et al., 1998; 2007). Silvasti (2003a, 2003b), described *scripts* as distinct mental maps which are consciously and subconsciously subscripted, resulting in adaptation of behaviours and values to socially accepted norms. This body of research, including Thomson (2001), has aimed to build upon the foundations of van der Ploeg (1994) who argued that a '*style* of farming is a concrete form of praxis, a particular unity of doing and thinking, of theory and practice' (in Vanclay et al., 2006: 63). In identifying 'styles', Howden and Vanclay (2000: 7) also uncovered 'a repertoire of mythologised hypothetical constructions, or *parables*, about farmers promulgated in farmers' talk'. These hypothetical manifestations, the 'styles', 'scripts' and 'parables', will be identified in this narrative to highlight the mythologised nature of farmer stereotypes in the farming sub-culture (Vanclay et al., 1998). This analysis provides a prologue to the shaping of both the agricultural spectrum from 'traditional' to 'alternative' practice, and the multidimensional 'innovator' as embedded within the farming sub-culture. These aspects of the farming sub-culture are the normative dimensions which can both enable or disable practice change, and ultimately, the ability to achieve landscape-scale natural resource management (NRM).

This chapter is divided into three sections, which navigate through the layers of sub-cultural knowledge and experience with practice change. Section 4.2 will outline and discuss the general positionality of the farming sub-culture within this landscape, documenting the scripts and parables that emerged via farming stories of belonging and attachment. Furthermore, a collective cry for agri-cultural change towards sustainability was unearthed across the landscape. Sub-cultural issues related to power and participation in NRM were also analysed and are available in Appendix C. Section 4.3 will explore the farming spectrum, discussing broader classifications of farmers through styles, scripts, parables, and dichotomies related to 'good'/'bad' and 'traditional'/'alternative' farming practice. Within this context, the 'innovator' emerges as a myth, an imagined social-construction based on current perceptions of innovative farming personas and practices. In Section 4.4, through this socio-cultural lens, the innovator is further (de)constructed with living examples of 'innovators' being identified. This chapter ultimately paves the way for the (re) construction of the innovator in Chapter 5.

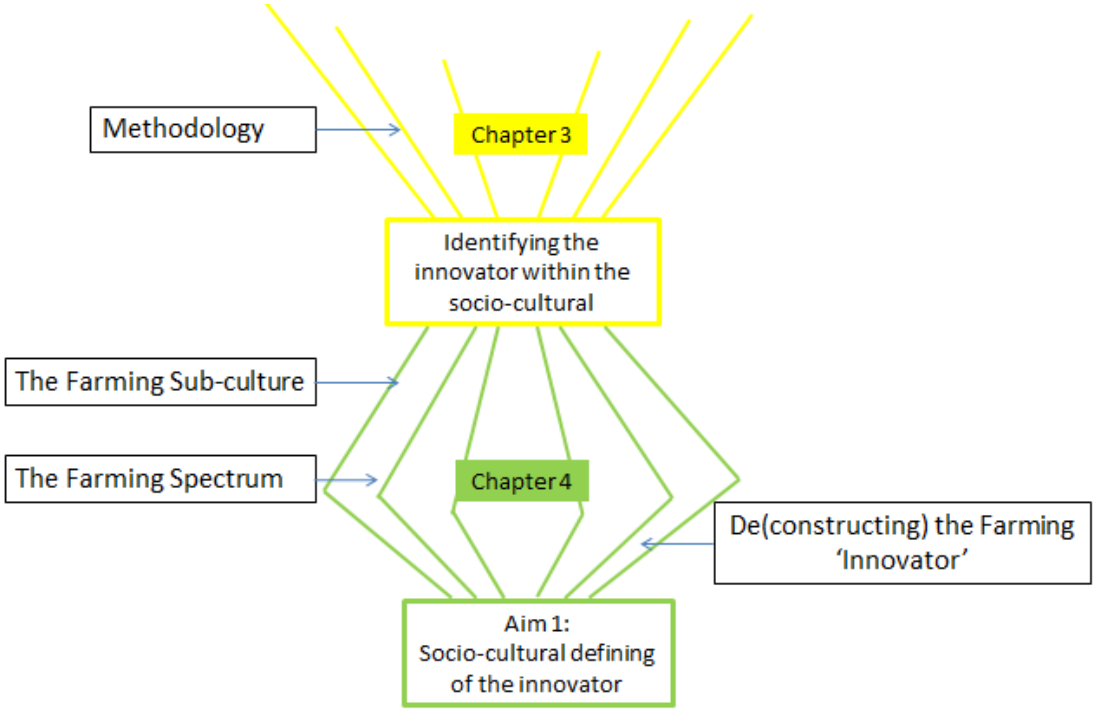

Figure 4.1 Thesis outline: linking Chapter 3 to Chapter 4

4.2 Exploring the positionality of the farming sub-culture

This section aims to explore the context of the farming sub-culture through a collective lens – what defines this sub-culture? Where do the concepts of choice, change and control fit within this sub-culture in regards to practice change and Natural Resource Management? As 'farming practices are socially and culturally constructed and can only be understood in the context of the social relations of everyday life' (Phillips & Gray, 1995: 128), this section will explore this farming context through an interpretive approach to the collective narrative. As Beus and Dunlap (1994: 465, in Share, 1995: 9) argued, the sub-culture is a 'multifarious concept that defies simple definition, a concept whose character changes as it is employed by various parties in different situations'. Therefore positioning the current norms and values of the sub-culture needs to precede a study of the innovator. This positionality is attempting to shape the context of practice change; constructing a rich picture of the current sub-culture allows for the subsequent (de) construction of first, the farming spectrum, and second, the (de) construction and emergence of the farming innovator from within this cultural hub[30].

4.2.1 Recognising diversity and difference within the farming sub-culture

As this research adopts classifications based on sub-cultural rhetoric and myths, other demographic variables and established classifications of farmers have been avoided in Section 4.2. Rather, this research embraces the understanding that heterogeneity is indigenous to the farming sub-culture (Vanclay, 1992), and that farming is realised through 'multiple realities' (Thomson, 2001). Therefore, diversity and difference are realised by avoiding predisposed assumptions of difference/diversity, therefore allowing for diversity in experience, values, beliefs, attitudes, behaviours and philosophies to emerge from stories within the sub-culture. Predisposed classifications limit the explanation of diverse and enterprise specific environmental, socio-cultural and financial parameters, and thus provide limited insight into practice change (Lawrence, et al. 1994; Vanclay & Lawrence1995b). In order to examine the socio-cultural sphere, the above aspects relating to the classification of diversity, or, diversity that can be measured (Vanclay et al., 1998), are positioned peripherally in this discussion. However, whilst these 'categories of difference' do not frame this discussion, a summary has been provided below to illuminate the 'reductionist' context (Thomson, 2001), or 'physical diversity' (Vanclay et al., 1998) based on PRA workshop insights.

Farmers and landholders involved with producing food and fibre, and living within these landscapes operate within a spectrum of varying physical, social and economic environments, as well as cultural spheres (Ampt

[30] As explained in Chapter 3, Section 3.4, the innovator needed to be defined as an embedded part of the farming-culture

et al., 2010). The importance of this diversity is foundational in the layered and dynamic nature of the farming sub-culture (as emphasised by Vanclay et al. 1998, Vanclay et al., 2006 and Vanclay 2011). As noted in Ampt et al. (2010: 8[31]), workshops produced a number of conversations amongst interviewers which highlight the vast list of differences and considerable diversity witnessed during interviews:

- Time in the district - from recent arrivals to long-term, multi-generational dynasties
- Personal and family goals and preferences
- Personal and family financial circumstances – including inherited debt
- Size and nature of the property - including inherited degradation
- Range of enterprises
- Approach to environmental issues
- Degree of connectedness with the local community

Enterprises included; (the most common) beef and sheep (lamb and/or wool) graziers and grain croppers, as well as piggeries, dairies, vineyards, orchards, permaculture ventures, and other distinct enterprises such as alpaca farming and native seed harvest. This categorical break-down offers a superficial classification of farming due to the range of enterprises that included mixed farming methods, and other forms of income related either to the property or to off-farm work. Further differences were found in the levels of involvement and participation with local/regional groups and government related programs/initiatives (both production and/or conservation related). These differences varied between and within the three CMAs (Ampt et al., 2010).

While it is possible to delve into further categories of difference, the discussion in this chapter is composed in a fashion which constructs the farming sub-culture based on the themes that resonate collectively within the landscape. The main themes that emerged from the PRA process, which shaped the farming sub-culture, were place attachment and belonging, the collective need for farming change, and issues with power and participation (see Appendix C for the discussion on power and participation within this landscape). These are the emotional themes which tie together the concepts of change and control within the farming sub-

[31] This PRA report also discusses insights from the PRA process, and was developed to inform the overall approach of CiL (as explained in Chapter 3, Section 3.2.5)

culture. Utilising these themes as a framework, this section avoids the 'usual' farming classifications (see Phillips and Gray, 1995) and rather explores farming diversity through a qualitative approach, highlighting the complex nature of this collective farming voice. These themes provide a structural framework for positioning farming practice, and embrace the diversity of experience. The themes have been used in a purposeful succession to illustrate the personally and collectively 'situated intersections of biography, culture and social-structure' (Phillips & Gray, 1995). It is via participant self-positioning that the socio-cultural farming fabric emerges and frames the consequent discussions on the farming spectrum and farming innovators in Sections 4.3 and 4.4 respectively. The proceeding sections provide a discussion of the preliminary results/quotes collected during the PRA process.

4.2.2 A sense of belonging and place attachment/detachment

A sense of belonging and place attachment are fundamental aspects of the geographical-human relationship, which can help frame individual and collective 'positioning' within a subculture (Burton & Wilson, 2006). These concepts are interrelated, and are incorporated to express the tangible and intangible aspects of this sense of connectedness, which reside at the core of these relationships. Understanding these deep connections between people and place/space is fundamental in recognising the norms of the farming sub-culture, in part, exacerbated due to the vocational and generational nature of farming (Vanclay 2008, in Vanclay 2011). Beilin (2001: 187) further explained the relationship between farmers and their land; 'farmers, through their work and land management, create everyday landscapes…the landscape is their biography', while Hunt (2010) argued that the landscape impacts upon farmers as much as they impact upon it – the place relationship is therefore inescapable in agriculture. These stories shape an emotional range; from attachment to disenchantment/detachment within place, as well as a sense of belonging and conversely, a sense of longing. Therefore place and belonging are recognised as concepts influencing farm management/ practices within this farming microcosm. These concepts are represented in the Venn diagram below (see Figure 4.2) as developed by Raymond et al. (2010b: 425) to illustrate place attachment and belonging amongst rural landholders in the Adelaide and Mount Lofty Ranges region.

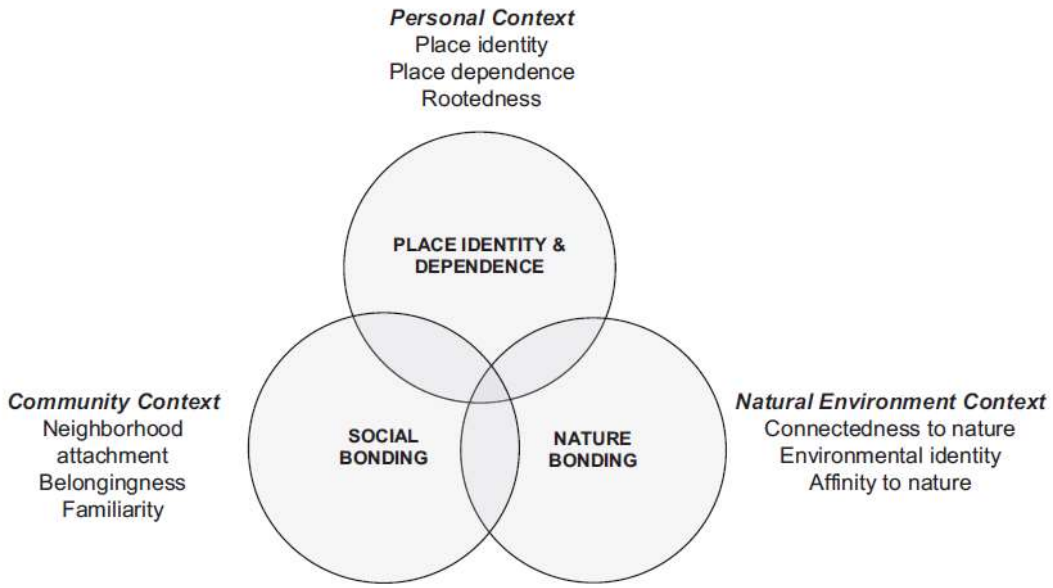

Figure 4.2 Dimensions of place and belonging in the rural context (borrowed from Raymond et al., 2010b: 425)

Throughout the PRA and ME research phases, the same themes Raymond et al. (2010b) devised emerged from the interviews; with place identity and dependence, nature bonding, and social bonding correlated with the respective farming sub-cultural aspects of tradition and history, stewardship and succession, and community connectivity. The relationship between these aspects of the farming sub-culture and land management is therefore crucial in understanding the positionality of those within the sub-culture towards sustainable practice change and NRM.

4.2.2.1 Tradition and History

Within the farming sub-culture, the role that hereditary traditions and history play in maintaining place attachment and a sense of belonging is both integral and foundational (Crockett, 2004; Silvasti, 2003a; Silvasti, 2003b). Silvesti (2003: 144) emphasised the impact parents have on maintaining and shaping the farming sub-culture, 'parents…provide models for gender roles, they influence or determine succession arrangements and expectations, and contribute to the instilling of cultural meanings about land, nature and environment'. While Segalen (1987 in Silvasti, 2003), emphasised the role long-term ownership plays in developing a deep and emotional attachment between family and land, Bennett (1980, in Phillips and Gray, 1995), refers to the core of this relationship as the 'agri-family'. This strong attachment to place through family history and tradition was strongly communicated by those participants who came from long-term,

multi-generational farming families. This attachment was often explained as being a personal attachment to a specific farm or property, and associated town or region due to a generational sense of belonging. A sense of obligation or responsibility towards the farm due to this traditional rural attachment was often mentioned by participants (also referred to in Vanclay, 2011), with the farm being not only a family legacy, but in some cases a family heirloom[32]. Carrying on the family farm history and tradition through continuity is arguably the most powerful script in the farming sub-culture (Crockett, 2004; Silvasti, 2003a, 2003b). The following farmers expressed the importance of having a family history in continuing, maintaining and 'taking care' of the farm;

> You want to take care of the land for the next generation, because of the *long history* they have on the farm (PRA interviewee 13, LCMA)

> My *primary motivation* for continuing on the farm is the fact that it was my father's and grandfather's (ME 9, CWCMA)

In some cases, place attachment was cultivated through an attachment to an original family property, which translated to subsequent farming properties. In other cases, an attachment to the 'rural', or being 'country born and raised' or 'the salt of the land' was transposed to a more general sense of belonging within rural landscapes rather than a particular, multi-generational farming landscape or property.

An obligation and sense of duty for continuing farm history and tradition extends beyond hereditary property ownership, and includes inherited local land management wisdom, which is also passed-down via family tradition. This wisdom, also referred to as 'indigenous technical knowledge' (Farrington & Martin, 1988, in Dunn et al., 2000) or 'craftship' (Mooney, 1988, in Dunn et al., 2000) or 'family legend' (Wilkinson, 2009), is based largely on local knowledge and experience with both farming and the local environment. This knowledge also extends to anecdotal and documented family histories and local socio-cultural histories which play a role in strengthening place attachment and sense of belonging (Main, 2005). Local oral traditions passed (mainly) from father to son[33], places pressure on the new generation to 'replicate family tradition, carry on farm legacies or reproduce the family farm' (Clark et al., nd: 1). In this sense, local farming knowledge becomes a connection to the past, which refers to the generational perspective that

[32] My own experience with this relationship is overwhelming, the desire and urge to maintain the family farm has a direct link with maintaining a sense of respect for past ancestors and their challenges, and present environmental and emotional constructs of family and home.

[33] Gendered terminology is used to illustrate the male-dominated farming sub-culture (Alston, 2006; Pini, 2005; Saugeres, 2002). An overwhelming number of interviewees throughout the PRA and ME processes were male farmers.

farmers are 'born and not made' (Crockett, 2004), and a sense of stewardship is attached to maintaining and building upon this ancestral legacy of wisdom (Wilson, 1997). For most generational farmers, this knowledge provided the foundation of their farming education, and in instances, the bulk of it; [My] father taught me everything I know (PRA 16, CWCMA). Via this family tradition, a heightened sense of belonging, established through a specific bond with the vocation of farming, is also developed. The sentiment, 'farming is who we are', was proudly expressed across the landscape with most farmers explaining that farming was 'in their blood', the decision to become a farmer was a 'calling' (Crockett, 2004). The following respondents explained that having a family connection and a personal history, growing up on a farm, directly influenced their life-choices;

> [I] *loved it* from an early age, [I] *wanted to* live on the land (PRA interviewee 6, MCMA)

> Why am I a farmer [?]…I was *born into it* and [I] always *wanted to* be one (PRA interviewee 14, CWCMA)

While for this farmer, who grew up in metropolitan Australia, this connection was developed through exposure to his uncle's property;

> *Always loved* cattle, old mick had a farm (PRA interviewee 20, MCMA)

The following interviewee also emphasised that becoming a farmer was a choice;

> [I] *wanted to* be a farmer (PRA interviewee 22, LCMA)

Choosing to be a farmer is to counteract the sense of forced obligation that is also present in the farming sub-culture (Wilkinson, 2009). The generational aspect of farming infuses a duty for sons to continue the family business and maintain a connection with the property. Some respondents also explained that being part of the family farm, in a 'father and son' team, limited the option of leaving family orientated farming due to obligation. The following farmers explained that becoming a farmer was felt to be an expectation rather than a choice;

> Didn't really have a *choice* when my father died during my teens, [I] had to take on the farm (PRA interviewee14, LCMA)

> Travelled around Australia [first], wanted to see it…knew if I came home I'd made my career *choice* (ME 5, LCMA)

This farmer explained that while initially farming was not the preferred long-term occupation, farming was always a part of who she was;

> What I *always wanted to* do…but I wasn't always in farming…ran a coffee shop in town first, got *fed up* with farming, but married and fell back into it…but it was a *natural progression* (ME 4, MCMA)

Wilkinson (2009: 129) also found in his research that some farmer's expressed that taking over the farm was not a choice, but rather a destiny, as the following sheep farmer explained:

> *'Ever since school, I've lived here and worked here all my life. So I've just, you know, continued on with the family tradition, virtually…this was sort of the natural progression for me…'*

In other cases, taking over the farm was discouraged due to rural decline and the perceived lack of stability in agriculture.

> [Farming] was what I *always wanted to* do, [my] father discouraged it, [he] could see what was happening to agriculture financially….Dad was a vet…[he was] discouraged from coming back to the land (ME 1, CWCMA)

Allison (1996:142, in Burton, 2004:196) found in his research that farming was 'the meaning of life. Farmers want to farm. It gives them their identity and their sense of achievement'. The 'farmer identity' was typified across this landscape in NSW via multi-generational threads of sub-cultural history and tradition. In the farming sub-culture, the relationship between farmer and farm is the strongest indicator of place attachment, as concluded by Hunt (2010) in a study on New Zealand orchardists. Lynne Sherrod (2009: 101) encapsulated this symbiosis when she discussed her husband's connection to the land, 'my husband, whose love for the land was knit into the very fibre of his being'. This *love* of the land was potent during interviews and unravels a significant emotional substrate of stewardship. The sub-cultural understanding that farmers and farming practices are not separate, that practices are an expression or outer reflection of the farmer's internal thoughts and understandings, is a foundational belief (Phillips & Gray, 1995). Farmers identified this relationship between the farm and themselves during interviews.

Passing on this identity through family tradition, however, was expressed by respondents as both an enabling and disabling factor in terms of changing farming management and maintaining both place attachment and a sense of family belonging. A frequent observation amongst farmers across this landscape was the ability of the family farming tradition to be a disabling factor in allowing adaptations to farming

management and decision-making by controlling and limiting change. Breaking away from tradition, for example by changing practices, was sometimes perceived as a challenge or threat to the continuance of the family legacy (Phillips & Gray, 1995). This was most apparent in families which lacked, what was described as a 'clean' succession plan, where management decisions and complete control of the farm is passed on as well as the property and business. Howden and Vanclay (2000) similarly identified a style they termed 'the autocrat farmer'; 'an older male farmer who, despite having a middle-aged son on the farm, refuses to surrender decision-making power and/or financial control' (Vanclay et al., 2007: 7). The following respondents explained the 'autocrat' farmer within this landscape;

> A lot of fellows on the land now have problems with their father's because they're too stuck in their ways …it's a social problem in a big way actually…the problem with family succession [is that] the older generation have nothing in their lives off-farm…[they're] still there controlling what the son does, still controlling the cheque book[34]….silly old bastards not stepping down, not enough external interests (ME 8, CWCMA)

> If your dad is not open-minded, it's hard to progress (PRA interviewee 23, CWCMA)

In some cases this lack of 'clean succession' led to conflicts between the older and younger generations based on differing ideas of management. Intergenerational conflict, disharmony and tension can result within these relationships and inhibit the passing over process (Stephens, 2011; Barclay, 2007). The following respondent explained his conflict with family tradition originated with his awareness of environmental issues;

> There was a strong pull [after university] with the 82 drought to come back to the land… …[I] came back with some environmental awareness…during [those] 5-6 years, working with my father, the situation with [my] family deteriorated because of this (PRA interviewee 20, LCMA)

Silvasti (2003a; 2003b) also identified that a powerful cultural script within the farming-subcultural tradition was that of farming gender roles. The extensive body of research employing feminist geography to critique the patriarchal farming subculture in terms of practice change (for example see Alston, 1998; Saugeres, 2002; Pini, 2005; Alston, 2006) strongly reinforces the ability for this script to favour male successors as farmers and women to subordinate, traditionally domestic positions (Silvasti, 2003b; Bryant,

[34] Vanclay and Enticott (2011) also argued that within parable/script of the 'autocrat' farmer was the prevalent catch-phrase 'having access to the chequebook'.

2001). The ability of reinforcing this script can conflict with the script of continuity with the family farming tradition, as denying succession to a female heir jeopardises the future of the farm as a family legacy (Silvasti, 2003b). The following respondent explained the impact of this conflict of scripts in her experience;

> The woman wasn't meant to be a part of the farming family so much…[I] moved away from family farm because of this and other reasons (ME 4, LCMA)

Dingham and Major (2000:191) also found that persistence of this script was prevalent in the Australian landscape, with one of the female graziers in their focus group explaining;

> *'When we first moved here…the men wouldn't let the women go out into the paddock – it wasn't women's work. Then last year my leg was broken because a cow trod on it while I was working in the cattle yards and the fellow next-door said "that's what happens when you have women in the cattle yards".'*

In other cases, female succession has been encouraged and supported by the agri-family. For some farmers, the tradition of succession had been broken in the past by mothers or grandmothers who took over the farm through necessity after the male farmer was incapable (through absenteeism, death or injury) of continuing the farm. Silvasti (2003b) also found that Finnish farmers were circumventing and revising traditional gender divisions of farm labour by reconstructing the gender script and integrating continuity through female heirs; thus rewriting tradition through personal choice.

Breaking away from family tradition and history through personal choice was a liberating experience for some farmers who had moved away from the family farm, but maintained the family farm tradition through occupational choice. The following farmer explained that a change in farming location insured that he would not be 'handicapped' by family history and tradition;

> [I] can do [my] own thing here with no family looking over [my] shoulder…now taking on new things, *not handicapped* with *old-fashioned* things' (PRA interviewee 26, CWCMA)

Within this landscape, respondents who did not have this direct a multi-generational attachment with the property and/or with a family farming tradition identified with not being a part of a 'dynasty' (Ampt et al., 2010) and therefore not being constricted, stifled or controlled by tradition;

> With no farming background, [we have] not [been] influenced by parents or traditional farming practices (PRA interviewee 2, MCMA)

In other cases, rather than breaking with tradition, farmers were rewriting or transitioning the traditional by forming generational teams based on mentorship, with the older generation providing a 'guiding hand' (Stephens, 2011: 64). Rather than a 'clean' break, negotiation of control between father and son as co-managers was evident within this landscape; as explained by the following respondent;

> Dad is pretty open with new things, [I] try out new things on some paddocks and then [I] might implement [it] on a larger scale (PRA interviewee 8, CWCMA)

While another farmer explained that his father's habitual lack of conformity to social norms enabled and supported his experience of succession and practice change (ME 5, MCMA). In other cases, 'clean' succession was designed and premeditated purposefully to avoid potential conflicts. The following farmer explained that his succession strategy, based on the success of his own father's, was a deliberate and pre-planned attempt to maintain the stability and co-ordination of the family farm unit;

> [When they] turned 18 [I handed] them the family chequebooks, I said, "you're a partner now", just as my father did when I turned 18…when [they] turned 30, they were running the farm…[we had] always planned it like that, a three-way partnership (PRA interviewee 19, CWCMA)

Dunn et al. (2000) emphasised the importance that tradition and history play in maintaining the family farm dynamic, but warned that it varies in its nature and implications, referring to the ability for these ties to history and tradition to either strengthen or weaken the sense of place attachment and/or belonging within the farming sub-culture. The impact that history and tradition have on practice change has been explored by Dunn et al. (2000), who argued that the real and imagined transmissions of farming tradition and history within the farming sub-culture have a direct impact on and impinge upon environmental management. Vanclay (1992) also highlighted the fact that farmers suffer from the pressure to conform to traditional sub-cultural prescriptions, while Dunn et al (2000) adds, 'the sub-cultural model makes no accommodation for change'. However, as portrayed in this research, and others (for example Silvasti, 2003b), the transitioning of these cultural norms and scripts/parables is a reality of promoting continuity, often, enabling change. Underlying this, place attachment and a sense of belonging to the family tradition and history are also strengthened through transition.

4.2.2.2 Stewardship and Succession

'I want to know that this land always looks the same as the day God made it'
Rancher Sam Capps, Colorado (in Sherrod, 2009: 101)

Continuance of the family farming tradition is exacted within the landscape via a stewardship ethic, and a further plan for succession. Research has reinforced the importance these social norms play in maintaining the farming sub-culture (Crockett, 2004; Vanclay & Enticott, 2011; Gray et al., 2000).

The stewardship ethic, or 'taking care of the land' through a sense of guardianship or trusteeship, has been widely researched within the context of the farming sub-culture and practice change (Wilkinson & Cary, 1992; Cary, 1993; Vanclay, 1992; Barr & Cary, 2000; Vanclay & Lawrence, 1995; Lawrence et al., 2004). This ethic is based on an emotional attachment to the geography and natural aspects of the local environment, and further, maintenance of place attachment to the farm. Many farmers emphasised the role stewardship played in their farming ethic;

> We try to *look after* the country (PRA interviewee 2, CWCMA)
>
> Our motto, "We do not inherit this land from our ancestors, we *borrow it* from our children" (PRA interviewee 3, CWCMA)
>
> *Looking after* the 'little things' is important (PRA interviewee 31, LCMA)
>
> [I see myself] as a *caretaker* of the country (PRA interviewee 3, MCMA)
>
> [I am] concerned about learning everything…have to leave the land in *better shape* than when you got it (PRA interviewee 15, LCMA)

The following landholders explained that they would aim to instil this stewardship ethic into the title of the property;

> [I] see [myself] as a *caretaker* of the country; if a philanthropist came and asked to buy the country, then [I] would sell it in a flash, if they could agree on how to run the place (PRA interviewee 3, MCMA)

> [We] don't want to leave the farm burdened, [we] want to leave it better than what [we] were given… [we are] *custodians*, if [we] sold, [we] would tie a covenant into the title to ensure future conservation (PRA, interviewee 2, LCMA)

While the proceeding landholders incorporated profitability with the notion of sustainability in their stewardship ethic;

> [We are] making the *land better* than when we got it, and leaving it better than it is now… [We hope it] stays *sustainable*, has good soils structure, is not causing further erosion, has less dust, [and is] still being profitable (PRA interviewee 11, MCMA)

> Have to be *good stewards* for [our] own wellbeing, not just for [the next generation]…Has to look good, feel good, and be efficient and productive…Would be depressing if you let it run down (PRA interviewee 19, MCMA)

Most innovators expressed their stewardship ethic as a reflection of their deep appreciation of nature and discussed the intrinsic value of, and symbolic connections with, the landscape (Cary 1993). The following farmer indicated the strength of these symbolic values within the farming sub-culture;

> [I] was involved in a project in Western Queensland…[we asked landholders to] take us to their favourite place on their property…people took us no place that was associated with farming and production, always environmental, aesthetic value, [for example] channels, trees, picnic spots etcetera (PRA interviewee 7, LCMA)

Many of the respondents throughout this study also detailed the biodiverse aspects of their property to convey this attachment;

> Like most farmers they want to leave the farm in *better shape* than when they started; small birds aren't as prolific anymore…[but we] get new birds here now and then…black cockatoos are appearing! (PRA interviewee 7, MCMA)

> Personally don't think [its] worth wiping all species out to do farming… [we] try not to lose any species…ridiculous to focus on the few species that you're harvesting and ignore everything else (PRA interviewee 10, MCMA)

> [I] personally like to see trees and birds, and a diversity of habitats (PRA interviewee 8, LCMA)

> [My] aim is to manage for as much wildlife as [I] can, squirrel gliders, superb parrots and all other birds…120 species of birds have been counted so far (PRA interviewee 19, LCMA)

> [It's] lovely having wine in the evening with parrots and squirrel gliders, we watch them jump from one tree to the next (PRA interviewee 10, LCMA)

While other respondents explained the stewardship ethic in terms of aesthetics and importantly, maintaining viability;

> [I] would like to put native vegetation back on a number of blocks of country; the value would be for aesthetics (PRA interviewee 5, MCMA)

> Tree-lines bring in birds…birds eat insects and also, [I] like the look of tree-lines, it is the aesthetics (PRA interviewee 15, MCMA)

> [Motivations for NRM are] aesthetics and self-satisfaction… [we need to] bring [the] land back to a healthy state…[it's] not viable if [you're] not looking after your property (PRA interviewee 26, MCMA)

Reimer et al. (2012) argued that stewardship and the valuing of off-farm benefits and indirect/long-term financial dividends are factors which influence farmers' environmental conservation behaviours. Further, Gosling and Williams (2010) found that connectedness to nature through intrinsic valuing was linked to on-farm management of native vegetation, however as highlighted by the researchers, this relationship is tenuous. The commentary from this landscape implies that having a stewardship ethic is an ingrained part of the sub-cultural fabric of farming, (Buttel, 1992; Vanclay 1992; Barr & Cary, 2000; Lawrence et al. 2004). During PRA workshops, it was identified that all landholders, including those without a family farming history and tradition, had strong stewardship ideals associated to both production and conservation (Ampt et al., 2010). With relation to practice change, many academics have debunked the apparent 'paradox' of a prevalent stewardship ethic and a lack of conservation farming practice (Lawrence et al., 2004) with Vanclay (2004: 215) explaining, 'for farmers, sustainability is not a new concept'. Natural Sequence Farmer Peter Andrews (2006: 5) explains this apparent disconnection by stating, 'no farmer I know of has ever harmed the environment deliberately. Obviously, it's not in a farmer's interest to do so. When farmers harm the environment, land you can be sure they do it out of ignorance[35]'. This aspect of stewardship was also relayed by the following participant;

[35] 'Ignorance' in this sense refers to a lack of comprehension regarding the unsustainable issues resulting from the productivist paradigm

> This is our livelihood, why would a farmer destroy their livelihood? Well…they wouldn't (PRA interviewee 22, CWCMA)

Vanclay and Enticott (2011: 264) also identified that a sub-cultural farming script described farmers as the 'original conservationists', but that underlying tensions associated with this social norm were related to social expectations stemming from this label. The stewardship ethic within the farming sub-culture has contemporarily been utilised by policy-makers; especially in terms of developing collective stewardship through Landcare (Curtis & De Lacy, 1998), and through the development of covenant schemes which offer financial incentives for maintaining native vegetation and biodiversity (Cocklin et al., 2006) (as explained further in Appendix C).

Maintaining viability of the farm through a stewardship ethic was traditionally coupled with having a plan for family orientated succession or inheritance. Succession is a traditional family-farm practice which plays a crucial role in maintaining the farming tradition (Dunn et al, 2000; Gray et al, 2000; Potter and Lobely, 1996; Wilkinson, 2009) and reinforces the script of 'continuity' (Silvasti, 2003a; 2003b). The successional dimension of farming can influence a sense of attachment or detachment to the future of the farm (and therefore, the present farm). Plans and options for passing on the farm through traditional successional paths were often explained by participants as an imperative long-term strategy and integral to the success of the farm. The following respondents explained the need of older generations to take responsibility for succession within the landscape;

> [I] believe it's up to the parents to sort out succession to make sure it goes *smoothly* (PRA interviewee 20, LCMA)

> Succession planning must happen… [I have a] young family, [and] *would love to pass the farm on*… [Have to] start it early and keep the ball rolling (PRA interviewee 19, MCMA)

Feeling attached to the present 'state' of the farm was often explained as a motivator for wanting to pass the family farm on to future generations. The following respondents explained that a 'satisfaction' with the 'good life' offered by farming was the catalyst for choosing succession;

> Looks after his property and it pays off….Farming is a lifestyle, [it is about] *satisfaction*….production has improved a lot…Enjoys passing it onto the next generation (PRA interviewee 13, LCMA)

> [I'm] pretty *optimistic*; [my] *confidence* is growing all the time; [I] feel [I have] had a *good life* farming, and [I'd] like to think [I] don't have to send all [my] kids away (PRA Interviewee 6, LCMA)

However, most respondents with children explained that they had often encouraged them to explore differing lifestyles before committing to farming. Vanclay and Enticott (2011: 265) also found that this was a strong farming script which is captured in the catch-phrase, 'passing on the farm to your children is a form of child abuse', referring to the recognised need to offer choice within a succession plan. The following comments summarise this position;

> The important thing [for children], is to get out of their own area and get some experience before coming back to run the farm and make decisions…to "get out of their own dung-heap" (PRA interviewee 2, LCMA)

> [I] expect that there will be a few of them to carry on the farm, but they should be able to be whatever they want to be (PRA interviewee 19, CWCMA)

> [I] won't push the kids, they need to have the passion (PRA interviewee 12, CWCMA)

Wilkinson (2009: 133) also identified this script in his research with one sheep farmer commenting, '*I think it's probably good to get out…see how life is in different circumstances, perhaps to have a paid job'*. The lack of perceived long-term stability and viability in farming meant that other respondents were not as hopeful when it came to passing on the farm;

> *Not hopeful* about [the] future of farming …handing [the farm] on [is] *not encouraging* (PRA interviewee 12, LCMA)

> See [ourselves] living on the property indefinitely, but [we] don't see there being a future in it for the kids (PRA interviewee 2, CWCMA)

> Would like [our] son to take over…but viability? Self-esteem for boys [affected by] friends out there earning more not farming, [and consequently] living and loving life…*farming [is] stressful* at the moment, therefore these [younger] ones [are] struggling…[it's] all *frustrating* (PRA Interviewee 14, LCMA)

A common occurrence within the farming sub-culture is the accepted 'death' of the family farm tradition due to loss of economic resilience (Barclay, 2007). As Gray et al. (2000: 36) argued, 'the significant change occurring in Australia may be one of reality rather than values: rather than farm families becoming more materialistic in their succession and inheritance goals, they are questioning whether a farm career will serve

their children as they might wish'. The following respondent explained that he would deliberately discourage his children from a career in farming, a common sentiment across this landscape;

> [Going to] push kids towards another occupation before farming…not really doing succession, [I] know economies [and how they] work against farmers (PRA interviewee 17, LCMA)

The role of planned succession in motivating farming practice change has been highlighted by Inwood and Sharp (2012: 107) who found that amongst American farmers, families with heirs were more likely to identify a variety of strategies for continuance, while those without were more likely to 'disinvest or enter a static management mode'. This was paralleled in PRA workshop summaries; 'where there was no logical succession plan, or where succession issues were less resolved or imminent, managers were more likely to be marking time and continuing with practices that may not be achieving results rather than seeking to adapt' (Ampt et al., 2010: 12). A strong link between succession and the adoption of conservation activities was also discovered by Ward and Lowe (1994) in a European context and both Vanclay and Lawrence (1995) and Gray et al (2000) in an Australian context. This relates back to having a strong and tangible stewardship ethic due to the responsibility to provide a future for intergenerational farm transfer. In contrast to this, the following farmers explained that due to a lack of succession, they had more financial freedom to pursue conservation activities;

> [We have] no children coming back onto the farm, [this] *frees up decision making* and the need to focus on production (PRA interviewee 2, MCMA)

In summary, the role of succession in maintaining place attachment and belonging via tradition, history and stewardship interwoven within the farming sub-culture, is pivotal in maintaining the agri-family, and therefore the agri-community (Gray et al., 2000).

4.2.2.3 Community connectivity

Place attachment and a sense of belonging within the farming sub-culture are inherently linked with farming practice and philosophy, as 'it is clear that farmers do not make individual decisions within a social vacuum' (Vanclay, 2000: 11). Localised perceptions of place and connections to community are important dimensions of the farming sub-culture, and are therefore crucial in maintaining communal place attachment and socio-cultural belonging. In most cases, this communal dimension was constructed through family traditions and histories, collective stewardship, and succession of family farms.

Within this landscape, contrasting perceptions of rural decline versus rural growth and vibrancy were conveyed during interviews. In different localities across the three CMAs, community connectivity and cohesiveness was arguably strong, as expressed by the following respondents;

> [The] local community is fairly *cohesive*… [it] stays the same even with the change of landholders over time (PRA interviewee 19, LCMA)
>
> [We] felt very *welcomed* into this community, *neighbourly* (PRA interviewee 21, MCMA)
>
> [A] very strong network of people with [a] *strong community focus*…Both [our] next door neighbours as well as wider community (PRA interviewee 1, CWCMA)

In contrast, other respondents claimed that the sub-cultural fabric in their location was 'patchy' on a communal scale;

> [The local] community is not a tightly knit community, [it's] *fragmented* (PRA interviewee 12, CWCMA)
>
> [I have] seen community strength *deplete* quite drastically over [my] life time (PRA interviewee 5, MCMA)
>
> Observing community networks and support for landholders, around here [it is] *light on* (PRA interviewee 10, MCMA)
>
> See the community in [this] region as *dissolving* and *shrinking* and would like to work together to do something about this (PRA interviewee 2, MCMA)

While the following respondent also linked a lack of community connectivity to the stress of the 2000-2010 drought;

> Not too much of a sense of community anymore…population is ageing, [and] everyone has one or two properties… [the] community is getting *less cohesive* and also the locals are very *depressed*, 10 years of drought is getting people down…(PRA interviewee 12, MCMA)

This respondent explained committee burnout as a reason for community fragmentation;

> The community is *suffering*, [there are] less people to sit on committees and those that are sitting on committees[36] [and] taking on roles are *running out of steam*…also lack of involvement from younger people… there are also less people in the region… population is not growing, even though there are more homes (PRA interviewee 26, LCMA)

While the next farmer reiterated the underlying concern all interviewees conveyed, a breakdown with the younger generation across rural communities;

> There is change…older people are dying out, but there are a few new ones…[but] you often don't know half the people (PRA interviewee 17, MCMA)

A lack of community connectivity, in relation to an aging population, was also perceived by farmers across the landscape as a loss in continuity of farming. A sense of losing communal sub-cultural attachment to place was expressed due to the generational changes occurring in most Australian agricultural environments, with a lack of younger farmers and youth in general populating farming environments (Alston, 2004). Concern for the future continuation of the farm and family farming tradition was an evident reality across this landscape. The following farmer indicated that while he was positive about the future of the community, the lack of new farmers was a concern;

> Community is *stable*, but average age of farmers is always a concern…*positive* about the future of the community here and positive about his place here on the farm (PRA interviewee 14, CWCMA)

While the following respondents described a sense of fear for the future of farming and the farming sub-culture due to the lack of succession prevalent across the landscape;

> Predicting there will be a generational change here in the near future…there are only a few young farmers around (PRA interview 26, LCMA)

> Future of farming [is] *dismal*; it's going to be a very *lonely* place in 15 years because of lack of succession of family…lots of families have no one coming home to the farm in the future (PRA interviewee 15, MCMA)

[36] Vanclay and Howden (2000) identified the parable of the 'committee farmer', who is 'a farmer who spends all their time going to committee meetings and conferences, is probably an executive on the local Landcare group or catchment management committee, and probably has another family member, share farmer or employee who is the *real farmer'* (Vanclay & Silvasti, 2009: 163). The importance of this parable in land management is evident in Appendix C.

> [There are] no old district farms here… [there are] new people coming in, the older generation have gone, [I'm] *disappointed* they didn't stay, [it's a] *turn off*…[I] see it as people, not living on the land (PRA interviewee 22, LCMA)

> The children around the district aren't interested in farming (PRA interviewee 27, CWCMA)

> [I'm] *sad* that farming is a *dying* tradition and lifestyle choice (PRA interviewee 22, CWCMA)

A lack of community cohesiveness was also attributed to the 'rural decline' phenomena and a lack of socio-economic resilience resulting in the closure of social spaces of interaction. Farmer Graham Strong (2008:59) linked the loss of neighbours to the diminishment of his local community;

> '*My family has watched this system over five generations on the land. We have watched people gradually leave, buildings become redundant and once vibrant communities vanish'* (Strong, 2008: 59)

While the following farmer explained the loss of local public communal space;

> Not a strong community, too close to town…no public meeting place to go to, no hall, no real community structure (PRA interviewee 27, CWCMA)

Many farmers used the example of the local tennis club, one of the last vestiges conducive to locally situated rural community public interaction (Liepins, 2000; Panelli, 2001), to illustrate the loss of community. As the following respondent explained;

> Not really [a community] at all, tennis club is on its last legs [due to] insurance costs (PRA interviewee 23, MCMA)

Feeling disconnected with people in regional centres and communities was also associated with a perceived loss of community;

> Community has quite a rural base still…a bit of 'us' and the 'town' feel...[there's] not much happening for young people, most go to Sydney (PRA interviewee 17, CWCMA)

Changes to the socio-cultural 'mix' within farming landscapes, with increasing in-migration, had an impact on the farming sub-culture across this landscape (Ampt et al., 2010). Smailes (2002: 79) referred to these changes in landownership as 'rural dilution', which he explained as the 'change in social composition of rural populations…those elements engaged in primary production are thinned out by agricultural restructuring and labour-shedding, while at the same time in-migration of new elements is occurring'. Vanclay and Silvasti (2009) argued that the 'hobby' or 'lifestyle' or 'absentee[37]' farmer label is also a farming parable which is used to differentiate landholders that are not considered to be 'real' farmers within the farming sub-culture. In many cases, especially within the Murrumbidgee CMA, respondents mentioned 'newcomers' who changed the culture of the local community;

> [There is] not much community here now, lots of people have 100 acre blocks…diverse enterprises [such as] pigeons, meat goats… getting new landholders to mix with the community is hard to do, the older farmers mix a lot… there isn't much of the younger generation around (PRA interviewee 7, MCMA)

> Large scale hobby farms are becoming more common, for example properties with a manager or semi-retired people (PRA interviewee 12, MCMA)

> [The] social landscape has changed…non-rural people buying for non-agricultural reasons, for example, storing machinery and hunting…more absentee landlords (PRA interviewee 18, MCMA)

> 20-30acre block holders seem to be more community minded…maybe [some] have moved out of town to find that sense of smaller community' (PRA interviewee 28, MCMA)

A consequent farming script that also resonates is the dismissing and diminishment of outsider knowledge via the 'you've just breezed in here, what would you know?' catch-cry which 'reinforces the value of local knowledge and local experience' (Vanclay & Enticott, 2011: 264). Furthermore, landholders explained they were worried rural futures would be characterised by corporate farming which would erode the local community further;

> [There are] less people in the community, [and it] will continue to decline as people move off farm and haven't got people to take on farm, larger companies [will] buy in… [in] 30 years this may be large

[37] It is of interest to note here that Vanclay and Silvasti (2009: 163) identified different labels for absentee farmers across NSW, QLD and Victoria, respectively 'Pitt Street farmers', 'Queen Street farmers' and 'Collins Street farmers'. In this landscape, the 'Pitt Street' farmers were described as wealthy urbanites, often doctors and lawyers, who bought land for the purposes of avoiding taxes or to 'play around with agriculture'.

> conglomerate rather than family farming area…[it is] worrying as they don't care for the land as much, and we'll lose the community spirit (PRA interviewee 11, MCMA)

The following farmers explained they felt 'frightened', and were 'gloomy' about the future of the community;

> The future of the area and in agriculture… [We] feel frightened; everything was OK until Bob Carr came in and released a map showing that the whole Carabost area was going to go under forestry; some high level officials disparaged the agricultural value of the country and praised the forestry for taking it over and making it over… [We] feel fairly *gloomy* in the long term (PRA interviewee 7, MCMA)

In terms of practice change and land management, the role of community connectivity in enabling or disabling change is closely related to the communal value placed on continuing the family farm. Section 4.3 discusses the role community plays in identifying and defining desirable farming practices to further dissect and unravel the influence of the farming sub-culture on practice change. Furthermore, Section 4.4 discusses community perceptions of innovators and practice change, shedding light onto the socio-cultural intersection between tradition and change.

4.2.3 Identifying the collective need for farming change

Within the farming sub-culture, the need to 'change' or adapt farming methods in order to survive external communal threats, was discussed by respondents. Adaptation and change are inherently associated with being a farmer (Vanclay, 1992; 2004); however there was widespread identification and acknowledgement of the increasing fragmentation of external systems and the need to overhaul these systems. With fragmentation an evident concern, protecting and supporting place attachment and sense of belonging led to discussions on the *need* for change in order to maintain relationships with tradition and history, stewardship and succession, and community. The perceived changes required are based on environmental, social and economic challenges, which affect the farming sub-culture. These challenges have been extensively discussed in rural geography literature (for example, Cocklin & Dibden, 2005; Pritchard & McManus, 2000). The workshop discussions identified widespread consensus throughout interviews; that change in practices and management within farming districts had and was occurring, or would need to within the near future in order to secure future satisfaction. This is a key feature of the current socio-cultural climate, as Ampt et al. (2010: iii) identified there was a 'strong sense of urgency among landholders to adapt to a changing environment'.

The level of fragmentation in the socio-cultural sphere was overwhelming. This was a common theme during PRA workshops, with perceived 'rips' in the socio-cultural fabric identified. Participants, reflecting on past farming struggles and predicting future fragmentation, provided explanations for their awareness of the need to change, potential ways for coping with change, and perceived resistance/barriers to change across the farming sub-culture. Provided is a brief discussion of this socio-cultural climate, which adds to the positioning of the farming sub-culture under exploration.

4.2.3.1 Reasons for needing farming change

The central reason for an increased awareness in the need for change was the perceived loss of control, and a sense of being externally controlled (Bates et al., 2008; Ampt et al., 2010). This loss of control is perceived to be a threat to the farming-subcultural sense of place and belonging. Within the farming subculture, Vanclay and Enticott (2011: 264) identified the vocational farming script related to 'being your own boss' and explained, 'this almost universal script reinforces the autonomy of farmers and it is also a way of romanticising the role'. Losing control, and therefore autonomy, was explained in terms of fears for community in the future, explained in the previous section (4.2.2.3), and was also explained in terms of environmental, financial and psychological instability/fragmentation.

Adapting to the changing environment and remediating degradation were expressed as motivators for initializing change. The need for practice change evolved in interviews through understandings of past and present farming conditions, specifically, via memories of environmental stress and control-loss, related to extreme natural events. Across this landscape, recollections of the tumultuous drought of 1982 were at forefront in identifying this need;

> Storms are an issue but most farms are now better managed...no bare ground like 1982, better management [now] (PRA interviewee 17, LCMA)
>
> [During the] 82/83 drought [there was] no vegetation… [It was a] good *learning curve* (PRA interviewee 15, LCMA)
>
> Dust storms [were a] *big reason for making environmental changes*, [I] hate seeing bare paddocks and seeing topsoil blowing away, [I] don't like seeing starving animals, or buying in grain (PRA interviewee 11, MCMA)

While the following respondents were influenced by recent climatic events;

> [There was a] moment that *changed [my] point of view*…[the] property near the hall [was] very cleared, [we] had a very cold winter and a lamb froze in the paddock (PRA interviewee 16, MCMA)

> [I] wanted to change practices to more sustainable farming [due to the] dry times (PRA interviewee 15, LCMA)

Adapting to persistent degradation of the farming environment was also a reason for needing short and long-term change. The following farmers indicated that various economic and environmental pursuits were in conflict across the landscape;

> People[are] aware they are degrading the land…they would have to be blind not to notice, as most farms around here are not economic, there will need to be a lot of adjustment (PRA interviewee 5, LCMA)

> The biggest pressure on the environment is the need to push the land to make money (PRA interviewee 27, CWCMA)

Recognition of the production 'tread-mill' was explained by farmer Graham Strong who explained, '"get big or get out" has been the mantra' (Strong, 2008: 59). Vanclay et al (2006) argue that this catch-phrase is linked to the parable of the expansionist farmer, the farmer who 'continually' expands, and therefore becomes more reliant on increasing profit and production. Predicting a grim economic outlook for 'small' farms and 'lifestyle' family farms was explained in the following responses;

> I think at this stage, the big will get bigger and the smaller will disappear (PRA interviewee 24, CWCMA)

> [It's getting] harder and harder to make a good profit and maintain a lifestyle (PRA interviewee 21, CWCMA)

Increased debt, the need for additional, off-farm income and consequently 'going broke' were described as common incidences within the landscape as the following respondents described;

> [We] are getting into [the] red more and more as [we] record debt (PRA interviewee 10, MCMA)

> Fearful of [the] outcome, how will [we] retire with this much debt? (PRA interviewee 13, MCMA)

> Neighbouring properties selling up…usually [due to reaching the] end of the line [in farming] (PRA interviewee 5, CWCMA)

> [I would] estimate that only around 10% [of farms] don't have off farm income [in this area] (PRA interviewee 19, LCMA)

Being reliant on fluctuating global markets was also a financial worry for most farmers;

> Inconsistency in the quality of beef and grain prices, hope things return to proper prices (PRA interviewee 7, CWCMA)

The following farmer explained the lack of socio-economic resilience common in the rural landscape;

> The heart has been torn out of rural Australia, all the pressure of money etcetera…rural Australia makes plenty of money, but it gets siphoned away (PRA interviewee 3, MCMA)

Concern related to climate change was also mentioned by most participants. The following respondent expressed this with a mixture of optimism and worry;

> Feels good about future, *confident* about future of property…*Worried* about [the] climate, but [I] have a positive outlook (PRA interviewee 13, LCMA)

Environmental and economic challenges were tied to issues of psychological well-being within the farming sub-culture, which were a concern for most respondents. The following respondents both emphasised the impact drought and psychological depression had on the farming sub-culture;

> *Worried* about depression… farming, it's hard to see 10 years ahead …*hard* to run and hard for income… [farmers are] not as quiet about depression now…[I'm] *worried* also because it is in [the] family (PRA, interviewee 2, LCMA)

> People manage drought and *crash* after the rain…either because their hard work came to nothing, or because the *stress* is gone and now they *can't adjust*…community support is vital…two in five rural men suffer depression (PRA interviewee 6, CWCMA)

Stress and risk were also associated with a perceived loss of control across the landscape, as the following respondents identified;

> Not so good when times get *tough*…young people have not seen any good years…wheat farmers have the shortest memory on earth (PRA interviewee 2, MCMA)

> [I] like the *freedom* of working the land, but it is *stressful*… [it] is always stressful, that's just part of it (PRA interviewee 7, CWCMA)

Ultimately, the reasons for needing change were based on farming sub-cultural erosion, where dependence, complexity and choice had become limited; as the following respondent expressed;

> They believe that one of the problems in this area is that the management is *too complex* and management *will have to change* in the future (PRA interviewee 26, LCMA)

This cry for change and the reasons offered for needing change were consistent across the landscape. Fearing 'doom and gloom[38]', regarding the future of farming and family were expressed, but were also mixed with a strong sense of optimism and determination to 'keep things going', or 'plan to get out'. Optimism and stoicism are purported to be key psycho-social characteristics which are attributed to the perseverance of the farming sub-culture (Berry et al., 2011).

4.2.3.2 Dealing with farming change

In addressing the need for change within the landscape, farmers explained a range of options which would address these issues. In terms of adapting management to environmental 'constraints', the following respondents explained the need to incorporate 'simplicity', 'adaptiveness' and 'flexibility' as strategies to cope with change;

> If [the] season turns against you, you can react quickly…need to be *adaptable, flexible* (PRA interviewee 13, LCMA)

> Simplicity is so important, [we need] *simple management tools*…don't need science (PRA interviewee 18, LCMA)

In terms of management, some farmers explained that in order to 'change' things and develop an 'internal' locus of control, they needed to stop 'controlling the things they couldn't[39]', such as the weather events and fluctuations in global markets;

[38] Vanclay et al. (2006) also refer to the 'doom and gloom' parable regarding the pessimistic farmers who vocally complain about their dependency and the resulting stress.
[39] This is a mantra used in the Holistic Management and Grazing for Profit programs – these are discussed in more detail in Section 4.3.4

> You *can't control* rain, so control all the elements you can and maximise opportunities (PRA interviewee 4, LCMA)

> Farming profit depends solely on something [farmers] have *no control* over, [the] environment, [therefore there is] more hunger for *knowledge* to better understand the system…more *risk management* (PRA interviewee 9, MCMA)

Looking for 'alternative' practices to achieve these goals was the most common coping strategy mentioned;

> Farmers are looking for new alternatives [and] new technologies with an increased interest in research… [We] need a systems based approach (PRA interviewee 9, MCMA)

As proposed in the sentiment above, many farmers explained that in order to deal with change, there would need to be a greater level of involvement from the farmer in research and development. The following farmers suggested this as a strategy;

> [The] farming community is now realising the importance of research and development…[we] can't go on farming the way things have been farmed…Current farmers are better educated than before (PRA interviewee 9, MCMA)

> [There was talk about] getting funds, farmers putting [dollars] into [their] own research. That may be something that is a *new way* of doing things…industry investment [is] scaling down all the time (PRA interviewee 10, MCMA)

Having more financial support from the off-farm domain, in order to relieve economic stress, was also offered as a coping strategy. The following farmers discussed the need to align the public versus private benefits of environmental conservation;

> Market rewards one set of behaviours and yet environmental stuff requires another set of behaviours…therefore need to align and reward (PRA interviewee 7, LCMA)

> If as a society we want more trees and native pastures then society needs to pay. Private, public good, unsure where line is (PRA interviewee 4, LCMA)

With structural inequalities evident between the supermarket duopoly and farmers in Australia (Richards et al., 2012), nearly all interviewees, at some point, discussed 'Coles' and 'Woolies' as the 'problem';

> The whole problem is Coles and Woolies; [we] need competition… [we need to introduce] food miles (PRA interviewee 14, LCMA)

> Supermarkets [are] just undermining Australian farmers, robbing us (PRA interviewee 2, LCMA)

While the following farmer argued for a renewal in the relationship between government and farmers;

> We've got to build bridges [with the government] (PRA interviewee 7, CWCMA)

Strengthening and utilising grass-roots community networks to re-build a local sense of control was also offered as a strategy to deal with change. The following respondent explained that change has to originate at this community level;

> Confident with future, [but] not confident if we keep doing the same things; the only way we will be successful in the future is *if we change* the way we do things…the change has to come from a *grassroots* level , it can never come from the top, the government (PRA interviewee 3, MCMA)

While the following respondent offered another community-based strategy;

> [We] need to use mentors, generally [they are] the older [generation of farmers]… would like talking to those that are experienced (PRA, interviewee 2, LCMA)

The ways for dealing with change are therefore about influencing system fragmentation at all levels, from the micro farm environment to the macro globalised systems. However, many farmers explained that the 'real' changes were the psychological or mental changes – the internal changes required to develop an internal sense of control.

4.2.3.3 Perceived 'resistance' to farming change

Resistance to change within the landscape was also a multi-faceted topic, incorporating numerous barriers to change via financial, environmental and social/cultural and psychological constraints. The perceived financial risks associated with changing management or practices were viewed as a widespread constraint to change within the farming environment. This correlates with almost all research which has identified 'being in the red', or economic constraint, as the main barrier to practice change (Lawrence et al., 1994; Barr & Cary, 2000; Vanclay, 2004; Pannell et al., 2006). The following farmers explained this perceived limiting factor for change;

> It has been hard with the drought to focus beyond the day to day… I don't want to take *risks* (PRA interviewee 8, LCMA)

> Economic circumstances determine what happens on the farm …at the moment [they are] *pretty bad* (PRA interviewee 9, MCMA)

> [With] economic pressures, [the] short term cost for changeover is too *big to gamble* (PRA interviewee 21, MCMA)

> People interested in conservation will continue to do small things, but not the big things, but people *can't afford* to do the big things (watering systems, conservation machinery)…Some people sleep better at night if they don't know what all the rules are, [for example] Workcover, chemical use, native veg act (PRA interviewee 26, LCMA)

> The hard part for farmers is going from the *synthetic system* that they know to this more *natural system*…But farming is on its knees and farmers can't *afford* to make mistakes while changing over to a new system (PRA interviewee 3, MCMA)

While the following farmers explained that economic instability from change was a common misperception;

> [We] have a love for the box country, [but in terms of] symbolic value versus utilitarian value…there is too much emphasis on the symbolic value, therefore people don't connect it with profitability (PRA, interviewee 2, LCMA)

> [I have] a problem with [the saying] *'you can't be in the green unless you're in the black'* – economic viability [and] staying in business is just as important as ecological conservation in an agricultural setting (PRA interviewee 9, CWCMA)

The preceding quote uses a well-known mantra in the farming sub-culture (Ampt et al., 2010), which correlates with the mantra, 'it's hard to be green when you're in the red' (Richards et al. 2005). Vanclay & Enticott (2011) argued that this is a far-reaching parable within farming communities that publicly justifies and defends non-adoption of conservation behaviours, and therefore restricts wide-spread change.

The perception that practice change was just another imposition of systems and people external to the farm, another evaporator of control, was associated with farmers being defensive and therefore restricting internal/mental change. The following farmers discussed 'self- denial' as a form of resistance to change;

> In reality farmers (and everyone) seeks to *blame* others for the situation they are in…[we] do not support the "it's not their fault" [mantra], but they believe it's the farmer's management decisions that get them into the situation they are in, especially as there are methods of transitioning away from previous management (PRA interviewee 20, LCMA)

> [I don't] like the fact that farming industry and community focuses on aspects they *can't control* and ignores profitability [matched with] cost of production (PRA interviewee 7, CWCMA)

While the following respondents explained that being 'scared' or 'frightened' of change, or scared of being 'forced' to change were both understandable, but at the same time hampering practice change;

> Some people just aren't interested in other opportunities, why? They are *scared* [and] don't want to change their management (PRA interviewee 19, LCMA)

> [There is] *resistance* in this area because change is the hardest thing to do (PRA interviewee 3, CWCMA)

> Too many farmers are *too set* in their own ways (PRA interviewee 5, LCMA)

> People need to be interested already…can't talk them into things (PRA interviewee 3, CWCMA)

Aspects of pride, personality, and individuality were also attributed to this resistance, as the following respondents explained;

> [I] believe there is an amount of *ego* involved, especially when people have being doing things one way for 30 years; that it's difficult to change as it means they are admitting they were wrong all these years (PRA interviewee 20, LCMA)

> Farming…you are what you do, if [farmers are] asked to change practices, you are asking them to *change themselves, redefine themselves*…this is an issue (PRA interviewee 7, LCMA)

> The other fundamental belief I have is that farmers are *reluctant* to spoil things, they know what they are doing to the land but sometimes they have to and sometimes they are just *lazy* (PRA interviewee 9, CWCMA)

While the next respondents hypothesised restrictions to change based on stronger ties to tradition and history within the older generation;

> [The] next generation might be more open to good natural resource management, [but] not current generation (PRA interviewee 1, MCMA)

> Generational divide; older people are more resistant to change. [I have] learned all the things [now], but [I] may not have implemented without the [influence of the] next generation (PRA interviewee 1, CWCMA)

In contrast, the following respondent explained that the younger generation was more restricted than the older generation in making change happen;

> Mainly it's older people who can change, the young have family responsibilities and that makes it hard (PRA interviewee 13, LCMA)

It was also common during interviews to hear about being 'burnt-out' from past attempts at change forming into resistance against future changes. Having negative experiences in the past with the adoption of certain practices was explained by the following respondent;

> People who have tried a corrupted version of a good approach in the past and have failed, will *dismiss* it in [the] future and ignore all attempts to promote the system because 'it doesn't work'…people need to be given complete information, that they can understand, so they don't *close their minds* to education (PRA interviewee 7, CWCMA)

While another farmer claimed that fearing sub-cultural ridicule and failure were also constraints which limited change;

> Other people are *worried* about making changes in case they are seen as different and making mistakes…[we] are involved in a few grazing groups, some people are coming along, [they] are interested in new ideas, [they] see there is something wrong with the way they are doing things, but [they are] not quite ready to change yet…People keep in mind the stories of those that have taken a chance and done something different and gotten caught out (PRA interviewee 20, LCMA)

Many farmers also used the mantra, 'it won't work on my place' as a form of resistance to practice change, as the following farmer commented;

> Farmers like to see things first before trying it, preferably local…'it won't work here' is a common remark, [but] hard-core consultants are perceived with healthy scepticism (PRA interviewee 1, CWCMA)

A further barrier to change is hinted at in the prior quote; a 'parable' was uncovered within this research relating to the perception that educators/consultants in practice change programs were 'failed farmers', as the following farmer explained;

> [A] great deal of teachers out there are [the] ones that failed at farming…[there are] some good ones though (PRA interviewee 19, CWCMA)

In summary, the conflict between wide-spread recognition of needing change and the perceived resistance to change is based on the perception of 'who' is in control, and therefore 'who' has the perceived responsibility in instigating change. This complexity within the positionality of the farming sub-culture demonstrates the diversity of current perceptions of change, and the barriers to change, across this landscape.

4.3. The farming spectrum

'Differences between conventional and sustainable paradigms of agriculture are much more a matter of differences in farming philosophy than of farming practices or methods'

(Ikerd, 1993: 147)

This section will build on the positionality of the farming sub-culture by examining the spectrum of agricultural paradigms. Section 4.2 of this chapter emphasised the ambiguity in attempting to strictly define any part of the socio-cultural web. Exploring the perceived spectrum of difference between the 'traditional' and 'alternative' farming paradigms is central to this investigation.

What is traditional/alternative farming? Why are they different? Globally there are different understandings of 'traditional' farming; for example, 'traditional' refers to the historical context of the locality (Batterhills & Guilg, 1996) and can refer to 'Indigenous farming' (Gammage, 2011) , or 'peasant farming', for example the Amish in the United States of America, (Stinner et al., 1989). These practices are often posited as 'traditional subsistence', which are often regarded as the sustainable alternative to 'modern' agriculture. In Australia, as Bill Gammage (2011) argued that aboriginals did 'farm' the land through broad and migratory natural resource management, there exists a 'traditional' or 'older' management of Australian farming landscapes. However, in Australian Agriculture, the reference to 'traditional farming' is usually in the context of white occupation – traditional European management mixed with an evolving philosophy of technological adoption. This means that in the socio-cultural context, 'modern', 'traditional' and 'conservative' are ironically all words used to describe a similar type of high-input Agriculture.

However, other terminology that is also associated with 'traditional' practices implies that this paradigm exists within a philosophy of growth and capitalism/economic rationality and embodies the (supposed) man vs. nature dichotomy (see Chapter 1, Section 1.2). In current discourse, farming practices labelled 'traditional' are often referred to as 'backwards', 'out-dated', and 'technologically reliant', and consequently have been stigmatised by proponents of sustainable farming (Mesiti and Vanclay, 2006).

The 'traditional' paradigm or model of farming is often regarded as the antithesis of the 'new alternative paradigm' (Buller & Morris, 2004), with Beus and Dunlap (1990: 591) arguing that these models of agriculture represent a 'conflict of fundamentally divergent paradigms'. Adding confusion to these distinctions, 'alternative' practices in some schools of thought refer to nothing more specific than what is *not* traditional, opening the scope of alternative to embrace any difference in practice or mindset. Furthermore, whether these are 'new' ideas of farming which are building 'new' relationships with the land is again contested with the acknowledgment of the apparent irony of 'sustainability' as a new concept in human history. As Masunobu Fukuoka (1978) explained, going back to natural or organic farming is akin to going back to the roots of humanity, our ways of farming before industrialisation. Table 4.1 summarises the perceived differences and 'vivid binary contrasts' (Goodman, 2004:10) between the two paradigms of Agriculture within academia.

Table 4.1 The farming spectrum

Traditional	Alternative	Author
Old	New	Goodman (2008); Ploeg et al. (2000)
Conventional Large-scale, highly industrialised, mechanised	Alternative Ecologically sustainable agriculture	Beus and Dunlap (1990); Duram (1997); Goodman (2004)
Production-orientated/Productivists/ Profit	Conservation-orientated/Conservationists/Environmental	Buller and Morris (2004)
Productivist	Post-productivist[40]	Wilson (2001); Burton and Wilson (2006)

[40] These authors define productivist farming techniques in terms of increasing mechanisation and biochemical input, and define postproductivist farming techniques in terms of a shift to sustainable farming through reduced intensity and a move to environmental conservation (see Wilson 2001, Table 1) to summarise this dichotomy, as represented in Table 4.1. However, 'farming techniques' represent an aspect of these regimes; consumption of rural landscapes

Dominant Social Paradigm	New Environmental Paradigm	Dunlap and Van Liere (1984)
Mechanised, capital intensive, monocultures of crops, reliance on pesticides/herbicides/fertilisers, intensive animal husbandry		Knorr and Watkins (1984; in Beus & Dunlap, 1990)
	Organic, sustainable, regenerative, ecoagriculture, permaculture, biodynamics, natural farming, low-input	Buttel et al. (1986; in Beus & Dunlap, 1990); Fairweather and Campbell, 2003; Sullivan et al., 1996
	Agro-ecology Ecoagriculture Eco-farming	Altieri (1989; 1995) Scherr and McNeely (2007) Gerber and Hoffman (1998)
Weak Multifunctionality/Monofunctional /Productivist	Strong Multifunctionality[41]/Non-productivist	Wilson (2008)
Newtonian – mechanical	Eltonian – ecological	Callicott (1990; in Beus and Dunlap 1990)

Due to these divergent paradigms, there has long been an academic focus on a 'paradigm shift' from the 'old' or traditional to the 'new' or alternative paradigm of agriculture (Beus & Dunlap, 1990). However, translating this 'paradigm shift' into 'practice change', simultaneously distorts and re-creates the spectrum of farming styles, when positioned within the current farming sub-culture where multi-dimensional traditional/alternative practices and paradigms emerge. In other words, farmers are not homogenous, nor are they dichotomous, most farmers represent an integration of 'old' and 'new' or 'traditional' and 'alternative' practices, as well as 'old' and 'new' thoughts; the extremes of the spectrum are concepts. The manifestation of these paradigms within the farming sub-culture is depicted conceptually within Figure 4.3. This diagram represents individuality of farmers and the concept of internalising practices, which is

is also factored into these ideologies. For example, the postproductivist regime includes urban migrations to rural areas, increased land-use competition and a decreased focus on agriculture, which is at odds with a focus on integrating production and conservation and maintaining and rejuvenating the farming sub-culture.

[41] Wilson (2008: 368) takes a normative view of multifunctionality and explains that farms with 'strong multifunctionality' are characterised by 'strong social, economic, cultural, moral and environmental capital'.

reinforced through the use of a colour spectrum. This individuality frames the internalisation of varying degrees of traditional and alternative practices as depicted by the differing shades of grey represented in the internal spirals.

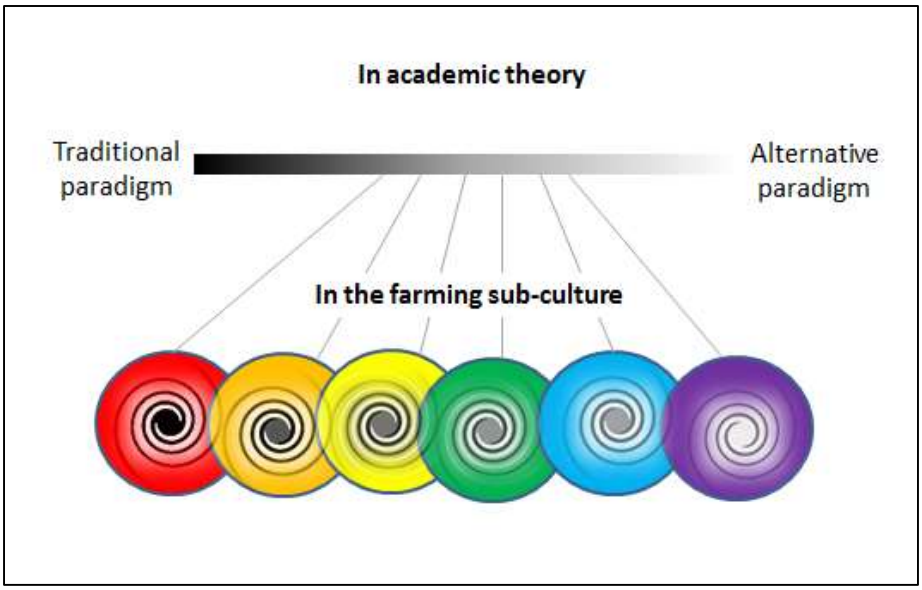

Figure 4.3 The farming style spectrum: comparing theory to practice

Across the landscape, the reality of practice change is a complex phenomenon – what constitutes desirable practice change? The differentiation within the spectrum is dependent on and shaped by the farming sub-culture and local understandings and perceptions of the desirability of traditional or alternative farming (Howden and Vanclay, 2000; Silvasti, 2003; Vanclay, 1997; 2004; 2011). However, within an atmosphere of social scrutiny, the negative and positive connotations associated with traditional and alternative farming practices present a contradictory and complex socio-cultural web of layered meanings, as also found by Wilson and Burton (2006) in their search for farming identities.

4.3.1 The farming 'style' spectrum

Identifying and understanding difference and diversity in modes of farming and rationale for these modes, or as van der Ploeg (1994; cited in Vanclay et al. 1998; 2007) coined, 'farming styles[42]', is only possible in

[42] The determination of specific 'farming styles' has evolved from simple behavioural analysis (Van der ploeg, 1994) through to belief, value and attitudinal incorporation in the Australian context (Vanclay; Thomson, 2001. These have been presented in both quantitative (Thomson, 2001) and qualitative studies (Waters et al., 2009) in an attempt to group farmers into categories in order to identify the most efficient targeting of extension-related

context (Pretty, 2002; Rigby & Caceres, 2001). These 'styles' are developed through socio-cultural processes of mythologising (Howden & Vanclay, 2000) via categorisation and prejudice of farmers and farming practices (Thomson, 2001); 'while styles were relatively easily identified in the focus group data, it was impossible to identify farmers who embodied those styles in reality, leading to the conclusion that the styles only exist as mythical entities (Howden & Vanclay, 2000: 100).

Vanclay et al. (1998), Howden and Vanclay (2000), Mesiti and Vanclay (2006) and Vanclay et al., (2006) broadened the farming styles approach using 'portraits' developed by farmers to describe other farmers and to use in categorising themselves. The main styles which they identified throughout this body of research are presented in Table 4.2.

Table 4.2 Farming style labels identified by Howden and Vanclay (2000: 301)

Major Styles	Minor Styles		Poorly Defined Styles
Innovative	Lazy farmer	Autocrat	Committee person
Traditional	Risk Taker	Perfectionist	Lucky farmer
Progressive	Skite	Secret farmer	Mediator
Middle of the road	Hard Driver	Diesel burner	Safety-net farmer
Resource limited-personal	Lifestyler	Tinkerer	
Resource limited-structural	Old Rich	Doom and gloom	
	Expansionist	Opportunist	
	Grazing emphasis	Developer	
	Organic		

While some of these styles have already appeared throughout this discussion, of particular note are the 'major' styles which include 'innovative', 'traditional' and 'progressive' – distinct styles in the farming spectrum. The difficulty associated with translating farming 'styles' into farmer 'types' has been highlighted by Thomson (2001:1) who argued that '…people involved in farming, and farmers themselves,

activities. 'Farming styles' research has since evolved into 'Derived Attitudinal Farmer Segments' (DAFS) (see Waters et al. 2009), which aims to incorporate situational and individual characteristics into the categorisation process.

have images of different types of farmers'. While Vanclay et al. (2006: 65) explained the limitations associated with farmers self-categorising into farming styles;

> *'Many farmers, especially the more literate people and perhaps those who had more contact with extension, would read between the lines of the portraits and were acutely aware of the normative judgements associated with the label or image being presented. Many farmers would avoid identification with a portrait that might be seen in a negative sense, even where it did actually describe them to some extent – at least in the eyes of the researcher, a neighbouring farmer, the nominating extension officer or sometimes their spouse or children'.*

This refers to farmers positioning themselves within the farming sub-culture by drawing on multiple identities of 'farmer' (Burton & Wilson, 2006) rather than identifying specifically with any 'style' along the spectrum; these 'styles' therefore exist as farmer stereotypes. These 'mythical' entities are also described by Thomson (2001:1) as 'heuristic parables', which exist outside of a tangible reality (Howden et al., 1998; Mesiti and Vanclay, 2006). Vanclay et al. (2006) also identified that styles existed as overlapping multi-dimensional concepts which were both temporally and spatially constructed.

The imagined rhetoric of farming styles makes way for the exploration of contradictory ideas, what entails 'good' farming versus 'bad' farming or 'good' farmers versus 'bad' farmers? Participants also positioned good and bad farmers/farming across the farming spectrum, with traditional and alternative practices both commended and denounced. Therefore, this section aims to build an encompassing picture of the farming spectrum and the associated 'styles' based on the social rhetoric discovered within interviews. Furthermore, the complexity associated with practices that define these socio-cultural classifications is explored with clear 'prescriptions' and signposts which differentiate traditional/alternative farming within this landscape. These discussions then pave the way for interpretation of 'innovator' status and style (Howden & Vanclay, 2000; Vanclay & Enticott, 2011) within this melee of diversity and contradiction. Therefore, the aim of this section is not to 'categorise' farmers based on farming styles, but rather, to understand these categories and why they emerged within the current farming discourse, framed by the socio-cultural fabric (Thomson, 2001).

4.3.2 Good farmer, Bad farmer?

The strongest cultural script and farming parable that exists in the farming sub-culture is the good farmer/bad farmer binary opposition, which has been found to have a direct relationship with practice

change (Silvasti, 2003a; Vanclay et al., 1998). Those farmers that are deemed to be 'bad' farmers or managers, or reported as practicing 'bad farming' are breaching local resource-related ideas of desirable farming (Silvasti, 2003a; Vanclay, 2004; 2011), and are perceived by the sub-culture to be a threat to the continuity of the farming tradition/history and future. The way certain farming practices and lifestyles are perceived as being either 'traditional' or 'alternative' is consequently a contested notion within the landscape, related to whether these are 'good' or 'bad' forms of operating and producing (Beus & Dunlap, 1990; Vanclay 2004; 2011). The relationships between 'good' farmers also 'differs between and within farming styles' (van der Ploeg, 2003, in Sutherland & Darnhofer, 2012: 232), and is prejudiced by a geo-centric 'community of place' influencing these conclusions (Sutherland & Darnhofer, 2012). Furthermore, Stock (2007) outlined the self-reflexive nature of categorisation and argued that farmers conceptualise the 'good' farmer based on a mirroring reflection of their own self-identity (Phillips and Gray, 1995), with Burton and Wilson (2006: 100) explaining that this is a production of the 'other', a 'counter-identity'.

Within this landscape, associating 'good farmers' with the use of traditional practices was evident; these 'good' farmers were usually 'good managers' or 'conservative with traditional inputs' or 'good business managers', frequently associated with profitability. Hunt (2010) also identified this productivist association with 'good' farming amongst orchardists in New Zealand. The following responses illustrate this perception;

> Next door are *conventional farmers*, [they are] *good managers* (PRA interviewee 3, CWCMA)
>
> Brother is a *good, but a traditional, manager* (ME 2, CWCMA)
>
> [My neighbour] is a *good traditional farmer* (PRA interviewee 4, CWCMA)

However, the 'traditional' paradigm (as discussed further in Section 4.3), is associated with a productivist mindset which is more often viewed contemporarily as 'bad' farming. In their study on farming styles amongst viticulturalists in the Sunraysia region of Victoria, Mesiti and Vanclay (2006) differentiated 'traditional' and 'conservative' styles and uncovered negative associations with these labels. 'Traditional' described those farmers who were adverse to change while defending the use of traditional practices, while the conservative were found to be more 'middle of the road', 'non-risk takers' with an 'aversion to debt' (Mesiti & Vanclay, 2006). Similarly Howden et al. (1998) identified 'traditional' farmers as 'old-fashioned' and 'living in the past', as opposed to 'middle-of-the-road' farmers who were the 'average' or 'practical' farmers amongst broadacre croppers in the Riverina region of south-west, New South Wales.

However, throughout this research 'traditional' and 'conservative' were labels used interchangeably to describe a distinct farming portrait.

The good 'traditional' farming label was also ascribed to farmers who maintained steady or increased profit and/or produce yields. In the research conducted on farming styles, the following three portraits emerged, which explained an association between perceptions of 'modernity', 'machinery and technology adoption' and 'good farming'. The 'progressive farmer' was described by Howden et al. (1998) as farmers who adopted and 'kept up with' the latest 'accepted' technological innovations (Howden & Vanclay, 2000), while Mesiti and Vanclay (2006: 588) described the 'Industry-endorsed Early Adopter' who was the 'teacher's pet', i.e. they were 'strategically aligned with extension agencies'. Both styles were found to be favoured amongst the farming sub-culture. In contrast, Vanclay et al. (2006) describe the 'risk-takers' as 'gamblers' who take 'unnecessary risks' and are regarded as being 'silly'. The following respondent explained his perception of difference between 'self-sufficient' farmers were those who didn't 'improve' anything (referring to the language used in the traditional paradigm to promote increased inputs and vegetation clearance as 'improvements[43]) and technology adopters who are described as 'risk takers';

> There are three types of farmers; [those that are] completely *self-sufficient*, [they] don't buy or improve anything, *mixed* [farmers], [they] buy some second hand stuff and improve a bit, [and] *risk takers* who always buy the latest machinery etc…they [risk takers] will decrease in numbers in the future' (PRA interviewee 16, LCMA)

Howden et al. (1998), Howden and Vanclay (2000) and Vanclay et al. (2006) explain that these portraits are often perceived to have 'innovator' status, especially within industries which are technologically specialised, in locations which experience widespread financial stress, and by most extension professionals. Section 4.4.2 will discuss further the perceived characteristics of the 'innovator'. Within this landscape, a dependency on machinery and technology was also found to be an undesirable model due to the widespread perceived lack of economic resilience in agriculture;

> Most things with *machines* probably *not good*…[they] cost money…if you can do it *naturally*, [it is a] *better* way (PRA interviewee 10, MCMA)

[43] See Scott (2007) for a discussion on the need to 'dislodge' productivist language in farming

Being a 'hard worker' was also associated with being a 'good productivist manager'. The 'hard work' script, as disclosed by Silvasti (2003), is the perception that physical and visible hard work exemplifies a good farmer. The understanding that a farmer should be 'out there' on a tractor ploughing, harvesting and working up a sweat, is deeply ingrained in the tradition of the farming sub-culture; as Silvasti (2003: 145) argued, 'once the virtue of hard work was rooted in rural life, the conservatism and traditionalism of agrarian people, together with relative isolation, assured its continuance. Industriousness became the central virtue of rural life'. Silvasti (2003) asserted that the socio-cultural aspect of this doctrine is in the 'visibility' of land management, the parts of the farm which can be viewed externally by neighbours. In opposition to this script is the parable of the lazy farmer who produces no evidence of 'real work' (Howden & Vanclay, 2000). The following respondent explained his 'traditional' father's reaction to his perceived lack of 'hard work';

> 'Dad couldn't understand, he thought I did no work because I stopped ploughing…I still let him put some Lucerne in to keep him happy…but I have to pull that back' (PRA interviewee 24, CWCMA)

While another respondent explained;

> When we sold our tractor [sixteen years ago] – the rumours that went around, we were 'selling up' (PRA interviewee 2, CWCMA)

Another productivist script is that the 'farm is a tended garden', where the 'hard work/not lazy' script transforms the landscape from being 'wild', 'untamed', and 'uncontrolled' into a 'controlled', 'neat and tidy', and 'manicured' farm-scape[44] (Silvasti, 2003b; Vanclay et al., 2007; Sutherland and Darnhofer, 2012). Silvasti (2003b) argued that this is an anthropocentric view of stewardship, where custodianship is viewed as farming control, the farm being sectioned into distinct 'tended' and 'untended' land. The following quote illustrates this script;

> [There is a] place [for *conservation*], you can do it where is doesn't *hurt production* (PRA interviewee 5, LCMA)

This is obviously associated with high yields and outputs, and therefore financial gain, which traditionally invokes the 'good farming' label. In this region, there were farmers who commented on good fencing, neat laneways, and tidy farms in general, however there were also many that considered this to be a traditional and limited way to farm;

[44] This script correlates with the productivist paradigm and notions of 'control over nature'

> [I] don't see why *traditional farmers* think one particular part of the landscape should be managed differently to the rest – why fence off one part and manage it one way and manage the rest differently depending on what plants were there? Why is one ecosystem more important than any other? (PRA interviewee 2, CWCMA)

In general, traditional farmers were more commonly associated with 'bad' farming as opposed to good farming. The following respondents provided some description;

> [They are] nice people, but *not good farmers* (PRA interviewee 1, MCMA)

> [There are] still some *bad traditional farmers* who like to *flog the land* (PRA interviewee 2, LCMA)

'Bad' managers were most commonly referred to as those who exploited the environment through their practices; however there was undeniable agreement that these farmers also used traditional practices. However, there were only several reports of 'floggers' or 'land rapists' within these interviews (Ampt et al., 2010). These labels correlate with the 'hard-driver' parable developed by Vanclay et al. (2006: 74), described as 'working the land too hard…in order to maximise the short-term income from the farm, usually at the expense of potential long-term income or environmental well-being of the land'. 'Bad' managers were also perceived as 'undesirable' characters within the socio-cultural farming landscape;

> [*Bad management*] affects [you] psychologically …would devalue your property if you had a *bad manager* alongside you (PRA interviewee 11, MCMA)

These comments represent a wider paradigm shift, where 'good' traditional farming values have been transitioned within the farming sub-culture into 'bad' practices based on perceived unsustainability, and 'good' farming becomes associated with alternative/sustainable practices (Burton, 2004; Burton & Wilson, 2006; Haggerty et al. 2009; Silvasti, 2003b).

The most common response indicating 'good farmer' status was associated with the conservationist farmer, or as Mesiti and Vanclay (2006) found amongst viticulturalists, the 'low-input sustainable agriculture' style. With the increasing recognition of the need for change, those adapting to natural systems by utilising 'alternative' practices were perceived as 'good';

> A couple of farmers around are *really good*… [a few] organic chains (PRA interviewee 9, LCMA)

While the following farmer, in comparing the paradigms, explained that the alternative paradigm was less risk, implying a benefit;

> In a good season, the *conventional* are much more *profitable*, but this *[alternate] system* is much more *risk adverse* (PRA interviewee 1, CWCMA)

Another reason for favouring conservation practices was the perception that this type of farming was conducive to the long-term continuance of the farming tradition. The following respondent identified and differentiated the 'bad' farmer based on perceived non-participation in conservation;

> NRM [is] in the whole area...it's picking up in the community…there's one farmer here who isn't into conservation at all (PRA interviewee 21, LCMA)

However the perceived short-term financial loss associated with 'conservation-orientated' farming, meant that amongst some farmers, it was described as 'bad' farming as it conflicted with notions regarding the 'farming as a business' script which aims for maximum short-term profit (Vanclay & Enticott, 2011), and in many cases the 'hard work' ethic (Silvasti, 2003a). Overwhelmingly, the 'good alternative' farmer was often labelled an 'innovator' by participants. Further discussion of this 'style' and this relationship with the alternative paradigm is presented in Section 4.4.3.

In summary, this section further illustrates the complexity and subjectivity in identifying not only farmer types, but further, the binary opposite examples of good or bad farming, and whether the individuals enacting them are good or bad farmers. As one farmer claimed, the 'good' were the doers and the 'bad' were the static, irrespective of their paradigm (PRA interviewee 24, CWCMA). The differentiation between good and bad is therefore subjectively positioned across the farming spectrum with no *real* categorisation possible (Vanclay et al., 2006). The following two sections however, offer some categorisation of the differences between 'traditional' and 'alternative' paradigms experienced within the landscape.

4.3.3 Differentiating the 'traditional'

During the PRA process most participants explained that in terms of the 'traditional' paradigm, production was the primary focus. Most of these participants expressed conventional views about grazing and cropping, and were reluctant to be associated with an 'alternative' or 'greenie' paradigm (Ampt et al., 2010). As found by Ampt et al. (2010: 16);

> ‘*despite this, production focused people clearly expressed environmental values even though they don’t necessarily identify themselves or their actions in environmental terms. They appeared open to incorporating/integrating environmental and production values, even if they haven’t done so in terms of biodiversity they may have done so in terms of functionality (e.g. fencing off creeks, planting tree lines etc).’*

Therefore most farmers identified with values associated with both paradigms, however in some cases there was an emphasis on having a more ‘traditional’ orientation. The following farmers self-identified with a production orientation;

> [We] are *production oriented*, but have an interest in conservation (PRA interviewee 26, LCMA)
>
> [We] practice *high-input farming*, but we are improving soil and soil carbon (PRA interviewee 21, CWCMA)
>
> [My] brothers’ farming methods are somewhere between *traditional and conservation*, but we don’t always see eye to eye (PRA interviewee 23, CWCMA)

While the following farmers identified neighbours as production orientated but not without conservation values;

> Neighbours directly opposite are more *production orientated*, but aren’t anti conservation (PRA interviewee 9, LCMA)
>
> [Throughout the] district, *traditional farmers* are trying to do the best that they can towards the land (PRA interviewee 26, CWCMA)
>
> A few seriously *conventional farmers* [round here] (PRA interviewee 18, CWCMA)

However, as discussed in the previous section, ‘traditional’ farmers were also regarded as ‘progressive’ farmers, but their practices were referred to as ‘modern’ rather than ‘traditional’. Other farmers, aware of the shadow of socio-cultural negativity regarding the traditional paradigm and its reliance on technology, defended this and explained the resulting environmental benefits;

> Many people are very anti-technology; but it is improvements in technology that has allowed stubble management, drip irrigation and many things that have had huge environmental benefits…[regarding] chemistry technology, some people don’t like herbicides, but they have been important (PRA interviewee 26, LCMA)

Practices that are inherently part of the traditional paradigm are also linked with having a sustainable or environmental focus, as alternative technologies become available.

In differentiating the 'traditional' farmer or 'traditional' practices there were some clear practices/behaviours/attitudes and 'signposts', which respondents commonly associated with this paradigm. The collective 'bad' farmer connotation associated with this paradigm, is once again iterated in terms of specific farming practices. To summarise this end-extreme of the spectrum, productivist activities were generally related to a high input of both money and time, high (often short-term and at times extreme) risk and stress, as well as technological investment, , expansionism, use of pesticides/herbicides, set-stocking, intensive cropping, and factory farming. The following respondents used language relating to perceived productivist practices to classify neighbours as 'conservative landholders';

> People around here are still using one way discs – *very conservative landholders*…very different management styles amongst the neighbours (PRA interviewee 1, MCMA)
>
> *Conservative [farmers]* …set-stocking, some rotation, high inputs (PRA interviewee 3, CWCMA)

The following interviewee also associated high-inputs with production orientated farmers and a traditional paradigm, adding the 'bad' farmer tag of 'bragger'[45];

> Most farmers around here are primarily *production orientated. Traditional* farmers are using pesticides and chemicals etcetera… [they] will tell you the results of their best paddock and *brag* about new machinery etcetera (PRA interviewee 16, LCMA)

Farmers who were perceived to be 'adverse' to conservation activities were supporters of traditional practices. Howden and Vanclay (2000) identified the parable of the 'diesel burner', 'a farmer who is perceived to cultivate excessively and/or has a passion for machinery' (Vanclay et al. 2007: 7). These are the destructive farmers, or the 'land rapists 'who are perceived as bad productivist farmers. The following respondent identified his neighbours using these labels to explain their lack of involvement in conservation;

> Some of [the] neighbours are less amenable to the idea of conservation and in working together… [there is] one neighbour with a large property of 18 000 acres who *loves burning diesel and pushing trees over* because

[45] The 'skite' farmer was also identified by Vanclay et al. (2006: 75) who described this parable as the 'farmer who brags about (exaggerates) their farm or the yields they get. The farming community likes to share information and stories, but individuals should not use this as an opportunity to big-note themselves'.

> they are in the way …On another side are fairly *traditional landholders*…getting either [of] them into groups or into tree planting would be impossible (PRA interviewee 19, LCMA)

A correlation between traditional practices and dependency, or loss of control was also evident within these farmer's narratives. The following respondents provide some descriptive commentary to express this association;

> In 1994 [we] went *cold turkey*[46] from *conventional* equipment to minimum tillage…originally used Roundup, but it does too much *damage* to perennials (PRA interviewee 19, LCMA)

> *High intensity agriculture* was *burning them out* (PRA interviewee 20, LCMA)

Traditional farming in this landscape was often associated with high-input intensive cropping systems, by both participants and project members during the PRA process. While the following farmer associated cropping practices with traditional management and also cited a lack of enjoyment with this farming style;

> Changed his approach to grazing management, doesn't grow grain or barley, didn't enjoy *that type of farming* (PRA interviewee 13, LCMA)

While the following respondent explained;

> When [I] came home, [I was] very *conventional*…now [I practice] half direct drill and half agricultural ploughing (PRA interviewee 8, CWCMA)

In summary, no farmers self-identified as being 'traditional' or 'conventional', but rather as being 'progressive' or 'production/profit' orientated. However, this relationship becomes hard to quantify or qualify, as 'traditional' farmers were also aligned with conservation in most cases, and conversely, many farmers within the 'alternative' paradigm were also reported to have a production/profit focus (as also found by Burton & Wilson, 2006).

4.3.4 Differentiating the 'alternative'

Cary et al. (2001: 2) differentiated and defined 'alternative' or 'sustainable' farming as practices, which 'ameliorate unsustainable land-use by rectifying biophysical constraints to agricultural production and conserve the resource base'. A list of practices that represent this philosophy was compiled by Cary et al.

[46] Interestingly, describing 'traditional practices' with metaphors related to addiction or drug-use is also evident in Chapter 5, Section 5.3.2 with descriptions of plants being 'addicted' to fertiliser

(2001: 3) from ABS and ABARE data to describe the diversity in the 'alternative' paradigm. Amongst these practices, which are modifications to traditional practices, are the signpost practices, which were identified as 'alternative' by all interviewees. These practices were deemed 'sustainable' and were typified by low input systems which incorporated soil, water and biodiversity conservation, and a more 'natural' approach. This was frequently viewed as a 'better way of doings things' and 'taking a different approach' by many farmers who identified as alternative farmers. Alternative practice were associated with the adoption of more specific practices, for example, no-till conservation cropping, stubble/pasture retention, integrated pest management, biodiversity protection measures, reduced/zero fertiliser pesticide/herbicide use, rotational/cell-grazing regimes, native perennial grassland recovery, native seed harvesting and lastly, pasture cropping. While 'alternative' farming was deemed to be more favourable than 'traditional' farming across this landscape; not all farmers deemed certain practices desirable. For example, the following farmer explained the 'downsides' of conservation in cropping regimes;

> Some benefits of conservation farming, but many downsides as well…According to some, *conventional farming* ruins your soil etcetera…but the downsides to *conservation farming* [are], more disease, the crop doesn't establish as well, [and] moisture conservation is *not necessarily optimal* (PRA interviewee 5, CWCMA)

Some of the main 'alternative' regimes, that were commonly associated with sustainability, were 'organic farming[47]' and 'biodynamics[48]'. Organic farming was often regarded to be virtuous, however there was scepticism related to the validity of certification and the assumption that it was a 'conservation' practice. The following respondent explained this;

> Organic farming is the way to go…but there are some organic farmers that don't practice any natural resource management and do nothing to regenerate the land (PRA interviewee 31, CWCMA)

> [Was] interested in organic farming, but [it] hasn't really worked out…*Sceptical*…[you] have to reduce [your] total expectations of productivity for 10-20yrs until you change over…not viable unless [you] own [your] property outright (PRA interviewee 21, MCMA)

Similarly, biodynamic farming was also viewed with scepticism and described by respondents as perhaps 'too' alternative, as illustrated in the following quotes;

[47] 'Organic Farmers' were also found to represent a certain 'style' of farmer by Vanclay et al. (2006)
[48] Biodynamic farming was developed by Rudolf Steiner in the 1920s and is a form of natural farming

> [I] have attended talks on biodynamic farming…interesting, but *hard to comprehend* (PRA interviewee 16, LCMA)

> [I] did a biodynamics workshop…found it interesting and could understand the point of it (building up a store of microbes and spreading it over the country)… [but I] was a bit *sceptical* about the peppering [of inputs] (PRA interviewee 19, LCMA)

> Went to a biodynamic field day, it was too *wacky* (PRA interviewee 15, CWCMA)

> [I] view 'herbal brews' with *scepticism* (PRA interviewee 8, LCMA)

> Many people see it as '*woo woo stuff*' (ME 13, TAS)

Natural Sequence Farming (NSF), developed by pioneer Peter Andrews[49], was also espoused to be a popular practice, aligned closely with the Alternative paradigm. For some, NSF farming was perceived to offer 'a new way of doing things';

> [I] go to Peter Andrew's talks, [he's] not traditional...and to Tony Coote[50], a natural sequence farmer (PRA interviewee 6, MCMA)

> Peter Andrews, [I] get a lot out of him and [his] ideas, motivating (PRA interviewee 19, MCMA)

While others expressed with scepticism;

> [I] don't agree with Peter Andrews retaining and planting willows along creeklines…Peter Andrews's ideas will work in some places but not others (PRA interviewee 26, LCMA)

> Peter Andrews doesn't relate to the human aspect (PRA interviewee 16, MCMA)

Most farmers, who were identified as alternative, had enterprises with either a predominant grazing focus or a 'mixed farming' approach. The following respondents described alternative practices associated with grazing in this landscape;

[49] A celebrity farming 'innovator' – has featured in two ABC Australian Story episodes and has written two books, 'Back from the Brink' and 'Beyond the brink' which detail his stories of practice change.
[50] Tony Coote, NSF farmer, is founder of the Mulloon Institute, for more, visit http://themullooninstitute.org/about/our-team

> Landholders in grazing…are doing a lot of things like hedgerows, managing pasture *better* (PRA interviewee 10, MCMA)

> [I] think there is a lot going for the idea of rotational grazing and maintaining groundcover and being flexible, but [I] feel it is best left to the next generation (PRA interviewee 5, LCMA)

Vanclay et al. (2006) evolved the parable of the farmer with a 'Grazing Emphasis'. This refers to a farmer who has crop-able land, but chooses to graze to avoid risk and stress. Vanclay et al. (2006: 76) also identified that these farmers were often associated with the 'lazy' farmer stereotype, by the farming sub-culture in Australia, where 'cropping is regarded as superior to the rearing of animals'. With grazing the main focus of alternative regimes across this region, there were some key grazing change programs that were regularly cited as being 'alternative';

> *'Holistic Management (HM) and other similar approaches stand out as key interventions influencing a change in thinking and practice towards an approach that integrates production and conservation…Many of the practices arising from this intervention focus around grazing management and increasing diversity and resilience of native grasslands'* (Ampt et al., 2010: iv).

Similar approaches include Grazing for Profit (run by Resource Consulting Services, RCS), which is based on the philosophy of cell-grazing[51], Prograze[52] and Evergraze[53]. The following discussion provides commentary on farmers' experiences with the main alternative approaches in this landscape, HM and GFP.

Holistic Management

HM[54] was one of the more 'mainstream' alternative agriculture programs offered within this region. HM was developed by Alan Savory[55] (1988) and aims to integrate sustainability into farming via rotational grazing and management/regeneration of native grasslands. Importantly though, the real hallmark of HM was professed to be its integration of people, culture, and the psyche/self with farming, as explained by the following farmers;

[51] For more on cell-grazing, see McCosker (2000)
[52] For more on the Prograze program, visit http://www.dpi.nsw.gov.au/agriculture/profarm/courses/prograze
[53] For more on the Evergraze movement, visit http://www.evergraze.com.au/about-evergraze/
[54] For more on HM in Australia, visit http://hmeducators.com.au/ , for an international perspective, visit http://holisticmanagement.org/
[55] For more on Allan Savory and the Savory Institute, visit http://www.savoryinstitute.com/

> HM is good as it encourages people to make mental changes, not just the physical ones (PRA interviewee 20, LCMA)

> HM very popular…[it is]motivated by lifestyle and pasture management (PRA interviewee 1, LCMA)

> Have done Holistic Management…changed [our] outlook on management, reinforced [our] thinking…[it is also a] support group, HM meet informally at different farms…lots [of] group interaction and visiting farms (PRA interviewee 18, LCMA)

The following respondent differentiated HM from other alternative approaches;

> HM innovation, Natural Sequence Farming, No Bull farming and pasture cropping… [there is a] new direction [through] amalgamation of these. HM is the closest because it's the most developed, [it's] integrated, deals with the whole person…HM see family, not stability as the key. Unfortunately people go to HRM after going organic and go broke after 5 years because they did it as a last resort. [You] have to start early and integrate into the whole system (PRA interviewee 16, MCMA)

The above sentiment also introduces the scepticism, and 'bad experience' related to this program and its recommended alternation to the farming sub-culture. The following farmers explain some of this scepticism;

> In the 1970s rotational grazing started [here]…but [it was] really production focused…that's where rotational grazing got a bad name, there were no spelling periods, only focussed on production… no focus on people or ecology (PRA interviewee 1, CWCMA)

> In this area about 10 years ago there was a huge influx of people getting into holistic management and getting all enthusiastic, but that enthusiasm has waned, I think people are losing enthusiasm because they aren't seeing improvements (PRA interviewee 26, CWCMA)

> HM is associated with going broke [back] in NZ (PRA interviewee 1, CWCMA)

> I don't know many people who have been successful in the long term with HM! (PRA interviewee 19, CWCMA)

The following respondent's expressed their perception that HM is 'airy fairy' or 'green';

> HM round here – seen as good for [people who] have plenty of money… [it's] 'airy fairy'…people sell off when [it's] dry and get out (PRA interviewee 22, LCMA)

> HM is not big in this area…[it's] airy fairy, [it's] not based on practicality…more an intellectual approach to how you should be running farm (PRA interviewee 11, MCMA)

> In many conventional areas, they have the impression that HM is "dreadlocks and tie-dyed" (PRA interviewee 15, CWCMA)

While the following interviewees provided commentary related to a lack of improvement between maintaining current practices and adopting HM;

> [I'm] not a big fan of HM…[I want] to turn over stock quickly (PRA interviewee 1, LCMA)

> [I'm] not totally convinced that HM works…some of the chemistry results [we] were expecting didn't happen (PRA interviewee 3, CWCMA)

> [A] criticism of HM [is that it] takes out inputs, [but the farm is then] really just surviving on the residual inputs of the last few years…[it's a] fair point, and something that needs monitoring…but we've had no inputs in 11 years, conventionally [we] shouldn't be able to grow anything! (ME 7, LCMA)

Grazing for Profit/Resource Consulting Services/Cell-grazing

In this region, cell-grazing was offered via RCS and Terry McCosker (2000), delivering the program GFP which is founded on Stan Parsons[56] research into grazing systems. This approach is similar to HM, as it was also based on a three tiered integration between people, profit, and conservation; however, in contrast, cell-grazing reportedly adopted a more structured approach to grazing. The following farmers explained the value they discovered in this alternative approach;

> Learnt a lot from Grazing for Profit…gained a lot more from that than two years in Agriculture College! (PRA interviewee 24, CWCMA)

> Loved Grazing for Profit, love the concept and what they are trying to do (PRA interviewee 23, CWCMA)

> [I] did a grazing for profit course in about 2000 [and] found it very illuminating; but the person who taught the course doesn't enact those practices on his own place; but [I] believe in the concept, though it is expensive to set up…Grazing for profit also got him thinking (PRA interviewee 3, MCMA)

[56] For more on Stan Parsons, founder of Ranching For Profit, visit http://ranchmanagement.com/about/about.html

> Cell grazing and holistic management, [both] appealed to me (PRA interviewee 19, MCMA)

While the following respondent, echoing the above respondent, criticised Grazing for Profit with the parable of the 'failed farmer as educator' (discussed in Section 4.3.3);

> A criticism of Grazing for Profit would have to be the fact that the mentors themselves had sold their farms; they were failed farmers (ME 2, CWCMA)

For other farmers, cell-grazing was also perceived to have drawbacks as communicated by the following farmers;

> Cell grazing unsuitable as very hard to fatten stock, can't manage to make money…[I have] seen poorly managed cell graziers' properties (PRA interviewee 1, LCMA)

> Cell-graziers believe they have the perfect balance, but you're taking things out of the system so [you] need to supplement…[we] use lime and fertiliser (does soil testing to establish what's needed)…Cell-grazing, ideal for pasture but *not optimal* for production…Set-stocking, bad for pasture but focused on production (PRA interviewee 5, CWCMA)

> Cell-grazing wouldn't work for [us] as we are fine wool merino wool growers and that means their feed needs to be more consistent without stock gorging and then food being sparse (PRA interviewee 19, CWCMA)

> Credibility is a big issue, some cell-graziers are not credible (PRA interviewee 12, CWCMA)

> Not keen on native perennial grasses or cell-grazing (PRA interviewee 12, LCMA)

The scepticism associated with these programs within the sub-culture, aligns well with observations made by Pannell (1999) on the 'dis-adoption' of alternative farming practices. Pannell (1999) argued that the simultaneous lack of 'observability' and a long-time-lag of results, make conservation practices less attractive to some farmers. Further, he argued that poor-implementation of conservation practices can lead farmers to draw negative conclusions about alternative practices in general and explained;

> '*unfortunately, this outcome is more likely with land-conservation practice than for productivity-orientated innovations because a) they are commonly less familiar to the farmer and less similar to existing farm practices, and b) they can be more complicated, with more scope for errors'* (Pannell, 1999: 9)

Pasture cropping, which is a relatively new and grass-roots developed practice, is often implemented as an addition to native grass management and rotational/cell-grazing. Scepticism related to this alternative practice was described as a perceived lack of science to verify claims made by pasture croppers, or what Pannell (2009) terms, 'technical soundness'. The following farmers expressed their hesitation with adopting pasture cropping;

> He is a *bit cautious* about things like pasture cropping etcetera…with pasture cropping you can do it where there is moisture (PRA interviewee 15, MCMA)
>
> Interest in alternate production, but *has to be proven* before taken up…concepts [like] pasture cropping with natives (PRA interviewee 16, MCMA)
>
> Pasture cropping [will work] in some areas, where there is lighter soil, [while in] other areas it is a complete *waste of time* (PRA interviewee 27, CWCMA)
>
> I don't believe in cell-grazing or pasture cropping (PRA interviewee 21, CWCMA)
>
> I don't see any profit in cell grazing or pasture cropping…not ideal on my property (PRA interviewee 8, CWCMA)
>
> Everything seems to be *in a 'box'*, cell grazing, pasture cropping etcetera (PRA interviewee 26, LCMA)

The social differentiation between 'traditional' and 'alternative' farmers also caused some local socio-cultural polarisation (Ampt et al., 2010) through the processes of 'othering'. Lankester (2013) analysed the 'othering' amongst cell-graziers in Queensland and found that there were distinct social differences in interactions with cell-graziers and traditional graziers/croppers, whom socialised separately. The following landholder explains this division, and evokes the hard work ethic to typify the cell-grazier as the 'lazy farmer';

> Cell-graziers are all very *unproductive*…All cell-graziers are in it for the *lifestyle*, places have been given to them, [they have] no debt, *haven't done the hard work*, [their] fathers did the work and now they're cashing in , getting all the money[57]…you don't get funding if you haven't done RCS…*divided the community* into people getting all the funding and the more traditional farmers who don't get anything (PRA interviewee 12, CWCMA)

[57] This was mentioned a few times through the PRA process, with farmers who had 'been given everything', seen as 'unproductive' or 'bad' farmers. This was identified as a farming parable within this landscape.

While the following farmer identified cell-graziers as 'pushy';

> Cell-graziers are a bit *pushy*…taking a lot of resources out without replacing…As a farmer you learn from other farmers. If someone's doing it better you take it on, no one takes on cell-grazing because it's not performing (PRA interviewee 8, CWCMA)

A further respondent commented;

> CMAs and cell-grazing divided the community (PRA interviewee 21, CWCMA)

Manifestations of 'othering' were also reported between Holistic managers and non-Holistic managers, as well as organic farmers and non-organic farmers. The following respondent explained that non-adoption of these innovative practices and approaches caused a socio-cultural perception of non-involvement with conservation;

> There seems to be an attitude with some people that if you are not involved in native grasses etcetera, you are not involved in conservation…[there is] no appreciation that its '*horses for courses*' or 'plants for places' and the small things that people do (PRA interviewee 26, LCMA)

However, the following respondent explained that in her community, social interaction was not limited by practice, thus did not extend to discussing these differences in company;

> [Local] drinks…during the 1994 drought the older generation started it…around 25 couples mingle…good open atmosphere with both *conventional and cell-graziers* mixed…we don't discuss our management! (PRA interviewee 8, CWCMA)

Within the farming spectrum (see Section 4.3.1), the alternative paradigm is closely aligned with a 'conservation-orientation' as opposed to being 'production-orientated'. However the practices and approaches most commonly associated with the alternative paradigm, were explained by respondents to be an integration of production and conservation with a 'holistic orientation', what Burton and Wilson (2006) and Wilson (2001; 2008) term 'strong farm multifunctionality'. This is an effort to move away from the 'traditional versus alternative' binary opposition.

The paradigm 'shift' along the spectrum from 'traditional' to 'alternative' represents a transition from being 'production-orientated', to a more encompassing 'holistic-orientated' approach. In all cases, this was discussed as a move away from 'recipe', or 'prescriptive' farming. 'Recipe' farmers could loosely be

described as a farming type or style, defined by an over-subscription to a particular approach or practice. This type of farming is strongly related with a traditional regime, with heavy undertones of 'dependency' written into the recipe. However, as the following respondent explained, this can also be in reference to farmers using alternative practices;

> Some people absolutely subscribe to traditional farming, or cell-grazing [and] they over did it … [I still] believe it's the right thing to do, [it's] still alive in [the area] (PRA interviewee 6, MCMA)

All farmers using the term 'recipe management' described this as a mental block, and purported it as the main reason for non-adoption or failed adoption of novel alternative approaches. This was most commonly explained in terms of farmers aiming to 'replicate' or adopt management through a behavioural formula rather than a personal adaptation to a practice philosophy. The following respondents further explained recipe managers;

> Lots of people look at the blocks [managed by innovators], [and wonder] why it won't work on their own place (PRA interviewee 7, LCMA)

> Some people only think they are doing HM…[they] become a rotational grazier, but [they are] not complete (PRA interviewee 19, MCMA)

To enhance this 'shift', respondents who identified with an alternative paradigm explained that their goals were to 'integrate' rather than 'orientate' or 'segregate'. The proceeding respondents expressed these philosophies, which aimed to integrate conservation, production and profit;

> Biodiversity versus production is *integrate*/segregate (PRA interviewee 7, LCMA)

> Focus on [a] *balance* between conservation/environment and production/profit based on HM principles (PRA interviewee 18, LCMA)

> 'Why aren't we focusing on creating profitable, dynamic farming businesses within the landscape?' '*Mosaic*' [is the] key word (PRA interviewee 7, CWCMA)

> One of the main issues is the conflict situation 'them against us'…but [I] believe that production and conservation can go *hand in hand* and aren't mutually exclusive (PRA interviewee 26, LCMA)

The alternative practices and philosophies discussed in this section were also aligned with the 'innovator' stereotype, as discussed further in Section 4.4.2.

4.4 Socio-cultural identification and (de)construction of the 'eco-innovator'

'*The future is here. It's just not widely distributed yet'*
William Gibson (Stevenson, 2011: x)

4.4.1 The innovator 'style'

'*There are literally thousands of these new farmers who are creating new and better ways to farm. They may label themselves organic, biodynamic, ecological, natural, holistic, practical or innovative, or nothing at all; but they are all pursuing the same basic purpose. They are all on the frontier of a new and different kind of agriculture…*' (Ikerd, 2002: 9)

Within the farming sub-cultural climate, the differentiation of farmers based on 'innovator' status addresses the initial purpose of this thesis, to identify the 'innovator' hidden within this landscape and it's farmers. The confusion, complexity and contradictions associated with defining farming practices/styles into specific categories, reflects the mythologised nature of farming 'types'. However, within this sub-cultural landscape, the innovator emerged as a more confidently defined concept as opposed to other potential styles. This was also found by Howden and Vanclay (2000: 300) who found that 'even though the innovative style applied to less than ten percent of farmers, we classified it as a major style because it was the most frequently identified…by the greatest number of farmers'.

'The innovator', as discussed in Chapter 2, Section 2.3.1, is at the extreme of Rogers (1962) adoption model, and Gerber and Hoffman's (1998) social diffusion model, where they are depicted as the 'first' farmers to 'change' or 'adopt'; as Gerber and Hoffman (1998) argued, these are the farmers that first perceive a problem and first become aware of a solution within the farming sub-culture. The 'innovator' or 'innovative manager' has also emerged as a unique farming style in most Australian research on farming styles (Thomson, 2001; Glyde & Vanclay, 1996; Vanclay & Enticott, 2011). A majority of 'innovator' representations are based on a range of capitalistic values, and are usually positioned before the

‘progressive’ or ‘early adopters’ (Rogers, 1962; Howden and Vanclay, 2000). In an ‘adoption’ sense, Diederen et al. (2003) argued that innovators are the first to use a certain innovation in a certain market. These representations of the innovator as the ‘big-picture’, ‘money-spending’, ‘calculated market risk-taker’, who adopt or develop the ‘latest technology’, would seem to be stereotypes which have persisted in most research that refers to innovators (Guerin & Guerin, 1994; Howden & Vanclay, 2000; Diederen et a., 2003; Alexopoulos et al., 2010). The ‘innovator’ image in these studies, represent a different ‘farming portrait’ as compared with the ‘alternative farmer’, the ‘low-input sustainable agriculturalist’, and the ‘organic farmer’.

As this study demonstrates, when farmers were asked to identify innovators within their own landscape, while some were referred to as ‘traditional’ ‘techno-innovators’, the majority of innovators were defined as the ‘new’, ‘alternative’, and ‘biocentric’ farmers; in other words, the ‘eco-innovators’. There are other studies that have also identified ‘innovators’ as those seeking sustainability (see Sherren et al., 2010). The emergence of ‘ecoagricultural innovators’ (Scherr &McNeely, 2007) is attributed to the ‘shift’ in perceptions of ‘good’ farming as discussed in Section 4.3.2. However, rarely within academia are these farmers specifically referred to as ‘innovators’; although in all cases, the innovator is fundamentally described as a ‘self-changer’, and a ‘self-controller’. Thus, there are a number of personality characteristics, attitudes and behaviours that have been associated with innovative groupings of famers (Shrapnel and Davie, 2001; Thomson, 2001; Vanclay et al. 1998). The following Table 4.2 summarises personal traits contained in the literature:

Table 4.3 Characteristics of farming innovators in the literature

Innovator characteristics	
Multifunctional	Wilson 2001; Wilson, 2008
Venturesome	Wilson, 2008
Self-aware, self-determined, confident	Shrapnel and Davie, 2001
Interested in/Welcome Change	Wilson, 2008; Duram 1997
Launch new ideas	Wilson, 2008
Create new ideas	Deideren et al. 2003; Ikerd, 1993;
Influence peer networks	Wilson, 2008
Open-minded	Wilson, 2008
Pro-active	Duram, 1997

Like a challenge	Duram, 1997; Shrapnel and Davie, 2001
Positive/calculated riskers	Duram, 1997; Vanclay et al. 1998
Resilient/Adaptive	Shrapnel and Davie, 2001
Whole system managers	Ikerd, 1993
Strategic/Active	Shrapnel and Davie, 2001
Highly involved with government/extension	Thomson 2001
All-rounders/good farmers	Phillips, 2001

Identification and (de)construction of the 'innovator', within this landscape, is *crucial* in addressing the main aim of this research, to redefine the farming 'innovator'. The 'innovator' began as a concept that materialised through interviews into a broad spectrum of further difference and diversity between farmers typified as 'innovators'. These 'stylings' of innovator characteristics are developed via layered perceptions of meaning, based on experience, hearsay and self-identification. These differentiations are explored in the following section.

4.4.2 Identifying characteristics of the 'eco-innovator'

Interviewee respondents during the PRA were asked to discuss 'who' innovators were and 'why'. Responses varied, ranging from naming and pinpointing 'living' innovators in the landscape, to identifying innovators they had heard about outside the case study boundaries; there were some very well-known 'celebrity' innovators, such as Peter Andrews and Bruce Maynard[58], whose names were 'dropped' across these locales. While in some cases, respondents referred to 'progressive' or 'traditional' farmers as innovators, as Mesiti and Vanclay (1996) discussed, these were more likely to be 'early adopters' rather than 'innovators'. The following quote summarises these responses regarding innovators;

> Very community minded in Marrar, 80% *progressive farmers*…Tightly held land…Mostly farmers second generation, some third…No one alternate, probably some *advanced farmers…progressive*, up with the newest innovations on how to do things. Newest techniques, varieties…What about environmental management perspective? No-one who stands out (PRA interviewee 11, MCMA)

While the following respondent referred to 'non-farmers' as innovators;

[58] For more on Bruce Maynard, visit http://www.pasturecropping.com

Innovators round here [are] seed companies and agronomy services (PRA interviewee 25, LCMA)

This discussion of distinct characteristics moves away from 'classic' definitions, and is based on the majority who identified innovators as farmers who were embracing alternative agriculture through the philosophy and practice of 'holistic integration'. Almost all respondents could name a few 'innovators' of the 'eco' variety.

As the construction of the 'innovator' is largely based on legend, or myth (Howden and Vanclay, 2000; Vanclay et al., 2006; Vanclay et al., 2007), people across this landscape identified and defined innovators using a range of 'characteristics'. These characteristics were based on broader socio-cultural generalisations regarding the 'visible' adoption of certain styles, belonging to certain groups, or certain enterprise characteristics. Furthermore, there were certain 'innovator stereotypes', or loosely attributed 'innovator styles' or dimensions that were also used to characterise innovators. These attributes evolved based on the socio-cultural identification of innovators, self-identification as an innovator, and through PRA workshop discussions. These are the farming sub-cultural (de)constructions or 'stylings' inherent in spectral dimensions of the 'innovator', as summarised below in Figure 4.4.

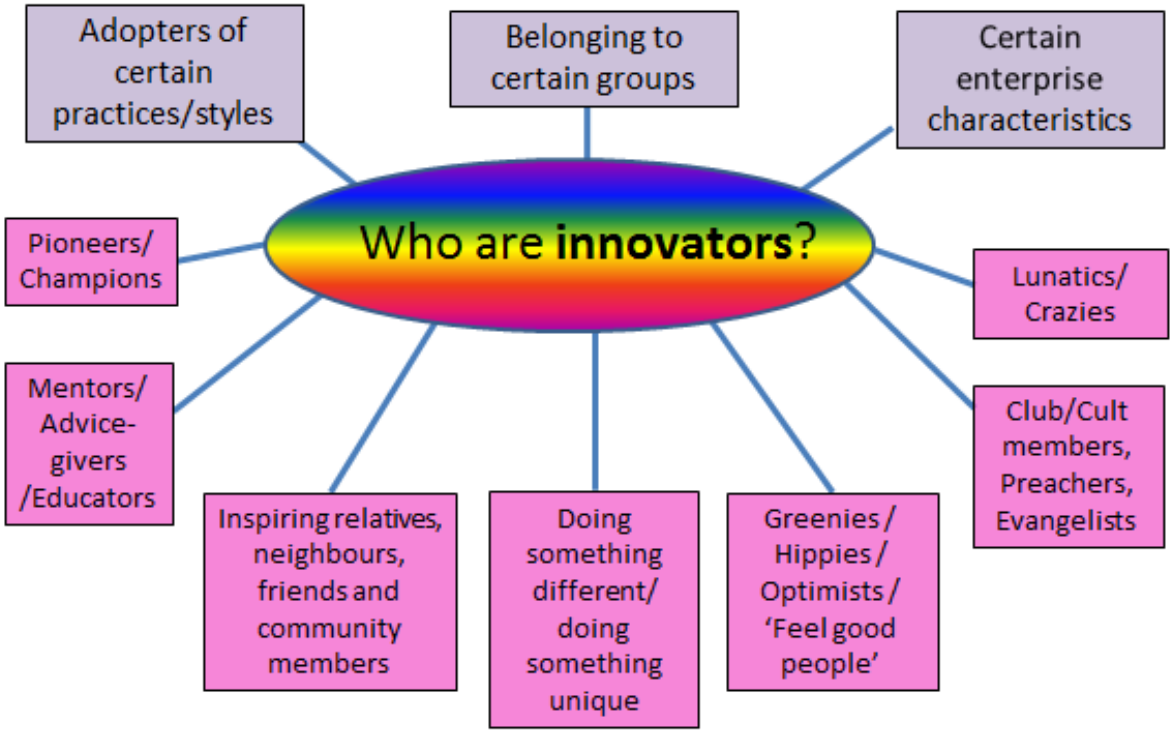

Figure 4.4 Styling the multi-dimensional and mythologised 'innovator'

(The darker purple squares refer to the more tangible and categorical identifications of the innovator, while the pink squares represent the socio-cultural imaginings of the innovator).

4.4.2.1 Categorical representations of the innovator

Adopter of certain practices/styles

Becoming an adopter of a certain alternative practice/style or being a co-creator/inventor of an alternative technique meant that, in most cases, innovators were defined by their 'visible' practices first and by their farming philosophies second. In this landscape, being a 'cell-grazier', a 'rotational grazier', a 'pasture cropper', a 'native grass-manager' or an 'ethical animal handler' largely defined the 'innovator'. The following comments summarise this categorisation;

> [There is] an innovator, [he's] *rotational grazing*, he's a young farmer (PRA interviewee 13, LCMA)

Often without directly meeting the farmer, respondents would identify innovators based on what they had read and heard, regarding these practices, or what they could identify superficially from the roadside of the said innovator's property. However, there was widespread consensus that not all adopters of these practices were innovators, and certain adopters of these styles did not self-identify with being innovators, thus these practices did not automatically concrete this 'style'.

Belonging or membership to certain groups/affiliations

Being a 'member' of certain practice change groups were often ways of categorising the 'innovator'; for example innovators were attributed group labels, for example 'cell-grazier set', or as 'HMers'. Landcare, the Central West Farming Systems group[59], the Conservation and No-till Farmers Association (CANFA)[60], the Stipa Native Grasses Association[61], and the Willing Workers on Organic Farms (WWOOF) Program[62], were groups that innovators reportedly belonged to (Ampt et al., 2010). In certain catchments, an affiliation to certain local social groups also differentiated innovators.

Innovators were also identified through their staunch affiliations with certain government initiatives, staff, certain academic researchers, and/or private consultants. Being involved in government funding for sustainability activities and in particular, the Stewardship Covenant (see Appendix C) typified innovators. Affiliations or co-research partnerships with certain change agents/scientists, including Christine Jones, Maarten Stapper, Alan Nicholson, Mark Gardener, Graeme Hand and Peter Ampt; and affiliations with well-known innovators/change agents such as Col Seis, Bruce Maynard and Bruce Ward, were also relationships that identified innovator (these actors are further discussed through Chapter 5). Farmers who had won major conservation and farming awards or grants were also easily identified as innovators.

Certain enterprise characteristics

Running multiple enterprises and/or having niche, 'small-scale' enterprises, based on sustainable practices, were indicative of innovative farmers. Innovators were described as mixed farmers who explored a range of sustainable yet productive ideas. These included permaculture, polyculture, eco-tourism, forest farming, native seed harvesting and native food operations. Further avant-garde characteristics that respondents used

[59] For more on the Central West Farming Systems Inc., visit http://www.cwfs.org.au/
[60] For more on CANFA, visit http://canfa.com.au/sponsors.html
[61] For more on Stipa Native Grasses, visit http://www.stipa.com.au/
[62] For more on WWOOF, visit http://www.wwoof.com.au/

to identify innovators included successful self-marketing of ecological products, both locally/regionally or inter-state, and also farm-gate operations for selling produce.

4.4.2.2 The Multi-dimensional imaginings of the Innovator

Pioneers/Champions

This dimension of the innovator is linked to the pioneering farmer, as Ikerd (2000: 1) suggests, 'they are the explorers, the colonists, the revolutionaries, and the builders of a *new world'* and further, that they are 'heroes' who 'combine imagination with action'. Innovators who had developed, invented or co-created new practices/new machinery/new enterprises, and/or exciting new ways of reconceptualising agriculture were the pioneers, while the champions were usually the first successful adopters of undeveloped/under-researched alternative farming practices and systems. As the following farmers explained;

> Innovators *start the ball rolling*, [then] a few *adventurous* sorts will take up the idea and give it a try, and then more people will take on the idea as they see it working for other people (PRA interviewee 25, CWCMA)

> [We are] surrounded by very *successful, go ahead* farmers (PRA interviewee 15, MCMA)

While the following innovators self-identified as a 'pioneers';

> [I] helped *pioneer* pasture cropping in 2000, [and have] been doing it ever since…[I have] *strong ideas*, and would like to show the profitability of this system (PRA interviewee 7)

> [I'm] a bit of a *pioneer* in native pastures and native grass harvesting (PRA interviewee 12, MCMA)

This facet of the innovator represents a sub-cultural celebration of difference; stepping 'outside of the box' is often perceived as 'daring', 'dangerous', and 'venturesome', and surprisingly, enviable. The positive connotation associated with the self-determination of the innovator is displayed in the following comments;

> [He] works a bit by *instinct* or by the *seat of his pants*, rather than meticulous, structured planning for example like grazing charts (PRA interviewee 19, LCMA)

This 'aura' attached to the innovator delegates a certain 'local celebrity' status, and these farmers are praised and held up as examples or role-models for other farmers reciprocate and receive inspiration and often information from. Their environmentally ethical, financially viable, and socially well-regarded

modes of sustainable farming are perceived to be 'before their time'. This styling was often rejected by 'modest' innovators who did not want to be 'elevated' above their peers.

Mentors/advice givers/educators

Innovators were also explained as mentors, teachers/educators, advisers, especially those innovators who were locally active as Agents of Change. The positive connotations associated with this facet of the innovator are attributed via the perceptions of 'intelligence' and 'problem-solving'; they are the 'thinkers'. Due to this, they are also well-regarded/ respected members of the community and are making the time to share their experience, wisdom and expertise to 'guide' and 'better' their peers. The following respondents illustrate these views;

> [Our] neighbour [is a] holistic farmer, a *smart* man, *well regarded'* (PRA interviewee 1, LCMA)
>
> [We] trial native grasses at [an innovator's] place…[I] like the things he thinks, [he is] a *problem-solver* (PRA interviewee 20, MCMA)
>
> [Likes to] talk to *successful* farmers around the area and get some ideas, but these are often further afield (PRA interviewee 7, MCMA)
>
> Likes to hear from local innovators (PRA interviewee 17, LCMA)

Other respondents spoke of 'farming gurus', bestowing the title of 'high teacher' on some innovators. Associating innovators with wisdom, intelligence and respect, and consequently a higher social status was also expressed by some respondents.

Inspiring relatives, neighbours, friends and community members

In many cases, innovators were identified in more personal sentiments, as quiet inspirers who simply preserved a communal sense of optimism, especially during the recent drought. In another vein, 'innovators' were singled out by their voluntary engagements and positive contribution to community life, social work, and human rights work. Farmers who had supported other farmers through the depression of the drought were often mentioned, as were farmers who actively protested for farmers' rights (such as the 'Lock the Gate[63]' campaign against coal-seam gas mining). Volunteer work at local schools, community projects, and volunteering to have workplace schemes on their farms, standing up for the socio-

[63] For more on the 'Lock the gate' campaign, visit http://www.lockthegate.org.au/

economically challenged, refugees and youth programs, were also mentioned in this 'stying' of the sub-cultural, 'selfless' innovator.

Doing something different/Doing something unique

In other cases, innovators were defined by the more literal meaning of alternative, just being different. This styling of the innovator was often offered as a neutraliser, with no 'good' or 'bad' sub-cultural referencing. The following respondents identified innovators in this way;

> There's a guy up the road…he does some *interesting* things, a bit *different* (PRA interviewee 27, CWCMA)

> There are a of people around here who do things *differently* (PRA interviewee 19, PRA interviewee 23, CWCMA)

While the following innovator self-identified with this portrait;

> [I] don't see myself as an innovator, [I] just see myself as doing *different things* (PRA interviewee 12, MCMA

However, often the perception of 'doing something different' was associated with a certain level of scepticism (as discussed in Section 4.3.4);

> [There are] two innovators around, they keep trying *different things*, people watch with *scepticism* (PRA interviewee 8, LCMA)

> [There are] no innovators immediately local, but some around…[they're] not necessarily on the right track (PRA interviewee 24, LCMA)

> There are early innovators in HM or tree planting; but many are *sceptical* of [innovators in this area] as they don't make their whole income off property (PRA interviewee 19, LCMA)

While the following farmer evoked the 'lazy farming' parable in his identification;

> [I'm] *sceptical* of [my] 'innovative' neighbour, he doesn't get up early (PRA interviewee 21, LCMA)

This style begins to acknowledge the 'Innovator as the intruder' stage, which is discussed further by Gerber and Hoffman (1998).

Greenies/Hippies/Optimists/'feel good'

Some innovators often attracted the culturally 'loaded' label of 'conservationists' and 'nature-lovers' by some members of the community. These 'green' commentaries of the innovator were often positive and linked to strong stewardship and ethical practice, which constituted 'responsible' or 'unselfish' views of the innovator. However, in most cases a more stereotypical portrait of the 'tye-died, dreadlock', nature extremist was utilised to identify the 'innovator'. These innovators were also identified as 'airy fairy', 'wishy washy', 'hippies', and 'feel good optimists' who were ideologically disassociated from the realities of farming. The negative connotations are expressed in the following comments by self-identified innovators;

> [I'm] perceived as a '*rabid greenie'* by some community members (PRA interviewee 1, MCMA)
>
> Son thought dad was '*green*' (PRA interviewee 13, MCMA)

While the following respondent had a unique label for 'innovators' of this variety;

> They are *'Socks and Sandals'* farmers (PRA interviewee 21, CWCMA)

However, due to the negativity associated with 'being green', many innovators also self-differentiated themselves from 'green groups', as the following quotes exemplify;

> Put me in contact with the *greenies* and let me try to convince them that we need to adopt a holistic approach' (PRA interviewee 7, CWCMA)
>
> *Green people* are *ideologically fixed* and I suppose farmers are too (PRA interviewee 9, CWCMA)

However, other innovators self-identified with this styling; the following respondent was critical of others for not doing so;

> One statement [I] dislike hearing from farmers, 'I'm not a *greenie* but....' (PRA interviewee 8, MCMA)

Club members/preachers/ cult members

The negative stying of the 'innovator' is also present via the dimension of the perceived 'intruder'. In some cases, innovators were associated with being part of an 'innovator club' and were perceived to be 'pushy', 'arrogant' and at times vocally 'condescending' when it came to differences in practice. In a more extreme

tone, innovators were also regarded to be ‘cult’ or ‘sect’ members, ‘disciples’ and ‘blind followers’ of a particular farming approach. These religious ‘overtones’ were common across this landscape, with the following respondent explaining the undesirability in describing practices as belief systems;

> People go into the schools with certain beliefs, and come out with changed beliefs and new ideas…these ideas become ‘*beliefs*’ and then people stop listening again…would prefer to see more people saying ‘I have these ideas that I’d like support on’ rather than ‘I have these *beliefs*’ (PRA interviewee 6, CWCMA)

Some respondents also explained that people went into a program and came out again like ‘new-born religious fanatics’ or ‘evangelists’ who had an impulsive urge to ‘preach’ to or ‘lecture’ other farmers on the right and wrong ways of farming. In some areas, this construction of the innovator caused some social division (as discussed in Section 4.3.4). The following respondents explained;

> Some HM groups are almost *like religions, very evangelistic*, which is a bit of a turn off, [I’m] not comfortable with that sort of thing (PRA interviewee 19, LCMA)

> Early 2000 there was a divide between HMers and non-HMers…became a bit *cliquey* and *evangelical*, it has changed since then, everyone speaks their mind (PRA interviewee 1, CWCMA)

Other practices, which were deemed unconventional, such as biodynamic farming also attracted negative stigma and practitioners, were referred to as practicing ‘witchcraft’, ‘voodoo’ and ‘hocus pocus’.

Lunatics/crazies

This dimension of the ‘innovator’ is the most negative association, in terms of viewing the innovator as an intruder, and was the most common way for innovators to explain how the community perceived them. Gerber and Hoffman (1998: 142) argued that this is an expected reaction from the community towards innovators; ‘as a rule, adopting an innovation leads to a certain isolation from the rest of the community. Innovators are laughed at or even rejected’. In this landscape, innovators were referred to as ‘mad as a cut snake’, ‘lunatics’, ‘crazies’ and ‘mental’, as well as references to being an ‘idiot’ or taking ‘silly-risks’. The following quotes offer some commentary on this styling;

> *The crazy* sow pastures into native grasses…haven’t seen any results yet (PRA interviewee 8, CWCMA)

> [I think] that some of [my] neighbours think [I’m] a bit *weird*; but [I] don’t mind that (PRA interviewee 12, MCMA)

> Doesn't mind that he looks *silly* to others, he just wants to work to show progress on the farm…that will be the proof in the pudding (PRA interviewee 3, MCMA)

While the following innovator indicated that isolation was the result of these sub-cultural perceptions;

> [I] tried to talk to people…some people think [I'm] *a nutter*, some aren't anti [my] ways, but they say 'just, we gotta do it our way'… [I] felt a bit *isolated* (PRA interviewee 9, LCMA)

This is a concerning 'styling' of the innovator, which is explored by 'celebrity' status innovators such as Peter Andrews (2006), Joe Salatin (2010) and Masanobu Fukuoka (1978), who documented their respective experiences with being negatively perceived by the local farming sub-culture (see Chapter 5, Section 5.2.3 for further discussion).

4.4.3 (De)constructing the living eco-innovator

As respondents 'constructed' the 'innovator', they also (de)constructed and allowed for identification of the 'living' innovator, which was a crucial element of this thesis, which consequently guided the execution of the ME process. 'Living' innovators were farmers who were named repeatedly, throughout the PRA process, by interviewers and interviewees alike, as 'innovators'.

When 'living' innovators were discussed, there were spatial and geographical variances which differentiated the stylings of the living innovators. Interestingly, some respondents identified that no innovators lived locally;

> [Farmers in the area are] steady, [there is] no-one really advancing…a number do drought lots, but not enough, still a lot of dust in summer (PRA interviewee 10, MCMA)

> [There are] no innovators in the area…A few a bit further away are doing some *good* things (PRA interviewee 1, MCMA)

> [Are there] any really innovative farmers [or] neighbours?... not really (PRA interviewee 17, MCMA)

> Not many people doing innovative things (PRA interviewee 12, LCMA)

These comments can be linked to the fact that some innovators were reclusive and avoided local community involvement due to a fear of ridicule and socio-cultural 'othering'. Many innovators were isolated in terms

of eco-practice change, and felt they were living in 'islands' or 'pockets' across the landscape. The following comments highlight feelings of 'innovator isolation';

> Some people have adopted similar practices to his, but many people around here haven't… [Innovators are] *isolated*, there are different *pockets* (PRA interviewee 7, CWCMA)

> Nobody really understands what I am doing here, the sheep are different…I get a *hammering* and it makes me more determined (PRA interviewee 22, LCMA)

> Neighbours don't farm like he does, not many 'innovators' in the area (PRA interviewee 8, MCMA)

> Next door neighbour is on *same wavelength* at least with his goals and intents, even if he is not very practical; lady next door is interested in what [I'm] doing even if [she's] not totally committed (PRA interviewee 3, MCMA)

However, while isolation could be associated with innovators not being aware of one another, respondents also explained the general lack of eco-innovators across the landscape;

> [We are] being inundated with requests from the CMA to bring people out...too few innovators for too many requests (PRA interviewee 3, CWCMA)

> I'm *sick of pioneering*, would like more support instead of always having to take the knocks himself and learn the hard way and keep shouting to be heard…but [I am] certainly not going to stop what [I'm] doing (PRA interviewee 7, CWCMA)

While the following innovator explained having to find innovators in another district;

> [I] find people that think like [me], it's hard…[I] eventually found people around the Mudgee area (STIPA)…[they had] a more refined idea of what he wanted, but the distance, [they were] too far away (PRA Interviewee 9, LCMA)

In contrast, a particular region in the CWCMA boasted a large number of innovators, who were not only connected by the landscape, but also through shared ideas of alternative farming practice and philosophies. The workshops identified the strength of bond in this group, as Ampt et al. (2010: 5) summarised in the initial report;

> '*A critical mass of landholders/change agents etc in a relatively small area that feed off each other and support each other – this is true of the central west area. So much so that it is becoming 'normal' to talk about maintaining ground cover etc. We are describing it as a 'community of practice' that is also a 'community of place'.*

The following respondents offered some commentary on this group of innovators;

> Within the community a group formed a benchmarking group in 1994, 50% innovators in the area are now part of group…the social side is more important than the financial side these days (PRA interviewee 6, CWCMA)

> [The] *success* [of this group] is in *openness*, building of *trust*, and tackling real issues….*education* has a big role in getting a group like that working, the whole group has done HM…wives get involved too….there is regularity and process behind this group (PRA interviewee 1, CWCMA)

The PRA workshops concluded that the group of people who had been identified as eco-innovators were all operating under integrative farming philosophies and practice, had all been involved with certain practice change programs at various points in time, and were all practicing some form of rotational grazing, managing for native grass regeneration, and in cases, some pasture cropping. In (de)constructing participants for the ME study, as discussed in Chapter 3 (Section 3.3.2), this was executed in line with Peter Ampt's (Ampt & Doornbos, 2011) 'Innovator Benchmarking Study'. The innovators that participated in these two research processes were a mix of both isolated well-connected innovators, such as the Central West innovator group. During the PRA workshops, there were certain 'traits' or characteristics that typified and summarised innovators within this landscape, as presented in Table 4.4.

Table 4.4 Innovator characteristics (adapted from Ampt et al., 2010: 23)

Innovators in the PRA context:
• Very strong sense of *integrating* production and conservation;
• Very lifestyle orientated with *integration* of the family and the farm;
• Some also had a strong profitability focus – i.e. creating local economies through self-marketing, or currently thinking about how to do this – tapping into a niche market for healthy, environmentally sound local produce in an attempt to move from being price takers to becoming price *makers*.
• Felt they had *more control* over their current enterprise with current practices vs. previous practices;
• Diversity of innovation – related to the influence of many environmental farming movements prevalent in the landscape;
• Had adopted practices that made their farm *less reliant* on rain;
• They were thinking about the about the farm in a *holistic manner* – were, or were attempting to 'over-ride the fragmentation of systems';
• Key attributes of successful innovators are: *responsive, observant, analytical, opportunistic, know own limitations*;
• Some expressed the feeling of *liberation* when they released themselves from family and/or community expectations and focussed on *regenerating* their land;
• Many were already involved in research and farmer-to-farmer education. Many do not want to be 'champions' but would be more comfortable with a more *modest* role such as farmer-to-farmer communicator;

Returning to the concepts of change and control, it was summarised and hypothesised that in contrast to the majority of the farming population, 'living' innovators had developed a strong self-locus of control, an ability to embrace/spread change, and a desire to steer their own destiny. Ultimately, for the purposes of

Peter Ampt's recruitment of participants, innovators had to fit the following criteria (adapted from Ampt & Doornbos, 2011: 4):

- Successful implementation of a practice or suite of practices for 5 years or more
- Recognition as an innovator by peers
- A suitable sampling site (with a traditional neighbour)
- Willingness of innovators and adjacent neighbours to participate

Furthermore, of the nine innovators from the benchmarking study, four other innovators were included that fulfilled the first two criteria above. These innovators were highly interconnected across the landscape (see Figure 3.6), leading Ampt (2013) to argue that they represented a 'community of practice', with shared practices, values and philosophies. In some respects, and as explained in Chapters 5 and 6, this community of practice represents an organic innovator network or 'innovator sub-culture'. To understand how these philosophies, values, beliefs and paradigms formed and shaped attitudes and behaviours within this sub-culture, innovator's stories pertaining to change towards sustainability, were investigated.

4.5 Chapter summary

This Chapter aimed to address the primary and secondary research questions, and fulfilled the first aim of this thesis (see Chapter 1 Section 1.4). An understanding of the contemporary pillars of the farming sub-culture and the perceived need for change prevalent among these communities set the scene for Section 4.2. This section then explored the farming spectrum and the variety of the sub-cultural labels, including associations of 'bad' and 'good' practices for 'traditional' through to 'alternative' agriculture. Comprehending what practices constituted the 'traditional' and 'alternative' paradigms was also required, in order to understand where innovators were individually positioned along the spectrum. The (de)constructing of the innovator through this multi-dimensional lens provided further insight into the mythologised nature of 'innovators'. To understand how these stereotypes translate from reality, living innovators were identified and (re)defined by the farming sub-culture through the PRA process. This chapter provides context and background for the subsequent chapter, which migrates from narratives within the farming sub-culture towards stories of the 'innovator sub-culture', or as Wu and Pretty termed (2004), 'farmer innovation circles'.

CHAPTER 5 - Journeys of Change: Weaving together experiences and (re)constructing the farming 'innovator'

5.1 Chapter Introduction

'Sustainable farming is thinking farming. It requires an ability to translate observation into information, information into knowledge, knowledge into understanding, and understanding into wisdom'

(Ikerd, 2002: 1).

Why do some farmers become known as 'innovators', and how did they become 'innovators'? What is this process, this journey of change (Fortino, 2011), the transformation? Ikerd (2002) expressed this as a personal process – an internal journey of change towards sustainable farming knowledge. To explore the phenomenon of practice change, this chapter is predominately focussed on insights from the stories of peer-identified and self-identified 'innovators' (see Chapter 4, Section 4.4.3). A narrative of agri-cultural change on the micro level has emerged from the rich micro-ethnographic (ME) data, associated farmer owned-research/publications, and insights from inspirational farming 'innovators' from around the globe. This change is essentially portrayed as a shift from the 'traditional' or 'unsustainable' paradigm to an 'alternative' and 'sustainable' paradigm (see Chapter 4, Section 4.3.1), the transformation of the farmer into the 'eco-innovator' (as defined in Chapter 4, Section 4.4.1). However the complexity involved in this cyclic journey of change is not well understood (McKenzie, 2013), and classifications of innovators along the farming spectrum and within farming styles prove to be socio-cultural constructions or 'myths' (Vanclay & Howden, 1998; Howden & Vanclay 2000; Vanclay et al., 2006; Vanclay et al., 2007; Vanclay & Enticott, 2011). Importantly, these classifications are only relevant in context, being temporally and spatially fluid. Documenting these personal stories of innovative change is vital in obtaining 'truths' within the complex tapestry of practice change. However, presented here is only one dimension of these innovators' personalities, lives and stories, which in turn have been analysed, interpreted and constructed from one perspective.

The narratives presented in this chapter essentially relives the experiences of identified innovators whilst also offering an exploration of the thinking and emotional processes associated with practice change. This collation of farming knowledge and wisdom from the perspective of the innovator explores the main influences/motivations, behaviours/practices, and finally, the philosophies underpinning this cultural shift in farming. In summary, the multidimensional nature of practice change is discussed, and using insights from these experiences, the 'innovator' has been (re)constructed to represent the reality of the living

innovator in the current farming sub-culture. This (re)construction through narrative allows for a broader (re)defining of this identity based on innovator experience; an extrapolation of the (de)constructed socio-cultural innovator presented in Chapter 4 (see Figure 5.1).

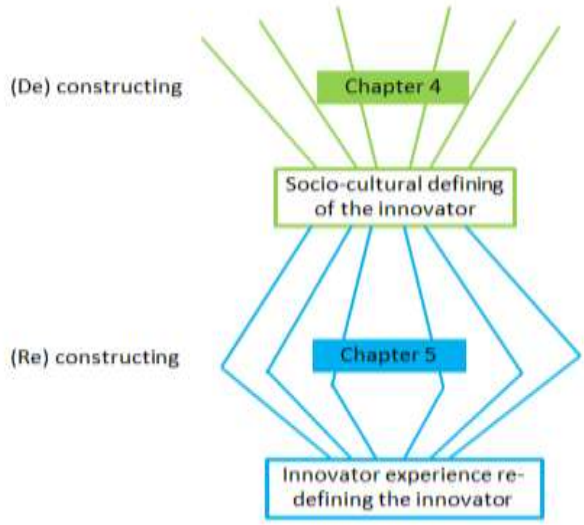

Figure 5.1 Thesis Structure: linking Chapters 4 and 5

This chapter is essentially the heart of the thesis and documents the key findings; previous chapters have led to this one, and consequent chapters discuss, summarise and develop on key concepts, ideas and understandings presented throughout these stories.

5.1.1 Recognising diversity: innovator multi-dimensionality

In Chapter 4 (Section 4.4.3) the identity of the farming innovator was deconstructed and derived from the farming socio-cultural climate and associated workshops with agents of change. This identity was composed through the development of a pre- agreed set of prevailing principles and practices, which typified these farmers. As in Chapter 4 (Section 4.2.1) the importance of Vanclay's (2004) first principle to understanding farmers is once again reinforced; understanding farmer diversity which on this micro-scale translates into individuality. Therefore, the (de)constructed innovator typology or socio-culturally-accepted 'criteria', depicted and discussed in Chapter 4 (Section 4.4.3), formed a guide for further investigation into individual diversity; essentially the investigation of experience within this chapter breaks down this criteria.

While these individuals are framed within similar spatial/environmental boundaries[64], and further, socio-cultural 'boundaries[65]' including political and economic spaces, this heuristic approach has allowed for an exploration of individual motivations, influences, beliefs, values, attitudes, behaviours and philosophies; the commonalities that tie these individuals together within a paradigm of 'new' agri-cuture. Each farmer is driven by personal desire and circumstance, this translated into a unique, individually tailored farming styles, as described within farmer-orientated research (Vanclay & Howden 1998; Wilson & Hart, 2001; Eckert & Bell, 2005; Pannell et a., 2006; McKenzie, 2013), and was similarly stressed by participants throughout this research (Ampt et al., 2010). The fact that innovators are not only implementing new practices but also adopting a new way of thinking and seeing agriculture (Lawrence et al., 1994; Strong, 2008; Marsh 2007) adds a new depth to the exploration of change journeys and the scope of difference within the alternative or 'novo' farming paradigm. It also allows for an expressive communication of the journey's complexity, its multi-dimensional nature, and embraces and values these innovators' experiences as crucial to understanding agri-cultural practice change.

While individuality has been celebrated, individuals anonymity remains and the narrative is structured as a collective voice (Petit et al., 2011) (see Chapter 3, Section 4.3); this aims to recognise the context framing of these journeys, without becoming mired in the complexity of individual circumstance[66]. Scettri (2001), Ventura and Milone (2004) and McKenzie (2013) found that even though 'successful farmers'[67] or 'innovative farmers' start from different situations and contexts, there are connective themes that emerge from their practice and philosophy. This research also found that while each innovator experienced change differently, there were both theoretical and practical intersections in experiences (motivations, behaviours and philosophies), as well as common emotional and cognitive changes. These intersections have been woven together to produce a geographical representation of an innovator sub-culture within a farming sub-culture. Innovative farmer Graham Strong (2011) illustrates diversity in conformity in Figure 5.2 through his depiction of group culture or mob mentality. The concept has been utilised in this research to represent the multidimensional nature of the identity of the 'living innovator'.

[64] See Chapter 3, Section 3.3.2
[65] See Chapter 4, Section 4.2 for more on the farming sub-culture
[66] This was also due to ethical reasons and for the sake of maintaining anonymity
[67] Definition of innovators

Figure 5.2 Collective identities and group culture (borrowed from Strong (2011: 27)

Unity emerges through the diversity of experience, the heterogeneous composition of the collective (Vanclay & Silvasti, 2009; Petit et al., 2011), and has led to a diverse range of definitions which ultimately (re)construct and (re)define the innovator (see Section 5.5) within this landscape. This (re)constructed journey is also informed by many other actors/actants[68] (Callon, 2004) whose influence has also been interwoven into the collective voice of the narrative.

5.1.2 Investigating the Change Journey

'Wayfarer, there is no way, we make the way by walking' Machado (in Ping, 2004b: x)

'Life is no straight and easy corridor along which we travel free and unhampered, but a maze of passages, through which we must seek our way, lost and confused, now and again checked in a blind alley' AJ Cronin (Johnson, 2001: 8)

Recognising that evolving farming practices requires change processes and a journey has been recognised in part by research focussed on-farm decision-making (Phillips 1985, in Barr, 2011; McCown, 2005; Jakku

[68] See Chapter 1, Section 1.2 for more on Actor-Network theory

& Thorburn, 2010; McCown, 2012). This body of research recognises that a 'shift' takes place and aims to identify 'triggers' for change or adoption, and cause and effect relationships. However, the change journeys documented here illustrate a network of triggers, motivations and influences which impacted upon and activated the transformation of practice and thought to varying degrees. What causes farming change exists within the framework of the farming sub-culture, but is unique to each individual (Maybery et al., 2005; McKenzie, 2013; McGuire, 2013). Farming practices and philosophies develop, take shape and dissolve into new understandings of farming over lifetimes of chance, purposeful and imposed experiences; reiterating the importance of exploring the concepts of choice, change and control in agri-culture. As Roberts and Gillard (2007) argued, the complexity of practice change or farming transformation is that it can be both a chosen and/or an unchosen process, and is not simply a product of farmer impetus. Finding out why and how people change is a matter of looking at the parts as a whole; it is a whole life experience which has ultimately led to changing agri-cultural thought and practice.

5.2 Management motivations/influences

The motivations and influences for changing management practices and paradigms are unique to each individual depending on their experience, perceptions and personal philosophies. What motivates us to change? If farming is a mental model that defines who a farmer *is*, and practice change means a farmer therefore changes who they *are* (Pretty, 2002) - then it is crucial to understand the context, in which, innovators change – their life experience. Eckert and Bell (2005) argued that life experience shapes farmers' mental models and therefore highly influences decisions made with regards to practice change. The following sections present a narrative of the founding influences on management, the pathways to changing management, and the reality of breaking away from tradition. These are the attitudinal and motivational aspects of the 'new' farming paradigm which influenced change.

5.2.1 Founding influences

The importance of having a family history intertwined with farming practice tradition (see chapter 4, section 4.3.1) played a key role in the journeys of some of these innovators. With the relationship between family farming tradition and sustainable practice 'transfer' not being well understood (Dunn, et al. 2000), these experiences emphasise the importance of generational and socio-cultural influences which shape the change journey through knowledge and wisdom imparted to innovators over many lifetimes.

Fostering a conservation ethos

For many of these innovators, the earliest memories of being a part of the outdoors and discovering natural history were fundamental in shaping current understandings and philosophies. These childhood 'roots into the earth' are vital in comprehending the overall change journey. The 'landscape', a conceptualisation of observable nature, acts as an 'actant' or 'actor' as it directly influenced these experiences (Winter, 2005), and is an integral feature throughout these journeys. The following innovator explains how this connection with nature was forged through family experiences and laments the loss of this in information-age childhoods;

> We were fortunate, [we had a] *love of the bush*, we were wild bush kids…learnt to live off the land at a very early age…we were brought up that yes you make a profit off the land, but the land also gave of you…we had [our] own meat, fished, hunting and gathering to feed the family, rarely went to the town…[it's a] different connection [these days], sadly no-one has time to do that with their kids today (ME 12, MCMA)

Fostering a 'love of the bush' during bushwalking ventures at a young age was voiced by the following innovators;

> [Did] a reasonable amount of bushwalking with Dad, I *loved the bush* (ME 7, LCMA)

> The bush-walking, [I have] a background here, [you] grow up with it without really thinking about it (ME 4, LCMA)

While the following innovator explained the innateness of his conservation ethos;

> [Back] then I was very *nature conscious*, probably without recognising it…but I think it's always been there (ME 5, MCMA)

Recognising specific family members and family friends as mentors and educators on 'the bush', was a common feature along these journeys. The following innovators recognised the influence of mothers and grandmothers in fostering this ethos;

> [My conservation ethos] came from my father, his grandmother was a farmer and a story-teller, [and also, it] came from my mother…as kids, if we shot birds, she'd go crook, [she was] always *very aware* of the animals, the ecological side of things (ME 8, CWCMA)

> My parents have been a big influence, and my grandmother who was a farmer…we used to go over to her place, my brothers and cousins, she'd take six of us camping, or for walks…she was a great *nature lover*, quite good with the birds…one of those ladies that commanded respect…she'd have us noticing stuff (ME 5, MCMA)

The following innovator recognised both the role his father and a stock-hand played in developing his relationship with nature, agriculture, and sense of place;

> My father had a big influence on me, developing that *love of the land, love of agriculture, passion for agriculture*…going camping, driving around on the farm, learning about plants and animals and the way they interact…also, an old guy who lived on the property, lived here 60 odd years…he had a *great affiliation with the land*, and the history of the land, the people, goldminers, bushrangers…dad spent a lot of his life with him…[I] spent time with him as a kid…he seemed to just know things about the bush, like what plants to rub on you to keep the flies away (ME 9, CWCMA)

These innovators explained how early-life explorations of farm and bush were integral to the development of the eco-philosophies guiding their current practices.

Parental influences on management

With farming succession offering a 'conduit of knowledge' between generations (Dunn, et al. 2000, Silvasti, 2003) (see Chapter 4, section 4.3.1), in nearly all cases, in which, innovators came from a farming background, an 'inspirational' father[69] was mentioned as having a foundational influence on current farming practice and perceptions of both production and conservation. Fathers who were early adopters of high-input, production-orientated technologies in the past, such as using super-phosphate and sub-clover, were identified as pioneering new ways of farming, as the following innovators explained;

> Dad [was] very conservative, but very *innovative*, [he was using] super, sowing different crops, [he was] *innovative* in a different time (ME 9, CWCMA)

> Father was one of the first with super, [he was the] first one with sub-clover by air…back then it was the thing to do, quite *innovative* (ME 10, CWCMA)

[69] As in Chapter 4, gendered language has been used here to highlight the fact that all these farmers indicated, through their discourse, the patriarchal nature of the farming sub-culture.

Similarly this innovator, (who is also acknowledged as a modern-day pioneer within the innovator sub-culture[70]), also referred to his father as innovative and as a pioneer of technological innovations;

> Father very *innovative*, he had the greatest influence on me, more than anyone else…he was a *pioneer* of the total pasture improvement, or sub-super revolution in the 1940s (ME 8, CWCMA)

In contrast, some innovators indicated that their father's conservation behaviour was an influential motivator;

> My dad was a big influence… [he was] very much involved in soil conservation; [on my childhood farm] we had contour banks, drainage lines, strict ploughing, didn't over-plough…but there were strict environmental protection laws [back in Africa] (ME 2, CWCMA)

> [My] father was keen on birds, he put in habitat…doing that since 1966, planting trees was very *unusual* then (ME 7, LCMA)

The influence of having a parent who was described as an innovator was also discussed in terms of social reactions to experimentation of new ideas, which were outside of the cultural norm. These comments echo the negative perception of the 'innovator as intruder' (Gerber & Hoffman, 1998: 141) within the farming sub-culture, as discussed in Chapter 4, Section 4.4.1. The following innovators explained their father's experience with practice change and local community responses;

> Dad left native country [on the farm], and 30 years ago people thought he was *crazy* for not fixing up that *'rubbishy*' country…didn't mind flying his own kite, but he was a conservative farmer (ME 4, LCMA)

> Dad always had native grasses; people thought he was a bit *weird* for not trying to work that part of the land (ME 11, CWCMA)

One innovator explained how his father's early experimentation with sustainable practices simultaneously stirred up local animosity and influenced his thinking;

> Dad set up a [GFP] trial cell…he said people stopped talking to him basically, to a degree, they thought he was *weird*…[he] made a basic video of it and had spoken about it…it always spoke to me, I always thought back to it (ME 5, MCMA)

[70] As based on discussions throughout the PRA process and during informal discussions with certain 'agents of change'.

The influence of this innovative behaviour was explained further than just impacting the adoption of certain practices or behaviours, and in nearly all cases was paired with influencing a spirit for accepting challenges and trying new techniques. The following innovator explained how his father's experimentation fostered a conservation ethos that was branded into the family farming tradition;

> Dad, one thing he used to talk about, very dry years in 1935-46,had a bit of wheat, and they lamb in autumn, so put two lambs on the wheat, well, those lambs stood out from the herd for the rest of their life, so much better …realised he had to look after his sheep and to do that, you had to *look after your land*, and we learnt from him, and that's been our principle ever since… different techniques as we've gone along, but it's the basic principle we've stuck by…[my brother and I] like to say 'only thing we've really done well is listen to our father' (ME 10, CWCMA)

Patriarchs also played an integral role in challenging the realities of traditional agriculture. The following innovators cited their fathers as recognising the declining state of the land and the need to change traditional agricultural paradigms;

> Dad was a bit of a *visionary* himself…he could see the *need to change* (ME 8, CWCMA)

> Dad had been asking *questions* for a long time, and had noticed that things weren't going in the right direction that they (mum and dad) wanted it to…could see the spiral, *the down turning trend* (ME 5, MCMA)

As the following innovator explained, his father's need for change was impeded by a lack of opportunities for change;

> Since I left school I knew we were doing things wrong, but I didn't know the answer…I felt [that] my father also felt that way, but he was *never exposed* to anything that offered *a way to do things differently* (ME 3, LCMA)

The investigation of alternative ideas, due to the influence of the proceeding innovator's father (a doctor, but a 'frustrated farmer' who loved growing), encouraged future ideas on ecology and land management;

> Dad had books…'An Agricultural Testament'…it's about compost [and] fungi, by Sir Albert Howard (1943)… I read that, and watched Dad make compost, and I had a *belief* that putting organics into soil had to be good for it, with not a lot of science for [the practice] (ME 7, LCMA)

For some innovators, the influence of their father's management practice was the opposite; it was 'what not to do'. These innovators explain their dissatisfaction with traditional practices and the initial break-away from family tradition;

> [My] father used to chip and hoe and spray thistles…[it] was not the way to do it! I wasn't happy with the way things were run [by my father and brothers], *I had alternative ideas*…[I] moved into a cottage [on the farm], I wasn't involved in running the farm, [I] did farm trees, and permaculture…[my] parents thought I would get it out of my system (ME 4, LCMA)

> Dad farmed traditionally…I *hated* ploughing, dust blowing…[I] asked myself, do I want to do this in ten years' time? The answer was already no…I was pretty *disillusioned* (ME 3, LCMA)

The influence of father's on the innovator's experience with land management also extends to the negative influence their past intensive practices had on the land. Interactions with the landscape in these cases triggered farmers to question certain agricultural practices.

Realising disconnections

"The people who neglect their land destroy themselves"
Ana Primavesi (in Lamarca, 1996:1)

'The storm had turned the land around into a desert… The land had been devastated in this way as far as you could see. As young as I was this made a deep impression on me. I am sure it was the start of what proved to be an intense lifelong interest in how the landscape functioned'
(Peter Andrews, 2006: 15)

This realisation of fragmenting farming systems was often felt acutely by innovators with visible recognition of ecological decline and degradation. Vanclay (2004) found that experiencing environmental deterioration motivated the adoption of conservation practices (Vanclay, 2004), and this motivation, to some extent, was evident in each of these journeys. This disconnection was not only witnessed materially in the landscape and in bank accounts, but was also felt as internal disconnection between perception and reality. Degrading the farm is at odds with the farming virtues associated with having a stewardship and conservation ethic (Lawrence et al., 2004). Therefore, these events often instigated a process of self-reflection, resulting in self-realisation that the primary victims of this degradation and discontent were also the primary perpetrators (Lawrence & Gray, 2000; Lockie, 1997; Rogan et al., 2005). The following

innovators described the struggle to internalise and accept responsibility for past mismanagement, which were perceived as 'wrong-doings';

> With change, [you're] doing something for 30 years…change that, [we've] just admitted to ourselves that what we've been doing for 30 years has been *wrong*! (ME 8, CWCMA)

> Telling me I've been doing it *wrong* all these years? *Hard* one for [us] to get over (ME 10, CWCMA)

The following innovator also explained the realisation of this disconnection as an emotional cleansing or cathartic experience, which opened the way for change;

> [It's] *hard to break* that paradigm of how you do it and how you've always done it…unless something **cathartic** happens to you which makes you say, hold on, this is *wrong*, this is not working, I either keep doing this and I'm not going to be able to live with myself or I say, well *I want to live within my own skin and be truthful to myself* then I've got to do something different (ME 3, LCMA)

Emotional cleansing, brought on by degradation, was also revealed by the following innovator who referred to an 'internal conflict' associated with traditional practices. He described the disconnect between his current lifestyle versus his desired lifestyle, an apparent gulf between his attitudes and behaviours. In this case, the economic and emotional extremes associated with high energy cropping and a guilty 'indulgence' of inputs led to realisations of this disconnection;

> If you're [practising high-input agriculture] there is a *conflict in your mind* that you don't even recognise, and I didn't until it was revealed…I thought cropping was best, it produces cash, but [you] balance out losses and costs over time, plus *a rollercoaster of emotion, absolute euphoria, absolute despair*…we had doubled our cropping area over 90s, rainfall was good, but out of 8 years, 5 years didn't deliver results because of dry years, wet harvest, frost... *didn't know then, only knew* fallowing and saving moisture for the crop next year, but really we were burning carbon out of the soil, running organic matter backwards…why did it take us 30years to figure out! Already practices we were *indulging* in that we were worried about, pesticides etcetera (ME 7, LCMA)

For some innovators, these memories of degradation were emotionally upheaving, leaving physical and emotional scars, which stimulated a conviction to change practices. There was also a palpable amount of personal guilt associated with these moments. The following innovator explains this sense of remorse, evoking 'sadness', 'negativity' and 'irresponsibility';

> Watching the soil blow away that year made me *cry*…[it] was a big *negative*, [it] made me feel *irresponsible*… [It's] very *depressing*, [that it] got like that through our decisions… and I decided I never wanted to see it like that again (ME 7, LCMA)

The following innovator similarly conveys the intense sadness of these moments, and explained the compassion this triggered;

> For me, regenerating landscape was really important…because we know it has been deteriorating, and that *hurts*…*hate* seeing it when it's blowing away or washing away (ME 3, LCMA)

The erosion of the landscape, both 'ugly' and 'horrendous', was the catalyst for the proceeding innovators' new approach;

> We had some *really ugly* erosion…so anything that could change that was a good thing as far as I was concerned (ME 5, MCMA)

> [I] read, 'Vanishing Lands' by Jacks [and Whyte] (1972)…it chronicled soil erosion all around the world, was *horrendous*, particularly in Australia and the US from best practice cultivation…that influenced my thinking (ME 7, LCMA)

The following innovator explained how his experience with ruination highlighted this disconnect, which incited his search for alternative practices;

> *'The returning images of dust storms, soil erosion, dying vegetation and trees invoked a personal sadness, the same as for a dying family member and this jolted us into a sudden realisation. The answer lay right in front of us, in the spirit of the country itself...We found ourselves looking for new directions and ideas'* (Strong, 2008: 77)

For some innovators, these on-farm experiences led to self-education on the wider disconnections between ecosystems and humanity on a global scale. The following innovators acknowledged the influence of 'ground-breaking', environmentally-related books on changing their thinking;

> Rachael Carson's Silent Spring (1962)… [I] read that in high school in about year 11 and it had a *profound effect* on me, I don't remember much of it but I learnt about *connectedness* (ME 3, LCMA)

> The Odum[71] brothers wrote a text book on ecology…statement really *resonated* with [me] as a farmer, 'for a complex community to maintain structure and diversity, it uses about 30% of its energy from the sun to pump out disorder in the community and allow it to be long term functioning, resilient, stable etcetera.' The *opposite happens in agriculture*…[I] realised people become responsible for all the complex things in a simplified community (ME 7, LCMA)

The latter innovator also explained the impact Aldo Leopold's (1949) work had on his early thinking;

> During my uni course, I kept coming across quotes from Aldo Leopold… In 'A Sand County Almanac'…the book is about the gradual awakening of his mind to nature, the way the world really worked, and then the upshot…I've got most of the books he wrote. Couldn't find one book, mentioned it to my wife's friend, an ecologist, she acted like I'd mentioned god! She said, that's my bible…she was very reluctant to lend it to me…then read it and bought 5 copies to lend to people…*It was all the stuff my mind had cottoned onto* while I was studying (ME 7, LCMA)

Discovering Masanobu Fukuoka's book (1978) on natural farming was the major influence for the next innovator's change in thinking;

> 'One Straw Revolution' is a great book…[A] Japanese farmer…[the book is] very much on the philosophical approach to farming, *very inspirational*…came to me through my involvement [with] permaculture (ME 4, LCMA)

These epiphanies were often catalytic in motivating the initial paradigm change, however, for others environmental degradation also led to income stress which became the 'turning point' (Rogan et al., 2005) in changing land management.

Crisis moments

The dawning of observable fractures in agro-ecological systems, for numerous innovators, meant that reaching an acute crisis point, or a 'bottleneck' to progress, forced practical change. Looking for alternatives became the only option for keeping the farm going. Perkins et al. (2003: 24) also found that experiencing hardship was a common theme amongst innovators and argued 'pain is an important part of the process of change for people and innovative farmers are no different'. These hardships not only relate

[71] Eugene and Howard T. Odum, (1953) *Fundamentals of Ecology*

to economic and financial stress, but also health crises which impacted upon management. Crisis moments, as 'catalysts for change' are noted by the next innovator;

> Where's this going? [That] was my *catalyst for change*…[I was] *forced to* find some other way of making money…what were we going to do? (ME 1, CWCMA)

Loss of financial stability due to a bush fire triggered a crisis moment/change realisation for the following innovator who explained his experience as 'unchosen' change;

> A major fire in 1979 really *forced me to change* anyway…I *didn't have any choice* because we were instantly broke here (ME 8, CWCMA)

In the case of the following innovator's journey, drought related economic stress combined with a personal health crisis demanded radical practice change;

> So 2001, we were highly productive, but we didn't make a profit from an accountancy point of view…1000 dollars an acre, cost 1087 dollars an acre to do…so what do we do…also, broke my back and had a heart attack…so then management *had to change*…thought long and hard while I was out [of action] (ME 2, CWCMA)

The impact of reaching breaking points both ecologically and financially has also been reported by Llewellyn (2007) who found that rising costs and droughts significantly influenced the up-take of no-till conservation practices in cropping systems. The stresses and pressures which trigger change towards alternative, biological management have also been recorded by ANU PhD candidate and innovative farmer Charles Massy, who found that approximately 60% of innovators across the bioregions of Australia had experienced a 'life shock which cracked open the mind' (Copland, 2012: 31). However, Massy also explained that approximately 35-40% of the innovators he interviewed had similar realisations, but were delayed in their responses, or rather took a less acute path towards practice change. Perkins et al. (2003) similarly claimed that while hardship provided a turning point for farmers, there were different types of hardship which varied in impact and severity on the journey.

Evolutionary change

Similar to Massy's study (see Copland, 2012), not all innovators involved in this research experienced the same crisis-forcing-change journey, but rather described it as evolutionary change. The following

innovators identified with a continuous practice of alternative, biological farming principles coupled with a sense of 'restlessness' and the need for discovering new challenges in farming;

> [We] have never really been traditional…have always had organic, alternative ideas…[the] enterprises we had at Wombat, [we] *changed them often*, all rather mundane, but getting them there, the process was interesting…once they were successful I found myself losing interest…it becomes a *routine*, [I] needed another challenge…I like being *restless* (ME 4, LCMA)

For other innovators, this was explained as an evolution of change through exposure to fresh ideas and information. As new training programs were offered to rural communities, which publicised alternative practices, private investigations were also made by innovators seeking change. The following innovator explained how he chose to evolve his managerial practices via the opportunity to be involved in the Grazing for Profit (GFP) program;

> A lot of people say necessity is the instigator of change…but there *wasn't really a necessity* to change this business at the time, it was really healthy, [GFP] was more like *an opportunity* to improve the ecology, and I thought we could make more money from that (ME 10, CWCMA)

Interestingly, the following innovator's lack of a farming background, allowed him to farm unshackled;

> I grew up in the city, [then] I worked on a farm in Narrabri…[I] was always interested in organic farming, [so] I knew I wanted to farm that way …I didn't have a background in traditional agriculture…no parents telling me what to do [so I] had *no pre-conceived ideas* about what I should or shouldn't be do (ME 6, CWCMA)

These founding influences on change, whether acute or evolved, are based on letting go of the traditional or conventional paradigm and associated farming practices through realisation of farming instability and an awakening to alternative modes of production.

5.2.2 Pathways to Change

Building on personal foundations, all innovators explained that a myriad of experiences influenced the direction and nature of farming practice and thought change. The path to finding alternatives for each innovator was described as one of chance meetings and interactions paired with actively seeking and finding the required information on land management. The influence of certain people, groups and bodies who acted as conduits for innovators in seeking and unearthing alternative pathways was an essential elements

in their journeys, and reinforces the fact that farming change is somewhat directly shaped by the socio-cultural and geographic context.

Fostering conservation knowledge

In a few cases, involvement in certain local/regional/state government programs of conservation and ecology led some innovators to discover and begin fostering their own environmental knowledge. The following innovator explained his involvement in various groups and the evolution these had on developing his conservation knowledge;

> Landcare was going towards biodiversity, moving away from linear plantations and direct seeding of trees in early 90s. Since 1992 we've stopped planting plants. Planted scattered plant trees [and] did counts to see death, decline over time. [I] left Landcare and got involved with other things, member of NSW Native Vegetation Advisory Council[72] (NVAC), also [part of the] Sustainable Grazing of Saline Lands (SGSL) committee[73]…then I started thinking more about biodiversity (ME 7, LCMA)

This innovator credited his involvement in a CMA program as a key conduit for discovering alternative information on conservation;

> The CWCMA took 10 businesses out of the catchment and put them through training on everything over 12 months, part of the Farming Systems program…learnt about aboriginal culture, aboriginal management systems, cropping systems, grazing systems, ecology, hydrology, salt, Bruce Maynard did a low-stress stock handling day, Peter Ampt and David Tongway did a Landscape Function Analysis day, etcetera (ME 2, CWCMA)

While the CMA stewardship scheme accelerated the next innovator's interest in biodiversity;

> I'm much more interested in birds now…through the government stewardship scheme…1100ha out of 1300ha in the scheme, [we're] looking at reptiles, birds and little mammals [now with] Australian National University [researchers] (ME 3, CWCMA)

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[72] The Native Vegetation Advisory Council (NVAC) was established by the Native Vegetation Conservation Act. For more on the NVAC and their role, visit: https://www.rbgsyd.nsw.gov.au/__data/assets/pdf_file/0018/51480/settingthescene.pdf

[73] SGSL was a sub-program of Land and Water Australia's Land, Water and Wool module. For more on SGSL, visit: http://lwa.gov.au/taxonomy/term/6?page=4

While the following innovator explained how his involvement in plant ID for the local council sparked an interest in ecology and biodiversity;

> [I was] employed by the council to do plant ID around the borders of my property…[I started] wondering why certain plants lived with other plants and what their relationships were…[this] led to a great interest in the ecology side of things (PRA 8, MCMA)

Information available on local conservation and biodiversity was influential to this innovator's journey towards adopting native grasses for production;

> 'A Million Wild Acres' by Eric Rolls (2011) about the Pilliga scrub, saying there was only a tree per acre, now thick scrub…speaking about perennials…that book had an influence on me, because it made me look at tree density and brought in the native grassland idea (ME 8, CWCMA)

In other cases, innovators explained how their involvement in grassroots' groups helped develop their understanding of ecology and conservation. In particular, the Central West group of innovative farmers (as mentioned in Chapter 4, Section 4.4.3) was instrumental in feeding each other information on both conservation and alternative practices. The development of a local 'microscope group' played a key role the understanding of soil ecology for the next innovators;

> Microscope group – [we] went to a lady in Mudgee, got interested in that, wanted to learn more…got someone down to speak to our group, went from there, evolved into general land management…20 or 30 in the group, meet once a month, very social, often go to a vineyard or a pub, very diverse, high-input, biodynamic, organic, vineyards, sheep etc…but the good thing is they are all very open-minded…person in group each time talks about what they do…formed through common interest…Landcare coordinator – very into microbiology, knew her from the initial day – she organised it and still does and it went from there….from this little model, microscope groups starting up all over Australia, there's one in Tassie! (ME 8, CWCMA)

> [The] microscope group has been fantastic, the things that go on under the ground are *mind-blowing,* and that's the stuff you need to know…we are always finding new bugs we haven't seen before (ME 6, CWCMA)

Looking for practice alternatives

'I was starting then from a position of ignorance: I barely knew the basics. On the other hand, I was pretty sure there were fundamental laws determining how the landscape functioned, which until now nobody had identified, much less understood. In short, I was venturing into unknown territory'

Peter Andrews (2006:36)

Actively seeking practical/progressive alternatives was a common thread within the change journeys. However for some of these earlier innovators, as Peter Andrews described above, finding there was a lack of information available meant also identifying huge gaps in existing knowledge. For some innovators, they began this journey by seeking Indigenous knowledge of local land management. The following innovator explained his quest for this knowledge and the unexpected wisdom he received;

> [There was a] lack of what I could access because it (Indigenous knowledge) is a living, experiential thing…I thought, well we need to go back to [that] thinking, that plus 40,000 years of knowledge – [they] had to have learnt something over this time! So I went up all these cold trails, then I rang an elder from Naranderra, told him what I wanted…, he said, '*just listen to your god…young fella, sounds like you're pretty attached to your land and maybe that's where your god can talk to you…but above all, you need to find a place where it's quiet, where you can hear what you need to hear, and when you hear it, you'll know'.* I came away from that conversation quite disappointed, I was expecting a prescription. The longer I thought about it, I realised how *profound* it was…it has proven in time [to be] *gold* (ME 12, MCMA)

The following innovator also explained his search for this history and his connections to aboriginal land management;

> [It was] very hard to get info, but I know how the land was managed, and before that by squatters, and aboriginals, and that did influence me…I became interested in aboriginal management…I've leased a farm from them the last 15 years, since then have gotten to know the elders …they have *so much to teach us* (ME 8, CWCMA)

An initial lack of information in traditional science on ways to manage the native landscape was also expressed by innovators. The following two innovators described the lack of information regarding the potential value and benefit of native grasses to agriculture;

> [A local neighbour and I] were getting interested in native grasses, so we thought well, we'll find out some more about these native grasses, we'll ring someone up…[there was] no-one, kept running into *brick walls*

> *everywhere* in finding out about native grasses…[the] only person we did find was Wal Whalley at Armidale uni (UNE)…he was the only one we could find in Australia that knew about native grasses, realised there was *a big need* here (ME 8, CWCMA)

> In 1980s, asked an agronomist about Microlaena, I asked him 'what's that grass' he said, 'I don't know, I'll have to look it up'…he said, 'it's Weeping Rye grass, grows amongst rocks and trees, won't get much out of those grasses'…that's how much *things have changed* (ME 10, CWCMA)

Instigating this change on the local environment was the only option towards *developing* land management information /knowledge for some innovators. In one case, seeking this knowledge advanced into a co-ordinated effort to actually develop the required knowledge and information. The following innovator reflected on the grass-roots initiation of the Stipa Native Grasses Association[74];

> Stipa, seemed like a good idea at the time, contacted Wal Whalley[75], he drove it for a bit, contacted the CMA…not the CMA then, [they were a] soil conservation group.. and contacted Nicko (Dr Allan Nicholson)…[I] was starting to be a bit involved in things…then [we] organised a meeting over at Wellington, Wal gave a talk on native grasses…and then we started Stipa that day…20-30 people in a church hall in Wellington, might have been 1995 (ME 8, CWCMA)

The following innovator recalled his quest for information which led him to discover other modes of alternative farming. Keyline Farming fit with his ideology, but not his practice beliefs, whilst the Potter Farmland Plan opened up new concepts of integration;

> [I] read 'Water for Every Farm: Yeoman's Keyline Plan', by Yeomans (1993), all about contours, chisel ploughing, roots, organics etc …Idea sort of matched up with my idea of loosening things up and letting roots down……Was about less disturbance, but needed heavy earth moving gear…Father knew guy in Vic, Bill Middleton created Potter-farmland plan, fore-runner to whole farm planning…Got a look at this and it *made a lot of sense* to me (ME 7, LCMA)

Finding practice alternatives

The connection between the grazing programs Holistic Resource Management (HRM) and Grazing for Profit (GFP) in particular to innovators and alternative land management has been discussed in Chapter 4 (Section 4.3.4), and is re-emphasised here with most innovators being involved in one or both of these

[74] For more on this organisation visit http://www.stipa.com.au/
[75] For more on Professor Whalley from UNE, visit http://www.une.edu.au/staff/rwhalley.php

programs. In some cases, these innovators were amongst the first farmers to partake in these courses. The following innovator explains that Grazing for Profit was the only alternative information available to him;

> [I] did the Grazing For Profit course in 1992..I'd read about the idea, I read Allan Savory's book, but I couldn't get further info, [the] only way was to do the course (ME 1, CWCMA)

With farmer-to-farmer sharing of information being a crucial main source of farmer knowledge (McKenzie, 2013), local connections were integral to the discovery of these alternatives, and this type of information transfer was a common denominator in each of these innovator's journeys. After meeting with a fellow innovator who was introducing ideas of pest/weed management using Savory's Holistic Resource Management (Savory & Butterfield, 1998) principles, Strong (2008: 80) explained the impact this had on his own conviction and self-confidence with changing practices;

> *'These lessons of observation, unexpected opportunities, creative thinking, respecting natural processes and keeping things as simple and low-cost as possible were an inspiration which gave me confidence in my own creativity and intuition'* (Strong, 2008: 80)

As discussed, the Central West group of innovators provided a network of information sharing and played a large role in influencing change across the landscape. The following two innovators are referring to the influence of a member from this group on their discovery of alternative pathways. This innovator described how this farmer-to-farmer interaction led him to explore Holistic Management;

> Blessed in having worked for [our neighbours], [he] contracted me…they'd been through Holistic Management and had total focus on soil health for 20 odd years…[I] saw him putting his shovel in so deep on top of the hills…and I thought, how'd he get that? It was a bit wet with no rain! I said *'I need to talk to you, that's what we want'*…I asked him 'what do we do'…he said start with Holistic Management, it's up to you, the journey's yours (ME 2, CWCMA)

While this innovator links the interaction to both exploration of Stipa and Grazing for Profit, and a defined 'turning point' in management;

> Our next door neighbour influenced us a fair bit, he got us into Stipa Native Grasses (Association), and then [our son] did Resource Consulting Services (RCS) (Grazing For Profit) training and that's been the *turning point*, the combination of Stipa and RCS (GFP) (ME 10, CWCMA)

The influence of farmers' partners[76] on driving change on the farm by encouraging attendance at courses and co-participating in these programs was also mentioned by most innovators;

> A major driver was my wife, *we re-evaluated* what we were doing together…we did heaps of courses together (ME 1, CWCMA)

> My wife *encouraged* me to get into these sorts of things…we went to Holistic Management *together* in 1998 (ME 9, CWCMA)

The added value of having a partner present during these courses was mentioned by this innovator;

> Holistic Management was the way [my wife and I] both wanted to go, but we needed to do it *together*, two people hearing one person talk can hear it very differently (ME 5, MCMA)

While interestingly, co-involvement for this innovator's wife instigated a profound moment of understanding of her husband's relationship to farming;

> After doing that course, (HRM), *it dawned on me, like a light bulb*…that this is his love, and I love him, this is his *passion*…and it's sort of grown from there (ME 9, CWCMA)

What these courses initially offered to these innovators was a different way of thinking about agriculture rather than being solely orientated towards practice change. This innovator attributed HRM with allowing him to continue farming by offering an alternative paradigm;

> I was going to give up on farming, then I did Holistic Management with my wife in 1998…I found that there was another way, a way to *make decisions from a different framework* basically…. (ME 3, LCMA)

While these innovators detailed their experiences with both programs and their paradigms;

> *My movement* into ecological management…it was what we wanted…jumped right in and did a Grazing For Profit course, was good to a certain extent…left Grazing For Profit and went down the HRM side of things, into soil health…Grazing For Profit about finance, not people or ecology, [we] needed the other 2 rungs so went to Holistic Management to balance this out (ME 2, CWCMA)

[76] All 13 innovators were married and discussed their partner's involvement in the transition.

> Got involved in HRM during 2000s…[I'd] heard about [Savory] in 1989 from a friend of mine…he went to America, stumbled across the book and gave it to me… [at the] same time, GFP…used to be with HM, but some sort of falling out…started running courses on their model of HM, so went to an introduction to grazing day (ME 7, LCMA)

These innovators explained how they related to the theory behind the Holistic Management and Grazing For Profit programs. They described these paradigms as logical, that they 'made sense' and fit their personal mental frameworks;

> *Made enough sense* to Dad at an introduction talk that we went along and did the course in 1993, Grazing for Profit …[then] I went and did a Holistic Management course in 1996, as a point of difference…the theory behind Grazing For Profit and Holistic Management was the same…so again, [like Grazing For Profit] *it just made sense*, I could see how I wanted the land in *my head* (ME 5, MCMA)

> Knew people who had done Holistic Management and had read a bit about Savory, read his first book before I did the course…. *my mind* was ready for the environmental side, *made a lot of sense to me* (ME 7, LCMA)

The focus towards working with nature, as an alternative to traditional farming, was the main attraction of these programs, the 'making sense' factor for these innovators;

> What GFP gave me was a way to be working *with nature* and not against it…rather than as a farmer, [who] sprays and ploughs etcetera (ME 1, CWCMA)

> [The] natural tendency of life is to proliferate and diversify, so Holistic Management is about just letting it do that (ME 7, LCMA)

> Logic plays a pretty big part, I was pretty close-minded about cell-grazing…but seemed logical to me that it was the best way (ME 11, CWCMA)

The focus towards working with nature, as an alternative to traditional farming, was the main attraction of these programs, the 'making sense' factor was vital for these innovators;

> What GFP gave me was a way to be working *with nature* and not against it…rather than as a farmer, [who] sprays and ploughs etcetera (ME 1, CWCMA)

> [The] natural tendency of life is to proliferate and diversify, so Holistic Management is about just letting it do that (ME 7, LCMA)

Eureka Moments

A revelation in some of these personal stories was a distinct 'eureka' or 'light bulb' moment; the discovery of 'answers' (van der Veen, 2010). This was described as an immediate moment when all the information 'clicked', all the dots connected, or suddenly observations or 'things' fell into place, or as previously mentioned, 'made sense'. The organic Japanese farmer Masanobu Fukuoka reflected on this moment in his experience with practice change;

> *'Recently people have been asking me why I started farming this way…you could say there was no way to talk about it. It was simply – how would you say it – a shock, a flash, one small experience that was the starting point'* (Fukuoka, 1978: 4)

The early influence of Allan Savory's book 'Holistic Resource Management' (1988), as mentioned, played a key role as a catalyst for change, with most innovators describing this as a starting point[77] for alternative pathways. Below, is how the next innovator's involvement in the Biodynamic farming movement led to unearthing Holistic Resource Management and the consequent eureka moments;

> We were certified with the biodynamic people at that stage, and someone had read Savory's book, Holistic Management was just getting around then, the early nineties, he said you want to read this book, I gave it to [my wife] I said you've got to read this…*here was an answer*…all these other *things fell into place* as I read the book, it was like *all these little lights went on*…so that's one of those moments…also a lot of things we had observed about running livestock and he explained it in a different way *it was like ah*, there's something to this (ME 4, LCMA)

Studying this book was also described as an 'answer' to the question of 'how to change' by the following innovator;

[77] See Section 5.3 – Changing management paradigms explains which principles of Savory's were 'adopted' by innovators

> Read Holistic Resource Management, and just thought…You know how some things you *intuitively know are going to provide an answer*…[HM educator] Mark Gardener[78], said the first time he read Allan Savory's book he didn't understand it but knew there was something there…sort of the same for me (ME 3, LCMA)

The proceeding innovator also relayed a 'eureka moment' with involvement in Grazing For Profit;

> [I had a] *light bulb moment* with Grazing For Profit…[they] offered *simple answers* (PRA 16, CWCMA)

While for the following innovator, it was Eileen Ingham's (2004) connectivity work which instigated this moment and connected the dots in farming;

> Elaine Ingham[79], her soil food web is what *clicked* it for me…[she's] being doing it since 1981 (ME 2, CWCMA)

Not all change journeys were punctuated by a clear initial 'eureka' moment, just as all innovators did not experience an acute 'crisis moment'. In some cases persistence with practices led to this development[80], while in other cases the concept of 'evolving change' was once again reiterated;

> No real eureka moment, that just kept evolving…[I had] many eureka moments… [I] just kept learning so much (ME 8, CWCMA)

With all innovators experiencing some degree of 'evolving change', 'eureka' moments were also expressed at many other intersections along the change journey, with new and profound connections and realisations being a common and constant feature of the change journey.

5.2.3 Breaking with tradition

'Life is rarely easy on any new frontier' (Ikerd, 2002: 1)

The socio-cultural sub-cultural ramifications of breaking with traditional practices and processes also shaped the journey of these innovators. Breaking with the traditional, localised farming practice and moving away from the social norms was reflected in the landscape with socio-cultural perceptions relating

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[78] [78] For more on Mark Gardener, director of Vanguard Business Services visit http://www.vbs.net.au/aboutus.html
[79] For more on Elaine Ingham and the soil food web visit: http://www.soilfoodweb.com/ redirected to http://rodaleinstitute.org
[80] See Section 5.3.2 – the role of persistence with practices

innovators to, for example, 'greenies', 'lunatics' and 'cult-members' (see Chapter 4, Section 4.4.2.1). Being socially isolated or ostracised due to change was an expected occurrence for some innovators who witnessed their father's experience with alternative experimentation, as described in Section 5.2.1. Being on this new frontier in agri-culture was described as being 'out on a limb', and in many cases a 'struggle'. The following innovator explained the struggle of going against the 'experts';

> Hardest part is to *go against the norm* and to *go against the advice* all the 'experts' have given us…surely they must know, and you would think so (ME 2, CWCMA)

Breaking with the traditional norms of agricultural science and having experience illegitimated by 'experts' is further discussed in Chapter 6, Section 6.6.2, while the following sections detail innovator's personal experiences with this reality of change.

Taking the Social Leap

'Industrial foodists believe farmers like me are barbarians and Luddites…What I consider liberating, they see as abusive. Indeed, to them, I'm a lunatic' Joel Salatin (2010: xv)

Initially breaking away from traditional practices and the norms of the farming sub-culture is a process which produces a double-edged sword of risk; a reliance on a certain amount of personal conviction or 'faith' in alternative practices, and the potential for social isolation or diminished community respect/influence (Guerin & Guerin, 1994; Stanley et al., 2005; Richards et al., 2005; Richards & Lawrence, 2009). Many prominent farming innovators who have published their stories have also described the experience of being socially identified as 'strange', 'different' or 'loony' (Andrews, 2005; Fukuoka, 2978; Salatin, 2010). The following innovator described the implications of being an 'early adopter' of Holistic Management;

> [It's] *frightening, quite risky changing*…Have to say it is quite a *leap of faith* to do something like this, you don't know whether…well you think, 'this sounds right'…and there is no one out there, [there] are now, but when we first started practising Holistic Management in 1999, those who were also doing Holistic Management had only just started…I find it hard because I *don't connect* with a lot of other farmers, because I'm doing something *so different*, so I tend to not talk about it, unless they ask…*I'm climbing to the top of the building, I'm on one and they are trying to climb to the top of another* (ME 3, LCMA)

Having 'no-one else out there' meant that some innovators experienced isolation due to non-conformance with the dominant traditional farming paradigm, a founding part of the farming sub-culture[81]. In QLD, Richards and Lawrence (2009: 637) found that cell-graziers experienced degrees of social exclusion and received 'flak from neighbours', while Perkins et al. (2003) found that innovators often believed that neighbours viewed them as 'mad', which were also common perceptions amongst these innovators. Having a property 'right on the road' and the social consequences of publicly airing changes in paddocks was also mentioned by the following innovators in relation to a local neighbour's experience. In contrast, they described the benefits of changing practices whilst being less visible and off the main road;

> I think the social pressure is a really big factor in it, and often ignored, but always a problem [neighbour's] big problem is people looking in on the farm, luckily for us we're down here (end of the road) unlike [our neighbour]…he is a spokesperson, people are looking to him and they will see what they want…dangerous place out there on the front, *could get your head chopped off* (ME 4, LCMA)

While another innovator explained his aim to keep a low profile;

> What I did here locally, and still do locally, is I keep a low profile…not many people realise, I get people from all over the world here, travelling to this place, and I go all over the world… …no-one knows that here and I intentionally keep it that way…it's easier…a lot easier to live in a small country town …I know some people that have diff personalities to me, and because they don't keep a low profile, they promote themselves locally [and] they end up copping a hell of a lot of flack…[I was] aware of that and wasn't going to go down that path (ME 8, CWCMA)

This innovator recalled eliciting his neighbour's criticism for leaving paddocks to rest rather than grazing them;

> Sometimes people *criticise me*, [they say] 'you can't lock it up, that's unproductive, you've got to do something with it, you're creating a huge biohazard'. Neighbour has a firebreak along the fence-line…[he's] never done that before, probably freaking out …croppers making more flammable biomass than I ever would…people can't see the connections (ME 12, MCMA)

While these innovators described the social reaction to their early involvement with the Grazing For Profit program. The socio-cultural identity of the innovator (as discussed in Chapter 4, Section 4.2.2) as an 'idiot' or 'cult member' is evident;

[81] See Chapter 4, Section 4.4.3

> [I was the] first one in area to do the course (Grazing For Profit)…[I] came back and *they all thought I was an idiot* (ME 1, CWCMA)

> Dad [came back from Grazing For Profit] and set up a trial cell…he said people stopped talking to him basically, to a degree, they *thought he was weird*…because it was right on the road…if he tried to talk about it they just *thought he was in a cult* or something…this was really early on, [it was] too different (ME 5, MCMA)

> Both the things we've done have been seen as trends...[people] say '*it's a cult'*…'oh, you do that grazing for profit'…'that didn't work back in the 40s' (ME 9, CWCMA)

Conversely the following innovator explained that he and his family did not feel like they were openly criticised, but rather, were viewed as being different;

> Some people used to think I was *a bit different*, not bad criticism, and even up to fairly recently, [they] think our family *do funny things* (ME 11, CWCMA)

While this innovator summarised his experience of always being 'a bit different' and having resilience to the socio-cultural reactions to change;

> We've always been ok with doing other things, and not being too concerned with other's responses, otherwise we wouldn't have done half the stuff we've done…*a bit out of the box, a bit different*…people will find fault in anything if they want to (ME 4, LCMA)

In a contrasting case, ME 6 (CWCMA) explained that his urban background and therefore 'outsider status' (Richards & Lawrence, 2009) meant that he was never known as a farmer, and therefore never experienced social condemnation for his farming methods.

Having support from other 'leapers'

Other than family, the social networks between innovators and with change agents across these landscapes were in all cases expressed as providing vital management support during the break away from traditional

paradigms. For this innovative 'pioneer[82]', having a 'partner in crime' in the early days provided support whilst 'taking the leap';

> [It was] *fortunate* we were working together…most people that have ideas as way out as that one, don't have the confidence to continue with them because everyone says you are a *lunatic*, well they [called us that] anyway…but we *had each other to support each other*, especially during those early days, the developmental days of it…very difficult to do it on your own (ME 8, CWCMA)

While these innovators explained the benefit of having a fellow Grazing For Profit comrade for support and advice;

> There was another guy who did the course at a similar time, lived nearby, [he was] in a similar situation …every time I was stuck a bit, I'd talk to him (ME 1, CWCMA)

> [I] went to a field day at Mick Wetmores, and Anne Williams…non-stop lecturing [on] soil chem, soil biology and microscope courses…Mick and I did GFP together few years before… [we] went and did compost tea and brewing extraction and all that sort of stuff together (ME 2, CWCMA)

Once again, the influence of the Central West innovator group was a key support mechanism for change for many innovators in this particular landscape. A farm visit from one of these group members, an innovator, influenced this innovator;

> He came and spent a day [on my farm] and he got excited about things he was seeing here…Warrego grass, Dung beetles…got me excited (ME 2, CWCMA)

While these innovators described the social resilience to criticism gained by being amongst a community of innovators;

> In this district, many people doing it, so just seen as *different levels of craziness*…someone might be a bit crazier up the road so you're part sane (ME 1, CWCMA)

> The group does *support and help keep us grounded*…When we first did Holistic Management it was right out there, [but] now it is becoming more mainstream (ME 9, CWCMA)

[82] Socio-cultural definition explained in Chapter 4, Section 4.4.2.2

In separate localities, others expressed this sentiment and explained that this alternative way of farming was becoming more established across the landscape;

> Here we are *not as different*, [there are] other people doing similar stuff (ME 4, LCMA)

Key 'agents of change' also played a vital supporting role in many innovators' journeys. In particular scientists Christine Jones[83], HRM educator Mark Gardener[84], and innovator/consultant Bruce Maynard[85] had worked closely with innovators across this landscape. In the case of this innovator, scientist Christine Jones was a major support especially during the early days of change;

> Primarily Christine Jones was the main person that influenced me, she was the only scientist who *understood what I was trying to do…very supportive* of what I was doing…surprising, we had the basic idea and it worked straight away, the concept of it…so we didn't actually run into many real problems…one of the things we ran into problems with, [we were] so into grasses, but many [were] dormant…Christine, you could ring [her] up and *she'd see things from the plants point of view*, how the plant was functioning and what we were doing to it with the soil…and then I knew we had to graze the grasses a lot shorter (ME 8, CWCMA)

While the following innovator explained the support proffered by Mark Gardener;

> Mark Gardener became a friend, a mentor, [he gave us] a lot of personal advice, [we] still meet up with him (ME 9, CWCMA)

Similarly the following innovator indicated network of influences and supporters ranging from other innovators to change agents to associations that supported practice change;

> [At the] same time, [I did a] low-stress stock management course with Bruce Maynard, running a farming systems program…also a part of the Conservation Agriculture and No-Till Farming Association[86] (CANFA), seminars associated with that…and Stipa – [my] influences…one was (ME 7, LCMA), saw him at a CANFA conference…and (ME 8, CWCMA)...the central west is a real hub for innovation, crazy things happening…Mark Gardener is a tremendous influence (ME 2, CWCMA)

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[83] For more on Dr Christine Jones, soil scientist visit http://www.amazingcarbon.com/

[85] For more on innovative farmer Bruce Maynard (who pioneered no-kill cropping) visit http://www.pasturecropping.com

[86] For more on this association visit http://www.confarming.org.au/

As the above quote implies, it was found that within this geographic region the network of innovators had been fashioned into an innovator sub-culture, with most ME participants being in contact with or aware of the other participants in this study[87]. Perkins et al. (2003) termed this networking 'horizontal integration' or 'horizontal linkages', and similarly found that most innovators they interviewed were aware of each other. The interactions across the network in this landscape were cultivated and formalised through HRM and GFP, as well as grass-roots groups such as CANFA and Stipa.

5.2.4 Summary: influences, motivations and attitudes

This section aimed to detail innovators' initial experiences with change; the influences which both motivated change and shaped attitudes towards change. The founding influences which fostered an understanding of conservation and production are critical to understanding how innovators' mental and emotional models are both established and embedded through the farming sub-culture. Realising disconnections and having crisis moments were common threads among these, which opened unexpected doors for change. Beyond these doors, the individual pathways to change were just as diverse, with acute and obtuse eureka moments clearly demarcating stepping stones of clarity and confidence with moving forward. The reality of breaking away from traditions of farming hegemony impacted, to varying degrees, on these journeys, and exemplifies the status of the innovator as both the non-conformer and the transformer.

5.3 Management behaviours and practices

This section provides an exploratory assessment of the practical aspects of altering farming management/styles/practices/technologies. This relates to the nuts and bolts of practice change; the actions and behaviours that led to successfully implementing, creating, adapting and innovating novo forms of agriculture. Also documented here are the economic and well-being practices that innovators undertook with the aim of holistically representing the change process.

5.3.1 Changing management

As discussed in Section 5.2.3, changing management was described as a 'leap of faith' for many innovators, however it is also a very personal risk which involves a certain amount of conviction in being able to translate and adapt theory into specific and individually tailored action across a farm. The three common

[87] See Chapter 3, Figure 3.6 for the innovator network

practices, albeit with variation, which innovators were implementing include forms of rotational grazing, regeneration of native perennial grasslands and forms of pasture cropping (see Chapter 4, Section 4.4.3).

Changing farming paradigms

While transitioning over to new forms of farm management, innovators described having to first realise the difference between the old and new paradigms. For this innovator, continuing a traditional cropping regime was at odds with plans to realise a new agricultural paradigm;

> [Our] cropping program, couldn't deliver what we wanted in landscape… [we wanted] full cover, diversity, and basically a self-sustaining [system] (ME 7, LCMA)

> Great to be able to look at yourself and *break those paradigms* which are there all the time, especially in farming, with the way we've done things, paradigms like 'spray the burrs, or they'll take over', always got to question that and I think that's something you learn from Holistic Management (ME 9, CWCMA)

This innovator explained how he and his father had their farming paradigms challenged by Grazing For Profit;

> People on it (cell-grazing) for 6 years before we went and I thought it was *ridiculous* when they were talking about 1000 sheep in one mob…and they (Grazing For Profit) use the acronym DEAD – *deny, explore, accept, then deny* – and I've definitely gone through that process and so has dad (ME 10, CWCMA)

This change in focussing management towards 'sustainability' was also explained by the following innovator who described a shift in thinking. She explained that the primary focus in the past had always focused on the product and solving issues associated with the product, rather than recognising the problem was people and their management;

> It was Savory (1988) who first put us onto the idea of the problem is not the animals; the problem is the management (ME 4, LCMA)

While similarly, this innovator explained how his focus moved from managing his animals to managing his land instead;

> That *paradigm chip* for me was…[we] always used to focus on the livestock, always said the land was important to us, but when the crunch came, in a drought or a dry autumn, we focussed on the livestock and

> the land took second place…only when I recognised that the land was the only thing that supported us, truly supported us, [I realised] the livestock were only a tool to make a healthier landscape…. [the] framework in the past told us livestock were most important things (ME 3, LCMA)

QLD cell-grazier Joyce (2000: 229) also comments on this shift in his thinking, and argued that realising livestock health was only a result of soil health was a fundamental epoch in his 'change for the better'. Another 'symptom' of soil health focussed on in the traditional farming paradigm is the concept of weeds and weed management. All innovators related their changed understandings of the interconnected relationship between bare ground, 'weeds' and management paradigms;

> Weeds [are a] result of lack of diversity and bare soil, so we try to get ground cover to out-compete it…*weeds are indicators* of bare soil, indicates I need to do something about it (ME 3, LCMA)

> People would say, 'look at [your] thistles', we would say, '[it's a] work in progress' (ME 7, LCMA)

Joyce (2000) also refers to weeds as indicators and even allies, rather than pests and argued that this represents a major attitudinal change in understandings of biodiversity. One innovator (ME 3, LCMA) described Patterson's Curse as being a litmus test across the landscape which indicated the presence of excessive of nutrients. This aspect of paradigm change was also explained by the following innovator;

> There is a little book in praise of weeds, (Cocannouer, 1950) it's a great book, you should go and pick it up…[it] shows *everything has a purpose*…my definition of a weed now is a plant that's totally adapted to the environment *you've created* for it (ME 2, CWCMA)

Holistic farmer, Marsh (2007: 156) summarises this change on a philosophical level and quoted Aldo Leopold's sentiments from 1943 (Flader & Caldicott, 1991) by arguing that, 'it is a human concept to classify plants as useful or weedy; nature makes no such judgement'. Michael Pollan (1991: 105) composed a similar argument when he stated; 'the metaphysical problem with weeds is not unlike the metaphysical problem of evil: Is it an abiding property of the universe, or an invention of humanity?' This indicates that these paradigm shifts in thinking are occurring as farmers break away from an egocentric or anthropocentric founded world-view. These insights are critical in illuminating the moments along their journeys, where innovators began to shift their thinking and refocus their management, by integrating a better understanding of human/environment relationships into their paradigms.

Rethinking and setting goals

In tandem with a paradigm-shift, innovators began rethinking and redesigning their goals for themselves and for the farm. Planning new horizons is an integral part of the Holistic Management and Grazing For Profit programs, which aims to get farmers to reflect on what they want out of life first, and second, how that can manifest in their relationship with farming (Savory, 1983; Armijo, 1982; Nicholson et al., 2003). The following quotes illustrate some of these innovators' Holistic Management goals;

> *We started by asking ourselves how we want to live, based on our values. What are the things that we need to produce to allow us to live like that and what landscape will support those activities into the future…we describe how the landscape must look in the distant future* (Marsh, 2008: 57)

> [In] Holistic Management you have to write down holistic goals, [that is the] first step…what are the important things in your life, who are the people that are important to you, and what are you trying to achieve and how are you going to go about achieving it…our first holistic goal, when we had three kids, we foolishly put down have another child…and that goal was gone the following year, goal achieved! (ME 3, LCMA)

> Our holistic goal is to be the benchmark for healthy food production… [to] build resilience into each aspect of the business (ME 2, CWCMA)

These goals are holistic in that they encompass the human nature relationship, as well as the conscious sub-conscious relationship. All innovators had both short and long term goals relating to sustainability (i.e. not all followed this process through Holistic Management). It was reported by innovators that these goals were often tiered and were revisited often and adapted to new situations.

Starting out: simplification

In order to propel towards changing practices on the farm, some innovators described how they had to initially begin by deconstructing the farm environment and the infrastructure set up for traditional farming methods. The complexity associated with high-inputs in traditional farming (see Chapter 4, Section 4.3.3) is untangled on farm and a simplification process transitions the farm towards low-input strategies. This often resulted in 'selling off' equipment such as tractors, harvesters and other machinery as well as pesticides, fertilisers, and in some cases, water licenses. Mckenzie (2013) found that property redesign, or altering the farm landscape was a process, which 10 of the 22 innovators she researched, had undertaken in

order to convert to sustainable agriculture. The following innovator explained his transition from a cropping regime;

> [We] phased out cropping over 3 years, went through our rotations…sold all our gear…the money [we used] for pesticides and fertilisers went towards water and fencing (ME 7, LCMA)

While this innovator kept his machinery, its purpose on the farm had metamorphosed and its use situational;

> The *revolution*…[we had] just bought all this machinery for precision agriculture, seeder's that use lasers and GPS to control crop rows…changed over completely, [and] developed [an enterprise based on] saltbush fed lamb…[we] kept the equipment but use it for different purposes now (PRA 8, MCMA)

While these innovators also restructured their farm layout as an initial step to change;

> [We] have changed the entire enterprise in 8 years…changed fencing layout, comprehensive water system…[we] put in long-term infrastructure (ME 4, LCMA)

Most innovators (in both the PRA and ME studies), explained this in terms of changing to 'controlling only what you are able to control', a key starting point in the Holistic Management and Grazing For Profit movements. For example, this innovator described using native grasses as a way to regain a sense of control and reduce the impact of unpredictable rain on production;

> [You] can only really control the farm level inputs…that was my plan, *not to control what I couldn't*, weather, markets etcetera…you have to go back to natives and cop the lower production and find the trade-off later (ME 12, MCMA)

This action plan to 'control the controllable' was a common feature of innovators in this landscape, and in a sense was the beginning for many in rediscovering and renewing the independent farming locus of control. Simplifying the farm and business in this way also produced well-being benefits associated with less risk and more time for managers as discussed further in Section 5.3.4.

Experimenting with change

Experimenting with new farming ideas on the farm was a mandatory experience for all innovators, with trial and error of different ideas and styles being integrated into the existing farm composition. Experimentation and trialling of new practices has long been a focus of practice change studies, as these

behaviours provide opportunities for farmers to solve farm-specific problems (Padel, 2001; Reij & Waters-Bayer, 2001; Pannell, 2006; Sturdy, et al. 2008; Milestad et al., 2010; Leitgeb et al., 2011; McKenzie, 2013). Indeed, Reij and Waters-Bayer (2001) strongly argued that innovator experimentation is the key to unlocking the enigma of sustainable agriculture, as experimentation eases adaption to change and simultaneously builds resilience into the farming system (Milestad et al., 2010; Folke et al., 2003; Bentley, 2006). McKenzie (2013) also found in her study of innovators, that a key behavioural aspect of 'innovativeness' was the level of participation in on-farm trialling and testing of new ideas; all innovators in this study had been and were still highly involved in trialling, testing in coordination with both formal and informal groups, as well as experimenting with their own creations. Often these emergent practices lacked mainstream scientific backing, and in cases had not permeated wide enough into the sub-culture to be easily perceived as verifiable, recognisable and/or reliable. Like all adoptions of a new practice, these new ideas required innovators to develop the principles and practices using their own wisdom, intuition and skill and adapt these new ideas to their existing framework. The following innovator explained his early assimilation of the Potter-Farm Plan;

> Early on, [using the Potter-Farm Plan principles] we started *changing fences to fit in with land capability*, it was *unusual at the time*, we rearranged things…productivity was what we based our thinking on still, but started planting many trees after 82 [drought], mainly wind-breaks…Did whole-farm planning, we *nutted it out ourselves* (ME 7, LCMA)

Via early 'baby-step' assimilations into alternative practices, the evidence of a progression in managerial styles were being implemented and integrated into the farm business were noticeable. The following innovator explains his 'assimilation path' from the early 80s to the development of his 'pioneering path' in the early 90s;

> I was looking at different ways of doing things and from the 1980s on, I started concentrating on ground cover and native grasses…then, I'd heard about Time control grazing, and I started implementing that in the late 1980s…then we developed pasture cropping in the early 90s…Developed pasture cropping over a few beers one night…developed techniques, and went with it from there (ME 8, CWCMA)

While the following innovators explain their frustration with having to wait until they could implement their ideas adapted from Savory (1988);

> We read Savory and we put his practices into what we had, but we weren't big enough and that was frustrating…We knew exactly what we wanted when we [went back to the old family farm], his *principles put into practice*, a low-cost enterprise based particularly on native perennials (ME 4, LCMA)

Experimenting with cell-grazing (due to involvement in the Grazing For Profit program) began a path of refining grazing management for the following innovator;

> Cell-grazing was the initial attraction…then we made steps and grew it from there, putting more mobs together, splitting big paddocks, and shortening the graze time and increasing the rest period [for paddocks] (ME 10, CWCMA)

All innovators used initial experimentation and trialling to convert their farms, using the results as guiding principles for their adaptive practice.

Taking steps back

With experimentation of new ideas and styles, inevitably trial can lead to 'error', 'failure' or 'mistakes', or in the words of some innovators, 'lessons' or an opportunity to learn (McGuire et al., 2013). In re-learning how to farm and consequently breaking away from traditional paradigms, a certain amount of 'stepping back' takes place as the farmer becomes a novice once again. The following innovator explains that assimilating the physical practices is only a small part of practice change and that the internalisation process is what causes the mental shift towards the concepts of farming connectivity and synergy;

> With grazing, [I] played around, fiddled with it but didn't really understand it, *my mind wasn't ready for it…I wasn't ready for the connection* between business, landscape and people that underpins all of that…until your mind is ready to receive the information, you *are blind to it* (ME 7, LCMA)

Stinner et al. (1997: 212) also reported that it took a Holistic Manager based in the United States 10 years to internalise the principles of Holistic Management; 'HM was mindboggling at first, but so simple now'. Translating the new paradigm to working practically on the farm was described as a refining process, with the following innovator explaining the need for a refresher course to refine his understanding of the HM principles associated with paddock rest or recovery;

> When we were first changing over I *made so many mistakes* you would not believe…[I] really stuffed it up…then I did HM with a second educator and *refreshed*….there were a few things I didn't quite get, and I got them the second time…one of the main things was recovery, I wasn't leaving it for long enough…

> Graeme [Hand[88] from Stipa] told me 'things didn't work until he pushed it to 150days recovery', and it was *like a sledgehammer between the eyes*…I thought, well mine's nothing like that, so I pushed it out to 120 days and started *seeing the changes*… more has happened since 2006 than in the six years or so before that (ME 3, LCMA)

This sentiment reinforces the important influence of farmer-to farmer knowledge sharing of experiences with experimentation in aiding the refinement of these processes. Innovators also discussed the fact that there was no 'recipe' for management as each farming enterprise is unique, and therefore grazing timing, rest and recovery are all principles which need to be internally processed by the farmer in order to create the transition (McKenzie, 2013). The following innovator recalled his initial frustrations with making the mental shift, his perseverance and faith in the principles behind the change, and ultimately his need for a refresher course to internalise and embody his Holistic Management goals in practice;

> So after the HM course, we started cutting our mob numbers back and rotating a lot more, but I didn't do it very well, my attention to detail was very ordinary and I think we started to *send things backwards* to a certain degree...a few educators have said that you can stuff country quicker by rotational grazing rather than set-stocking if you don't do it right, like I did, for 5 years, and then the drought came and that compounded it a little bit…I wouldn't say I was doing it really badly by then, but *I wasn't seeing the changes*, they were changing but very slowly, we just weren't seeing it…So I'd be *losing heart, but I still had faith* that it was the right way to go, so I'd be taking advice from someone else as well say an agronomist or a consultant, and so I was *very much torn*…in some respects I think I was *bastardising* both forms of practices we were doing…so not doing anything really well…it was really *frustrating*, it got to the point where we kept on drifting back to Holistic Management…so in 2008 we did Holistic Management again…[we said] if we're going to do it, we're going to do it properly, whatever properly is. Since then, [it's been] clearer and have *seen massive changes* on the property….We had to be a lot more thorough in the *whole process*…not just grazing, [that's] just a tiny part of it…but you've got to *live those goals*, same with anything in life (ME 5, MCMA)

The same innovator again explained the pitfalls associated with assimilating new farming management styles without letting go of traditional paradigms of 'recipe thinking' and reliance on concreted routines;

> *Danger* of what we're doing too, you *can get fixed* on a rotation, maybe vary stock a bit, but fixed on a certain number of days rest, and very quickly you are *in a routine* and you're comfortable…and then you think shit,

[88] Graeme played an integral part in the CiL project and was involved in the PRA process as an interviewer. Graeme Hand is CEO of Stipa Native Grasses Association, for more, visit http://www.stipa.com.au

> I haven't been noticing…so that's something we have to be aware of, hopefully we do realise when we need a push (ME 5, MCMA)

One of the risks associated with 'stepping back' (or really 'stepping out' of the traditional paradigm), comes back to taking the 'leap of faith'. Innovators explained that even with successful embodiment of new farming philosophies and practices, things can still 'crash' or fail in the short-term. However, acceptance of these failures is also part of the new paradigm as farmers move away from being in a comfortable regime (reliance on technology) and instead adopt the principle of dynamism (reliance on nature). The following innovator proposed the need for acceptance of 'crashing' in transitioning to sustainable farming;

> [It was a] natural progression to take [our farm] down the biological side of things…you try and do it to the best of your abilities…and *if you crash you crash, so be it* …but you've got to do it that way (ME 2, CWCMA)

While these innovators explained how their perspective on failure has changed along the journey of practice change;

> Fine with turning around and saying 'it didn't work out for us', ok with that now, once it would have been 'oh no, another mistake'…we don't seem to like failure as human beings…we are *willing to jump out on a limb and if it fails, well that's fine*; we'll just keep going…Holistic Managers have to be careful, not everything we do comes up trumps, it's *not the cure all* (ME 4, LCMA)

Perseverance and accepting /acknowledging mistakes and failures of practical experiments, constituted a large part of the change journey. The clear level of risk involved, which all these innovators faced and continue to face, is articulated by McCosker (2000: 208) who warns that cell-grazing, 'is therefore not for the faint hearted'. These quotes represent the cyclic nature of change and embody the old adage of taking two steps back in order to take one forward – the need for persistence and continual improvement and refinement of practices.

5.3.2 Nurturing Nature

These new paradigms which identify practice and management changes are related to encouraging self-regeneration and renewal in ecosystems, and evoke a sense of nurturing rather than physically managing nature's natural function (letting go of control over nature is further discussed in Section 5.4.2). In this sense, the locus of control in the farm environment is passed from the farmer to nature; nature becomes responsible for its own dynamism and therefore sustainability. The innovator is essentially trying to mimic what happens naturally in the local biotic environment (Savory, 1983). The following section explores the

various practices employed by innovators to encourage the well-being, integrity and fertility of the farm through management of soils, plants and animals. In tandem with this research, Peter Ampt's benchmarking study of innovators (Ampt & Doornbos, 2011) investigated the quantitative results produced in the landscape by these innovator's footprints. This report has been used throughout the following sections as science-based evidence to support the claims innovators' made about the positive eco-changes ensuing from their changed management practices and behaviours.

Regenerating native grasses

> *'Why native pastures? We have been practitioners of cell-grazing and holistic management since 1993 and believe our local provenance of grass and legumes are good for ruminants and truly sustainable'*
> (Walker & Frend, 2008: 124)

Transitioning the farm from a fragmented landscape based on unsuited or unadapted exotic annuals towards a holistic landscape based on local native grasses was the first point of experimentation for most innovators. For two innovators, their foray into regenerating native grasses was sparked or necessitated by a major bush-fire. The following innovator explained that regeneration of native grasses on his property was in part a necessitated experiment;

> After the major fire, [we] couldn't afford fertiliser, so we had nothing but the land…encouraged the native grasses to come back, wanted to see what would happen (ME 8, CWCMA)

While the next innovator recalled a similar devastation caused by a fire on his property and seizing the chance to rehabilitate and experiment with the farm's seed bank;

> During the fire [I] remember saying to the other guys, 'I'm going to have to destroy stock'… not one that hadn't been burnt…burnt [the] place to a cinder…burnt house, woolshed, nothing left, even burnt the humus…someone said there was no seed left due to this. I was just starting to learn about native grass management etcetera, and I thought to myself, this fire is probably burning so far into the seed bank it's probably activating seeds that have been there a very long time, so I shut the place up for a year, *things came back, things I'd never seen there*…A local botanist Geoff Burrows, came out, ID'd species, 160 species, [he was] fascinated with the richness of species (ME 12, MCMA)

Similarly, the following innovators explained how the drought had a similar effect on their property;

> Non-natives haven't performed, natives coming back in anyway, why am I wasting effort – drought definitely helped with that (ME 4, LCMA)

Giving grassland time to restore meant 'unnatural' lag-times between changing management and seeing the changes begin to manifest then stabilise within the landscape. The following innovator explained the changes over time in grass composition once superphosphate application was abandoned;

> As soon as we cut back super, all these *lovely perennials* came in that we'd never seen before…Father said a *lovely thing* about this area was the native grasses…Warrego and Microlaena in this paddock (showed photo) was once saffron thistle, took about *4-5 years to change* over. *You can see* the spring grass from year before, it's the dry matter, and it's too thick to allow thistles to come up…that's our ground cover (ME 10, CWCMA)

Similarly, this innovator explained his native grass recruitment after cutting off the 'fertiliser addiction' and his integration of rotational grazing and pasture cropping for pasture health. Rather than taking 4-5 years as mentioned in the previous quote, it took 10 years for this grassland to stabilise;

> The big change was when I started changing grazing management and putting them into big mobs, and then started to pasture crop…it encouraged and sped up the recruitment of the grasses very very rapidly, *took about 10 years*, [it was] almost like a drug addiction, the plants were addicted to fertiliser, I pulled the plug and many plants died…should have weaned them, I know that now…natives started getting competitive, *after 10 years they started doing well* (ME 8, CWCMA)

While the following innovator explained some of the variance in restoration rates; he also explained having to go through a 'weedy phase' before being able to encourage establishment of not only species, but communities of native grasses;

> In some areas [grassland] does crank up a bit quicker, [where there is] more rain, north…ecology says it takes *20-40 years for these communities to stabilise*, [they] go through a weedy phase…rotational management is still a rough go at what would happen naturally. In 1999, [we had] 1ha of native pasture, now over 100 ha…communities of grasses *starting to appear* (ME 7, LCMA)

Innovators reported that it is this 'weedy phase' which is often witnessed and perceived by traditional farmers as letting the farm go backwards. One innovator argued a stigma survives in Australia regarding a perceived lack of productive value in native grasses. However, he explained the need to go through the

natural cycles and allow for grass succession in order to build the community with more productive grasses appearing over time;

> *It's all about integration*, pasture cropping, sowing wheat crop or an oat crop into the grasses, when you first start to get the change, the lower successional grasses start to come back first, and are often poorer quality grasses from a sheep's point of view, but *gradually* better and better ones start to return (ME 8, CWCMA)

While this innovator similarly discussed his goal of encouraging native grass succession whilst acknowledging that it could take 'hundreds of years';

> I just think that from a grass species point of view, all our native grasses we own here, they are all C4, can't believe there weren't more C3, softer ones…so trying to get them to come back. Getting management to get there and the right conditions, they will come back at some point, *could take hundreds of years*, but *I believe they are there* and will come back, and then we will start really kicking some goals….but we don't know what they look like anyway…whether we'd even notice them! (ME 5, MCMA)

A common theme within these quotes is acceptance of the variability and uncertainty associated with influencing natural cycles for regeneration. The following innovator discussed his use of fire management to encourage native grass recruitment and succession;

> Every 3-5 years [I] burn the same patch…more info coming out about, this is the ways things should be managed with native grasslands…I use fire to manage [them], it has been very successful, I've spread perenniality…not always easy, have to be careful. (ME 12, MCMA)

Encouraging the recruitment of native grasses and the range of derived benefits was discussed with all innovators. A key theme that emerged from these interviews was the resilience of native grasses, to drought, fire, pests and livestock in general. The following innovators explained the resilience of native grasses to both livestock and drought respectively;

> Native grasses don't mind cattle, as long as you give them a rest…the grass is *more resilient*, doesn't get trodden down as much (ME 11, CWCMA)

> [We have] only sheep now, the place could not support cattle 3 years ago due to the drought, [it was] devastatingly dry…*shows resilience of natives* that they can come back so quickly. Without natives and weeds, we would all be broke; [they] kept everything alive during the drought (ME 12, MCMA)

Native grass regeneration is aided by the adoption of Holistic grazing or Sustainable Grazing Systems (SGS), which base grazing on rest and recovery periods for the perennials. The productive benefits resulting from grazing native grass management have been discussed by Sparkes (2000:22) who reported the following changes on her property; 'the result has been extra carrying capacity…cell grazing has doubled our productivity' Sparkes (2000: 222). Hand (2007), an innovative Victorian farmer, also discussed the benefits of changing over to native grass management during the drought period and reported an increase in perenniality during this time on his farm. Some innovators expanded on the notion of native grassland resilience and explained the opportunities associated with having an ecological farming base. Some of these innovators described the resourcefulness of a grassland as an enabling factor for introducing to their farming enterprise the concept of 'vertical stacking' or perhaps more appropriately developing a 'perennial polyculture[89]' (Soule & Piper, 1992: 197). The following innovator detailed his practice of vertical stacking and the associated products, whilst also stressing that the potential within this paradigm is only limited by the mind;

> Instead of having wool and crops of one species, and I could go a lot further on this place, [we are] stacking enterprises vertically on top of each other, on the same area… in order to do that we need a sound base to stack things on, here I've got a really ecologically stable native grassland, and then sheep on top, then [I] crop into that, now I'm harvesting native grass seed…some species here aboriginals have eaten for 40thousand years…that should be a food source as well … and then you can see the possibilities for what you can start to stack vertically are *only limited by imagination, the way you're thinking* …and if it is stable and functioning in an ecological way, you should be able to do it indefinitely, as long as it is *regenerative*, your base is regenerative (ME 8, CWCMA)

This quote explains that along with regenerating native grasslands, there are opportunities to regenerate paradigms which embrace the productive benefits of these species and consequently generate new avenues for income. In terms of pasture cropping, innovator Eric Harvey (2011: 69-70) explained this feedback effect as 'the better the grass, the better the crop, and the better the pasture'. While some innovators reported having to wait to observe changes in the landscape, other innovators described their surprise at how fast these changes could occur;

> Results to us have been *mindboggling*…how quickly you *can change systems* working with nature rather than against it…it totally *blew my mind* when we got Christine [Jones] and Graeme [Hand] from Stipa here and found 136 species of grasses…and once had only 30 or 40 (ME 2, CWCMA)

[89] This term is more appropriate as 'Vertical Farming' also refers to greenhouse methods of growing. For more on this innovative concept visit http://www.verticalfarm.com/

Innovators also explained that within the Box Gum Grassy Woodlands (BGGW) environment, they had also witnessed the regeneration of forbs, such as chocolate lilies, through changes in grazing disturbance and rest;

> Chocolate lilies, when I smelt them for first time…like Cadbury!! Can have these with grazing too, don't have to stop grazing, just change the way it is grazed (ME 3, LCMA)

This innovator described the dynamism witnessed in his native grass ecosystems, his appreciation of the time scale associated with nature's cycles, and his fascination with watching the grassland renew;

> It's a restored grassland, so there are some introduced still in there…[it's] still restoring, goodness knows how long it will take…*fascinating, watching the changes* in the species, and *every year it is different* (ME 8, CWCMA)

Peter Ampt's (Ampt & Doornbos, 2011) benchmarking study of the practices of these innovators revealed that restoration of native grasslands had led to greater biodiversity and 100% ground cover on most properties, which are imperative aspects of regenerating soil fertility and stability in this landscape.

Building soil

As well as regenerating native grasses, elevating soil health was also a focus of management, with all innovators discussing this practice within the new paradigm. 'Growing' and 'building' soil are also discussed by innovative American farmer Joe Salatin (2010: 2-13) as his main practices. Similarly, innovators in this study explained that the driving aspect of their management was motivated by a need to regenerate depleted soils. Soil is a major 'actant' in these journeys; many farming practices were explained by innovators as expressions of their interactions with soil. These 'communications' with nature and with the soil are explained in metaphorical terms by innovators as compromises or reconciliations. This relationship between 'farmer' and 'soil' is a negotiating process, and is described by Noe and Alrøe (2003: 13) as 'organising meaningfulness…in technical biological interactions in the farming processes, as a necessary self-referential process'. The following innovator described the connections between building soil, retaining moisture on the farm, and the personal satisfaction stemming from this practice;

> [We] don't have to push our landscape, we can *build it now*…the landscape is what supports us…wad of stuff underneath…soft and spongy (feeling soil) *took a long time to build up*… once I got [recovery periods

> for paddocks] in place, *my desire to build* litter happened, diversity started to happen and things fell into place…now I know, I have *stabilised* the soil and the rainfall I get soaks in… years like this, opportunities of unbelievable value for the landscape…next one might be 20years away…[we are] *building* litter, *building* perenniality, I'm really *pleased* with the way things are happening…could take 100 years to get this place back to what it should be (ME 3, LCMA)

The same innovator also explained his realisation of 'time' as a tool to build soil health;

> People always said to me' oh, what type of fertiliser are you using', and I'd say 'I'm not using any fertiliser'…but I came to realise that time was my fertiliser…time was what was growing the asset…took ten years for me *to realise the answer was time* (ME 3, LCMA)

Understanding the dynamics of soil science was also a priority for many innovators, with focus on the chemical and biological impacts of management. The following innovator discussed his interest in nutrient recycling and a having a realisation with a change agent who refined the balance between his management practice and his principles;

> Cell-grazing was challenged the other day by a bloke who came to [the area]…he said, 'we really do want a nutrient transfer and the cell-grazing system is about getting away from that'…[the] idea is that gravity is pulling nutrients into creeks and gullies and just runs-off, and we need something to reverse that nutrient flow, [we] want them to stay in the hills, and sheep are a great animal for that…but *it flipped on the head a few of the cell-grazing principles* that we thought we were addressing…*it makes sense*, if everything washes down it will go out to the ocean, even with cell-grazing, just keeps it in place, doesn't start that reverse nutrient transfer…*looking at a landscape level*…private advisor, he's based on Natural Sequence Farming, but a little away from that…interesting fellow, *had a real effect on me, on my world, contradicting what I thought* was a fairly stable principle (ME 10, CWCMA)

While the following innovator also explained his interest in nutrient recycling, his involvement in the project by Ampt (Ampt & Doornbos, 2011), and the excitement generated from this soil science;

> The whole focus has been soil health and recycling…the nutrient cycling stuff Peter [Ampt[90]] did was really interesting, the number of species and density, to us that's *really exciting stuff* (ME 2, CWCMA)

The same innovator also described seeing the results of his soil management with involvement in a CO2 Australia project;

[90] This is referring to Peter Ampt's Benchmarking Study, see (Ampt & Doornbos, 2011)

> Soil tests with CO2 Australia…bottom pits, all moist and wet in the middle of a drought, they said, 'Your soil profile is full!' (ME 2, CWCMA)

While the following innovator discussed the benefits of his native grasses on nitrogen levels in the soil;

> [We] used to think we had to have legumes to create nitrogen, but the dry grass recycling in the ground creates its own nitrogen…legumes still have their role to play, just *don't need to be reliant* on them (ME 10, CWCMA)

A key focus for innovators in recycling nutrients was to specifically influence carbon cycles by holding onto and increasing carbon levels in the soil. Many innovators were passionate about this aspect of their farming and considered carbon results to be the most foundational and demonstrable impact of their management practices. Influencing and understanding the microbial relationship with soil health and carbon cycles was a key priority for innovators in building soil. This emphasis on soil nutrient balance and soil carbon levels was also found by Perkins et al. (2003) and McKenzie (2013) in their studies on innovators. The use of compost teas for fertilising was explained by the following innovator as a catalyst for a healthy change in his soil composition;

> Amazing results from compost teas, the response is enormous, so quick…our ratio's aren't right yet…totally changed soil chemistry…all our weeds or annuals died, no nitrogen for them…What does it mean? We are increasing carbon in the soil (ME 2, CWCMA)

The same innovator explained the flow on nutritional benefits in his livestock resulting from the use of compost teas;

> We are starting to run in front of the mob now with microbial food, every 10 days to a fortnight…last year we found there was an 87% difference in the uptake of mineral blocks from livestock who had been on compost tea and biologically fed paddocks compared to the opposite…they required 87% less mineral uptake of what they actually took up…it was allowed to them there, and they didn't take it, they didn't want it…and that totally stunned us (ME 2, CWCMA)

The emphasis on influencing microbial activity in the soil was also discussed by members of the microscope group (mentioned earlier in Section 5.2.2). This innovator, a member of the group, explained the importance of understanding soil microbial relationships in influencing healthy soil 'growth';

> You need to know what is going on under there…that is where it all happens, that is what we need to understand more about and try to *influence* (ME 6, CWCMA)

While the following innovator indicated that his focus on these underground chemical reactions was spurred by an intensive educational course in soil health;

> Green Bootcamp[91] [taught me] 'The plant you see is the 'above-ground part' of a *complex symbiosis* with soil microbes in the root zone' (ME 2, CWCMA)

Peter Ampt's (Ampt & Doornbos, 2011) Benchmarking Study of these innovators' practices revealed that use of alternative grazing regimes meant that on average innovators had higher levels of nutrient recycling, water infiltration and had increased soil stability when compared to traditional grazing regimes. This science effectively begins to prove that these innovators are actively influencing soil health and fertility and therefore building soil.

Observing and monitoring changes

In transforming practices, visibly seeing the changes or the 'fruits of labour' in the farm environment is an important factor attributed to sustaining motivation throughout the journey (Ampt, 2011). Pannell et al. (2006) argued that 'observability' of the results of new management is a key factor in the uptake of new practices. Witnessing the farm environment respond to changes in management was described by innovators as a rewarding experience that instigated motivation to keep understanding these systems and improving/refining management practices. Similarly McKenzie (2013: 83) also found that one of the main management strategies innovators in her study employed was 'observing signals from the landscape', and responding to these cues by re-evaluating or refining management accordingly. The following innovator explained his daily routine of observing nature as an enjoyable and encouraging aspect of his management and change journey;

> Most important thing about it is to *enjoy the journey*…still run a lot of tape, haven't cut up all the paddocks yet, so most of my day I spend winding up and walking out tape, can't do forever, will wear out and get sick of it…but at the moment still *enjoyable as I take the time to notice the changes are happening*…but when it's a chore I will probably stop doing it…part of what *keeps me going and has got me more interested in nature* is making a point to notice what's happening around me (ME 5, MCMA)

[91] An intensive course based partially on Savory's (1988) HRM principles, as well as other alternative agricultures, see http://www.murrumbidgeelandcare.asn.au/node/1091 for more.

This above quote also explains the role observing biodiversity has on influencing continued motivation to work with nature and maintain persistence with experimentation and changing practices. While the following innovator described his observation of changes in the native wildlife and explains them as the 'signs' of healthy management;

> Did an audit this year, 43 species of bird in one morning…*see new stuff coming in all the time*, there are a whole heap of echidna's here now, you see them in the laneways, big fat fellows, goanna, possums are back, black wallabies… Last night you couldn't hear yourself for frogs, *they're the signs*…Thursday last week, 3 king parrots; have never seen them here before (ME 2, CWCMA)

Time-lapse, photographic comparisons were a common source of evidence used by innovators to explain results of environmental transformations. Many innovators also used boundary fence-line photos to depict the dramatic impact of their changed management in contrast with a neighbour's more traditional management during interviews (for example see Hand, 2007: 96-97; Marsh, 2008: 59; Walker & Frend, 2008: 127-128; Harvey 2011: 26). Comparison photos were used to demonstrate differences in grass composition, weed composition, ground cover and soil health. The following innovator described his fence line comparison with a neighbouring property;

> Neighbour [has] oat crops…[he] sprayed, we had ours on the other side, he got red-back [and] we didn't, he had to spray again…noxious weeds on his side of the fence and not mine…(showed photo) St John's wart stops at the fence-line…what's different in a fence-line except soil health? (ME 2, CWCMA)

A potent exhibition of these changes along fence-lines, were similarly witnessed by Joyce (2000: 228), whom after seeing numerous properties asked, 'is it the wire that does this?' These observations are key pieces of evidence, which are frequently used by innovators to formally communicate the results of their practice change to the farming community and extensionists.

The HM and GFP programs place heavy emphasis on monitoring and evaluating results (Savory, 1983; Savory, 1988; Savory and Butterfield, 1998; Nicholson, et al. 2003). As discussed in previous sections, monitoring change through grass ID was a common practice for innovators in this landscape. Further research employed to determine the behaviours of innovators and 'early adopters' have also concluded that scientific monitoring plays a crucial role in motivating continuous and successful practice change (Perkins et al., 2003; Ampt, 2013; McKenzie, 2013). Most innovators were monitoring various aspects of soil, water and biodiversity. Nearly all innovators described increases in native grass species and increases in general

plant diversity across the farm. Change agents played a large role in enabling this data collection with the following innovator explaining the exciting result of having Stipa visit his property;

> [Stipa] came out here and they found 69 different species, not all natives...shows how much biodiversity there is on the place, I had no idea there would be that many! (ME 11, CWCMA)

Traditional scientific methods, other than pure observation, are also appropriated on the farm to monitor and evaluate the progress of new practices. The following innovators stressed the importance of monitoring and evaluating throughout the change journey;

> [It's] very important to *monitor*, [if you] make a decision, you have to monitor it to see whether you are getting the results you want (ME 3, LCMA)

> [You've] always got to *evaluate* how you're going, otherwise you can think things are going a lot better than [you] actually are…I do a lot of monitoring here, 12 years of transects here measuring ground cover and plants on six different sites (ME 8, CWCMA)

While the following innovator explained how monitoring is a process, which allows for adaptation and refinement of management;

> By monitoring you will see that you're not going towards your goal, then you *will change* what you are doing (ME 9, CWCMA)

For one innovator in particular, the role of monitoring change and collecting data as evidence was a focal point for evolving farm management/business practice. He discussed being influenced by industry monitoring standards, his consequent use of Quality Assurance Farm software to guide his management, and the results which highlighted his transition to the 'new' agriculture;

> One place, [I was] wool classing [for] 3 years…that had a big influence on how I manage things …learnt data collection, etcetera, agronomists from the DPI, Department of Ag [back then]…[they] did everything by the book…individually record lambs and cattle…[they had a] big focus on recording everything…[I] monitor and evaluate everything, [you can] go to any year any day and match the animal and the test results, soil, wool, pests, it's totally *integrated*, rainfall…information goes in daily…then can look at probabilities based on this data…trends, annual totals…can look back at when we started here, not bunging it on, just showing what we've recorded…everything GPS mapped, whole farm…use it to plan…[but] it is seen as anecdotal

> evidence by 'experts'…*you can see in the data* when we changed from conventional to holistic…and [then] when we went with holistic and added biological (ME 2, CWCMA)

The same innovator also discussed his use of telemetry tactics, coupled with photographic evidence to back-up his positive results;

> Telemetry, remote monitoring, we've got a whole watering system, we can do it from the computer…graphs on tanks and pumps…automatically, pump starts based on levels in the tank…others run on solar…plus mobile camera we can use to observe the mob…we put them on watering points and program time lapse photos per day…some really interesting photos…building photographic evidence (ME 2, CWCMA)

McKenzie (2013) also found that telemetry was being utilised by innovators to improve on-farm observation and monitoring of water points in order to fine-tune grazing management. Most innovators practiced some sort of scientific monitoring, and were involved in many government or university led research projects, which also generated desired data specific to the farm. One innovator explained that he had received extensive scientific data comparing his insects, soils and native pastures to his traditional neighbour, from various university projects, which had reinforced the positive eco-impact his alternative management was having on the land. The following innovator explained the importance of practicing both qualitative observation and quantitative observation, an integrative approach to monitoring and evaluating;

> We monitor our soils, water etcetera…[these results] let us know we're on track, but I have also learnt from just sitting out there and watching the herd graze (ME 6, CWCMA)

This is reminiscent of Savory's (1988) inspiration for new grazing regimes, which were sparked by observations of wildlife in Africa; watching the herds and their behaviours and migration patterns and the effect these had on the local biota. Using experiential and experimental knowledge is fundamental in building resilience into farming systems (Folke et al., 2003). However, in order to justify the results and benefits of these new types of agriculture, the following innovator argued that more scientific evidence was needed to prove that this 'new' type of farming was in fact holistically sustainable;

> We need our evidence to say we are *increasing synergy* between business and farming and the ecological…need the carbon results, the results of our management on soil (ME 9, CWCMA)

Building resilience into the landscape

The overarching concepts that drive the dynamism of these practices are essentially building resilience by practicing adaptive management. One innovator (ME 3, LCMA), who identified with building soil health, argued that the primary explanation for this synergy was building diversity. The metaphor of the 'tool kit' was often used by innovators to describe the 'tools' which could be used to 'build' or create and influence the natural environment; effectively the 'tool kit' is a metaphor for managing points of 'human intervention' in the landscape. This metaphor is also used by educators in both Grazing for Profit and Holistic Management programs (Bingham, n.d ; Resource Consulting Sources, 2013). The following innovator described his 'tool kit' and how it helped with achieving his landscape goals;

> Pasture cropping is a tool, soil microbes are a tool, grazing rest a tool, animal impact a tool, all about big picture, achieving soil and ecosystem health and it *flows the whole way through* it…compost teas…[we] don't forget about what happens underneath, *what supports us* (ME 2, CWCMA)

Marsh (2007: 151) also expands on this idea and explains his tool kit as being an integrated mix of technology, rest, fire, grazing, animal impact and living organisms; and argued that 'human creativity, money and labour can be applied to any of these tools'. While the following innovator explained that every part of the farm ecosystem is effectively a tool, which can be used for production, a shift from focussing on healthy soils to healthy ecosystems;

> From a conservation side of it whether it be livestock, or native animals…[our farm] is now one of the first designated as 'land for wildlife'…all comes back, need every single part of it, whether it be a domesticated animal or a native animal or a frog or a grass or a fungi or a bacteria…need every single bit to create a healthy ecosystem…we were focussed on soil health, but now we've realised it's about healthy ecosystems (ME 2, CWCMA)

Building resilience into environmental systems on the farm was also described as a shield from future threats to the farm. The following innovators discussed their management and the perceived resilience inbuilt with regards to climate change;

> *Do fear* climate change…but still believe using this *management we can read* what is happening well in advance…Our country has been regenerating in what has been called a really bad drought, was dry, but still got growth (ME 3, LCMA)

> Climate change [is] certainly *a fear*…really trying to *build resilience* and make it low input…trends for high input just not good…see ourselves as *building more capacity into the systems* and reducing the need to rely on outside inputs more and more…Quite prepared to see the solution in a long term perspective…[traditional] practices revolve around the short term, but eventually this runs into the long term and if you haven't allowed for that, you can reach breakpoint (ME 4, LCMA)

Perkins et al. (2003) also found that some innovators believed they had built protection to the potentially adverse impacts of climate change. Similarly, this innovator explained his 'strong position' with facing potential future threats to stability and described his growing confidence with adaptive management;

> On a global scale, [our] greatest threat is human population…on the micro scale, down where I am, I don't feel that there are any major threats, because we've worked on our water…I feel as if I'm in a fairly strong position…unless there was a major bushfire, that would be a major threat…*I think I'm becoming pretty good at adapting, not frightened to try something different*… (ME 3, LCMA)

As reiterated in the last quote, not being frightened of change was attributed to enabling resilience and adaptation. Tapping back into the natural cycles by refining management techniques was the main aim of practice change. By refining resilience/adaptation to uncertain and variable ecosystems, innovators reported that maintaining continual motivation for improvement was required;

> *Nature is running on very different cycles*, each year is different…so you can't expect to do the same thing each year and get the same result (ME 4, LCMA)

While the next innovator also explained his plans for continual improvement and refinement of management;

> [We] could do more with the grazing…more watering points, could split up more paddocks (ME 10, CWCMA)

The following innovators also indicated that their management would never be 'right' and that there would always be room for improvement due to the very nature of change, being an evolving philosophy in their practice of strategic or adaptive management;

> We are not perfect, *we make mistakes*…we have our bad times…I'm sure we can do things better (ME 9, CWCMA)

> There is a long way for us to go on this place with management (ME 11, CWCMA)

> [The issue of] getting adequate production off a landscape and not degrading it, *I think we are closer to understanding how to do that*…I don't feel our resource base is declining (ME 4, LCMA)

Ultimately, to build resilience into an inherently unpredictable environment, it was essential innovators employed creativity/ingenuity as guiding principles in adaptive management planning processes, on an individual level (this is discussed further in Section 5.4.3).

Managing animal welfare and quality

Managing the welfare of animals and livestock was also a mutual theme in these change journeys, encapsulating a holistic approach to farming with nature itself. Innovative farmer Strong (2008) stressed the need to recognise, listen to and respond to changes in animal behaviour in order to embrace this paradigm. Innovators described their practice of animal welfare as an aim to develop a closer relationship with animals through a deeper understanding of animal behaviour, communication and culture. For most of these innovators, converting the farm over to native perennial grasses meant having to encourage their livestock to adapt to a new diet. The following innovator recalled his experience with enticing new animals onto native grasses;

> There were two rams I bought, [I] put them in with the other rams…after 3 weeks, they nearly died of starvation…they were on feed waist high, and I should've known, they just weren't used to eating this grass…they were wandering around looking for something else to eat…I did know, I just didn't apply it to myself…fed them grain, gradually got [them] used to the native grasses (ME 8, CWCMA)

Aiming to refine stock management by 'reading' the psychology of animals was a growing practice amongst these innovators. Some innovators, as previously mentioned had assimilated/integrated 'Low-Stress Stock Handling[92]' into their management, a technique inspired and taught by a pioneering innovator turned 'agent of change', Bruce Maynard[93]. The benefits of this practice as reported by innovators were less stressed stock and therefore 'happier' animals, as the flowing innovator reported, 'it has made handling our stock more of a pleasure, improved our health and safety, and had production benefits' (Marsh, 2008: 58). Following these principles of low-stress handling, the following innovator described this practice within his operation, and emphasised its focus on the relationships cultivated within mobs;

[92] For more on this stock-handling technique, visit http://www.lss.net.au/trainers.htm
[93] For more on Bruce Maynard and his expertise, visit http://www.pasturecropping.com

> [They] have a 45 day join and [then they] come back to the mob, …*makes sense*, we totally de-stress our stock…we walk through and tag calves as they are born in front of the mothers…take the mother and calf out, *we know who they all are*, who all their mothers and fathers are…wether lambs, put them in with older wethers in order to take them around the paddocks in order to teach them, ewe lambs all back with their mothers (ME 2, CWCMA)

'Family groupings' in animal management is also a key concept of Dr Fred Provenza's[94] work in understanding the social dimensions of the mob/herd, and utilising these for well-being and ease of management (Howrey et al., 1996; Provenza, 2003; Provenza et al., 2003). The rationale behind family groupings, as described by the following innovator, is to give lambs time with their mothers to both wean themselves and learn 'nutritional wisdom' (Bray, 2012). The framework of 'nutritional wisdom', developed by Dr Provenza, is based on the understanding that nutrition is both a product of being in the womb, and a learned behaviour (Provenza, 2003). The following innovator (from Tasmania) explained her path of chance and observation which led to her discovery of this concept;

> Someone had given me a DVD of Fred's, I put it in a drawer and I didn't watch it!...I had a cast ewe in really bad shape…put her in an aluminium frame with a sling…[people] *thought I was crazy* for not just shooting her, but I *believe* if they want to live, then I'll help them…I moved her sling around for her, so I watched her eat , she was so specific, in a pattern…you don't get *to see that unless you are close, kind of a fluke*…I talked about it with these speakers who came to Tassie, the more I talked, the more familiar it was, then I remembered the DVD! I put it on…5 hours later…*it pulled together all these things I just didn't understand, I saw them,* ***I knew them to be true, they were my experience****, but I had no framework...the nutritional wisdom framework gave me that* (ME 13, TAS)

These ideas of nutritional wisdom, family grouping and low-stress stock handling were also attributed to stock eating weeds (Maynard, 2011), a relatively new concept in weed management. The following innovator described his observations and conclusions regarding this phenomenon;

> [By] looking at the whole *culture of the mob*, [we are] getting weeds eaten, the variegated thistle got flogged…something they are getting from it or they wouldn't be eating it (ME 2, CWCMA)

[94] Dr Provenza is one of the main scientists involved in the BEHAVE program, Utah State University, US. This program aims to educate on the animal welfare aspects on farming within a holistic framework. For more on BEHAVE, visit http://extension.usu.edu/behave/

Several innovators described Dr. Fred Provenza's[95] work as the next frontier in livestock management. In many respects, this illustrates the interconnected network that has developed amongst innovators and their information resources, as well as emphasising the level of refinement in management. The following innovator described how these concepts dovetail back into production benefits from native grasses;

> We can learn to handle our stock better, Fred Provenza's stuff, I think that's the next improvement…One thing that Fred said, and we need to take notice of it from a health point of view, is that what the mother eats an unborn animal is influenced by…[for example] drug taking, type of plant [the] animal is eating, [the] animal has already been introduced to eating this…not used to native grasses, not used to eating them (ME 8, CWCMA)

While the following innovators described the production benefits of nutritional wisdom, in terms of developing the livestock's ability to uptake secondary compounds from feed (for additional marketing/health benefits of this practice, see Section 5.3.3);

> The most totally fascinating stuff is Fred Provenza's stuff which focuses on secondary compounds, that's what we are trying to get in our meat…what is the fat break up, what are the secondary compounds…who decided which ones we are extracting (ME 2, CWCMA)

> Sheep run here, [in comparison to other meat] should be healthier and better eating quality, more nutrient rich (ME 8, CWCMA)

Production benefits stemming from these practices are also directly related to 'growth rates, meat tenderness and mothering ability' (Kiss et al., 2007: 58). Therefore the basic premise of these practices is that animal welfare is directly related to the quality of the product. This was reported by innovators who practiced ethical breeding of sheep; breeds which lack the need to be mulesed[96] and require less chemical input (Bray, 2012). Some of these innovators belonged to 'Soft Rolling Skins[97]' (SRS), which promotes these practices, and were advised by the founder of SRS, Dr Jim Watts[98]; the following innovator explained his experience with these practices;

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[95] Dr Fred Provenza spoke at the *Stipa Native Grasses Conference 2011*, some of the ME innovators also attended and/or presented at this conference. Fred's presentation is available at http://www.stipa.com.au/Events/Conferences2011.html

[96] Mulesing is a common husbandry procedure involving the removal of skin from a lamb's breech and tail to avoid flystrike. It has recently been a subject of debate in the animal welfare arena, for more visit the RSPCA website: http://kb.rspca.org.au/What-is-mulesing-and-what-are-the-alternatives_113.html

[97] For more on the techniques employed by Soft Rolling Skins (SRS), visit http://www.srsmerino.com/srs-genetics

[98] For more on Dr Jim Watts, visit http://www.srsmerino.com/about-srs/our-people

> My Dad and [brother] brought SRS to our table…the sheep are plain bodied with no wrinkles, we don't have to mules…they have longer necks…these are just a different type of sheep, the fact they don't get fly-run, people don't *believe* it anyhow, people use chemicals for that…[our] wool is whiter…brighter and finer (ME 10, CWCMA)

Most innovators ran their stock in limited numbered mobs, often integrating both sheep and cattle in the same mob for ease of management and to build herd culture. These practices also require less input from farm managers, as the mob is less stressed and combined with rotational grazing, are used to being moved frequently through paddocks (Joyce, 2000). Numerous innovators described themselves as being 'gate openers' when it came to managing their livestock;

> Now I'm just a gate opener…the sheep know where to go, the dogs are struggling with this! (ME 13, TAS)

These practices also allowed innovators to add the 'animal welfare' seal, in cases with formal certifications, to their collection of sustainable and marketable practices.

5.3.3 Balancing profit

Balancing 'profit' within this paradigm was explained by most innovators as an integrated concept of resource wealth and economic stability, rather than pure fiscal input versus output. Innovators explained that profit also lie within the environmental and socio-cultural wealth generated by means of resilience to economic variability, creating/taking advantage of opportunities and building connections with consumers.

Dealing with economic variability

In desiring 'holistic' and 'sustainable' management, the new paradigm also has a strong focus on practices that enable short and long term financial return for the farm. Rather than having an annual focus on pure economic input and output, innovators balanced their gross profit margins rather than net profit growth. Monitoring these aspects of the business was a priority for innovators throughout the change journey;

> [We] monitor gross margins all the time…not much sense in doing something if it'll send you broke (ME 8, CWCMA)

> [It's] about getting away from being reliant on inputs… take out the inputs an you don't need as big a gross income to achieve a good net income…the net income is greater in some circumstances (ME 10, CWCMA)

Effectively, less in-put meant less economic operational risk due to the lower pecuniary outlay required to run the business. Making a profit was not reliant on high production yields; it was the safer bet, where the stakes and therefore risk were lowered. Therefore, these aspects of resilience building are related to financial stability and therefore a degree of farming freedom through the concept of opening up opportunity and choice. Before seeing the financial benefits of management, some innovators explained having to 'cop a loss' in short-term production and profit levels whilst changing over. However, as van der Ploeg et al. (2004: 13) also found, innovators did not approach this as a short-term 'partial downgrade', but rather as a long-term 'well-co-ordinated and congruent re-balancing of all relevant growth factors'; as innovative farmer David Marsh (2008: 58) explained 'in three years these once-annual expenditures paid for the fencing and water development which are once-only expenses that now give ongoing benefits for no annual cost'. The following innovator explained the support for this transition built into the Grazing for Profit program;

> Good thing about Grazing For Profit, is the strong financial planning module….[they are] warning people to go slowly, [to] do infrastructure as profit ensues (ME 7, LCMA)

While the following innovator explained that his approach is calculated and based on financial risk;

> I look at the risk and minimise it before we make the change, I make sure it is cost-effective…maybe [I'm] not conservative, [but I'm] more analytical, I like to have the t's crossed and the i's dotted before I go ahead with a change (ME 9, CWCMA)

The renewed focus is on stabilising profit rather than growing profit, and as the following innovator explained, getting this stability requires balancing production within an agro-ecological framework;

> As energy costs rise, [and] maybe the climate becomes a bit more variable…there is more stress, [it] becomes harder and harder to make a profit…it's tied in with Holistic Management, [we] want an agro-ecosystem that can give profit, but also provide for its own needs (ME 7, LCMA)

Due to this re-balancing of production and conservation in practice, Hand (2007: 97) described how this 'process resulted in the recent drought having a very low impact on the business or the family'. Similarly, this innovator also described the integrated economic resilience Holistic Management afforded his farm throughout the most recent drought;

> Five minutes after [we started] Holistic Management, we got an 8 year drought. Without Holistic Management, we would have gone out of business during the drought…not having to feed and already having reasonable debt [meant that our] income was modest, but there was no layout of cash (ME 7, LCMA)

Innovators explained that with these practices and with the resilience they have built into the farm, opportunities for profit are always available, even in highly variable seasons (Hand, 2007; Joyce, 2000; Spark, 2000). In dealing with variability, the following innovator compared being adaptive to being able to be dormant when required;

> [It's like those] dormant fish in mud, waiting for the rains to come to reproduce…that's what we are, that's how you have to be, dealing with a fluctuating production [and] economic system drives us to do that. *Finding ways of being dormant in the tough times*, people throw too much money at it…sometimes [you] need to sell everything off, leave the land for a bit and do something else (ME 12, MCMA)

While this innovator also described adopting a sense of opportunism in dealing with variability;

> [We] always have to be on our toes to make a living for ourselves…part of the process too (ME 4, LCMA)

The next innovator also described her adaptive approach to production and referred to her ecological base as the real 'bank', the real capital;

> My biggest lesson…[you] really have to work and pay attention…and work to keep the landscape healthy and vibrant, if it means selling livestock, do it, otherwise you're using up the bank (ME 13, TAS)

The following innovator also described working with variability and using it to provide both short and long term economic stability, based on the 'true' resource, the land;

> We hope we are *working with the variability*…a big challenge for us, a goal…we want this year to pay dividends for a lifetime…[happens by] managing our feed resource (ME 5, MCMA)

With low-input systems, debt levels amongst these farmers were marginal. The resilience offered by their farming systems provided a buffer to economic fluctuations in the marketplace, ultimately meaning that most of these farmers' incomes were modest in terms of production, but were perceived to be secured. This practice is therefore economically sustainable as it embraces a 'steady state' rather than 'growth rate' model (Washington, 2013).

Creating and taking advantage of opportunities

'Success in farming is a journey full of challenges and opportunities'
(Nell & Napier, 2005: 383)

'*…an entrepreneurial mindset among producers, where they choose to profit from taking advantage of uncertainty*' (Amanor-Boadu, 2005: 1)

With a stable ecological model providing economic confidence, these practices reduced the risk and stress associated farming and instead opened up opportunities to create new avenues for income to balance profit margins. As these practices also require less input physically from the farmer, this low maintenance affords certain flexibility with time management. The following innovator described this difference by comparing this mode of farming with traditional farming;

> The conventional farmers *think we are crazy*, think they are going to buy us out because we're all going to go broke…the nature of it is we are more financially viable, less time spent on running around and *more time spent taking the big opportunities* that are right under your nose (ME 1, CWCMA)

Opportunities for profit within this paradigm are related to the concept of being able to vertically stack enterprises, and therefore reap more from less, whilst aiming for continual regeneration and profit. Two innovators had native seed harvesting intertwined into their enterprise, which reportedly provided a very good economic return. In the case of this innovator, it was the creation of this market opportunity stemming from his involvement with Landcare and realised through ingenuity and invention that led to this becoming a successful economic aspect of the enterprise;

> [We] were collecting native seed in the Landcare group for 15 years…started looking at how to harvest, no one knew how to harvest them, or even grow them then…To harvest we invented a native grass harvester, my brother is very inventive bloke, also guy up the road very inventive plus an engineer…we made this wild machine and won a national Landcare award for it…and we went on from there, my cousin manufactures them and sells them now, that's how it evolved (ME 8, CWCMA)

For one innovator in particular, a native-seed harvesting business had become his sole form of profit from one of his properties;

> [I'm] not tied to situation, [I] have gone off and done other things revolving around native vegetation, and that's what my business is now, and now it's tied back into the farm…more money in native seed versus whatever I would put on the property, not everyone can do that…Small mob of sheep, mainly for our own meat. [We] would call in once every couple of months…when we were getting returns from sheep, [they] were very good (ME 12, MCMA)

Other innovators also reported stacking multiple enterprises together, their agency enabled by management flexibility. For example, adding a small-scale organic pig enterprise (ME 4, LCMA), or developing pipeline ideas for introducing llamas (ME 9, CWCMA). Being able to take advantage of government stewardship programs was also a financial opportunity which was derived from these management practices. The following innovator explained how his management led to the opportunity of putting eighty percent of his farm under the Box Gum Grassy Woodlands (BGGW) covenant scheme;

> [We have a] 14 year stewardship…paid to look after the trees and the grasses, and enhance it, make it even better…went along to meeting… explained it to me, [so we] put up most of our farm, but [it was] only because of what we have been doing that the country was certified…we had already built perenniality (ME 3, LCMA)

Taking advantage of lucrative opportunities, such as exploiting the newborn carbon market, was also seen as a key financial benefit in the new paradigm. Many innovators spoke of their 'good' position and predicted there might be future economic benefits from the carbon credit scheme. Having carbon in the soil was also seen as an opportunity to connect with consumers through marketing this aspect of the business. Another potential marketing aspect was the incorporation of sustainable energy sources on the farm. In particular, as one innovator (ME 9, CWCMA) had implemented solar panels to not only produce energy, but feed electricity back into the grid. While another innovator (ME 2, CWCMA) was investigating 'exhaust-to-soil options[99]', where carbon dioxide from machinery is injected directly back into the soil. Further to these opportunities, some innovators had also become change agents and were opportunistically profiting from running training and educational programs for other farmers on aspects of 'new' agricultural management (this is discussed further in Chapter 6 Section 6.6).

[99] This concept and technology was pioneered by innovative Canadian farmer Gary Lewis. For more on this emerging technology visit http://www.bioagtive.com/index.php?p=0&action=news&newsID=1124

Connecting with consumers: marketing

'We are now the price-makers, not the price-takers' (PRA 15, CWCMA)

One of the main opportunities afforded through these practices was the ability to market a sustainable product. Realising opportunities for niche markets requires a level of creativity/ingenuity on behalf of the innovator to develop relationships and connect with consumers (Eckert & Bell, 2005). This business behaviour, which has seen new adaptations and adjustments to a free market economy, indicates that innovators have blossomed into 'agricultural entrepreneurs' (Duczkowska-Malysz, 1993; Smit, 2004; Amanor-Boadu, 2005; Richards & Bulkley, 2007). For these innovators, the marketing aspects of the business had become a focal point for generating profits. In most cases, creating a niche market based on the specificities of management was the main goal – to differentiate their products from the mainstream. The benefit of sustaining the family farm into the future was described by the following innovator;

> I think agriculture has a bright future…people are going to want sustainable products…I think we're in a good position (ME 9, CWCMA)

In some cases, innovators were involved in collective marketing alliances with other farmers to improve endorsement of their sustainable products. One innovator (ME 7, LCMA) was involved with KLR[100] marketing, an organisation which brings farmers together and offers training for marketing produce. In another case, members of the Central West innovator group discussed plans to market their products as a collective. The following innovator described their plans to market this 'story' and develop a 'special' product which remains connected to the farm context;

> I was thinking about this wool marketing thing…a year until it happens, but it's happening, using the white-box thing, *pretty good story to tell*, carbon in the soil and a very good product…[the] *context* makes us very *special* (ME 1, CWCMA)

Similarly, another innovator (ME 6, CWCMA) was direct marketing his meat to butchers and restaurants in Sydney with 'toothpick flags', which detail his progressive narrative. In other cases, innovators were attempting to incorporate their animal welfare into marketing strategies;

[100] KLR marketing was pioneered by innovative farmer John Whitfeld in NSW. For more on this strategy visit http://www.klrmarketing.com.au

> [We are] probably more focussed on the grey matter prize, [the] marketing of the sheep, the *opportunity* [we are] more into at the moment…we need to start getting paid more for unmulesed sheep…I think the niche market will be the thing that keeps family farms going in the future…we're really growers, not marketers (ME 10, CWCMA)

Delving into niche markets and finding new ways to connect with customers was the main aim of some of these innovators' marketing strategies. The Tasmanian innovator explained that her wool marketing was based on promoting the ethical aspects of her business, whilst also looking into the possibilities of marketing wool as yarn (ME 13, TAS). Incorporating these values into marketing strategies is important in attracting customer support for the farm business (Nell & Napier, 2005). This same innovator also explained her plans to market towards specific requirements of customers;

> I would like to look into markets for Halal meats…uncut rams are potentially a special market (ME 13, TAS)

While the following innovator explained that his products were now filling a niche market in terms of providing offal, and more importantly, a market for customers with specific health and dietary requirements;

> Most of our customers now are coming from naturopaths, and medical people…found us, looking for grass-fed beef and lamb…we are promoted in Brisbane, [also] one in Dubbo and one in Sydney…[they want] guaranteed this and none of that…just happened in the last 4-5 months, [they are] looking for the ordering packs…and bones, we do an organ pack for sheep for ten bucks extra…beef [also]; heart, kidney, oxtail, liver [it's] 50 bucks extra…that's the interesting part]…and [the] preservative free side of sausages, [we] have always been gluten free, but now [we're] preservative free as well…a lot of sick people that are phoning up, I get comments about the meat being good for [the] digestion system, *exciting for us, but we want to actually prove it* is happening with these secondary compounds…[it's] just going to add to value [to our product] (ME 2, CWCMA)

Another aspect of self-promotion that these innovators are exploring is selling produce at the farm gate, as the following innovators explained;

> We have a cottage up the road, would like to start marketing at the farm gate hopefully, that's where I'd like to find a link (ME 4, LCMA)

All innovators emphasised that adopting this 'new' agriculture had afforded them a level of ecological as well as economic resilience. Being independent from the demands of major supermarkets was also a benefit

of self-marketing. In summary, these practices allowed innovators to realise economic stability through new market opportunities, reportedly resulting in more financial security and satisfaction when compared with their past high-output modes of farming.

5.3.4 The Farmer gets a life

> *'Lunatic farming: it's a wonderful life. Every day I feel blessed to have known about and then embraced this path'*
> Salatin (2010: 300)

> *'The satisfactions of a mad farmer…the quiet in the woods of a summer morning, the voice of a pewee passing through it like a tight silver wire'*
> Wendell Berry (the Collected Poems, 1957-1982)

Increasing quality of life

The personal satisfaction/well-being resulting from integrating practices, which nurture nature and balance profit, was an identifiable feature of each innovator's change journey. The concepts of freeing up time, reducing stress and minimising risk were attributable to this new paradigm in contrast to productivism;

> Changing management practices *increased quality of life*, conventional type of farming, you never have enough time, always trying to do it better and when you turn the other way, it falls apart (ME 1, CWCMA)

> Today I don't think we would be *enjoying farming* as much as if we went back to conventional agriculture (ME 5, MCMA)

For this innovator, satisfaction derived from environmental responsibility was contrasted with retrospectives on feeling/acting irresponsibly;

> Felt comfortable during the drought about the way this place was looking. No dust, ground cover all the time…felt like we were *being responsible* with animals, not going backwards financially…Mark Gardener (Holistic Management) calls it the *'sleepability effect'*. Honestly in 82 (amidst drought), during that time all I could do was go out and fill up the feeder bags and come back home… that's all I could do, nothing else, I must have been depressed (ME 7, LCMA)

Gardner (2012) and ME 2 (CWCMA) both reported 'sleepability' resulting from the use of telemetry (remote controlling of water points) along with the benefits of reduced stress, reduced time pressures, economic returns and general peace of mind. These 'quality of life' benefits were also attributed to the relaxed management of pastures (allowing natives to regenerate), soils (low/biological input), and livestock (re: the 'gate openers[101]'). The new paradigm of 'less is more', is based on a more relaxed approach to farming – where farmers 'farm without farming' (Cluff, 2003) and have consequential economic stability. The psychological/well-being benefits are associated with more confidence in the trajectory their management is taking, and the freed-up time to devote to other commitments. The following innovator explained this by contrasting his current and previous lifestyles, and elaborated that having more free time strengthened his family relationships;

> Financially, better off than we have ever been… …*financial stress is something that is kind of behind me*, I don't make a lot of money, but I make enough to do what I want to do…can still have a regular holiday, I went on my camel trip and [my] wife went to Scotland last year…*doing the important things*…Marriage is a lot better, [I] spend more time doing things with the kids….honestly, the *stress we used to be under was unbelievable*, I was never home, [my wife] was away working, I never saw my eldest daughter much, we lived separate lives…as my wife was saying this morning actually, 'I love sitting here having a glass of wine in the evening and having a cuppa tea in the morning together'…now we regularly go to Canberra, to the races and stay the night…never did that once…*happiness levels have definitely increased...I've never been more happy* (ME 3, LCMA)

Reporting an increase in happiness levels and therefore well-being/satisfaction is a key aspect of the HM and GFP programs, in championing practice change (Stinner et al., 1997; Savory & Butterfield, 1998; RCS, 2013). As described in Section 5.3.1, holistic goal setting played a key role in enabling and motivating change by instigating a 'quality of life review' (Peruniak, 2008). HM advocates not only the monitoring of financial and environmental changes in the landscape, but also focuses on reviewing and monitoring personal/ family satisfaction and well-being (Savory & Butterfield, 1998). The following innovator discussed some of the particular aspects of satisfaction which were plotted on graphs in order to monitor this progress;

> *We are tracking 'self-respect' alongside 'biodiversity'*...developed by Judith Crockett at Orange… Mark Gardener (Holistic Management) uses it as part of his consultation, [looks at] time with kids, time with wife etcetera…[we] can see it change over time in the graph, we do it every six months…rating [on a] satisfaction

[101] As mentioned by ME 13 (TAS) in Section 5.3.2

> scale, makes a difference…questions like, do I feel accepted by friends? The family, are we making decisions together? [In our] marriage, is criticism fair? [We] can see if we're growing together, really good for us as well…If we divorced, or didn't look after each other the family, the farm, everything would fall apart…happier, made our marriage stronger (ME 9, CWCMA)

While the following innovators discussed their HM goals and the flow-on effect of increased well-being/satisfaction;

> My goals are more about whether I'm *satisfied* with where I'm sitting, not so much about where the land is at…I ask myself – is this the way I want to live, and is this (management) contributing to that? But what's really important are the relationships, husband, children and based on *my well-being* (ME 4, LCMA)

> A Holistic goal is one of those things you have to keep updating…we haven't updated ours in a while…but I keep reading it, still reasonably current…I read it regularly… [My wife] says, as long as *you're happy, I'm happy*, so she puts it back to me…*Life changes*…goals change, once you have achieved them, where does it go from there? (ME 3, LCMA)

Another aspect increasing quality of life was the ability to use this time to engage in diverse social activities, such as volunteering time to give back to the community. Both these innovators dedicated time to local schools, which was made possible via this management paradigm;

> [Management] freed up a lot of time, but [I] filled it up with a lot of other stuff…you can *devote a lot of that time* into the community, that's a good thing, [you have] time to help… [I'm] president for the pre-school and we're looking at scholarships for lower socio-economic kids (ME 1, CWCMA)

> I work three half days at our school, not earning a lot of money…[the] principal asked me to come in and help with difficult boys…turned into a part-time job, I really *love* it (ME 3, LCMA)

Other innovators during the PRA process also indicated their intention to become involved in social justice issues, with one innovator discussing the possibility of developing a mentoring program for disadvantaged local kids (ME 6, CWCMA). Developing social networks was the aim of one innovator in particular, whose enterprise incorporated the WWOOF[102] program, hosted many university students, held an annual festival

[102] Willing Workers on Organic Farms (WWOOF) program – for more, visit http://www.wwoof.com.au/

on the property, and was involved in the community building project 'Gold' run by BigHart[103] (Strong, 2008).

For other innovators, quality of life was also enhanced through the discovery of communities of like-minded innovators with similar aspirations and philosophies. This refers to the transformative strength of a 'community of practice' (Handley et al., 2006) (see Chapter 1, Section 1.2), or more specifically, a 'farmer innovation circle' which Wu & Pretty (2004: 82) described as an informal social network which enhances technology development and cooperation by increasing a farmer's capacity to innovate and adapt. In the case of these innovators, these circles also provided a stage for expressing personal experiences, sharing knowledge with others, and building a level of conviction and trust in the new paradigm. In some cases, this has led to innovators also becoming active 'agents of change' (for more see Chapter 6, Section 6.6) as they have increased in influence or come upon new efficiencies and innovations.

A further aspect of well-being is the ability to pass on the farm to future generations (Savory & Butterfield, 1998). Most innovators were either in the process of succession, or were optimistic about passing it on to the younger generation (in cases, still children) as the following innovator expressed;

> I would love to pass it on, we would like to be in a position that we can choose whether to pass on the farm or not, might have to fund it, or kids might have to fund you. And they've got to want to do it, if they want to, we'll work out a way, same attitude my parents too – made sacrifices to allow us to go through succession (ME 5, MCMA)

Other innovators were more focussed on instilling a sense of well-being regarding country life in their children, and had plans to pass over ownership of the business to their children with a farm manager in place.

Self-help/personal development

For some innovators, being engaged in some of the more 'unconventional' practices related to self-help and personal development was a vital part of the change journey. These aspects of self-developing change are also in built into some modules of the Holistic Management and Grazing for Profit programs as discussed previously in relation to happiness and satisfaction. The following innovator described how 'group sharing' within these modules was not suited to all farmers seeking change;

[103] For more on 'Gold', visit http://bighart.org/public/?p=59

> A lot of people get into the personal development stuff…Grazing For Profit run by Principle Focus[104]…[I] was at one meeting, unbelievable…there was a motivational guy, [he] broke us into groups, [we] talked personally, people were crying, [I] didn't know if I was comfortable with it…process for some is quite hard and wearing, a couple both have to want to get right into it…I don't want to do any more soul searching (ME 7, LCMA)

Coupled with these practice management initiatives, some innovators had also taken part in specific self-development programs, such as the Landmark program[105]. This program is principally based on the concept of 'transformative learning'[106], and offers a 'fundamental shift' of empowerment through intensive courses (Landmark Education, 2012). The following innovators discussed the role Landmark played in this aspect of their journeys;

> Did a few of those Landmark courses…did a few of them, did a lot of personal development…read a lot of books (ME 1, CWCMA)

> [ME 1, CWCMA] is a *great mentor*…he rang me and said, I think you should come and do this course, Landmark, and we went ok, we'll do it, and we went because we *trust* him…recommend you do it, a bit whatever, but good to do…his wife had a great influence on us too in this way (ME 9, CWCMA)

These innovators were also members of the Central West innovator group mentioned throughout. Interestingly, this group had, for a time, met monthly with a consultant[107] who provided guidance on understanding the 'self' primarily through reflecting on internal perceptions of risk and stress;

> Meet up once a month with him…he talks a lot of sense, has started to get a bit repetitive…he doesn't think about money, thinks it will all just work out...a whole idea, *de-stressing*…all about looking after yourself, other people's choices are their own, blaming yourself for them is working against *resolving* problems (ME 1, CWCMA)

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[104] In addition to Resource Consulting Services, Principle Focus also ran the GFP program. Principle Focus is a service which offers training and coaching on the business and financial aspects of farming. Two of the PRA interviewees were educators in Principle Focus. For more visit http://www.principlefocus.com.au/

[105] For more on the Landmark educational training program, visit http://www.landmarkeducation.com/schedules

[106] This concept was developed by Jack Mezirow in 1978 (Mezirow &Associates, 2000, *Learning as Transformation: critical perspectives on a theory in process*, published by Jossey-Bass, California, USA) and provides the theoretical basis for the program (Landmark Education, 2012)

[107] An unpaid consultant who was an informal 'life guide'; his philosophy was that all ailments of the body were a product of the mind and could be controlled through empowerment.

The following innovator explained that via this consultant, he and his family had begun to practice meditation to de-stress their lives;

> Another thing we have got a lot out of over the past 3-4 years, and with a lot of people from the group, once a month we'd meet up at a coffee shop…he talks about mental health, basically being well and staying well, and living in the now and not worrying about the future…he's saying that mental distress, and stress in general causes a lot of illness in society…[have to] look after yourself, [the] number one person, [he] reiterates that to us once a month…he has some really out there ideas, he's a bit out there, doesn't seem to own anything at all…[He] taught us a meditation; life is a river and you're on the bridge, looking at the river, that's your past, that's your future and so you can't change it, so sit down and feel the wood, and *enjoy* the sunshine, and *enjoy* the fish and pebbles, and don't walk down the river because you're just going to get wet…[the] past is wet with tears…[it's] *about letting stuff go, not carrying it through your life*…doesn't work everyday, but helps [us] to be more *positive* about life in general…[you've] got to, then you notice other positive people, other innovators and learn from them…and [you] don't run away from negative people, [you've] got to understand them (ME 9, CWCMA)

The same innovator and his wife also claimed that due to this self-development process, their tolerance for those who thought and farmed differently, specifically, those practicing through a traditional framework of agriculture, was also developed;

> I think we have become more *tolerant* of people; we used to practice that way… [our] neighbours gave us 'Be' (Ping, 2004a) and 'Do' (Ping, 2004b), great books…Best quote that sums up (in 'Do') what people think we do and why they react the way they do…[they] get halfway, make one mistake and they say I told you so, and they say, better come back and do what we're doing (ME 9, CWCMA)

Using 'self-help' literature to help guide these changes was also common to other innovators who had participated in Landmark and the de-stressing consultation;

> One book I keep reading is called 'The Seven Spiritual Laws of Success' by Deepak Chopra (2007), a book I think I'll never stop reading. *Every-time I re-read it I have another insight* into a chapter…a bit like 'The Secret', but it goes further than that…if you are a really powerful person you can get things done by doing nothing, but just putting the thought out there…also of *influence*, Dr Wayne Dyer's [book], 'The Power of Intention: learning to co-create your world your way' (2005) (ME 1, CWCMA)

In terms of the unconventional, some innovators also reported other practices which they were involved in for self-development, such as kinesiology;

> [A] Kinesiologist I still go to, [she] made me much more comfortable with who I am (ME 4, LCMA)

> One of our neighbours (PRA 2, CWCMA) is into Kinesiology, that's right out there sort of stuff (ME 9, CWCMA)

While these aspects of self-development or 'help' are not common in all innovators' journeys, for others, these practices were integral to encouraging empowerment along the journey of change. Ultimately, these sentiments illustrate further examples of regaining 'control' and strengthening the internal farming locus of control through reflection on well-being.

Self-expression and experimentation with nature

> *[Aldo] Leopold imagines what a farmstead might be like when "self-expression" replaces "blind compliance with economic dogma"* (Flader & Callicott, 1991: 23)

As discussed in previous sections, these practices are based on the dynamism of Australian landscapes, and require creativity and self-expression to be successful (Milestad et al., 2010). For some innovators, self-expression was also used to communicate the philosophies underpinning their management practices through the medium of art. Some innovators created works to portray their management ideologies (see Appendix D for images). The works by Nita Lennon depict organic objects overlaying graphs/measurements were representing her philosophies of integration between science and environment (Plates 6-9). While the work by Strong, depicting his personal farm environment on a grand scale, represents his evolving ideologies and end-goal of connecting with others across the landscape through artistic expression (Plates 1-3).

For others, experimentation with unconventional practices was also discussed. In one of the PRAs, a farmer (PRA 16, CWCMA) discussed using radio waves to get rid of insects, while other innovators (ME 13, TAS; ME 4, LCMA) discussed the spiritual and cosmic nature of the management 'rituals' associated with the biodynamic movement[108] (McMahon, 2005). One of these innovators in particular spoke of practising 'bush magic' with an Indigenous educator by turning a saline bore into freshwater. This same innovator

[108] For more on these rituals see Steiner (1958) or visit http://biodynamics.net.au/ for the application of biodynamic farming rituals in Australia

discussed his experimentation with 'subtle energies[109]' via consultant Patrick MacManaway[110]. He explained the concept of 'virtual fence lines';

> [The] sub-conscious becomes a real form…[it's about] using it to make energy to make animals work for you, sort of works to a degree…the little pups, before I did his course, would come to the door and try and get through the gauze…he said put up *virtual barriers, use your mind*…the dogs do respond, I have to reinforce it though…what excites me is that though, back in the old days, with no fences, all this country was run by shepherds …only way I can think they kept them where they wanted them was virtual paddocks…in the bible, way back then, they used to build up a relationship with their sheep so the *sheep would trust them*…we've lost that to a degree… virtual fences, I want some help, I need some…there's got to be someone in the world doing it (ME 1, CWCMA)

While the following innovator, who mixed in similar circles, explained a fellow innovator's experience with these experiments;

> Way out there stuff…power of the mind, intent to create boundaries, effectively would replace fences…Bud Williams[111] in arid lands [looks at that stuff]…some people swear by the [gadgets] on the bull-bars to keep the kangaroos away, and that's all by waves… [ME 1, CWCMA's brother] talks more about iron loads and power energies…just given me enough to whet my appetite…you can see him buzzing as he talks about this sort of stuff (ME 10, CWCMA)

These examples of self-expression and experimentation with the unconventional are indicative of the open-minded, creative and intuitive traits of innovators (Ikerd, 1993; Ikerd, 1997a; Diederen et al., 2003). As Massy (2013: 232) found in his study of innovators;

> *'such a major paradigm change affects people's core constructs…this explains why transformative agriculturalists, after an initial change, often go on an accelerated and ongoing learning journey that sometimes involves explorations and openness to the spiritual, mystical, and transcendent fields'.*

[109] For more on 'subtle energies' visit http://www.scientificexploration.org/journal/jse_07_3_tiller.pdf (Tiller, 1993) for a scientific overview, or watch the following ABC Landline clip that documents Australian farmers' experiences with 'subtle energy' http://www.abc.net.au/landline/content/2013/s3887655.htm

[110] For more on geopathic consultant Patrick MacManaway visit http://patrickmacmanaway.com/about-patrick/

[111] For more on innovative farmer Bud Williams and his stock handling techniques visit http://stockmanship.com/

While only some innovators were participating in these sorts of practices, most indicated that they were becoming more aware of and fascinated with, the so-called 'woo woo', 'voodoo' or 'witchcraft' stuff – the scientifically unproven practices, or the 'real' alternatives.

5.3.5 Summary: the behaviours of innovators

The practices and behaviours which unified these farmers' change journeys are diverse and produce a wide range of environmental, economic, socio-cultural and psychological benefits for the farming system and sub-culture. Nurturing the Australian landscape, balancing healthy profit and improving quality of life are key concepts, which drive these 'novo' farming systems. These journeys encapsulate the notion of 'living sustainability'; where sustainability is not a concrete 'goal' or 'mountain top', but rather is a continuous day-by-day process of change (Norton & Steinemann, 2001). These changes aim for integration and refinement in the reported aspects of farm management and self-betterment. As these stories highlight, the concept of 'practice change', even on a behavioural level, is broadened to include the many changes and adaptations that these innovators made in order to adapt to the new paradigm.

5.4 Management Philosophies

'Indeed, the ways in which farmers put their visions into practice are indicative of their mental models of farming' (Ekhert & Bell, 2005: 1)

'We heard time and again at [this] conference that stories of change began with a fundamental philosophical shift, and that has certainly been my experience'
(Strong, 2008: 75)

As these external changes in behaviour and practice were taking place, there was simultaneously a personal psychological, philosophical and spiritual shift or 'leap' that also took place – the essence of the change. These new farming philosophies embody the true identity of the innovator in this research, one based on values, beliefs, faith and overwhelmingly, a professed relationship based on respect with nature, respect for the self, and respect for others – an assimilation of biocentric ideals into farming. The concepts of integration, biocentrism, self-reflection and connectivity were evident as interconnected philosophical themes within these journeys.

5.4.1 Integration as a philosophy

Integration is the fundamental philosophy that guided the managerial practices and behaviours of these innovators, which exemplifies their holistic goals. Integrating innovation/conservation modes of production were philosophies championed by these innovators.

Integrating conservation and production

'The theory is that one and the same oak will grow sawlogs, bind soil against erosion, retard floods, drop acorns to game, furnish shelter for songbirds, and cast shade for picnics; that one and the same acre can and should serve forestry, watersheds, wildlife, and recreation simultaneously'

Aldo Leopold, 1943 (in Flader & Callicott, 1991: 197)

Aldo Leopold's call for farming integration represents the ultimate aim of land management refinement and the main philosophy behind innovators' management; that conservation and production be integrated into farming to achieve integrity. Altieri (1989) termed this 'agroecology' (as mentioned in Chapter 1, Section 1.1) to linguistically explain the integrated basis of this philosophy. This also resonates with the idea of vertical stacking (as discussed in Section 5.3.2), the idea of 'balance' as 'integration'. The following innovator described a documentary on this type of integration which had inspired him;

> Documentary on Rebecca Hosking[112] [is] brilliant, comes back to farm, can't continue, goes on search for things, *can see her lightbulbs go on*…going into forest gardens, feeds double the amount of people per acre against conventional agriculture…and its sustainable, 10 day's work a year…rest of it is basically harvesting…only thing not in it cereals, but get equivalent from nuts…*a garden which is stacked vertically*, fascinating journey from traditional agriculture…best doco you'll ever see (ME 2, CWCMA)

Innovator Graham Strong advised that 'a model based on 'balancing' production and conservation is problematic' (Strong 2008: 75) as this infers managing these separately and in comparison without aiming for integration. These two pillars were not viewed by innovators as conflicting, with production and conservation perceived to be the same goal and therefore as harmonious;

> 'We aren't 'production orientated' or 'conservation orientated', we are *natural resource managers*' (ME 4, LCMA)

[112] For more on this documentary, visit http://www.bbc.co.uk/programmes/b00hs8zp

> ‘[We] are trying to generate a modest income and at the same time do what’s best for the land… it is a long *process* (ME 6, CWCMA)

These philosophies are evident in practice, as Ampt and Doornbos (2011) found that conservation and production benefits were simultaneously produced through the use of these new farming strategies. In order to achieve this integration, innovators explained that it was an ongoing process of refinement with no real limits to success.

Innovation and creativity

The manner in which these innovators integrate innovation into their farming systems is a creative process based on ingenuity and motivation to continue the discovery process. This refers to farmers having to incrementally problem-solve by making minor adjustments and improvements in striving towards integration (Hall, 2006 in McKenzie, 2013). Innovators integrated inventions and innovations into their management through creative pursuits, as the following innovator explained; ‘science and technology are important in farming, but our experience has shown that these are only two of many tools that are the result of creative thought…they are a means to an end’ (Strong, 2008: 86). The following innovator described his philosophy of innovation in relation to his farm management;

> As far as innovation is concerned I don’t think there is much, it’s just the way you apply different things…Mark (Gardener) says just try and take the best out of each system, what you think will work, *what’s best for you*…and that’s really what we’re trying to do here…and experiment…What I am trying to do here *is create* those linkages, how can I use, that, that, that and that to work here (ME 2, CWCMA)

While the following innovators explained their philosophies as a need for continual innovation in keeping up with sustainability, to avoid becoming static with management;

> So we have to keep pushing ourselves a little bit, to make sure that you are on the cutting edge*, it’s nice to be on the cutting edge, it’s exciting*, I’m quite conservative, more conservative than [my wife]…I’m more about innovation and a challenge, not so much about the hippie stuff, we’re trying to be innovative with what we are doing…not something you think about all the time, you *have to keep reminding yourself* of it because otherwise, you can get into a little *groove* and then you do something and you might do it for a couple of years, and you come back and think about it and go, well why am I doing that anyway (ME 9, CWCMA)

> History has a habit of repeating itself, just not quite in the same form…[but at the] farm basis it’s no different. Farming practices seem to go into 20-30 years cycles… [for example], when the chisel plough first came in,

> massive production gains…crops never seen before, but doesn't last…but not saying that what we're doing will last…hope we are conscious of that in ten year's time…*we don't know where the land's capacity is at, never will, it always changes and so we will always change our practices*…Agriculture in my eyes, it had been going anyway…you've got to be aware of that…human nature a bit, but we tend to fill our lives with so much stuff that you work on something and go ok, I've got that now and you move to the next bit and you can get a bit on *auto-pilot* I think and before you know it you're in a *routine*…A real *danger* in thinking you understand it…that's where you'll start making assumptions rather than recognising what it actually happening, understand the meaning of it, keeping the relevancy of it…have to keep *working hard at remembering this*…we keep talking about whether we are doing the right thing still…***hope I don't become complacent*** (ME 5, MCMA)

The above sentiments also imply the need continually be mindful that change is dynamic and is easily thwarted by the comfort of habit. The following innovator explained his philosophy, his aim to stay receptive;

> If you're receptive to ideas…you have a *chance to improve* on them (ME 11, CWCMA)

This innovator depicted the creativity needed for innovation with a simple puzzle which requires lateral thinking for assemblage (see Appendix D, Plates 4 and 5 for images of this puzzle). He explained how it represented the concept of a simple looking problem with a simple solution, but actually getting from the problem to the solution is all a matter of perspective and persistence – his philosophy: the solution is there, it's just not always visible at first (ME 11, MCMA).

Embracing holism

The guiding philosophy of the HM and GFP programs is an acceptance and application of holism. In many ways, the philosophical shift for innovators is based on thinking in wholes rather than parts, which according to Nell and Napier (2005), is a pre-requisite for successful strategic management. This was evident in the explanations of management practices throughout section 5.3, where every piece of the farm becomes crucial and the farm is essentially configured and managed as an organism (Kirschenmann, 1991, cited in Ikerd, 1993). Integrating a philosophy across the entire farm or 'organism', encapsulates the essence of sustainability. Innovators articulated this in terms of increasing and enhancing the synergy between 'people, ecology and business' (Lennon, 2012; ME 9, CWCMA; ME 10, CWCMA). The life support mechanisms for this organism include the farmers or custodians, as the following innovator explained; understanding that conservation and production, prosperity and human emotion are equivocal illustrates his philosophy of holism;

> *'We will discover that* ***biodiversity, production, prosperity and human emotion are one and the same thing****, and therefore the job of 'balancing production and biodiversity' will be a whole lot easier'* (Strong, 2008: 76)

Similarly, the following innovators from the USA argued for change using a similar philosophy;

> *'The four forms of wealth we are interested in are: 1) ecological 2) social 3) personal 4) financial. All of a person's needs –* ***to live, love and be loved, learn, and leave a legacy*** *– are achieved through these currencies'* (Atwood et al., 2007: 141)

Embracing the whole in this sense meant, embracing the systematic realities of farming, the social and economic spheres of sustainability are inherently anthropocentric – and are therefore not an 'anti' biocentric philosophy, but rather are understood by innovators to require integration with biocentrism. While 'biocentrism' encapsulates the anthropocentric as a 'part'; 'whole' biocentrism would indicate that humans should exist without a hierarchy and essentially embrace life and death as one with nature (see Chapter 1, Section 1.2). However, as the following three sections indicate, philosophies of biocentrism are integrated with anthropocentrism in aiming to embrace the 'unembraceable' whole and connect with and influence systematic realities through change.

5.4.2 Philosophies of Biocentrism

'The ancient sages described the most effortless way to bond with the universe and fulfil our desires. Their guiding motto turns out to be exquisitely simple: Act in accord with the laws on nature'
(Deepak Chopra, 2007)

Acting in accord with the laws of nature is the most primal application of biocentrism which colours the motivations/attitudes, behaviours and philosophies of these innovators within the new paradigm. These philosophies are based on continual 'negotiation' and integration with nature; as Lang and Heasman (2004; in Richards & Lawrence, 2009: 631) argued; agro-ecological practices operate within an ecologically integrated paradigm and are 'philosophically geared toward working with the rhythms of nature rather than against them'. Williams and McKenzie (2008) explained this as 'farming without harming', Cluff (2003) as 'farming without farming', Soule and Piper (1992) described it as 'farming in nature's image', while Savory (1988), Steiner (1958; 2004) and Fukuoka (1978) discussed the new paradigm as 'farming which

mimics nature'. These innovators expressed this biocentric view as the ultimate guide for understanding and practicing integration of conservation and production. The following sections relay the philosophies of innovators that drove this interpretation and translation of nature into farm practice through letting go of control over nature, building a dialogue with nature, attachment to place, ethics, and spirituality.

Letting go of control over nature

'Lunatic farmers embrace intricate relationships between animals and plants…multi-speciation is all about massaging these relationships…diversity is the crux of building relationships'
(Salatin, 2010: 262)

'Respecting and trusting nature's wisdom and systems requires letting go of old beliefs that have enforced offensive action, movement, control and power…To become literate in nature's idiom, we must challenge our ordinary perceptions and change our consciousness'
(Scott & Watson, 1996: 6)

In assimilating a philosophy of biocentrism into farming through the act of ethical relations with nature also meant that innovators described this relationship as working with nature rather than against it. As previously mentioned, non-human actors such as nature, soil, native grasses, livestock and water have all played an active role in shaping the innovator's journey and ultimately, philosophies. All innovators described their new practices as manifestations of the new relationship they had cultivated with nature. This essentially involved giving up the 'power-struggle' or control factor; or as Leopold explained, changing from the 'conqueror' to a custodian and 'plain member/citizen' of the cosmos (Kirschenmann, 2005). Innovative farmer Daryl Cluff (2003) described losing this control as 'farming without farming', while Masanobu Fukuoka (1978) described this as 'do-nothing farming'. Fukuoka (1978: 15) explained this concept in opposition to 'modern agriculture'; 'How about not doing this? How about not doing that? – that was my way of thinking. When you get right down to it, there are few agricultural practices that are really necessary'. The following innovator explained the relief of this realisation within his journey;

> 'It's not about what you do, but *about what you stop doing'*. Quite a relief when you come to these realisations (ME 7, LCMA)

The following innovator also described 'massaging' (Salatin, 2010) this relationship by 'leaving it to nature';

> I basically believe that you've just got to *leave it up to nature*, you know, give nature *time* and she[113] will heal (ME 3, LCMA)

While this innovator described the notion of 'control' as 'responsibility' and described embracing diversity as a concept to overcome the working against nature paradigm;

> Always had a *belief* that most of the landscape problems we have are related to a *loss of diversity* in the landscape – lacks resilience, can't get over, *you become responsible* for all the inputs that it used to provide itself (ME 7, LCMA)

The following innovator explained the redefining of this relationship within his new paradigm and explained it as an extension or evolution of past farming philosophies;

> The concept of *working with nature* rather than against it…never really thought of the idea that we were working against nature [in the past]…*but found a fine line* (ME 10, CWCMA)

The uncertainty with finding this 'fine line' and refining integration of biocentric relations was also described by the next innovators as a process of accepting the uncertainty associated with nature's dynamism;

> [The] case is that out there, nature, it's not if you do this, this will happen, I mean, there are *dynamics happening all over the place*…as humans that's something we've got to *accept*, and as farmer's we've got to *accept* (ME 4, LCMA)

> Because you're *working with nature* it's a *complex* piece…we like to think we *appreciate* it more than we did back then (ME 5, MCMA)

The notion of changing by 'giving up of control' was also described as a challenge by the following innovators;

> [It's] a big challenge for all of us…so used to being in charge of it and having it turn out the way we want it… (ME 4, LCMA)

While the following innovator encapsulated this biocentric philosophy in his own 'letting go of control';

[113] While not discussed in this thesis, the gendered connotations of the human-centric/biocentric paradigms (respectively masculine/feminine) are present in this quote.

> [I] changed my views on *control over people, nature, yourself* – why you do things, why you behave the way you do…[I've] tapped into my sub-conscious since… (ME 1, CWCMA)

These biocentric understandings were explained in terms of re-centring an inner locus of control (see Chapter 2, Section 2.3.2) by the means of generating choice through the forging of a mutual relationship with nature. As innovative farmer Whittaker summarised; 'It's getting back *diversity*, getting back *choice*, getting back *resilience*' (in Main, 2005: 256).

Developing a dialogue with nature

'We need the tonic of the wilderness…' Thoreau

'Our thoughts seep into our paddocks…' (ME 10, CWCMA)

Strong (2008; 2011) argued that the starting point for developing this bond and having it manifest, in Thoreau's words as a tonic, is to create a dialogue with nature. This innovator's argument resonates around the practice of communication between nature and ourselves, and argued that this requires '*reflection* on the very deep cadences of our relationship with nature' (Strong, 2011). The power of observation and the act of physically *being* within the landscape evokes an immediate multi-sensory response, which in turn becomes translated and stored in the farmer's repository of *intuitive wisdom*, directly impacting upon management decisions. For these innovators, having this guide the meta-philosophy of the farm meant that awareness of this relationship was often explained as fundamental in influencing practice. Furthermore, this information is valued and explained as a respect for the 'intelligence' of nature (Kirschenmann, 2005). All innovators explained the agency of the landscape as a 'living' entity which guided changes in practice. The following innovators discussed the farm environment as a metaphorical library or intelligence database of unique information and knowledge, to be interpreted and utilised;

> The farm [is a] *repository of knowledge*…[it will] always *teach* you something, and just when you think you know it all…[you are] always finding something new, seeing something different (ME 12, MCMA)

> We got our information from the land, you know, from just *reading* the land (ME 10, CWCMA)

The next innovator also explained his farm as a teacher, whilst also insinuating his position as the eternal student;

> The *greatest teacher* is out there, that's the teacher, we're just not observing it usually…nature will teach us all we need to know (ME 8, CWCMA)

As mentioned in Section 5.2.2, this innovator first received the advice to 'speak to the land from the heart' from an aboriginal elder. His philosophy is based on integrating communication with the land, with western science, in order to realise this dialogue;

> You have to sort of push off the hub-bub of life, all the noise, I mean, you have to take it all in, because it's a part of you, but you need to watch and listen to the land and let it start to *speak to you in a metaphoric way*…so you have to go through the seasons, see how things work, you've got to gain that *deeper personal knowledge*, and sure you have to mix that with some of the science that's available today, but you have to tap into the natural cycle and learn that way as well (ME 12, MCMA)

During the PRA workshops, it emerged that a landholder had told a story about a neighbouring farmer who wanted to 'talk' to and connect with his land, but wasn't sure how to go about it. He created a funnel with pipes and stuck it in the ground. Then he wrote down all his aspirations for the farm, tore up the list and put it into the funnel in an attempt to create dialogue with nature. This echoes some of the main practices attributed to the biodynamic farming movement (Massy, 2013). This innovator claimed that as a consequence, he saw the results in improved fertility and health of the farm.

Philosophies of attachment to place

'*A individual is not distinct from his place – he is that place'*
(Marcel in Relph 1976, in Dunabin & Dunabin 2008)

Having these biocentric philosophies meant that attachment to physical place also became a key philosophy in managing the farm within the new paradigm. Innovative farmers Cynthia and Tom Dunbabin (2008: 91) argued that at the basis of sustainable agriculture is a sense of place;

> *'If we are to achieve landscape and biodiversity protection in farming landscapes then relationships that include mutual respect for visions, values and meanings – the foundations of sense of place – are critical'*

Dunbabin and Dunbabin (2008) therefore argued that place is the fundamental driver of responsible action in the new agricultural paradigm, while innovative farmer Strong (2008: 86) explained that 'nurturing a personal relationship with country is what keeps us here'. In the literature, a relationship between a strong sense of place and conservation behaviours or sustainable practice has been established (Vaske & Cobrin, 2001; Gosling & Williams, 2010). The following innovator explained how Tim Flannery's (2005) personal reflections on the impact of place resonated with his own philosophy;

> Tim Flannery…something he said *resonates with me* 'this country changes people'…people everywhere have changed the land, but *Australia changes people*, this is very very true (ME 12, MCMA)

While the same innovator also explained how his attachment to place could be realised in practice on the farm;

> [My] values…based on another perspective, human *attachment to place*, many books written about it lately and the effect that it has on people, their decisions, lives …I'd like to pursue these values…get some amenities, restore it back to a woodland cover (ME 12, MCMA)

The following innovator discussed the deeper emotional cadences associated with his newfound sense of place;

> What [my faith guide] talks about a lot is *connection to place*, which I didn't realise I had so much…[the] essence of it, I've got the aboriginal *belonging*, this is my spot…my kids have got it too…*it's a real spot, and a part of you*…indigenous people had that (ME 1, CWCMA)

This resonates with the sub-cultural philosophies of stewardship and succession – succession is not just about survival of the family farm unit, for these innovators it is about maintaining a connection with local place and nature, and in some cases, embedding these values in their children (Rogan et al., 2005). Having this sense of place maintained the commitment to fostering dialogue and a relationship with local nature. As Saugeres (2002) explained, farmers define and see themselves through sense of place and their 'imagined relationships with the land and nature'. Many of the innovators in this study identified themselves through these relationships, which were described as 'invisible' rather than 'imagined' due to the reality of this strong emotional attachment.

Environmental ethics

'Farming as simply as possible within and in cooperation with the natural environment, rather than the modern approach of applying increasingly complex techniques to remake nature entirely for the benefit of human beings' (Fukuoka, 1978: 15)

'We can only be ethical in relation to something we can see, feel, understand, love, or otherwise, have faith in' (Leopold, 1949: 214)

Several innovators described their biocentric philosophies in terms of understanding that living things have birth-rights, and described themselves as having an ecological conscience or a sense of ecological morality. Recognising non-human entities as 'actants' who perform in a network of relationships with other 'actants' and 'actors' reflects the relationship innovators have built with the land, relationships based on negotiation, dialogue and respect (Noe & Alrøe, 2003). Innovators described themselves as advocates or spokespersons for the soil or the land to describe their practice of environmental justice – standing up for the silent voice of nature in human affairs. Equity, respect and justice for all living things (integration of social and ecological justice) were also explained as the fundamental principles of organic farming by Reed (2010). For many of these innovator's, integrated management was perceived to be the ethical practice of farming, it was the 'right' or 'good' way to think and behave (Strong, 2008; Rogan et al., 2005; McGuire, 2013). This was also the view of Leopold (1949) who argued passionately and poetically in his 'Land Ethic' essay for a change in human philosophy and ethos away from anthropocentrism. Pretty (2002) and the following innovator stressed that this essay has remained radical to this day, over 50 years after it was penned;

> The 'Land Ethic' is *incredibly profound and even today is at the cutting edge* of thought on Natural Resource Management…no-one's been able to express it in terms as meaningful as his, and I've researched far and wide (ME 7, LCMA)

Sanford (2011) explained this change in ethics as an expansion of the moral imagination which includes and respects equally all actors and actants (non-human actors) involved (Callon, 2004). In this light, having an 'environmental ethos' is akin to 'letting go of control over nature', with the former being conceived out of the latter. As Leopold summarised, '*a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise*' (Leopold, 1949: 224).

Spiritual connections with nature

'Fukuoka believes that natural farming proceeds from the spiritual health of an individual…He considers the healing of the land and the purification of the human spirit to be one process'

Korn discussing Fukuoka (in Fukuoka 1978: xi)

The above quote invokes a sense of 'emotional cleansing' (as mentioned in Section 5.2.1) through a quest for reconnecting /integrating with nature through farming practice. Fukuoka (1978) argued that farming is a sacred practice, while Steiner (1958) argued that farming or growing is a 'spiritual science', where 'forces' on the farm are dictated by the 'macro-cosmic' or the 'great nature'. The incorporation of spiritual and religious aspects in farming paradigms is discussed by Davis (2009: x) who concluded that they were fundamental, as 'agriculture involves questions of value and therefore of moral choice, whether or not we care to admit it'. While Wendell Berry described this by arguing that agriculture is ultimately about health, which shares a linguistic heritage with the words, heal, whole and holy (Shuman & Owens, 2009). Carroll (2004) further argued that true models for sustainability exist within the transcendent spiritual spheres which counter-oppose anthropocentrism.

In this research, innovators had developed and shaped their own biocentric framework through practice change and related their current philosophies to spiritual beliefs. No innovators discussed religious beliefs or doctrines[114], only their spiritual connections with the earth. Innovator Strong (2008: 75) emphasised his philosophy that growing food represents our 'most intimate relationship with the earth' which is not a 'resource' to be 'mined'. The emotional nature of this relationship is also described by innovator Owen Whittaker (in Main, 2005: 253), who conversely explained the loss of 'spirit' evident in production orientated landscapes; 'they've lost what it was that spoke to people, that touched them, that elevated them, that lifted their spirits, that rose above them?' These connotations of losing and finding 'spirit' are also intoned by innovative farmer George Taylor (2007) who described his change journey as 'Agriculturally to Hell and Back'. Some innovators also described the spiritual dimension of their farming in terms of their aim to maintain a balanced 'karma' (ME 9, CWCMA). These experiences were described as the aspects of spiritual development during the change journey. The following innovator described where his journey had led in terms of discovering 'spiritual forces' with an aboriginal guide;

> This is what that fellow is talking about, waves, you know, gamma waves, sound waves, all these waves we can't see…only ones we can see are ultraviolet – small spectrum of all waves…and all the other waves are

[114] Innovators' religious affiliations were not discussed during interviews

> affecting everything, [it] can be hard to fathom. The consciousness of an animal, or say a tree or a plant, different levels of consciousness, level of consciousness of spirits…fellow says aboriginal ancestors are still around, blows me away…this is what I'm into now! (ME 1, CWCMA)

In summary, the spiritual context of the farm-innovator relationship provides intimate insight into practice change, sustainability and social-ecological relationships or biocentrism in agriculture (Carroll, 2004; Hill, 2005).

5.4.3 Self-Reflection

The integration of biocentrism into a farming framework, the creation of a personal relationship with nature, meant that many innovators also expressed their farming philosophies using an introspective frame. The following sections relate to the meditative, internal realisations and insights innovators experienced, and the ensuing wisdom they developed.

On 'being green'

'This is why I think earth-friendly farmers have to be sissies. I'm a sissy farmer because I don't worship machinery' (Salatin, 2010: 173)

Self-reflecting on this relationship with nature via biocentrism, meant that many innovators had developed some degree of a 'deep green' mentality which had been integrated with a 'farming' mentality; essentially the 'eco-innovator' described in Chapter 4. Having this then translate into a personal identity of being a 'green farmer' (Salatin, 2010) or a 'conservation farmer' was common within this research and other studies related to sustainable or post-productivist farming (Burton & Wilson, 2006; McGuire, 2013). For some innovators, this translated into a pacifist or peace-maker philosophy for living and farming (PRA 8, MCMA; ME 7, LCMA). Identifying with being a 'greenie' was described by the following innovator as a 'power' or in other words, an internal locus of control;

> I've been a greenie all my life, my caring for the land is probably the most *powerful* thing I have (ME 3, LCMA)

However, not all innovators associated with the social stereotype of a 'greenie' or a deep green thinker. This shade of green was viewed as unbalanced with the reality of producing, at an extreme end of the spectrum by some innovators;

> Some farmers are more green than the greens! I wouldn't say here we are greener than the greens, but we understand the land better…[You've] got to have a practical outlook on life, [we're] better off with people managing the landscape (ME 9, CWCMA)

For one innovator, he would rather the 'green' was taken out of 'being a greenie' in Australia, due to the lack of the actual colour in the majority of our native landscapes (PRA 8, CWCMA).

Following intuition

Using intuition to decide 'right thing to do' (Strong 2008), rather than the farming sub-culture, was a key philosophy maintained by innovators in this landscape. In advising other farmers on practice change, the following innovator implores farmers to rely on intuition, conviction and passion throughout the journey;

> *'Human intuition should not be underestimated…what I am saying is to value your own convictions, have faith in our intuitive feelings and turn that into* ***passion****'* (Strong, 2008: 86)

The inherent need to use intuition to guide any type of farm management was also explained by the following innovator. In essence, he is explaining that most farmers use intuition as most farmers are innovators;

> Most farmers are very intuitive, they read the landscape very well, so a lot of the time they will short-circuit the science…the science does not just fit on the farm…a lot of farmers that don't read the landscape too I should add (ME 2, CWCMA)

The same innovator also reflected on his realisation of the need for intuition in adapting to change;

> Do it to the best of your *ability*, use everything possible within *what you know*… [that was a] big realisation (ME 2, CWCMA)

Similarly, the realisation of having to rely on oneself, one's own intuition to guide 'non-recipe' farming, was reflected on by the following innovator;

> I wanted an expert to put it all together [for me]…[I] realised, shit, *it's me*…I am the only one who can do this for my system…[I'll] probably never get it right, but *I* will do it best here (ME 13, TAS)

While the following innovator also explained his 'ecological awakening' as the realisation of having to trust himself;

> I trust in myself, and in others who are not swamped by traditional thought…I always listened to the advice of others, but I ultimately *trusted myself*, my *gut instinct* (ME 7, LCMA)

Other innovators throughout this chapter have also mentioned having to use 'gut instinct' to 'nut it out'. Similarly, the following innovator explained that intuition was his main source of guidance along the journey;

> I've had no formal training at all, and that's probably the best thing I could've done, because I wouldn't have been as innovative [as I have been], as I would have had pre-conceived ideas …It's interesting, I haven't been influenced by anything much, or *my biggest influence was my intuition and my gut feeling*…I've just worked off that, haven't read many books to be honest…don't think that's the way everyone should go, that's just the way I went…I read a lot now, I can't get enough to read…there was nothing to read back then, *I had to work it out myself* (ME 8, CWCMA)

While the proceeding innovator explained that following intuition was communicating with the sub-conscious;

> My brother [went to an] RCS conference, [he] came back and told me about this bloke who talked about getting in contact with our sub-consciousness, and I was a *great believer* in the fact that our sub-conscious was were all our *power* is… all knowledge is in your sub-consciousness and being able to tap into that would be invaluable, like the Midas touch, it's all there… …gut feelings*, you know you're right, you know* (ME 1, CWCMA)

Using intuition to guide the direction of practice change was a philosophy which innovators realised along the journey.

Embracing chaos and order

Innovators, interestingly, expressed a sense of embracing chaos, or integrating chaos into the ethos of the farm, with Strong (2011:31) even arguing that low-input agriculture *is* mental and physical chaos. However, rather than viewing chaos and associated uncertainty/complexity negatively, many innovators

explained this chaos as a positive personal challenge. The following innovator explained her philosophy using these terms;

> Chaos is what's keeping me going…you get more comfortable with a problem… [I] quite *enjoy a bit of chaos* around now (ME 4, LCMA)

Embracing chaos also espouses embracing diversity and variability in the new farming paradigm, a concept discussed by all innovators in relation to their practices. One innovator explained that the concept of 'randomness' (PRA 8, MCMA) surmised the philosophy behind his farming practice. He explained that this referred to both his management style and his lifestyle, and reflected his respect for the randomness of nature. While similarly, Harvey (2011: 7) referred to his management as '"fluid" holistic management' in order to embrace the concept of time and space variability.

In contrast to this, other innovators expressed a view of embracing order, specifically, the natural order or 'plan' of the universe. The following innovator spoke of integrating this ideology into his farming philosophy in juxtaposition with the idea of chaos;

> [A] farmers' life, you think life's chaos, but *it's all a part of the plan*, and [our mentor] says if you believe your whole life and every atom in the universe is part of a plan, it makes it easier to *live in the now* and not worry about tomorrow, whatever happens happens, takes away the distress…[we] don't worry about decisions, the decisions have already been made, [we] can plan for the future, but can't predict (ME 9, CWCMA)

The following innovator expressed a similar philosophy;

> [It's about] living in the present, but the decisions you are making now are predetermined, it just happens, that's just the way it is (ME 1, CWCMA)

On knowing 'nothing'

'All someone has to do to know nature is realise that he does not really know anything, that he is unable to know anything. It can then be expected that he will lose interest in discriminating knowledge'

(Fukuoka, 1978: 154)

This journey of change had also led innovators to self-reflect on the origins of knowledge, and the inherent human bias in the differentiation of 'fact' from 'fiction'. This led many innovators to explain that within the uncertainty and complexity of life, really we 'know nothing'. Japanese farmer Fukuoka (1978) explains his realisation of this as his light-bulb or eureka moment;

> *'That realisation completely changed my life. It is nothing you can really talk about, but it might be put something like this "humanity knows nothing at all. There is no intrinsic value in anything; and every action is a futile, meaningless effort." This may seem preposterous, but if you put chaos into words, that is the only way to describe it"* (Fukuoka, 1978: 4)

The following innovator described this in her philosophy for adaptive management;

> Nothing is predictable…everything is fundamentally based on probability (ME 13, TAS)

While the next innovators articulated their philosophies of 'knowing nothing' as an adoption of the teachings of Allan Savory;

> Allan Savory, as he says, when you make a decision assume you're wrong (ME 9, CWCMA)

> Savory has a great saying, 'in the short term our decisions are always right, but in the long-term we almost always get it wrong'…we are good at putting band-aids on things (ME 4, LCMA)

> Savory says that every decision you make is wrong in some way…you have to allow room for mistakes (ME 11, CWCMA)

Referring to practice change as a never-ending journey of discovery, is central in the following innovator's sentiment;

> Just when you think you know it, you realise you don't at all (ME 6, CWCMA)

These quotes illustrate the 'fresh' acceptance of uncertainty and mistakes central in the philosophy of 'knowing nothing'. The following innovator explained the inherent uncertainty in aiming for sustainability, and the time-limit on being an innovator;

> I can understand why people resist change, because I've been there…I've come out of it and gone in a different direction…and I'll never go back…I've seen the other side, I've done the other management…I hope there's no chance I'll go back…but *you never can say never* (ME 3, LCMA)

While the proceeding innovators reflected on the fluidity of their change journey's, and explained that it is only in hindsight that the path to change can be explained;

> [You] know where you don't want to go, [and] if you know where you do want to go, not sure what form it takes and how it is going to be (ME 4, LCMA)

> What I'm going to say now, the mind has already made up what is said… [it's] already made the decision…after is what we do (ME 1, CWCMA)

Reflecting on change

Innovators also adopted a state of reflection on the nature of change to explain their practice change journeys. For the following two innovators, this journey of reflection began in their forties;

> *Change is a journey*…changes as you age… [when I was] younger with a family, [I was] more profit conscious, I didn't start *reflecting on the impact* I was having on the world until I was in my 40s (ME 7, LCMA)

> I really didn't start to think about things until I was at least in my 40s (ME 8, CWCMA)

While the following innovator explained his philosophy of change as a continual sense of reflecting during his journey;

> The philosophy for us is what Fred Provenza said…we think that change stops, but *change is a constant*, only thing that is here all the time, happening all the time…I look back on life, who would've thought 30 or 40 years ago in Africa I would be sitting in Australia doing this…would've said don't be ridiculous…that's how *life changes*…I totally believe in climate change…its always changing…as Fred Provenza says, have we been here long enough to see continents ripped apart? We are a blink, not even that (ME 2, CWCMA)

The next innovator similarly reflected on the widening of her perspective developed throughout her personal change journey;

> Appreciating how short my time is…the human life-span…might say I have another 20years, only a little sapling really, gives you an interesting perspective on things (ME 4, LCMA)

Reflection was not only a philosophy utilised by innovators, but in many cases a habitual practice –which became ingrained. While there had been dramatic or acute changes in management, there were also incremental changes being reflected on. The adoption of change was the only way to adapt to change, as the following innovator discussed;

> You can't shrink it down to what you can manage, let it go…place worked better when I was out (recovering from a heart attack) 2003/2004…*we have a joke that the whole limiting factor on this farming system is me*…and if I keep expanding and thinking… the documentary [called] "The Brain that Changes Itself"[115]…states it's your perception of it; therefore it can change to anything (ME 2, CWCMA)

Adopting a philosophy of sustained change was a key theme amongst these innovators. The following innovators explained that sustaining change was vital in keeping up with time and innovation and maintaining adaptation;

> What is alternative today will become redundant and traditional tomorrow…I was in a trough and came through a period of understanding, but only through this period did I realise where the trough was…so how do I know when I am in the trough again? (ME 3, LCMA)

> Science once said that traditional agriculture was innovative, now alternative farming is innovative, who says we won't go the full circle? (ME 2, CWCMA)

One innovator (ME 3, LCMA) explained that his philosophy for adaptation is articulated by Spencer Johnson (2001) in his book "Who moved my Cheese?"[116] The book tells a metaphorical story that details the ongoing quest for success in an uncertain and ever-changing environment. This metaphor illustrates the need to accept that directions towards goals and goals themselves change, and that it is only in hindsight and reflection that the route taken and the decisions made can be understood.

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[115] Documentary and book – Doige, N. (2010) "The Brain that Changes Itself", Scribe Publications, Pty Ltd., Carlton North, Victoria, Australia. For more visit http://www.normandoidge.com/normandoidge.com/MAIN.html

[116] "Who Moved My Cheese?" (2001) is a story about dealing with change. It involves four characters that look for an ever-changing 'cheese', a metaphor for human desires, in an ever-changing 'maze', a metaphor for human world-views.

5.4.4 Connectivity as a philosophy

> *'In an interconnected world, a little neglect goes a long way. One thing done wrong can have ramifications throughout the system'* (Soule & Piper, 1992: 225)

Scaling the systems

Nell and Napier (2005:384) argued that 'farmers have to think small and act big' in order to be integrated into the macro-systems; however, innovators would also argue that they conversely act small and think big for this integration. Ventura and Milone (2004) argued that complex innovative processes often lead to a redefinition of the farm's boundaries; in other words, connecting the on and off-farm production processes. The philosophy of connectivity was explained by the following innovator's argument for the communal realisation of sustainability;

> That's what we have to get through to ourselves, *we're connected to one another* and we're connected to the landscape, and until we work that out, start figuring that out, we'll have problems…I'm only 1300ha in Australia, [other farmers] need me and I need them…[We are] individuals in this world, setting the *right example* is all we can do…as Allan Savory says 'we are all drips of water…the drips of water fall as rain, they join, become a stream, which becomes a bigger stream, which becomes a river…so we are all those drips and we have to just *connect, connect, connect'* (ME 3, LCMA)

While other innovators also explained that part of the philosophy behind what they do is based on making a difference across scales and across systems;

> The ways we are behaving, dovetails into bigger things like energy use, we are *making a difference* (ME 7, LCMA)

> *Win for everyone*, win for soil, win for moisture capacity, win for global warming, need 40,000ha under these systems to get carbon in, [if] well managed [we] will do it…improved human health, the *whole* way through…[needed as] all systems all across the western world are at breaking point (ME 2, CWCMA)

This philosophy which aims for connectedness in the external, off-farm systems was also explained by the following innovator as a way to regain some ground against the 'production agenda';

> *'I hope…that we are leading the way forward, beyond politics, to look for as many ways as possible to go around the back-door of the monopoly-driven production agenda and get closer to our customers, to ourselves, to our neighbours and to the planet.'* (Strong, 2008: 76)

The next innovators explained that their philosophy was based on re-connecting the disconnect evident across rural spaces;

> So many disconnections in the country, we aren't connected to the 'urban' the 'policy', 'health', 'science', 'consumers' (ME 4, LCMA)

Aiming for connectivity between the on-farm environment and off-farm systems was evident in practice through innovators attempts to reach distributers/customers personally, to be involved in research, and to improve landscape scale community conservation. Many innovators also utilised group approaches to share their stories, at local conferences and farmer field days and in cases, were acting as 'full circle' change agents. This comes from the philosophy of connectedness where many innovators talked of finding 'like-minded' people, to share ideas and journeys with.

Connecting soil with food

'Food and farming are the front and back of one body. It is clearer than firelight that if natural farming is not practiced, natural food will not be available to the public'
(Fukuoka, 1978: 147)

Specifically connecting the 'end' points of food production was also discussed by innovators who were keenly focussed on connectivity between the concepts that link nature and farming to food, nutrition and health. Stock (2007) similarly found that some innovators in the US were changing practices due to a concern with the health of their family and customers, and had integrated this concern into their identity and practice. Many innovators explained that their management of soil health was crucial in meeting the nutritional requirements for human health, as Tomkins & Bird (1998: xi) argued; *'malnutrition begins with the soil…Buoyant human health depends on wholesome food, and this can only come from fertile and productive soils'.* Figure 5.3 represents the farming philosophy of innovative farmer Eric Harvey. It is a diagrammatical representation of the soil health relationship and is utilised to explain his farm's philosophy;

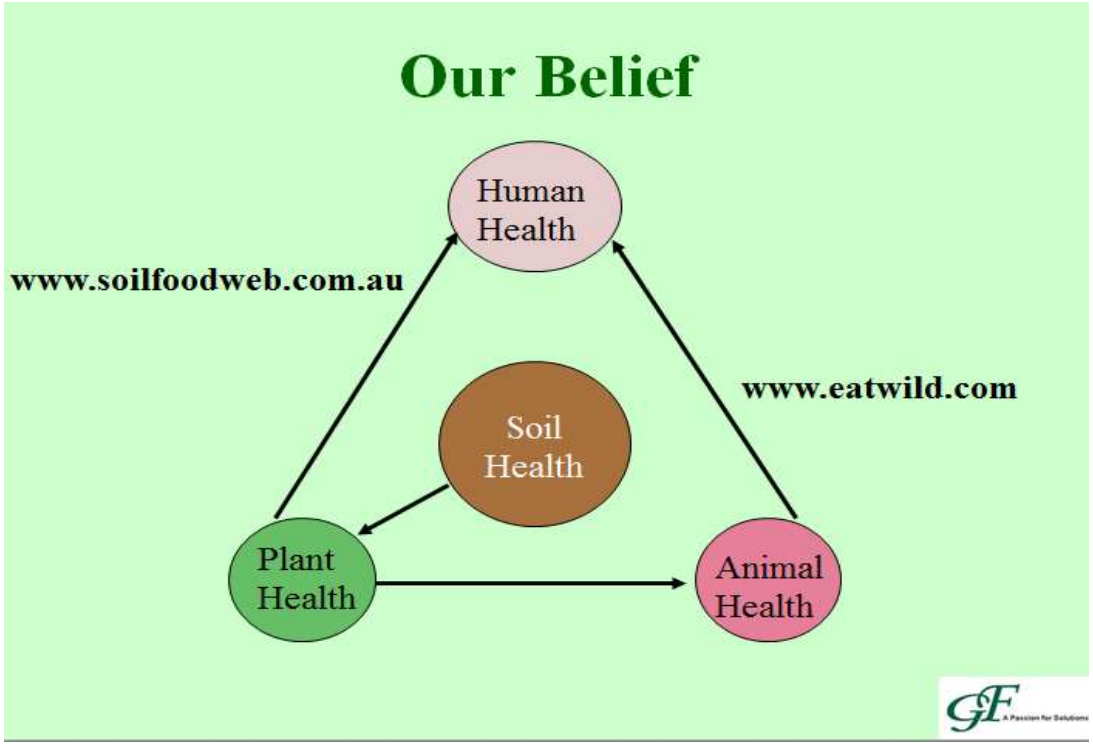

Figure 5.3 Gilgai farming belief – health connectivity (borrowed from Harvey, 2011: 89)

Many innovators had become aware of the link between modes of farming, human health and nutrition throughout their change journeys. Some innovators explained this information had been inspired through collaboration with Maarten Stapper[117], change agent and soil scientist who runs a series of local workshops for farmers, one of which is entitled "Healthy soils=Healthy food=Healthy people"[118]. Many explained how this sort of information had an impact on motivating continued changes in practice (ME 13, TAS; ME 9, CWCMA; ME 2, CWCMA; Salatin, 2010). The following innovator explained how inspiring this knowledge was;

> Dr Arden Anderson[119] from the US, heard him speak, [he's a] medical practitioner and a biological farmer…also researched all these connections…[he asks] do you realise that this is what we have done to our food chain? Everything comes back to soil health (ME 2, CWCMA)

[117] For more on Dr Maarten Stapper, visit http://drmaartenstapper.com.au/
[118] These workshops are run through his company Biologic AgFood, for more visit http://www.biologicagfood.com.au/services/
[119] For more on Dr Arden Anderson, a well-known academic in the field of Sustainable Agriculture, visit http://www.realmedicinerealhealth.com/index.html

> Little book, 'Nutrition Rules'[120] by Graeme Sait[121]… 22,000 chemicals we have released into our food chain with no idea of the ramifications…direct correlations with diabetes and water supplies…. [Sait was an] animal nutritionist and he became a human nutritionist (ME 2, CWCMA)

Another innovator also explained his concern with the links found between nutrition and diabetes;

> The links between nutrition and diabetes…it all comes back to needing [the] right food and eating healthily (ME 9, CWCMA)

Innovators aimed to connect customers with their ideologies through new marketing strategies, by incorporating these connections into their slogans. For example, Innovative farmer Graham Strong's slogan 'Natural Happy Delicious' aims to connect consumers to the mode of production. While both (ME 13, TAS) and (ME 6, CWCMA) explained that their produce was labelled 'ethical' in order to connect their animal welfare and biocentric philosophies and practices with consumers who were seeking nutritional, sustainably produced products.

New agricultural paradigms

Incorporating integration into farming meant that innovators were finding new ways to represent this interconnection, for example, the 'modern', 'traditional', 'indigenous', 'alternative' 'agro-ecological', and 'conservative' aspects of farming practice and philosophy. A diversity of these paradigms were adapted by each innovator; many innovators explained that they were not 'anti-technology' (Strong, 2008), or 'anti-progress' but were in fact integrating traditional modes of farming with 'new' alternative ideas. This integration of agricultural practices and philosophies were discussed by innovators in relation to the future of Agriculture in Australia. The following innovator explained the need for both 'high-input' and 'sustainable' agriculture;

> I think we're in a good position with agriculture, only thing that is going to stop it is government…[we] need high-input agriculture, it does feed the world, but that *needs to be balanced with sustainable agriculture*, so I feel we do have a good future, just depends how things tease out ME 9, CWCMA)

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[120] Sait, G. (2003) *Nutrition Rules! Guidelines from Master Consultants Volume 1: Soil Health-Animal Health-Human Health*, Soil Therapy Pty Ltd., Yandina, QLD, Australia

[121] Graeme Sait is founder and CEO of Nutri-Tech Solutions, a company focussed on the resolving the link between food and health through 'Soil and Plant therapy'. For more visit http://www.nutri-tech.com.au/

While this innovator also explained needing a mixture of the contemporary, 'European' farming, and the 'old', 'subsistence' farming in agriculture;

> European paradigm, we gave it a good go. [We need the] best of both worlds, can't become subsistent, can play around with it, but can't live off forests, [need to] do a bit of the both, *a bit of the new and old* (ME 12, MCMA)

Instead of viewing the differentiation between farmers as 'backwards' or 'forwards', focussing on connecting through lateral integration was the key message of this philosophy. The following innovator explained the biocentric principles associated with this integration;

> My philosophy on agriculture, we don't need to reinvent anything, we don't need any blueprints; we just need *to mimic nature's natural function* (ME 8, CWCMA)

These understandings can be related to new arguments that posit that the alternative 'new' paradigm is actually a return to the fundamental principles of farming evident in the earliest of humanities agricultural philosophies (Vanclay, 1997). The new paradigm is therefore based on re-integrating the past with the present, and therefore integrating the long-term with the short-term. The following innovator, Col Seis described his vision of an integrated, sustainable agriculture in Australia utilising three main agricultural paradigms for land management (depicted in Figure 5.4);

> Agriculture in Australia needed to be, I believed at the time [in the 1980s], a combination, almost in a triangle, of aboriginal land management, European management and a permaculture system, and that's how things have *evolved* here [on my farm], it is a combination of those three systems… [I] didn't intentionally move towards it, but I did have that thought, that that was where [agriculture] should be (Col Seis, Personal Comm. 2012)

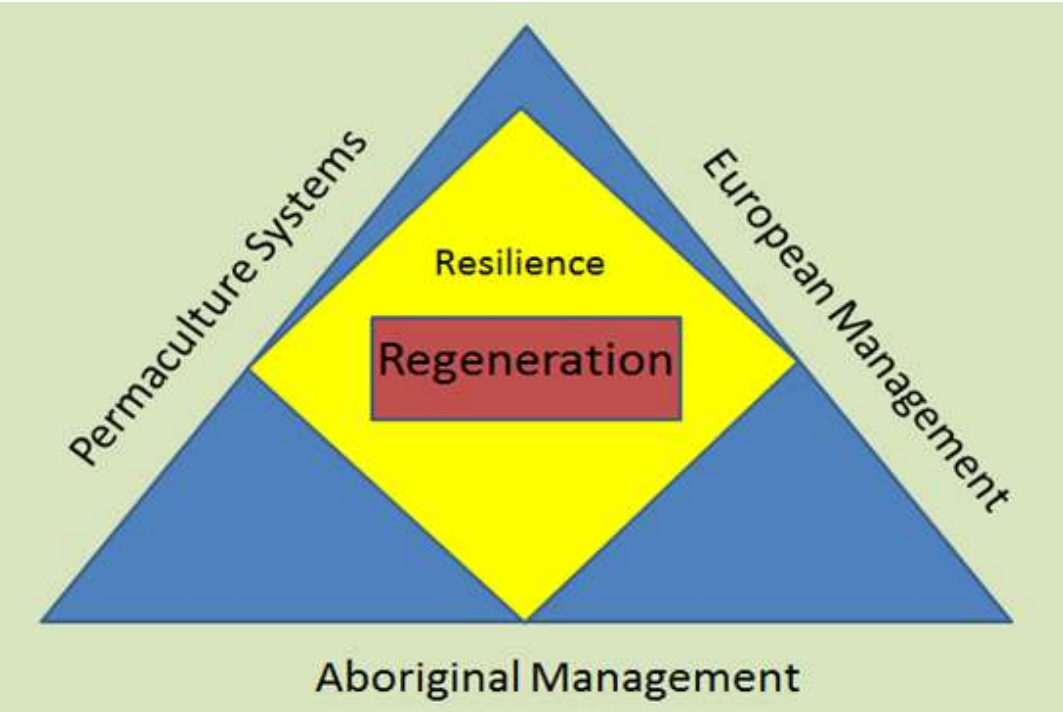

Figure 5.4 Integration for regeneration and stabilisation of Agriculture (adapted from Col Seis, personal comm., 2012)

Innovators also reflected on the connectivity between their current actions and the principle of intra-generational equity;

> My definition of farming is if we can't do what we're doing for the next, at least a thousand years, then we shouldn't be doing it…farming towards that goal is *being innovative*, 10 or 100 years is not enough, [it's] not good farming practice (ME 8, CWCMA)

While the following innovator explained the need for the ecological to take precedence over the economical;

> Agriculture [has been] around for one percent of humanities time…most of the time [we were] surviving based on threats, [the] hunter/gatherer, [we were] hardwired. Our future [is] not based on altruism [or] protecting resources, and it should be…economics, ignores costs we impose on ecosystems which are at the basis of it all (ME 7, LCMA)

Graham Strong similarly argued for a more balanced approach to agriculture and sustainability. His diagram (Figure 5.5) is based on the principles of regenerative agriculture which is central to farm prosperity. This diagram summarises some of the main concepts discussed in the previous sections. In Figure 5.5, while the economic and environmental have their own spheres, well-being and culture are both included as separate spheres to balance the internal and external 'human'. This is in contrast to the traditional concept of sustainability where these spheres are summarised as the 'social' factor.

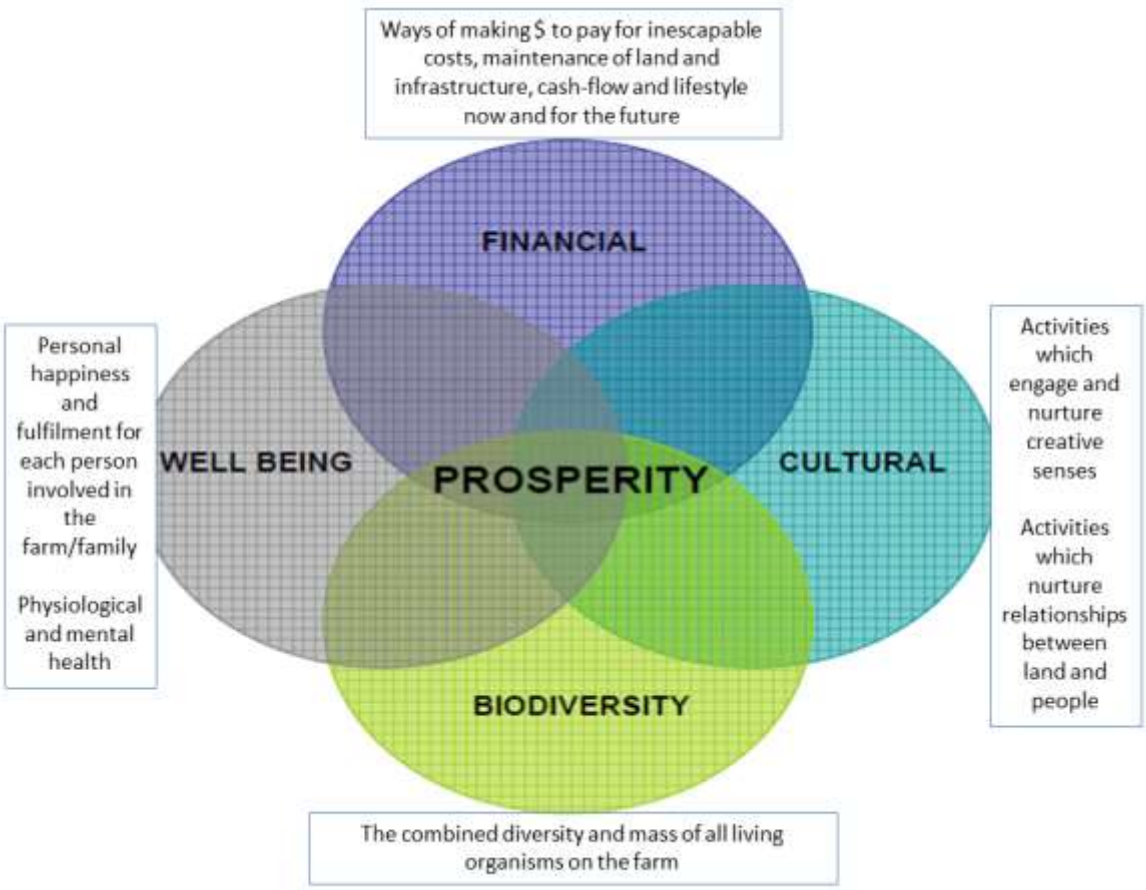

Figure 5.5 Four components of 'production' (borrowed from Strong, 2008: 79)

5.4.5 Summary of the Change Journey

In summary, the philosophies which underpin these innovators are key to understanding not only the extent of their journey, but also the emotional depth of their change. The philosophies of integration, biocentrism, self-refection and connectivity are evident throughout the sentiments discussed in sections 5.2 and 5.3, and are at the core of the change journey. In Section 5.2, the motivations and influences that impacted on this change journey are indicative of these innovators attitudes to farming change, while in Section 5.3 the behavioural and practical aspects of farming change were discussed. Guiding these attitudes and behaviours are the overarching philosophies which clarify innovators' perceptions of choice and control throughout the change process. This analysis of attitudes, behaviours and philosophies has led to the conclusion that sustaining moments of empowerment/ enlightenment and a sense of interdependence is the 'goal' of these 'eco-innovators'. In Chapter 6, Part 1 the nature of this change journey has been further simplified and summarised to examine the emotional/core aspects of the journey which drive individual change.

However, the aim of this chapter was to (re)construct the 'innovator' or 'eco-innovator' through the analysis of experience and reflection. The common thematic threads throughout these journeys reconstruct the innovator as a complex and multi-dimensional figure. The following section aims to employ this reconstruction to (re)define the innovator in terms which respect and illustrate 'living' innovators' attitudes, behaviours and philosophies.

5.5 (Re)defining the *in*novator

The 'innovator' becomes the' *in*novator'. This recognises the philosophical and *in*nate mental and emotional reconfigurations that take place throughout the change journey. This identity recognises that innovators are farmers who discover 'through their ability to see things differently' (Amanor-Boadu, 2005). The aim here is not to (re)define the innovator with a new set definition, but rather, provide a spectrum of definitions which innovators self-identified with. These definitions are not based on dominant alternative agricultural philosophies, such as 'organic' or 'biodynamic', but are rather based on personal philosophies and identities. These definitions therefore represent the multi-dimensional aspects of a new *in*novator identity.

Some innovators defined their identity by using terms which differentiated them from the dominant productive paradigm. Bruce Maynard describes himself as the 'lazy farmer' to explain his lifestyle and the well-being benefits of the new farming paradigm, while Joel Salatin (2010) described himself as the 'earth-

friendly' farmer. Similarly, many innovators identified themselves as 'conservative farmers', but rather than indicating that this meant conservative with regards to change, it was conversely defined as resourcefulness and positive risk-taking (ME 9, CWCMA; ME 7, LCMA; Joyce, 2000; Strong, 2008). Other innovators aimed to identify themselves by differentiating their practice from 'farming' by arguing that 'farmer' was an inherently anthropocentric term. Instead innovators identified as 'natural resource managers' (ME 4, LCMA), 'stewards' (ME 11, CWCMA) and 'gardeners of the earth' (ME 7, LCMA). These identities were explained as supervisory positions, based on pacifist interactions with nature rather than controlling or power-laden interactions. Soule and Piper (1992: 124) captured this identity arguing that within this new paradigm, '*the farmer's role will be more akin to that of an orchestra director than to the ecosystem simplifier's role as a soloist's coach'*.

For many of the innovators involved in this research, their relationship with nature was employed to define their ideology. Innovators referred to their relationship with soil and considered themselves 'soil carbon farmers' (ME 8, CWCMA) or 'soil farmers'/'soil builders'/'soil growers' (ME 5, MCMA; ME 6, CWCMA; ME 10, CWCMA). In contrast, Perkins et al. (2003) study of innovators only generated one participant who utilised this identity. Innovators also defined themselves as 'sunlight harvesters' (ME 2, CWCMA; ME 7, LCMA), terminology also used by Allan Savory to describe the practice of Holistic Resource Management (ME 7, LCMA). Similarly, Marsh (2004:3) argued that this identity should be defined as 'sunlight, plant and time managers', as 'everything we do is underpinned by the photosynthetic process'.

In recognising the core of the farmer-farm, human-nature relationship, innovators are also defined through this research thesis as 'philosophers of the land', 'interpreters of and for the land', and 'the natural scientists' (Classen et al., 2008). ME 2 (CWCMA) explained that he considered himself the 'real scientist', as he worked and experimented in the 'real laboratory'. This (re)defining challenges traditional thinking which separates the abilities and wisdom of farmers from the fields of science and philosophy (this is further discussed in Section 6.6.1).

The farming systems presented in this chapter also exemplify the definition of 'strong multifunctionality', which is defined by Wilson (2008) as systems with low farming intensity and productivity, high environmental sustainability, a reluctance to use Green Revolution or genetically-modified crops, a strong tendency for local and regional embeddedness, a focus on relocalised agro-food chains, high food quality, an enlightened vision of food and health, diversification of on-farm activities, partial or complete disengagement with global capitalist markets, substantial mental changes amongst farm stakeholders regarding 'farming' and 'agriculture', and a revaluation of existing household farming knowledge (for more

see Wilson, 2008: 368). These aspects of 'strong multifunctionality' have been identified within these journeys of change, and therefore these innovators could be loosely redefined as 'strong multifunctionalists'.

In order to highlight the continual change aspect of the new paradigm, Charles Massy (2013) described these innovators as the 'transformative farmers'. In a similar vein, the PRA workshops and this research defines innovators as 'farming integrators', 'resilience builders', 'the diversifiers' and 'the adaptors'. This spectrum of (re)definitions provides new depth and meaning to the terms 'early adopter' and 'innovator' in the field of sustainable agriculture. These new terms provide fresh direction to where the paradigm shift is taking place, by incorporating the innate philosophies of living 'eco-*in*novators', and how this is achieved. In summary this research has (re)defined innovators as socio-cultural 'change agents' who are ultimately sustainers of change and holistic integration.

5.6 Conclusion

The aim of this chapter was to take the reader on journeys of change, to re-live these innovators' reflections on their experiences. The story starts at the very beginning of these innovators lives, and aims to convey the brevity of their wisdom through their experiences of practice change. Their attitudes, behaviours and philosophies are intertwined, and develop a complex journey of constraints, triggers, changes, failures and successes with alternative and sustainable practice change. Figure 5.6 summarises some of the main nodes of the journey that were discussed throughout this chapter.

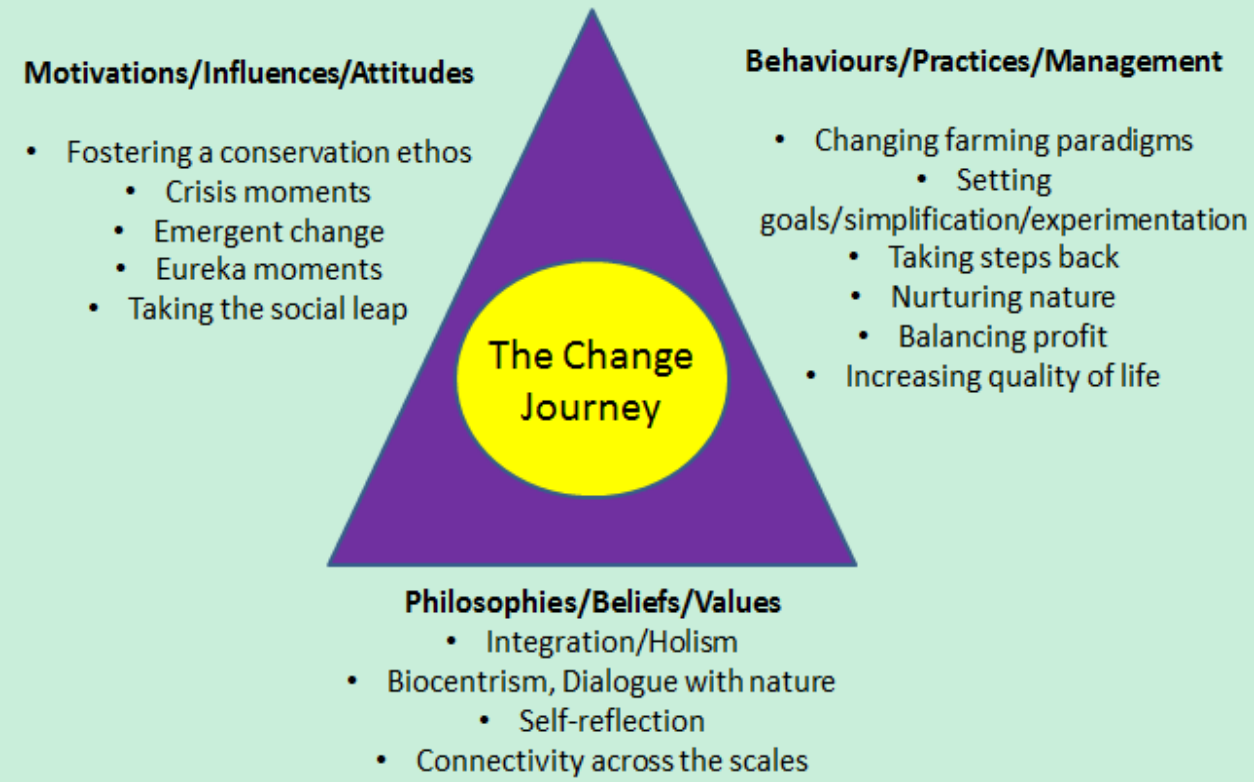

Figure 5.6 Summary of the innovator's change journey

Using an interpretive approach to build this story of change has conveyed the main messages communicated by innovators. The importance of reliving the journey is in understanding that innovators have much to teach other farmers, change agents, and society about personal transformations in agriculture. The next chapter provides a discussion on the underlying emotional and mental concepts which tied together the innovator's change journey, and the recommendations stemming from these insights for people currently working as 'agents of change' for sustainable farming.

CHAPTER 6 - Conceptualising the *In*novator's change journey and implications for Agents of Change

6.1 Chapter introduction

"I learned this, at least, by my experiment: that if one advances confidently in the direction of his dreams, and endeavours to live the life which he has imagined, he will meet with a success unexpected in common hours. He will put some things behind, will pass an invisible boundary; new, universal, and more liberal laws will begin to establish themselves around and within him; or the old laws be expanded, and interpreted in his favour in a more liberal sense, and he will live with the license of a higher order of beings. In proportion as he simplifies his life, the laws of the universe will appear less complex, and solitude will not be solitude, nor poverty poverty, nor weakness weakness. If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them"

- Thoreau

This chapter summarises and conceptualises key research implications of Chapters 4 & 5 about the change journeys of the innovators (Part 1). It then translates how these findings may inform those seeking to generate change towards sustainability (Part 2). Figure 6.1 depicts the relationship between these two parts and the chapter in relation to the broader thesis structure.

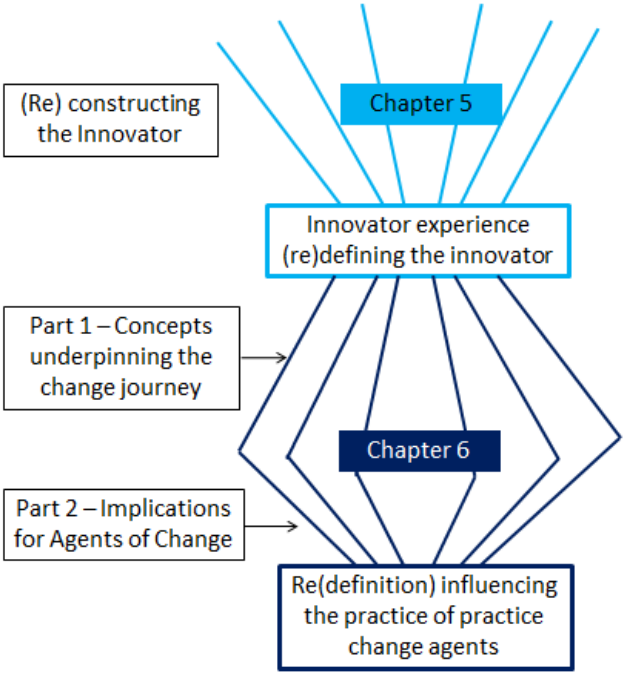

Figure 6.1 Thesis structure: linking chapters 5 and 6

The consequent (re)construction and (re)defining of the *in*novator in Chapter 5 Section 5.5 has opened the door to understanding the elemental and intangible concepts, which emerged throughout these documented journeys of change; the inner mental and emotional models which drive farming reconfiguration. The development of 'structures of feeling' (Wood & Smith, 2004: 534) is crucial in comprehending, unearthing and mapping human change (Mackian, 2004). As farming is an emotional enterprise (Roche & Rolley, 2011), understanding the workings of this emotional substrate is crucial. Emotional Geography employs this ethos, as Wood and Smith (2004: 533) argued, 'understanding emotions is crucial for appreciating how the world of human (inter)actions work'. Therefore, there is a need to understand how these inner emotional substrates interacted with the change journey – as these emotions are the base instincts which shaped the way innovator's constructed their stories and experiences (Davidson et al., 2005; Davidson & Milligan, 2004; de Rooij et al., 2010; Mackian, 2004; Wood and Smith; 2004) . This chapter examines these psychological and emotional drivers, the basic principles that were common amongst individual innovators' change journeys. The concepts of passion, persistence, reflection and trust are the 'motivators' which evoked an 'ecological self', a 'self-alignment' and an interdependent 'locus of control' (see Chapter 2, Section 2.3.2). Ultimately, empowerment, enlightenment, integrity, sustainable living and choice creation are the key concepts which summarise the collective outcome of the innovator's change journey. These

are the underlying thematic concepts, which influenced metamorphosis as discussed by all innovators during interviews.

The mental and emotional concepts which underpin the change journey are most relevant to professionals in the sustainable practice change arena, i.e. the 'extensionists' or the 'agents of change'. These deeper understandings of how and why people change is indispensable to this field, where agents of change are aiming to ignite practice change by 'reaching into the hearts and minds of farming communities'[122]. Therefore, Part 2 aims to utilise insights from individual journeys and reflections on the practice of instigating and accelerating practice change by offering a discussion on innovator's experiences as change agents and with change agents, arguing, therefore for the integration of innovator knowledge into innovation systems. Finally, a list of recommendations has been created to summarise this information and highlight the main points for consideration resulting from this body of research.

Part 1 – Conceptualising the change journey

"Success is liking yourself, liking what you do, and liking how you do it"
Maya Angelou (in Bowden, 2011: 17)

6.2 The emotional drivers of the change journey

'…take emotion seriously – since there is little we do with our bodies that we can think apart from feeling'
(Davidson & Milligan, 2004: 523)

This section discusses the underlying concepts that directly relate to the journeys of change experienced by the innovators in Chapter 5; the mechanisms that cause the 'inner changes' in assumptions and ways of operating (Senge et al., 2007). As stated, Peter Ampt's Benchmarking study of the same innovators (Ampt & Doornbos, 2011) aimed to empirically assess the ecological impact of the changes in practice. Ampt (2013) further employed this evidence to develop a model which conceptually summarised the conclusions of his study. This diagram (Figure 6.2) highlights the main ecological feedback mechanisms stemming

[122] Terminology utilised by 3 different agents of change in the extension field (Personal Comm 2011/2013)

from the integration and the particular practices these innovators integrated into their farm environment. This diagram also acknowledges the critical role innovator motivation plays in continuing this cycle.

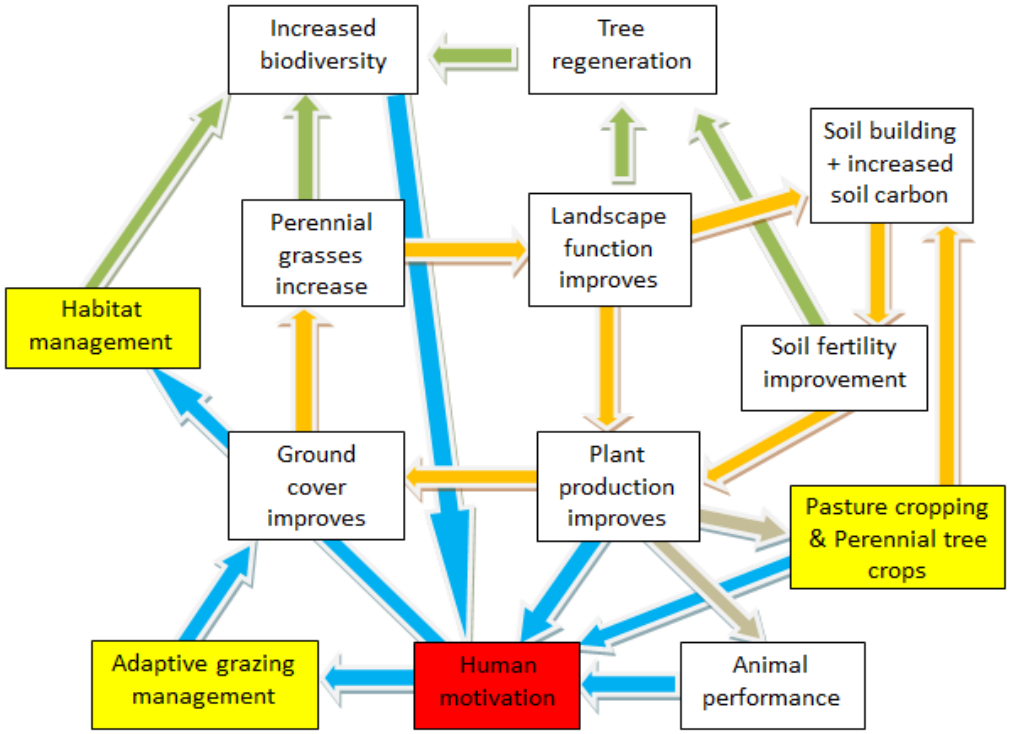

Figure 6.2 Conceptual model linking improved grazing management and motivation (Borrowed from Ampt, 2013: 181)

To complement this diagram, there are four main concepts which emerged from the innovator's journeys that prolonged motivation; these being to change through the personal and individual powers of passion, persistence, reflection and trust. These concepts constitute the emotional and mental concepts which drove change.

6.2.1 The power of passion

'A farm includes the passion of a farmer's heart…'

(Joel Salatin, 2007: 127)

Within the spectrum of factors that influenced or 'triggered' an innovators journey the underlying motivation was a strong interest or passion for biological/natural aspects of the farm environment. As

reported in Section 5.2.1, the roots of these passions were often developed during innovators' formative years. Innovators reported having a passion, and at times even an obsession, for aspects of ecology including soils, pastures, sheep, cattle, birds, native mammals and native grasses. As expressed in Chapter 4 (Section 4.2.2), a basic passion for farming or growing and maintaining this passion underlies the farming sub-culture. However this same passion, while it can maintain tradition it can also motivate change to improve on tradition. A passion for improvement, being resourceful, for accepting challenges, for trying different things, for being a risk-taker, for experimenting, and a passion for 'making a difference' were all reported by innovators in this study and others (Allan, 2005; Perkins et al., 2003). One innovative farmer expressed this in his business logo; "Passion for solutions" (Harvey, 2011). Innovators' passions also extended to a sense of belonging and place on the farm, with one innovator expressing his firing passion for the family history on his property. Most innovators also expressed a desire for succession of the property to take place, and in some cases, the business as well. These passions are the blueprint for change and were expressed through innovators' philosophies; through their respect, love and their intimate levels of stewardship for and knowledge of the land (Ikerd, 1997a; Saugeres, 2002). Through innovators' behavioural and practical efforts to fire these embodied passions they ended up 'doing what they do best' (Ikerd, 1997a: 1), and as Perkins et al. (2003) similarly found, they were extremely passionate about their journey. These passions have a direct influence on an innovator's 'venturesomeness' and their ability to increase their competence or 'mastery' in farming (Allan, 2005; Wilson, 2008). In other words, passion is the fuel for motivating sustainable change.

6.2.2 The power of persistence

'Nothing in the world can take the place of persistence…persistence and determination alone are omnipotent'

Former US President Calvin Coolidge (1933)

'Experience is what you get when you didn't get what you wanted. It's…a reminder that failure is not just acceptable, it's often essential'

(Pausch, 2008: 148)

If passion is the fuel, then persistence is the motor driving change. This emotional driver was explained by all innovators as key to succeeding with and maintaining change through the constant recycling of routines, recipes and traditions. As discussed in Chapter 5, innovators realised they had to rely on themselves and their own convictions for the real changes to occur. This therefore, required persistence with igniting their

passions or as Ikerd (1997a: 1) explained, to 'continually sharpen the sword'. Metaphors for encouraging persistence with practice change are also utilised by Grazing For Profit and Ranching For Profit Educators; for example through use of Albert Einstein's famous saying, 'insanity is doing the same thing over and over and expecting the results to be different the next time' during lectures (Beattie, n.d.:10). This saying is used by GFP to motivate farmers into accepting failure, mistakes and errors which are the learning curves directing the change process. Persistence with uncertainty, risk, determination, and social condemnation, were all aspects of persistence that were evident within innovators' change journeys. These elements were linked with motivating beyond persistence to build resilience into their social-ecological systems by adapting to unpredictability (Folke et al., 2003). Innovators also explained that persisting with change through behavioural experimentation and monitoring these factors helped keep the motion of the change current and relevant. Striving to maintain relevancy is explained by Christensen (1997 in Fortino, 2011) as the 'innovator's dilemma'; where the innovator is both at risk of being ostracised and illegitimated, as well as at risk of being a slave to their own innovations. This dilemma was often brought up and expressed by ME participants in a similar vein to Denning (2005b: 14), who argued that innovators are 'fighting a guerrilla war', conducting 'rogue operations', inducing disorder and disruption, and threatening the perceived stability of the status quo. Christensen (1997) argued that the 'innovator's solution' to this dilemma is to persist in destroying their own incumbency which in turn creates new incumbencies. Innovators' philosophies regarding 'the myth of perfection' and 'unlimited potential/imagination' meant that persistence was regarded by innovators as an inevitable and life-long part of the journey or process of change; as one innovator exclaimed 'the mind is a brute of a thing to overcome!' (ME 7, LCMA).

6.2.3 The power of reflection

'Hurry Slowly', a Zimbabwean saying, is my philosophy (ME 2, CWCMA)

Continuing the analogy, if passion is the fuel and persistence the motor, reflection is therefore the steering wheel which guides the direction of the change journey. Evaluating and self-reflecting were both thematic aspects of the innovators' journeys; as Dart (2005: 627) argued, 'in the contemporary farming systems improvement context, evaluation is most valuable when it has short-cycles and fosters reflection'. Reflecting on personal transformations and revelations, witnessed and felt throughout the change journey was an integral experience for innovators. This allowed for the important goal setting and re-evaluation process to take place – providing a compass for the direction of change. These reflections allowed for consistent improvement and adjustment, and kept the practice change cycle in motion. During moments of reflection on personal long-term and short-term impacts upon the world, innovators cultivated their most insightful philosophies; they were appraising and visualising their own mental road-maps. Kaltof (1999)

similarly found that self-reflective, biodynamic farmers used their own comprehensive philosophical wisdom to reflect on the reasoning behind each and every practical action and behaviour. The power of harnessing reflective thought is also related to challenging one's own ideology or 'sense of self' in order to destroy/innovate/create, essentially taking two small steps back for one stride forward (Allan, 2005; Fortino, 2011; Strong, 2011; Tarnoczi, 2011). Lankester (2013) evaluated from her study of cell-grazing beef farmers in Northern Queensland that critical reflection within the change journey led to questions of practices, of 'self', and broader cultural norms. While Stock (2007) argued that self-reflexive farmers exhibited a 'moral care' for the health of others and the environment. Innovators in this study also reported that reflection was a constant *reminder* to challenge their own knowledge and beliefs. Taking time to reflect was also regarded as enjoyable by innovators as it could reignite dormant passions and/or fire new passions.

6.2.4 The power of trust

The inherent power of trust is a structural rather than operational driver of change. Trust refers to the ability for the driver (or innovator) to have confidence in their own driving capabilities, to trust the road and to trust those they meet upon this road. Believing in these aspects of the journey allowed for innovators to navigate roadblocks and avoid accidents, in other words, miscommunications. The following diagram (Figure 6.3) aims to convey the concepts stemming from the human motivation box in Figure 6.2. This figure depicts the multiple interactions between the emotional drivers, within a cocoon of trust. This illustrates the change *cycle*, which realistically begins and ends in a different place each time as depicted through the repetitive nature of the journey in Chapter 5.

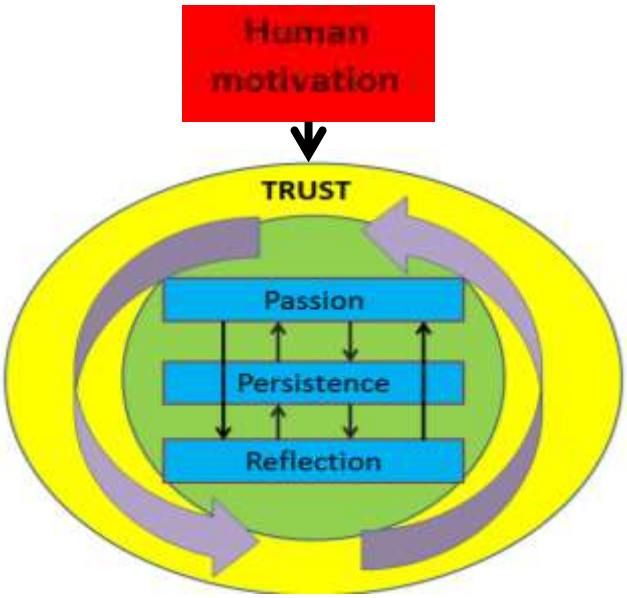

Figure 6.3 The relationships between the emotional drivers of change

To understand why trust is a 'cocoon' enveloping these drivers, the following research from Fortino (2011) and systems thinker Senge (2004) has been utilised to explain. Fortino (2011) utilised the 'Promethean myth'[123] to argue that the Prometheus is the 'fundamental archetype of the innovator'. His interpretation of this myth[124], in terms that reflect the emotional drivers of the innovators' change journey, has been

[123] *Prometheus Bound*, by Aeschylus. Fortino (2011: 207) summarised the myth as follows; 'Zeus, the modern Olympian chief god fought the War of the Titans with his father Chronos for control of the heavens. Most of the immortal Titans sided with Chronos against Zeus, except for two Titan brothers, Atlas and Prometheus. When Zeus won the war both Titans came to reside on Mount Olympus with Zeus. Atlas was rewarded with the task of holding up the heavens, but there was not much left for Prometheus to do. He was a clever fellow and as he saw that humankind lived at the whim of the gods, decided to take the immortal fire from heaven and endow man with the cleverness to invent and control his own destiny. The punishment Zeus meted out for Prometheus' transgression of making men less susceptible to the whims of the gods was to be chained to a mountain and have his liver eaten every day, so the story goes…Eventually, Prometheus' descendent Hercules freed him from his chains, a fact that Prometheus , having the gift of prescience knew would eventually take place'.

[124] The Prometheus story has been interpreted a number of ways in theoretical debate; the gift of immortal fire given to Prometheus, and subsequently to humankind, has been interpreted literally as technology (Dryzek 2005; Dryzek et al., 2009; White et al., 2007) and metaphorically as culture, creativity, innovation, ingenuity, change and self-awareness (Bachelard, 1964; Fortino, 2011; Marshall & Ojiako, 2010; Nixon, 2010). The literal and more popular interpretation has given rise to the term 'prometheanism', which denotes a reliance on technology to solve ecological concerns; prometheanism is based on dominance over nature and is opposed to environmentalism in this take on the myth. While the second interpretation, where human 'ingenuity' transcends technological invention, complements the broader definition of innovation utilised in this research and outlined in Chapter 1, Section 1.2.

summarised in Table 6.1. Senge (2004) similarly developed a set of concepts which he argued explain all learning processes and provide a model of change. These concepts have correspondingly been integrated into Table 6.1 as they also bear strong resemblance to the emotional drivers of the innovator's journey.

Table 6.1 – The emotional drivers and the change process

The Emotional Drivers:	The Promethean Myth (Fortino, 2011: 208)	The Change Process (Senge et al., 2004: 88)
Passion	**Departure** – The hero is separated from the known and steps into the unknown	**Sensing** – Transforming perception
Persistence	**Initiation** – By crossing the threshold the Hero's world is changed forever. A mental journey merges with the physical journey to result in a spiritual revelation of purpose and self.	**Presencing** - Transforming self and will
Reflection	**Return** – Through the Hero's ultimate sacrifice of self, he walks in an enlightened state	**Realising** - Transforming action

The silent witness which enables or protects the drivers (see Figure 6.3) depicted in Table 6.1 is trust in the internal and external. As in Prometheus' journey, trusting in oneself and relying on oneself is both a key strength and the key lesson to be learnt from the change journey/cycle (Fortino, 2011; Senge et al., 2004). This 'inner' trust is a faith in self-conviction, and is depicted in innovators' self-reflexive abilities to drive change successfully by navigating, between intuition and ingenuity. This trust was strengthened as the results of this change became evident to innovators; for examples, reports of increased resilience, adaptation, well-being, and stability. These positive results reinforced innovators' conviction and

However, the use of the Prometheus story in the context of this doctorate is not focussed on innovation, but rather, the innovator and the journey Prometheus went on. This journey can be interpreted as a metaphor for the human condition and the battle between maintaining tradition while encouraging change. As Perkins (2011: 7-8) summarised, Prometheus conjures; '*the image of humans as beings that are deeply ensnared in circumstances that often stultify and break them, [this] should resonate strongly with us. At the same time, another image, that of human beings as creatures that possess occasionally awe-inspiring world-transformative practical powers, should resonate in our imagination to the same extent'.*

motivation to continue with change making, as depicted in Figure 6.2 (Ampt, 2013). For innovators, trust was the major structural platform in creating both in heart and mind, and externally on the farm. More about innovator's reliance on the 'self' is discussed in Section 6.3.1.

Reflecting and challenging one's own belief system is an emotional process which requires dialogue, communication and a trust of others, as evident throughout the innovators' change journeys (Lankester, 2013). The role of 'external' or 'outer' trust, has been extensively discussed in terms of farmer knowledge generation, social learning, social networking, and social-capital generation in the practice change literature (Bridger & Alter, 2006; Carolan, 2006a; Carolan & Bell, 2003; Folke et al., 2003; Lankester, 2013; Morgan & Murdoch, 2000; Sligo & Massey, 2007). Existing mistrust for 'science' and the 'government' were key aspects impacting farming practice change (Richards et al., 2005; Richards & Lawrence, 2009) which are discussed further in Part 2. Innovators sought out trustworthy people, networks and information through self-appraisal in order to support their practice change journey, and additionally, to further develop their sense of place and belonging (Lankester, 2013). External trust is highly related to the concepts of 'truth' and 'respect' (Carolan, 2006b; Carolan & Bell, 2003; Folke et al., 2003). As Carolan (2006b) argued, trust both creates and is created through farmers' affiliations and/or disaffiliations. Throughout these farmers' journeys, disengagement or disaffiliation with certain paradigms, practices, philosophies, social-norms and networks, in order to allow room for new or more fruitful engagements, was a common experience. Developing relationships with like-minded people within the landscape was also a key theme throughout these change journeys; trust is what ultimately binds the innovator sub-culture together. Building relationships, or driving purposeful engagement with others, also reportedly influenced increased personal psychological well-being in innovators (Ryff et al., 2004; Ryff & Singer, 2008). Trust and respect building were therefore vital for successful and prolonged practice change, which shaped the purpose/motion of the emotional drivers or powers of change.

6.2.5 Summary of the emotional drivers

Ultimately, these drivers helped innovators overcome many of the potential 'road blocks' or 'breakdowns' during their journey towards a more fruitful farming practice. These are the fundamental aspects of the analogous 'drive' or the journey. As discussed, the fuel is passion, the motor is persistence, and the steering wheel/direction is based on reflection, while the skill and ability of the driver is based on the notion of trust; this metaphor represents an aspect of the psychological system. This journey of the innovator is an epic personal quest full of twists and turns, risks and rewards (Fortino, 2011). To revisit the Promethean Myth as discussed in Section 6.2.4, there are stark commonalities between Fortino's (2011) interpretation of the

main stages of the myth and the emotional drivers evident as the main stages of the innovators' journey of change. These have been adapted and summarised in Table 6.2 to provide a linear account of the journey.

Table 6.2 The Promethean myth and the emotional drivers of the innovator's change journey

The Promethean Journey	Prometheus translated into the innovator (Adapted from Fortino, 2011: 209)	Stages of the agro-eco innovator's change journey	The role of the emotional drivers
1. Inspiration (snatching fire from heaven)	Adopt-Transform-Apply (Innovation)	Eureka moments, crisis moments, realisations, need for change	Passion
2. The purpose (for snatching the fire)	Advancement for humankind	Connecting with people and nature	Passion
3. Consequence (of snatching the fire – God's are angry)	Creative destruction	Breaking with tradition, breaking paradigms	Persistence
4. Personal consequence (of the act of fire snatching – chained to the mountain)	The Innovator's Dilemma (incumbency)	Experimentation, failures, continual readjustment, accepting uncertainty	Persistence
5. Commitment (to making it worthwhile – sacrifice of his liver)	The Innovator's Solution	Faith in intuition, self-appraisal, committing to goals, biocentrism	Reflection
6. Vindication of the commitment (freed from the mountain)	Succeeding against the odds	Seeing the results, reinforcing conviction/motivation	Reflection
7. Ultimate Triumph	Lasting value	Faith in self-ability, faith in others, faith in change	Trust

As discussed, the journey is cyclic and therefore based on fluidity, dynamics, and constant change; it is an ongoing learning journey (Massy, 2013). The classic stages in the Promethean Myth do not logically translate into a realistic journey as an innovator experiences multiple stages throughout their continual

change process. To add depth to this cycle, the next section discusses the propellants of the journey - the concepts that allow the innovator (or driver) to take multiple journeys and achieve perceived success in reaching certain destinations.

6.3 Sustaining the change journey

The underlying emotional and psychological drivers of change allowed for fundamental changes in the 'self' to take place along the journey. The adaptations expressed via the innovators' change journeys can be summarised as the development of an ecological self, the alignment of attitudes/behaviours/philosophies and the development of an interdependent 'locus of control'. These are all internal shifts and processes of change – what manifests in reality is just a result, the output – the internal journey of the 'self' is what is creating and reconstructing the farming reality. These changes in the 'self' were explained as the sustainers or maintainers of continued change and improvement.

6.3.1 Developing an ecological self

Integration, biocentrism, self-reflection and connectivity all represent the innovators' perceived shift from having a 'partial' identity to a 'whole' identity. The 'self' in general is explained in most examples of 'sustainable' or 'ecological' farming – with these practices being 'self-sustained' (Soule & Piper, 1992), 'self-regulatory', 'self-reliant' (Richards & Lawrence, 2009) and 'self-sufficient' through modes of 'self-discovery' (Röling & Jiggins, 2000) and 'self-creation'. In the socio-cultural climate, innovators were defined as 'self-starters'(Ampt et al., 2010), while innovative farmer Eric Harvey (2011: 2) explains that 'self-awareness', 'self-motivation', 'self-monitoring' and 'self-disciplining' are all aspects of his farming creed. The idea that increasing autonomy and self-change are *at the core* of practice change, resonates highly with the idea of developing or maturing towards what Naess (1986) termed, an 'ecological self' (Drengson & Ioue, 1995; Mathews, 1991) or an 'ecocentric/biocentric self' (Bragg, 1996). This refers to the formation of a self-identity, which accepts interdependency and connectedness, based on a sense of altruism. This identity can be called the 'extended self', which delves into spheres and dimensions beyond the self (Ryff & Singer, 2008). Bragg (1996) explains it as an evolutionary process from 'shallow environmentalism' to 'deep ecology' or biocentrism; the understanding that the change needed is not 'out there', but within. The development and maintenance of this ecological self is evident within the innovators' change journey and exemplifies the philosophies of the new farming paradigm. The emotional/cognitive journey which has resulted in the maturation of the ecological self is reflected in the compassion, sympathy and empathy expressed by all innovators for the biocentric continuum; aspects of

their emotional intelligence (Merkowitz & Earnest, 2006; Schutte et al., 1998; Schutte and Malouff, 2011) or emotional knowledge (Wood & Smith, 2004). The ecological self can ultimately be explained as a self-professed 'love for life', or as termed by Wilson (1984 in Washington, 2013) 'Biophilia'. Massy (2013) similarly found that biophilic philosophies guided the eco-innovators in his study. Over time, the components of this journey which influence the strengthening, maturation or expansion of the ecological self (Gosling & Williams, 2010) are evident in the reported alignment between innovators' attitudes, behaviours and philosophies.

6.3.2 Aligning the ecological self

'I believe it's all about authenticity…Authenticity is about finding the real you, so you can live as the genuine article rather than as a cheap fake' (Ping, 2004b: 4)

Change journey revelations, relating to the realisation of self-disconnects, are directly correlated with the internal dynamics between attitudes, behaviours and philosophies (discussed in Chapter 1, Section 1.2). The realisations of fragmented disconnections within the 'outer' world (see Chapter 4, Section 4.2.2), meant that some innovators were 'triggered' by crisis moments, which led to investigation and reflection on their impact on the external spheres and consequently, their own happiness (see Chapter 5, Section 5.2.2). Setting goals with the aim of aligning attitudes, behaviours and philosophies was a common theme amongst innovators and other literature on sustainable farmers (Beedell & Rehman, 2000; Karami & Kesharvaz, 2010; Karami & Mansoorabadi, 2008; Gosling & Williams, 2010). Perceived success of this alignment was also strongly related to innovators' perceived levels of happiness and therefore both their eudaimonic[125] and hedonic wellbeing (Roche & Rolley, 2011; Ryff et al., 2004; Ryff & Singer, 2008). As Ryff and Singer (2008: 13) argued, psychological well-being is a process of alignment in that one has to 'know thyself to become what you are'. The following innovator explained identifying and remediating his 'internal conflict' through a Holistic Management module, which encouraged farmers to self-audit their attitudes and behaviours. He explained that his philosophical shift was a realisation of his base internal conflict;

> In my farming life I was acting in a way that was diametrically opposed to the way I naturally am, I'm an 'eco-centric' but I was behaving in a very techno-centric fashion…If you're [practising high-input agriculture] there is a *conflict in your mind* that you don't even recognise, and I didn't until it was

[125] Ryff et al. (2004: 1383) explained the difference between Eudaimonic and Hedonic well-being; 'the first addresses ideas of self-development, personal growth and personal engagement, while the second is concerned with positive feelings such as happiness and contentment'.

revealed…With Holistic Management I could behave the way I am…[it] **should be yourself driving** your behaviours (ME 7, LCMA)

In identifying his 'eco-centrism', this innovator began his journey of self-appraisal, triggering a quest for an alignment between his attitudes, behaviours and philosophies. In summary, the ecological self grows and influences the modification of behaviours which embody these philosophies and attitudes. Innovator Graham Strong (2011) represents this alignment conceptually in Figure 6.4 as an integration between the 'internal character' (attitudinal), the 'external character' (behavioural) and the 'true self' (philosophical) which creates the 'individual self' or, the ecological self[126].

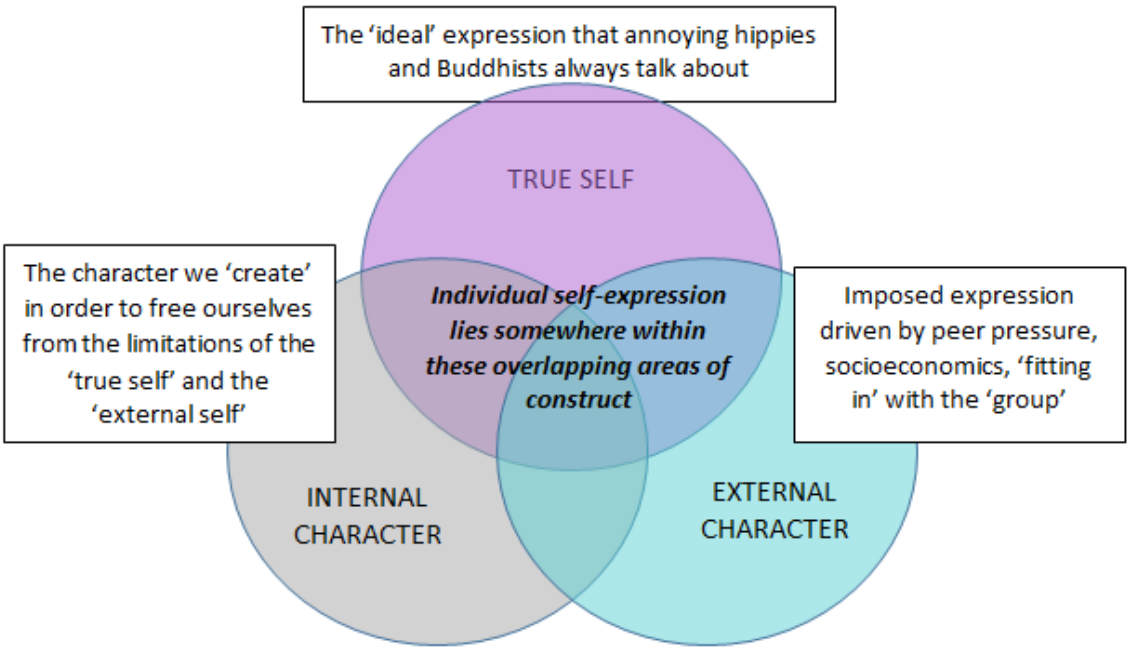

Figure 6.4 The alignment of the 'self' (borrowed from Strong, 2011: 12)

In understanding how this alignment of the 'self' translates into a relationship with nature, Gosling and Williams (2010) conceptualised connectedness theory amongst farmers' attachment to place (attitudinal) and pro-environmental behaviours. They found that 'biospheric concern' was the missing philosophical

[126] Recognising here that an 'ecological self' is not purely based on the individual identity, but an all-encompassing identity where the connections between life for the purpose of sustaining life are internally realised.

piece between farmers' environmental attitudes and behaviours, and represented this as a linear model to describe the interaction (Figure 6.5).

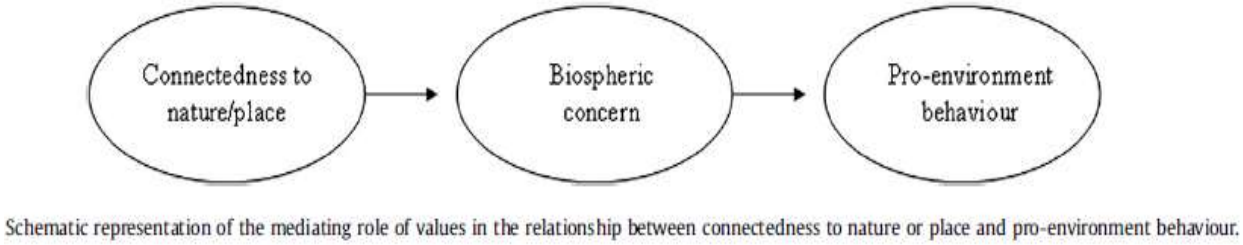

Figure 6.5 Connectedness theory amongst farmers (borrowed from Gosling & Williams, 2011: 299)

These three aspects of the 'self' are represented linearly by Gosling and Williams (2010). Therefore, Figure 6.5 does not recognise the complex interactions of the relationship of these aspects. To represent the holism of this relationship between attitudes, behaviours and philosophies and the nature of their 'alignment', a triangle should be used to incorporate the dynamism of Strong's (2011) (Figure 6.4) model, and the values presented in Gosling and Williams' (2010) (Figure 6.6).

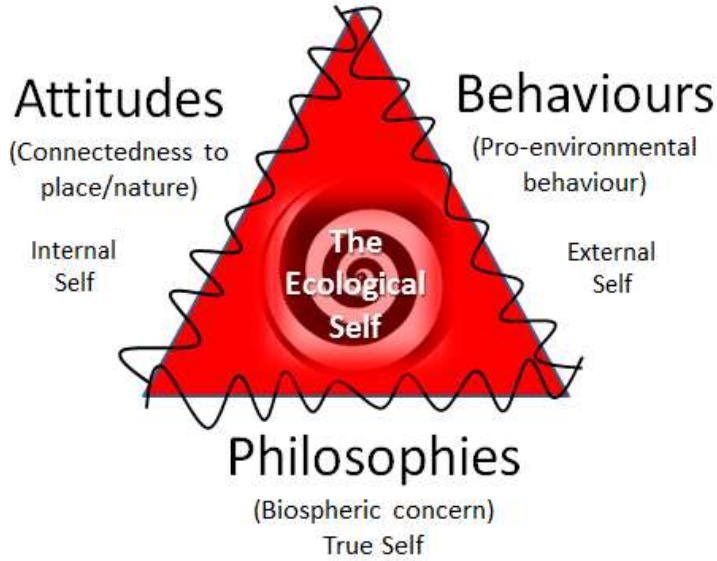

Figure 6.6 The alignment of attitudes, behaviours and philosophies allowing for maturation of the ecological self

As depicted above in Figure 6.6, and in the arguments of Schutte and Malouff (2011), the relationship between attitudes (or mindfulness), and behaviours (positive affect and life satisfaction) are mediated by philosophies (or emotional intelligence). The aspects of emotional intelligence, evident in innovators' include self-appraisal, self-expression and self-regulation of emotions, as well as the use of emotion to solve problems (Salovey & Mayer, 1990 in Schutte et al., 1998). This alignment with emotional intelligence created an ideal 'habitat' for growth/maturation of the ecological self. In contrast to this alignment, many innovators spoke of other farmers who were internally disconnected and lived in fear of change; as the following innovator articulated;

> People get in a rut and ***live a life in spite of themselves***… *[they] fear*, [and therefore] will hang onto the last little bit of [what they know] (ME 12, MCMA)

Some innovators reflected on their own paths and a past controlled by 'fear' and described the consequent growth/change in two distinct periods; for example, before HM or GFP/after HM or GFP, back then/now, unsatisfied/satisfied, disconnected/connected. This growth can be represented simplistically as a change from cognitive dissonance where things 'do not fit together', to cognitive consonance (Festinger, 1957 in Harmon-Jones, 2000: 186). These dualities are represented in Figure 6.7.

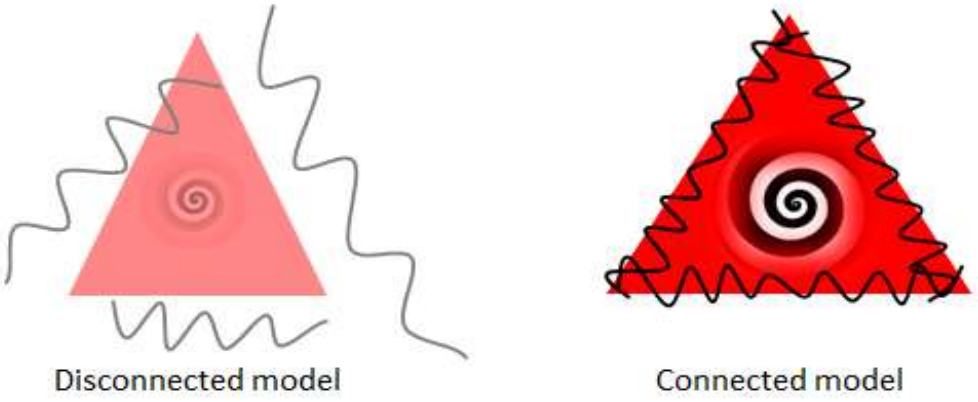

Figure 6.7 Conceptual differences between misalignment and alignment

Innovators also reported having to constantly break down paradigms in order to maintain innovation and continued improvement. Therefore, this alignment is not static, and is a dynamic cycle of connections and

disconnections, or moments of clarity and confusion. Furthermore, this alignment only represents one dimension of these innovators' collective lives and personalities, and is coloured by individual context.

6.3.3 An interdependent locus of control

'A person with an interdependent view of the self is more motivated to actions which enhance one's relatedness or connection to others – an ability to adjust, and maintain harmony with the social context'
(Markus & Kitayama, 1991 in Bragg, 1996: 101)

The 'Locus of Control' (LoC) in farming (as discussed in Chapter 2, Section 2.3.2) is revisited in this section to provide another picture of the innovators' journey and the interactions between the 'inner' and 'external' selves, or the inner and external forces which actively influence the farm environment (Inwood & Sharp, 2012). As discussed by innovators' in Chapter 5, Section 5.4.2, 'letting go of control' was a major part of the journey, as was 'regaining a sense of controlling one's own destiny'. As argued by Armstrong and Shulman (1990), a farmer's perception or sense of control is a key resource that can be tapped into to overcome stress, adversity and life strains. Control and trust are highly related concepts, as 'diminishing trust tends to occur when the vision is contested, needs revisiting, or lacks clarity. Increased 'control' is often seen as a way of compensating for a lack of trust…' (Church et al., 2002: 20). Along this journey, a lack of trust in and disillusionment with the main agricultural paradigm found many innovators rediscovering trust in a new paradigm, one which was controlled through an inner LoC. This is supported by Bates et al. (2008) who found that egoistic values were associated with an external locus of control while Biospheric values were associated with an internal locus of control. Pannell et al. (2006) also argued that having an internal locus of control may be related to personality[127], however as the diversity in these stories has illustrated, many innovators had to develop this inner control and 'unchain' themselves from an external locus of control throughout the journey. They also reported having to actively maintain constant internal development, by reminding themselves not to get stuck in a 'rut' or become 'prescriptive' and 'close-minded' (as evidenced in Chapter 5, Section 5.4.1).

Innovators explained neutralising many of the perceived barriers that inhibited or 'trapped' (ME 12, MCMA) their control and decision-making over farm management. Becoming independent from relying on the weather, social-norms, global markets, technology and other external influences was reported by all innovators; an observation supported during the PRA process when interviewee Sarah Doornbos (Personal

[127] However certain personality styles have been attributed to innovators, or those farmers who are more likely to change or seek information (for example see Shrapnel and Davie, 2001).

Comm…2010) claimed these innovators were 'overriding the fragmentation of systems'. The following innovator explained his observations of farmers with an external LoC;

> Seeing the state of some [of the] farms [around here], I wonder how the farmer is doing, [how is] his well-being? The depressing thing is that they desperately don't want their farm to look like that, at all costs, but it's the thing that happens every year in a long drought, [it's] like **they've completely lost control** (ME7, LCMA)

However, as also found by Bumacas et al., 2007 (in Scherr & McNeely, 2008), innovators reported that institutional, top-down governance generated the main constraints as opposed to technical or financial barriers. Becoming more reliant on intuition and the self, as previously discussed, was paramount in regaining control, fostering individual resilience and creativity (McKenzie & Stehlik, 2005) and combining imagination with action (Ikerd, 1993). In this light, innovators are independent from many of the traditional external pressures of farming and this has enabled a perceived self-sustainable LoC. The difference between the external and internal LoC is depicted in Figure 6.8, with the innovator positioned as overriding barriers and exerting more outward influence rather than being controlled by external influences.

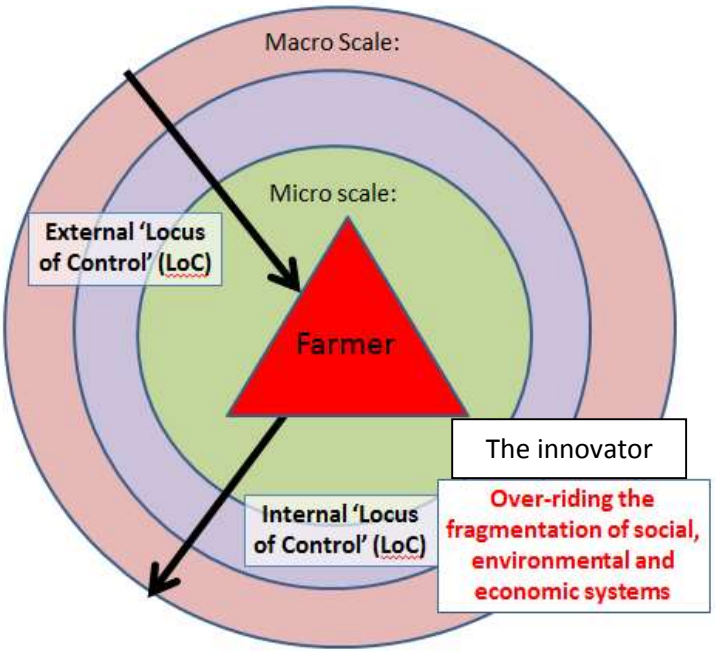

Figure 6.8 External locus of control vs. internal locus of control and the farming innovator

This does not, however, take into account the social relationships and networks of the innovator sub-culture. Innovators not only sought new information, they trusted and respected new ideas from new educators as evidenced throughout their journeys in Chapter 5. Pretty et al. (2001) refer to these relations as the 'positive externalities' in sustainable agriculture. Furthermore, innovators also developed relationships with their natural environments based on interdependent interactions rather than control-based interactions. Hence, innovators allowed for interdependency within their locus of control through trusting others, alternative farming concepts, and the ability of natural systems to self-regenerate, which impacted on their self-identity and sense of control over farm management (Thompson, 2009). This understanding of control is not about the individualistic, 'egotistic self', but the 'transpersonal self' (Bragg, 1996), the biocentric self, devoid of boundaries or distinctions between others' well-being and their own. As Caldwell (1984 in Washington, 2013: 115) explained, 'individual self-interest alone will never save the world. Safeguarding the biosphere requires a social commitment of a moral, quasi-religious character', which is evident in the *in*novator.

The relationships between all of the concepts discussed thus far, has been conceptualised in Figure 6.9. This diagram represents an emotional map (Mackian, 2004) of the collective 'innovator' as discovered through the practice change journey. This diagram includes the emotional drivers, placement of the ecological self, and the alignment of attitudes/behaviours/philosophies – combining all the elements of the journey discussed thus far.

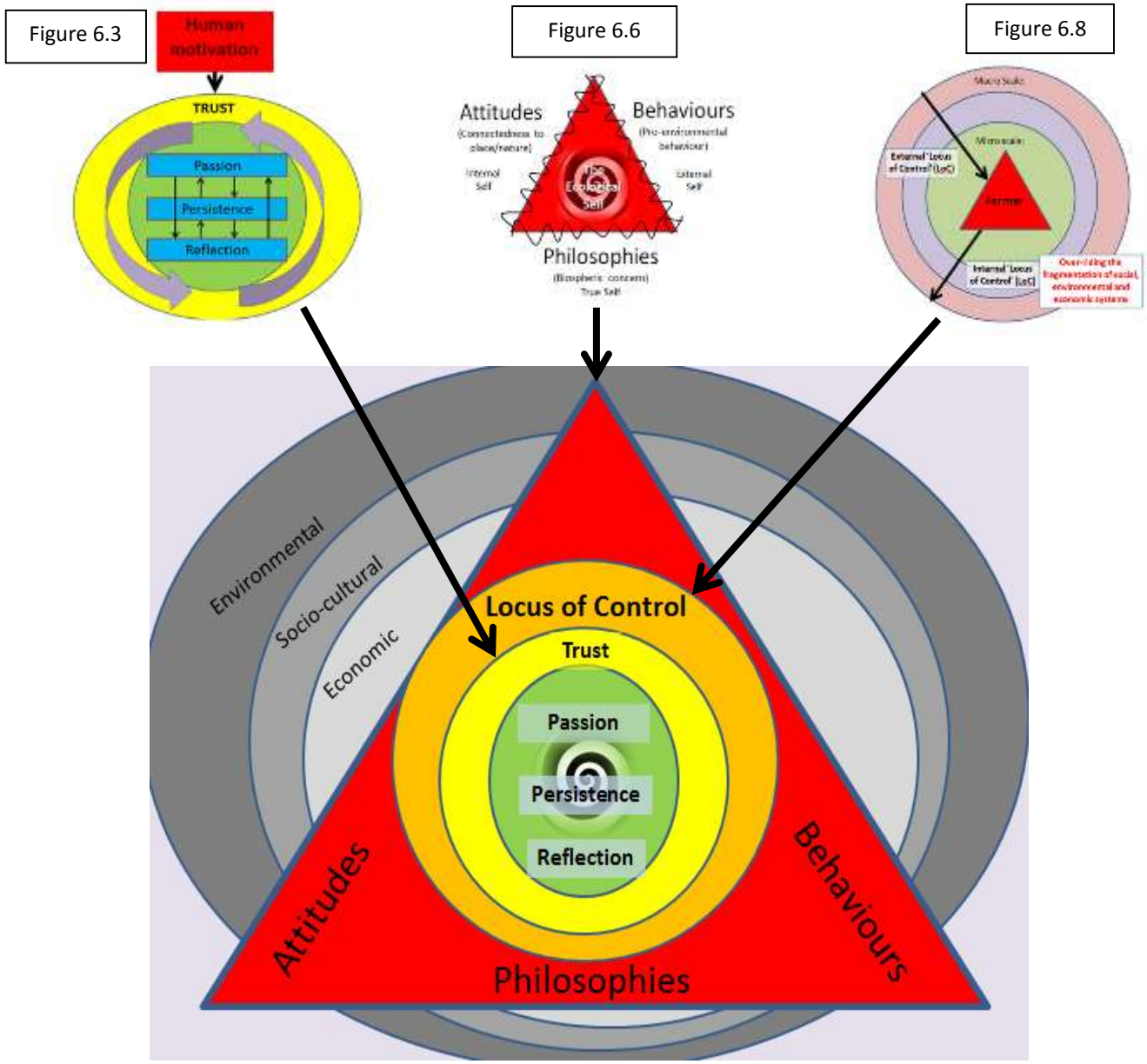

Figure 6.9 Concepts which influenced the innovator's change journey

This diagram integrates previous diagrams discussed throughout the chapter and includes Lapke's et al. (2012: 18) 'bullseye' model of sustainability (see Figure 1.1). It attempts to convey a holistic picture of the relations between these concepts.

6.4 Outcomes of the change journey

To summarise the overall impact of the innovators' change journey, the following sections discuss the personal outcomes of change in relation to the concepts of enlightenment, empowerment, integrity, paradigm shifting, living sustainability and choice creation.

6.4.1 Enlightenment, Empowerment, Integrity

'An integral being knows without going, sees without looking, and accomplishes without doing' Lao Tzu (in Deepak Chopra, 2007: xx)

The innovators' journey towards the adaptive and strategic 'new' farming paradigm, whilst cyclic, can be conceptualised via contrasting dualities. Several innovators explained that their past outlook on farming was not only controlled by external pressures, but also a disconnected, unenlightened, disempowered and fearful sensation. Chapter 5, Section 5.2.2 discussed the 'awakening' aspects of the journey – the realisations, eureka moments, the light bulbs – the moments of clarity that sparked a change in perspective. These profound moments were pivotal in changing the management paradigms of innovators and were often instigated by crisis moments, where financial, health or environmental hardship triggered innovators to re-evaluate their priorities and perspectives. While these moments are only a part of the journey, they can be used to convey a simplistic understanding of the main change that took place. Innovators explained that crises evolved from a general unawareness of their impact on the world, and that eureka moments stimulated renewed awareness and action to remedy past mistakes. Pearce (1983 in Massy, 2013: 230) refers to crisis moments as the 'shocks' which lead to eureka moments of enlightenment, the shocks 'crack the cosmic egg'. Grazing For Profit educator Andrew Beattie uses the following slide (Figure 6.10) in his presentations to illustrate the change from unconscious incompetence to unconscious competence. Unconscious competence refers to the tacit, implicit and emotional knowledge innovators develop in the new paradigm to guide management (Raymond et al., 2010a). Innovators also used this terminology when describing their journey as process of enlightenment and empowerment.

Figure 6.10 The Change Process: Grazing for Profit, Resource Consulting Services
(borrowed from Beattie, n.d.:11)

As discussed in Section 4.3.3, the inner locus of control is fundamental in successful practice change and has led to a sense of empowerment amongst these innovators. As Dunn et al., (2000: 20) argued this type of empowerment 'comes only from the kind of enlightenment offered by awareness of cultural construction and the structural forces shaping it'. However, this process is also deeply internal, with innovators simultaneously developing an awareness and reflection on the cultural and structural cognitive conditionings which guide their conscious and unconscious choices. Ikerd (2002: 20) explained this process as the 'quest' for 'enlightened self-interest…where anthropocentricity embraces ecocentricity', the ultimate integration. Many innovators reported 'seeing' and 'thinking' about the land differently, and juxtaposed this with when they were 'blind' or had 'tunnel vision', when they were 'disconnected', 'stubborn', or even 'ignorant', and did not allow room for change.

Intertwined with enlightenment and empowerment, the concept of integrity also emerged from these journeys. Practicing 'holistic' farming, having a sense of the 'whole' rather than sums of the parts, 'healing' the land and working in 'harmony' with nature are, as previously discussed, highly associated with the concept of 'integration'. This tapestry woven with conservation and production, led some innovators to discuss their resilience and adaptation in terms of *integrity*. The concept of integrity is interrelated with the concept of allowing nature to guide the inner moral compass (Washington, 2013). While 'integrity' is commonly used in reference to building ecosystem resilience and adaptation (Crossley, 1996; Kay, 1991), it is these concepts which can also explain the journey of the innovator in building self-integrity. Adger

(2000) argued that social (community) and ecological resilience are highly related concepts, however, the influence each has on the other is not fully understood; while Berkes and Folke (1998) argued that even discriminating between these two interdependent systems is 'artificial and arbitrary'. Burton (2004) and Hunt (2010) similarly argued that the relationship between the health of the farm and the health of the farmer is based on a consubstantial relationship. Innovator-poet Wendell Berry expressed the sacredness and intimacy of this relationship as a marriage based on love, integrity and respect (Schlueter, 2011). Furthermore, Berry argued that building integrity into our relationship with nature, through interdependency, also informs the integrity of our relations with other humans (Deneen, 2011).

The innovator's journey is an expression of their relationship with the natural environment, and innovators reported increasing integrity in both their farm ecosystem and their mental ecosystem simultaneously. Innovator's explained aiming to build integrity into themselves, their environments, their businesses, their relations with others, their supply chain, and their communities. Aiming for integrity in all aspects of farming life was the ultimate goal of innovators. Building ecological-integrity and self-integrity are aspects of practice change which can be used to demonstrate the direction of the transformation amongst these innovators. Having a heightened sense of conscience and honesty, via a sense of self-awareness and intuitiveness, are measures of strong emotional intelligence (Dulewicz & Higgs, 2000). Therefore, there is a strong relationship between developed emotional intelligence and innovators or leaders who foster change (Higgs, 2002). Developing an ecological self (or conscious/ethos), aligning attitudes/behaviours/philosophies, and fostering an interdependent locus of control were all aspects of the journey which refined innovators' sense of integrity and therefore opened the expression of their emotional intelligence.

6.4.2 Paradigm shifting

With these innovators representing the 'paradigm shift' that is needed to sustain agriculture, there is a need to conceptually understand not only how this 'shift' takes place, but track where innovators have migrated in their thinking. Throughout chapters 4 and 5, the terminology employed has suggested that there are 'old' and 'new' paradigms, and a 'shift' occurs between them. However, **practice change requires *practicing change or changing practice;*** terms which acknowledge the integrative, dynamic and fluid nature of the change journey. As Evans et al. (2002: 313) argued, conceptualising the change in agricultural paradigms as a 'shift', reinforces linear and dualistic thinking and 'package[s] complex changes'. These journeys of change have ironically explained that the 'paradigm shift' is not only a non-linear cyclic journey based on a constantly changing and inexact 'destination', but is also essentially about breaking down, re-building, and re-cycling paradigms – throwing out the idea of replacing patterns, or 'recipes' (Mckenzie, 2013; Shiere

et al., 2012), and instead embedding relevant parts of recipes into new creations. This process of breaking and re-building paradigms is a most complex process within each innovator's 'mental model' (Eckert & Bell, 2005) that can be described as a veritable jungle of growth and decay; a continual dynamic 'shifting', which is in a constant state of flux and change – just like any ecological 'system'. This understanding links with arguments for farm-level transitions towards 'strong multifunctionality', which aredescribed as heterogeneous, complex, inconsistent and 'temporally non-linear' transitions (Wilson, 2008). As Wilson (2008: 368) explained, this term acknowledges that 'post-productivism does not necessarily follow sequentially from and replace productivism' (also see Evans et al., 2002).

Innovators' were not 'anti' traditional practices and paradigms, and were quick to point out that they were mainly producing conventional/traditional products, ultimately with an anthropocentric motivation for survival. Therefore, the 'traditional' paradigm had not been discarded, but rather, had been integrated with alternative ideas to form an 'old new paradigm' (Fox et al., 2000: 521). This is in opposition to the idea that a 'paradigm war' is taking place between two sides, the traditional and alternative ends of the agricultural spectrum (Dunlap, 2008). Rather, as McCown (2002: 181) explained, we need to look at;

> *'Opportunities that seem to be provided by the new paradigm, new opportunities in the old paradigm, and [understand] the important fact that embracing the new does not require abandoning the successful aspects of the old'.*

As Matthews (1991) explained, the 'old new' paradigm in this case is redefined with connotations of 'world-views' and 'perspectives' rather than the original Kuhnian definition of a scientific model; in other words, science becomes a *part* of the holistic paradigm. The new paradigm is therefore essentially aiming towards 'no paradigm'. This is reflected in the concept of a new 'anti-model' or 'anti-goal' based on process rather than outcome. This is explained in the one-word philosophy of innovative farmer Eric Harvey (2011), 'disencumber'. This philosophy describes the innovators' journey as 'paradigm shifting', a term which encompasses process refinement and avoidance of incumbency as opposed to a 'paradigm shift' with a defined direction or finish line. Figure 6.11 depicts the conceptual difference between a 'paradigm shift' and the concept of 'paradigm shifting' – it depicts the tapestry of 'alternative farming paradigms' (biocentrism) as 'old new paradigms' (Fox et al., 2000) which integrate aspects of both the traditional (anthropocentrism) and 'new' alternative (as vs. traditional) paradigms, and allow room for uncertainty and change. To explain in terms of Best Management Practice terminology, these innovators would argue that it is just best management practice here, for now, until tomorrow.

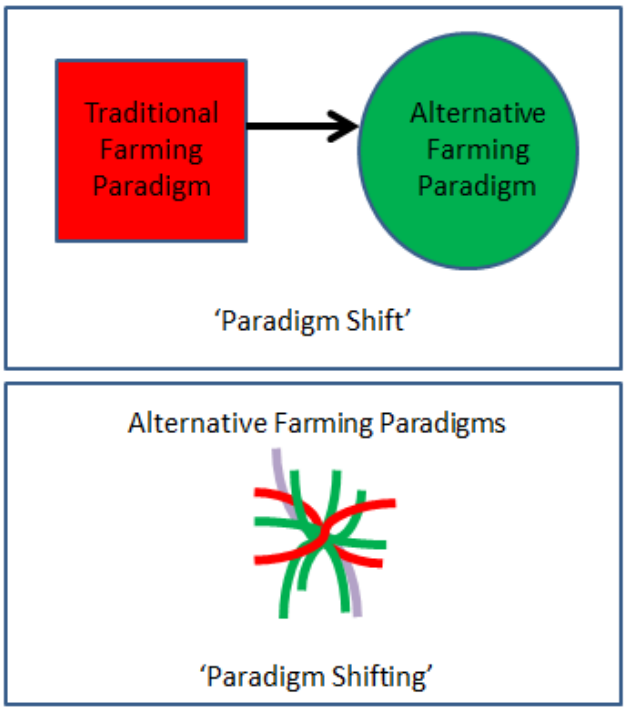

Figure 6.11 'Paradigm Shift' vs. 'Paradigm Shifting'

(The above graphic represents firstly, the traditional concept of a 'shift' from a traditional to an alternative paradigm. Secondly, a more relevant 'paradigm shifting' is demonstrated. It represents the 'matrix' of alternative farming paradigms that include the traditional (red threads), alternative (green threads), and uncertainty (purple thread).

6.4.3 Living Sustainability and Choice creation

To summarise the journeys of change, the ultimate conclusions, which emerged from the innovators' stories, argue that sustainability is a lived experience, and successful practice changing/paradigm shifting is essentially about choosing to change and choice creation. 'Living sustainability', as previously discussed in Chapter 4, refers to the day-to-day facets of sustainability and is conceptualised as a process rather than a goal (Berkes & Folke, 1998; Norton & Steinemann, 2001). As Washington (2013: 113) argued, 'sustainability requires that our emphasis shift from managing resources to managing *ourselves*', which like any living system is continuously developing and changing (Folke, 2006). This understanding of sustainability as a cyclic and dynamic process is highly prevalent in the concept of adaptive management (Berkes & Folke, 1998; Folke, 2006; Norton, 2005). Adaptive systems allow for uncertainty and provoke

constant regeneration, for example, Folke (2006: 258) discusses the 'adaptive renewal cycle', and explained the processes involved;

> '*There are periods of exponential change (r), periods of growing stasis and rigidity (K), periods of readjustment and collapse (Omega), and periods of reorganisation and renewal (α). The sequence of gradual change is followed by a sequence of rapid change, triggered by disturbance. Hence, instabilities organise the behaviours as much as do the stabilities'*

This process is described as increasing resilience during a cycle of disturbance and destruction by organising adaptations for change. This relationship is depicted in Figure 6.12 and was fashioned by Folke (2006: 258) from Gunderson and Holling (2002: 331) who utilised the same illustration to depict an adaptive policy management cycle.

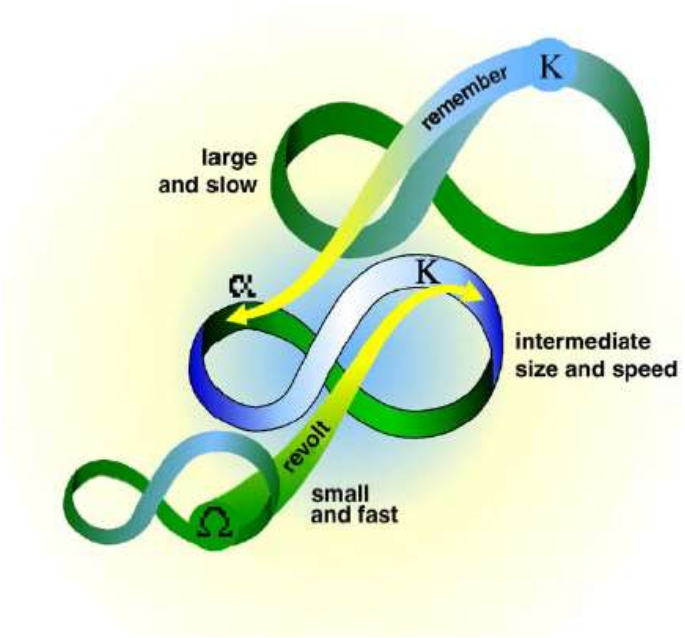

Figure 6.12 Socio-ecological adaptation cycle: a heuristic model of nested adaptive renewal cycles emphasising cross-scale interplay (borrowed from Folke, 2006: 258)

Figure 6.12 links the socio-ecological concepts of sustainable change, which has a strong connection with the mental ecosystems of innovators, where the emotional drivers of passion, persistence and reflection drive a similar cycle. Folke (2006) likened this process to the need for a fast bushfire, or a

disturbance/revolt, to trigger readjustments and the subsequent slow renewal of the forest through the seed-bank or the forest's 'memory'. To combine the two cycles: revolts are based on passions, readjustments are based on persistence and remembering is based on reflection. Through this process ecological 'memory' (Folke, 2006) (or intelligence, knowledge) is generated and is used to guide 'renewal, recombination, innovation, novelty, and self-organisation following disturbance' (Folke, 2006: 59). Just as adaptive renewal cycles are optimal for environmental integrity, the same concept can be applied to individuals, as Ryff and Singer (2008: 32) argued, 'eudaimonic well-being appears to be tied to more *adaptive patterns of brain circuitry'*. This explains the process of living sustainability through the practice of change and offers insight into all aspects of the innovators' journey.

This adaptive cycle of living sustainability ultimately produces change through the basic concept of choice generation (Churchman, 1968b). Deciding to change is the internal journey where change is based on personal desire and emotions, these result in choice creation, an organic maintenance of fluidity and openness to a novo system. In their explanation of the importance of 'choice' in farming, Hendrickson and James (2005) explained how a lack of choice and limited available opportunities can inhibit practice change;

> *'Industrialisation constrains in two ways, first it constrains – as in limits or inhibits – the decisions of farmers by restricting choice options or the types of decisions they can make…second, it constrains – as in compels or obliges – the choices of farmers by forcing them into the kinds of decisions that they otherwise would not have chosen for ethical or other reasons'.*

This 'lack of choice' is highly related to having an external, dependent or disconnected Locus of Control. In contrast to Hendrickson and James' (2005) depiction of a lack of choice in 'industrialised' or traditional agriculture, the success of the journey of innovators towards 'alternative farming paradigms' is underpinned by their generation of opportunity via the exercising of choice (McKenzie, 2013). Innovators refined their practices through internal and external adaptation and alignment by diversifying and increasing their multifunctionality (Wilson, 2008) which resulted in a consequent array of choices, or possibilities for the future of the farm. Choice creation generates a sense of freedom, reinforces autonomy (an inner locus of control) and impacts positively on well-being, which in turn enables resilience, adaptation and stability (Ryff & Singer, 2008). As Ryff and Singer (2008: 22) elaborated, 'Jahoda defined the individual's ability to choose or create environments suitable to his/her psychic conditions as a key characteristic of mental health'; while Ison and Russell (2011: 58) asserted, 'having a 'choice' is understood as choosing between

alternative emotions'. The breadth and depth of the scope of these choices was captured in chapter 5, where one innovator claimed that potential in this paradigm '*was only limited by imagination'* (ME 8, CWMA). Figure 6.13 utilises Figure 6.9 to place choice creation as a result of the conceptual journey of the innovator.

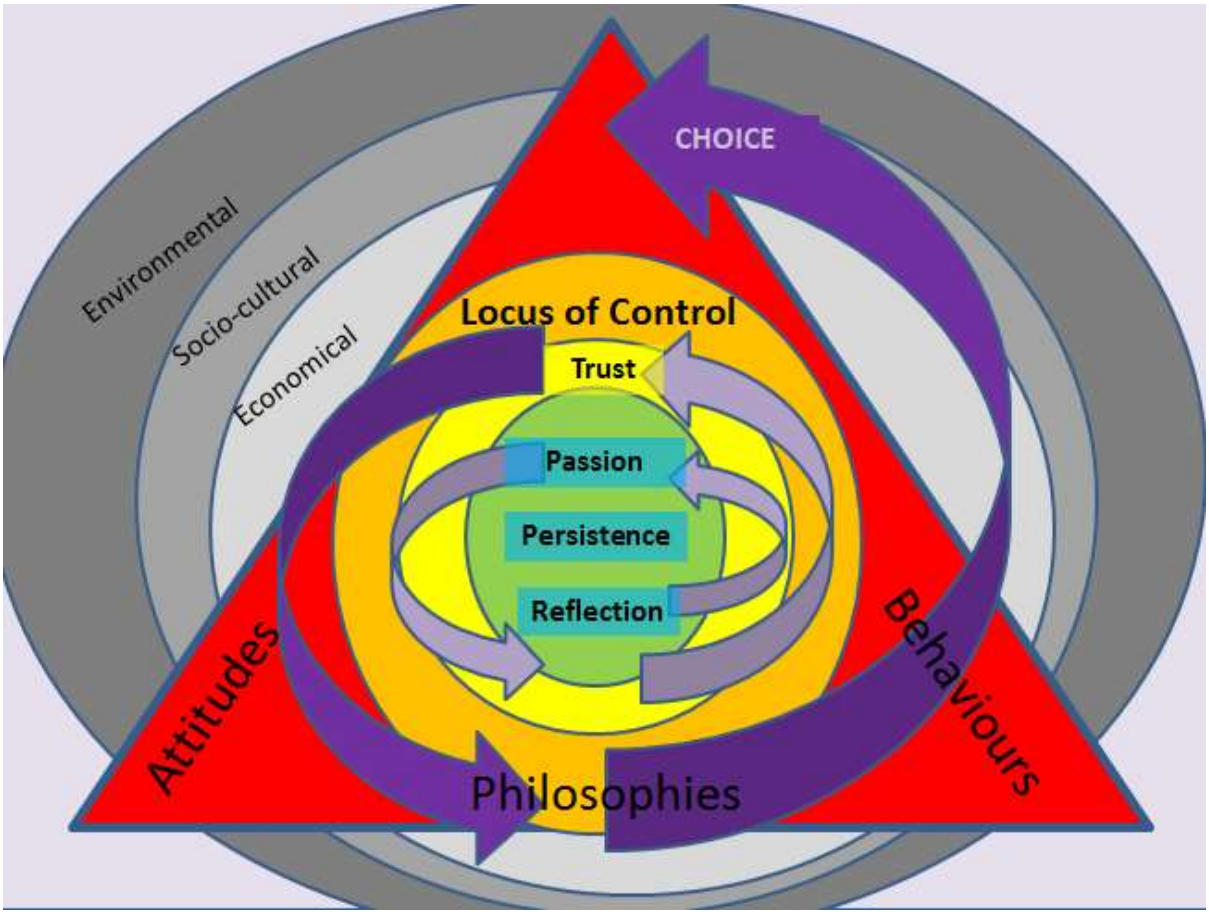

Figure 6.13 Choice generated through the journey of the innovator

6.5 Part 1 Summary

Part 1 aimed to represent the innovator's journey via the mental and emotional configurations/transformations that took place and the main concepts that underpin and explain these processes of change. The emotional drivers of the journey, sustaining change through ecological self-alignment and interdependency, and the outcomes of change provide a rich portrait of the depth and complexity involved in changing farming practices. To recap, these concepts covered the role of passion, persistence, reflection, trust, the ecological self, self-alignment, the locus of control, enlightenment,

empowerment, integrity, paradigm shifting, living sustainability and choice creation in shaping the innovators' journey. These concepts are highly related to Ryff and Singer's (2008) six measures[128] of psychological well-being as illustrated in Figure 6.14. Utilising their theory, Part 1 of this chapter can conclude that the unified outcome of the innovator's internal change journey was overall an increase in psychological well-being which allowed for perceived success with eco-agricultural practice change – and hence reinforces the concept of the theoretical *in*novator.

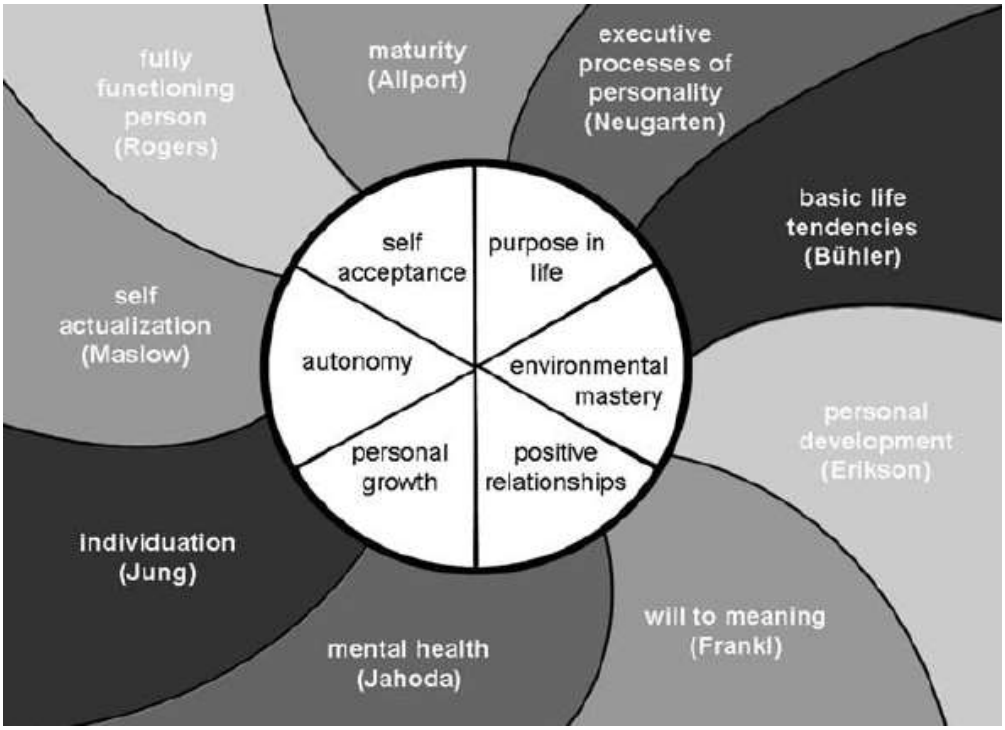

Figure 6.14 Core dimensions of psychological well-being and their theoretical foundations
(borrowed from Ryff and Singer, 2008: 20)

[128] One of these six measures, 'environmental mastery', does not refer to traditional views of 'control over nature'. Instead it is a psychological construct which is about positive alignment between the 'self' and the way the 'self' behaves in their environment (Ryff & Singer, 2008)

Part 2 – Implications for agents of change

This section will employ the conceptual underpinnings of the change journey, as discussed in Part 1, to improve the change agent's influence during the practice change process. 'Change agent', as mentioned in Chapter 3 (Section 3.3.7), are people involved in on-ground private/public, formal/informal extension of eco-agricultural knowledge. Interestingly, these implications are not industry specific or specialised, but rather, are broader lessons learnt from the innovator's change journey. Therefore, the first section discusses the successful and unsuccessful experiences Innovators had with agents of change. The second section draws from lessons in the first section and makes an argument for the integration of farmer knowledge into innovation systems; while the third section concludes this chapter and offers wide-reaching recommendations for change agents.

6.6 Learning from the change journey

As Murray (1998: 1) argued, understanding the change process is vital as this 'provides an understanding of what others need to go through to change', which is the long-term mission and purpose of the change agent who promotes sustainable practice change. In order for change agents to influence change they need to immerse themselves in the choice creation process. Change agents need to help spark passions, support persistence and enable reflection throughout the practice change period. They also need to build trust and respect with farmers and aid in strengthening farmers' self-sufficiency (their inner LoC), their ecological regard, and their ability to live sustainably. Who were the change agents who inspired, influenced, and supported the innovator's journey? What was their approach and why was it deemed to be successful? On the other hand, who were the change agents who inhibited and illegitimated this journey? The following sections discuss the range of successful and unsuccessful experiences innovators had with agents of change through their landscapes.

6.6.1 Successful Change Agents

As mentioned in Section 6.3.3, and evident throughout Chapter 5, the innovator's journey was not just an inner journey. Information, advice, support and inspiration were sought and discovered in change agents who had similar motivation, success and drive for sustainable change. All the change agents, who were named throughout Chapter 5, were actively successful in aiding these innovators with achieving the changes they desired to see in their farming systems. While public extensionists were mentioned (for example from the CMAs, Landcare, DPI and OEH), the major influence on journeys were the private extensionists. Educators from the main programs whom influenced practice change (HM, GFP/RCS, and Stipa Native

Grasses Assoc.) were specific soil and hydrology scientists, and university researchers. As evidenced throughout the change journey, innovators divulged close relationships with many of these change agents who were referred to as mentors and friends. Many of these relationships were developed and strengthened throughout the change journey. While some were short-term relationships, their impact and influence on the innovator was far-reaching. While in other cases, long-term relationships had evolved from professional acquaintances to being personal. These were the agents of change who conducted co-science, co-publishing, co-presenting at conferences and co-educating with innovators; an integration of the on and off-farm local knowledge domains (Berkes, 2009; Carolan, 2006b; Reed et al., 2013) (discussed further in Section 6.6.2).

Very importantly, another successful 'change agent' in this location was the innovator subculture itself. Innovators had influence on each other by sharing stories, experiences (attending courses/field days together), experiments, observations and celebrated literature. As evidenced throughout the journey, other innovators and farmers were the main supporters and advisers on changing practices (McKenzie, 2013). This was highly evident in the exchange of information, for example passing on Savory's book (1988), which led directly to the pathway for change for some innovators. Certain innovators self-identified as change agents. As evidenced, many presented their ideas at conferences and published their stories and data. They were publically extending their ecological knowledge and practicing a form of 'extension'. However, some innovators were private consultants, and extension had become a part of their philosophy and practice, which helped supplement and stabilise their income. The following innovator explained the influence of two local innovators who had taken on positions within programs which were influencing practice change in the landscape;

> [PRA 3, CWCMA] is a teacher at GFP or RCS, [while] [PRA 10, CWCMA] is a teacher at Principle Focus…pretty progressive lot of thinkers, progressive types of people…they have changed their practices and [have] gone from students to educators (ME 10, CWCMA)

One innovator was regularly mentioned, during interviews with other innovators, "are you going to visit him?" was a frequent question[129]. He was not only a key influence in the local movement to a new paradigm; he had also branched out into the global innovator network. Travelling globally to educate on his practices, prominent American (in particular) farming innovators and innovative change agents had visited his property in Australia;

[129] See Chapter 3, Figure 3.6 for a map of innovator connectivity

> Innovative Americans come here, **Joel Salatin**[130], he's sort of taken the vertical stacking stuff to quite a high level, and he's an organic farmer, although he doesn't call himself an organic farmer…he came here, was fascinated by pasture cropping, hadn't seen anything like it before, so he was going to integrate it and [in his] last book he's written some stuff on pasture cropping…**Courtney White**[131], runs a coalition in New Mexico and he was here, he's fascinating, [he] has written quite a few books as well, really interesting…**Wes Jackson**[132] [from the] Kansas research institute, his daughter came here and took the idea back…trying to create perennial crops with grass species (ME 8, CWCMA)

These innovators had written literature, which even, without direct interaction, had influenced innovators' thinking greatly. Following this conclusion, another category of successful 'change agent' are the actors who indirectly extended crucial knowledge and information via their publications.

Discussed in the large body of literature, successful change agents who influence sustainable farmers' lives are those that have mastered the art of communication, facilitation and negotiation to build 'capacity for change' into people and communities (Coutts & Roberts, 2011; Lambert & Elix, 2003; Leeuwis & Aarts, 2011; Measham et al., 2011; Nettle & Paine, 2011). The importance of building trust, respect and fluidity into these relations has also been discussed extensively (Bridger & Alter, 2006; Bruckmeier & Tovey, 2008; Franz et al., 2010; Freeman, 2011; Iivonen et al., 2011; Ingram, 2008; Leeuwis, 2004; Measham et al., 2011; Scoones & Thompson, 1994). Developing mutual trust, and respect via an open dialogue were the reasons for the success of these agents of change. Perhaps more importantly in sustainable practice change, and evident in these relationships, was a shared ideology based on biocentric thinking and a similar emotional drive for changing practices. Successful change agents and innovators were those that had a passion for agriculture, humanity/ the biosphere, persistence with integration, negotiating failure, and intuition when facing uncertainty. These agents also practiced deep reflection on the nature of change, the nature of our relation with the biosphere and the role of cultural paradigms in inhibiting widespread change. During informal discussions with these change agents, they also expressed an interdependent locus of control and identified their 'ecological selves'. More importantly, these change agents had undertaken a similar change journey or quest for sustainability and reported experiencing eureka moments, crisis moments, isolation, social condemnation, failure, success and ultimately, a major change over time in their perception of the inner/external world.

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[130] For more on innovative farmer Joel Salatin, visit http://www.joelsalatin.com.au/
[131] For more on Courtney White, Founder and Director of Quivira Coalition, visit http://quiviracoalition.org/Detailed/395.html
[132] For more on Wes Jackson, Founder and President of the Land Institute, visit http://www.landinstitute.org/vnews/display.v

6.6.2 Unsuccessful 'change agents'

In contrast, innovators also identified agents who inhibited practice change. Contrasting reports of conflicts, communication styles, personalities and close-mindedness, as well as major differences in ideology, were reported by innovators. A 'top-down' and unsuccessful interaction with a Holistic Management educator, is explored in the following sentiment;

> I had a HM bloke recently, I told him what I was doing and he started telling me what I should do…and I said no, these are my decisions…*I can be advised, but not like that* (ME 7, LCMA)

While the following innovator explained his dissatisfaction with certain Grazing for Profit educators and the flow-on effect this had on stirring social condemnation for the program;

> *[I] wasn't impressed* with some of the educators, 'this is the way you do it', didn't fit with what we were doing…I think they are a lot more accommodating now…GFP drove polarisation with [their idea of] wrong and right and [it] had an effect on *polarising* people in the district (ME 9, CWCMA)

The close-mindedness of agents in this case, can be ironically described as being stuck in the 'innovator's' dilemma', where the innovator reverts to tunnel vision and decides there is a 'right and a wrong' (Fortino, 2011) and is identified as a 'cult member or preacher' (See Chapter 4, Section 4.4.2). Furthermore, reports of innovators/change agents, who were unsuccessful in their aim to communicate and extend their own practice change experiences due to this dilemma, were mentioned by the following innovator. He identified a peer, being stuck in his own journey, as being 'dominant', 'arrogant' and an inhibitor to practice change;

> [There are] *dominating characters*, people that pioneer stuff, [they] need a *big ego* to have a lot of drive, but [there is] a point where it gets too much…They put on the blinkers and defend, and [everything else is] 'wrong thing', 'stupid', [they say] 'do what I'm doing'…50% of people have already written them off…(name omitted[133]) is a classic, great ideas…but the delivery! [He makes] generalisations, he's good in a certain area…and much of his stuff I'm quite pro, but other stuff is a rant…I'm always amazed people can get *arrogant about land management* (ME 4, LCMA)

While the next innovator described these change agents as having 'pushy', 'domineering', 'insecure' and 'polarising' personalities;

[133] Names have been omitted for anonymity and defamation purposes.

> We've watched people do similar courses and the way they have marketed or promoted themselves, and we're not *pushy* like that… (name omitted) is *dominating*, [he has a] huge personality which has *polarised* people…people who haven't met him hate him…[there is a] question over his credibility…probably an insecure person…he came out here on a farm visit [and] told us we were doing shit compared to him (ME 9, CWCMA)

These innovators also discussed how these 'dominant' and 'arrogant' change agents polarised the wider farming community and instigated conflict within the new paradigm by discounting other programs with similar philosophies. It was identified that these educators and innovators (the change agents), were impinging on the widespread integration of sustainable practice across the landscape.

Differences in agricultural ideology were most prevalent in innovators experiences with more traditional and conservative change agents. These change agents reportedly adhered to a productivist paradigm of thought, which dictates that production and profitability are the main drivers of practice change and innovation (Pretty, 1995; Rodriguez, et al. 2009). Innovators explained that these unsuccessful interactions were commonly based on a fundamental ideological difference with these 'change agents'. Change agents who were focussed on promoting practice change via adoption of various technologies and inputs, to counteract the threat posed by the new alternative paradigm. Pretty (1995) argued that this resistance is natural as the productivist system that enabled and built these change agents' professional careers is being threatened by sustainable agriculture, and therefore their future career prospects. The following innovator explained his experience of this with agronomists;

> We had a field day here, and we were standing in a crop of wheat, a very good one…[the] local agronomist [is an] extremely good one…but all he was commenting on was that there should be diseases because of all the grasses underneath the crop…wasn't any, and that was what he was focussed on…[it was a] valuable lesson for me, I realised, hang on, people don't get this…[they are] looking for the negatives. Agronomists are threatened by it…they are there saying you have to put in inputs, I come along and say we don't have to put all that in, [I] threaten their job...but then again, [I] met an agronomist in WA, and went to his place and he'd been experimenting with pasture cropping for years…there are a few now, at one time there were almost none…[During my presentations] I can pick the agronomist, [they are] down the front with their arms and legs all folded, and they always ask a ridiculous sort of agronomy question, and I'll start to answer it, and I'll say, 'I bet you're an agronomist', they always say 'yeah, how did you know?' (ME 8, CWCMA)

Most innovators had similar experiences with traditional change agents and agencies who discounted, invalidated, and in cases, ignored the results of their practice change journey. The following innovator explained the negative reactions of traditional change agents to the new paradigm;

> [I was involved in some] [Government] trials, started working with them a lot, but as soon as I started this sort of management, I got no support, I got a lot of negative crap, [they] didn't want to know it at all (ME 12, MCMA)

While the following innovators, disturbingly, explained hosting Government trials and being told by change agents that their data was somehow 'wrong';

> [Government] ran a pasture field day here in 2010 [and] tested pastures…came back with huge differences, [so they] ran a trial here and tested plant species…[they] wouldn't publish it…I presented the figures…27% difference in improved protein, 20% difference in metabolised biology, 17% difference in digestability and the plants were staying greener and longer by 73%...[they] said [the trial] wasn't replicated enough…[I] said how many more do you need, do it…[then they] stood in [my] paddock and told all [the] people that according to their data if I was running cattle on there I would be losing .8kg per head per day…We do 1.25kg per head per day…[I got an] email from [Government] research staff member *calling me a liar* basically (ME 2, CWCMA)

> [They] came and did the same testing [and got] similar results…claiming all data is now *irrelevant* due to gravel levels…I think they were just *hoping to disprove* what was happening…I've got data as well, so does Christine [Jones]…[a government change agent] came and told me what pasture cropping was, [he said it's] continual cropping, [and] I said but that's not pasture cropping …need to get some good science…[their] agenda's still tied to fertiliser companies…still doing fertiliser trials, exotic pasture trials…I think, oh geez. Don't be surprised if the [Government Departments] start to attack Peter [Ampt's] work (ME 8, CWCMA)

While the former innovator also explained that an Industry body came to a field day at his property and not only 'hijacked' it, but later published data attributed to his property incorrectly (ME 2, CWCMA). The same two innovators also explained that via these interactions they also realised that science and policy were far behind the on-ground reality of sustainable practice and thought;

> The biggest critics are the [Government] agronomists…bloody hopeless…holding Innovative agriculture up and they are at least 30 years behind…and they defend it in the most ridiculous ways…seriously bad science…[We] found [pasture cropping] was working [and] wanted more info, so [I] got back to research

> [and] tried to get [Government] involved…they didn't want to, [thought we were a] couple of lunatics! Now we are 15 years down the track, and the research is slowly starting to catch up (ME 8, CWCMA)

> [What] the [Government] research is looking at [is] about 10 years behind the times, that's the sad part about it…but they're the ones that are setting policy (ME 2, CWCMA)

These interactions with change agents were unsuccessful due to the 'top-down' focus that ideologically propelled these change agents to a communication break-down. These experiences highlight that these agents of change failed to respect the innovator's journey, generated mistrust, and essentially disassociated themselves from the innovator sub-culture which is leading the way in sustainable practice change. In contrast to the successful change agents, these are the change agents who are personally conflicted or disconnected and in principle, misaligned with the basic principle of the new alternative paradigm; biocentrism.

6.7 Integrating innovator knowledge into 'innovation systems'

'The shift to sustainability will depend on powerful networks of pioneers and champions'
(Washington, 2013: 125)

Discovering the spectrum of experiences with change agents, and their positive or negative impacts on the innovator's change journey, allows for a discussion on the fundamental barriers which inhibit the realisation of sustainable practice change. As described in the previous section, the innovator sub-culture, the organic network that has developed between innovators/educators/consultants/scientists and researchers is the powerhouse of grass-roots sustainable change in this landscape. As Washington (2013) implied, this means tapping into and becoming a part of these regional networks which are already realising change and, as innovator's observed, are ahead of science and policy (Ampt, 2013). As Mckenzie (2013) argued, understanding the journey of change at an individual, or farm level, is vital in informing improved sustainability in the broader agricultural innovation system; the agents and agencies of change. Therefore, the following discussion is based on resolving some of the institutional barriers which inhibited the innovator's change journey (Freeman, 2011; Scherr & McNeely, 2008). The first section expands on the experiences of innovators and presents an argument for the *genuine* legitimisation of farmer knowledge. This section also includes insights into informal discussions with 'successful' agents of change, who influenced these innovators' journeys and immersed themselves in the innovator subculture. The

proceeding section then argues for *genuine* interaction and engagement between change agents and Innovators through integration rather than the incorporation of farmer knowledge.

6.7.1 'Farmer knowledge' and 'expert knowledge'

'If we want to achieve broader social control over science and technology then we must face up to the central strategic challenge of wresting that control from industry'

(Kloppenburg, 1991: 483)

As evidenced throughout the innovator's change journey, the generation of on-farm knowledge and the integration (as opposed to adoption) of knowledge developed off-farm both played a key role in enabling and supporting change. These differing knowledge domains are referred to by Leeuwis (2004) as 'farmer knowledge' (bottom-up knowledge) and 'expert knowledge' (top-down knowledge) to distinguish between their epistemological origins. Antweiler (1998) ascribed farmer knowledge as a part of the 'local knowledge' domain which includes context specific ecological, agricultural, medical, indigenous, organisational and socio-cultural knowledge. Bartel (2013: 3) described this type of knowledge as 'vernacular knowledge' and explained that this term acknowledges the place-based nature of this wisdom that 'derives from places and produces places'. While Raymond et al. (2010a) refer to this as 'situated knowledge' which recognises land managers' knowledge of place-based nuances, their tacit or emotional/ecological knowledge. As evidenced in Chapters 4 and 5, this type of farming knowledge is derived from generational transfer, the farming-sub-culture, experience, experimentation, observation, and intuition (Leeuwis, 2004). Local knowledge is differentiated from 'expert knowledge', which is commonly referred to as 'scientific knowledge' (Antweiler, 1998; Raymond et al., 2010a; Reed et al., 2007; Reed et al., 2013; Shiva, 1993); expert knowledge can also be defined in practitioner terms as 'bureaucratic knowledge', which is knowledge made and held by government staff and specialists (Bartel, 2013). Expert knowledge is based on objective truths and reductionist inquiry, and is disassociated from the specifics of place and context (Leeuwis, 2004; Raymond et al., 2010a). Expert knowledge is often deemed to be superior to farmer knowledge in dominant discourse, however in certain debates, local knowledge is deemed superior (Bartel, 2013; Leeuwis, 2004; Raymond et al., 2010a; Scoones and Thompson, 1994). As Masunobu Fukuoka (1978: 171) explained;

> *'You might be wondering why I have this habit of picking on the scientists all the time…it's because the role of scientists in society is analogous to the role of discrimination in your own minds'*

However, most of the literature argues that there are inherent strengths and weaknesses in both forms of knowledge and if interwoven, they have the potential to inform and enrich via interaction (Antweiler, 1998; Bartel, 2013; Carolan, 2006b; Leeuwis, 2004; Raymond et al., 2010a; Reed et al., 2007; Reed et al., 2013; Shiva, 1993; Scoones & Thompson, 1994; Wilson, 2008).

The experiences throughout the innovator's change journey were largely based on incorporating their existing knowledge with 'expert knowledge' as well as 'traditional knowledge' to develop new local farming knowledge for a new alternative paradigm. As the quotes in Section 6.5 implied, the successful change agents regarded 'farmer knowledge' as a form of 'expert knowledge' and in most cases co-created new knowledge with farmers (Berkes, 2009; Reed et al., 2013). Röling and Jiggins (1998) refer to this as a 'shift' from the Conventional Knowledge System which deems farmers as adopters and *not* innovators, to the Ecological Knowledge System which adopts biocentrism and therefore regards farmers as the 'experts' of their situations. In practice, Carolan (2006b: 422) refers to the co-production of expert knowledge as 'interactional expertise' and argued that this is required for 'greater epistemic diversity to enter into the decision-making process'. The successful change agents identified innovators as applied or adaptive scientists, and recognised the value in collaborating 'natural science' with 'book science' (Classen et al., 2008) by actually developing, conducting and evaluating experiments and results with farmers on their properties. As explained in Chapter 5, some innovators also identified themselves as the 'real' scientists, however when this title was conferred to them from an 'expert', as the following innovator explained, it was a 'shock';

> **Farmers are scientists? That's right**…I've been called that once, it was great shock to me, that I was considered some sort of pasture scientist…many people are doing very good experimental work on their own farm (ME 8, CWCMA)

In contrast, the largely unsuccessful change agents, illegitimated 'science' farmers had generated, and placed more value in top-down science. Ingram (2008: 405) argued that these sort of 'knowledge exchange encounters are characterised by an imbalance of power, distrust, and the divergence of knowledge'. This sentiment implies that even demarcating these knowledge domains exacerbates information dissonance (Agrawal, 1995) and can lead to 'epistemic injustice' (Fortmann, 2008: 4). Demarcation of knowledge based on value judgements is 'anti' the new alternative paradigm which is based on trust, interdependency and holism. The negative on-ground consequences resulting from the ranking of 'farmer knowledge vs. expert knowledge' domains in agricultural change have been discussed extensively in the literature and are evident in this study; for example resulting in communication break-downs/miscommunications,

disrespectful interactions and the alienation of farmers (Carolan, 2006a; 2006b; Ison, 2000; Leeuwis, 2004). These are the real barriers to widespread sustainable practice change, as these are the change agents who are in a position to pass on farmer knowledge, but rather halt the process through ignorance, invalidation and misinformation (Rodriguez et al., 2009). Unsuccessful change agents are also defined as those who are involved in sustainable agricultural change, but do not see the benefits in conducting co-science. Their non-engagement with local farming knowledge is perhaps a subtle form of elitist invalidation. As Maarten Stapper (Personal Comm , 2011) explained, the scientists in his lab thought it was 'quaint' that he conducted experiments and built relationships with farmers. The deference to expert science as the superior knowledge domain was also evident in a conversation with an extensionist who explained to me that one day an 'expert' would come up with an equation to solve sustainability. As Carolan (2006b: 423) explained, these are the change agents who 'lacked the knowledge to understand that farmers really did know what they were talking about and that their knowledge was meaningful' and furthermore, that integrating this knowledge is *mandatory* for sustainability (Fortmann, 2008). While knowledge specialisation has an integral role in agriculture and extension, this needs to be complemented with interdisciplinary and transdisciplinary integrated RD&E specialisation and practice, especially in marginal agricultural landscapes which can no longer withstand the impact of industrialised agriculture.

It is therefore arguable that change agents who rely heavily on using 'expert knowledge' to influence farmers to change practices have an External LoC guiding their comprehension of sustainable practice change and how to enable it. In contrast, the successful change agents integrated their knowledge and developed interdependent relationships with farmers to realise co-practice change through 'interactional expertise' (Berkes, 2009; Carolan, 2006b; Iivonen et al., 2011; Reed et al., 2013). While there is much research detailing the need to overcome dichotomous thinking about knowledge domains in the realm of sustainable practice change (Bartel, 2013; Bouma, 2005; Leeuwis, 2004; Röling & Jiggins, 1998), the experiences of these innovators highlight the continued and current impact of this issue on retarding holistic practice change. Therefore, this issue demands urgent readdressing within the thinking, practice and conduct of change agents.

6.7.2 Integration versus incorporation of farmer knowledge

'*No one is smart enough to invent anything worthwhile on his or her own; we need to skim and combine and collect the greatest hits from a huge pool of potential innovators'*

Steven Pinker (Cognitive Psychologist, Harvard[134])

Major 'shifts' in the extension of knowledge within the domain of agriculture are all based on recognising, legitimising and incorporating farmer knowledge into the Research, Development and Extension (RD&E) innovation system (Coutts & Roberts, 2011; Scoones & Thompson, 2004). Re-framing innovation as a dynamic and complex *system* is aimed at removing linear, top-down thinking and moving toward co-evolution through participatory research, which engages within the local knowledge domain (Klerkx & Leeuwis, 2008). However, the many interpretations and definitions of what constitutes 'participation' and 'engagement' has led to debate over the problem of translating theoretical shifts into practice shifts (Kelly, 2005; Measham et al., 2011; Pretty, 1995). As Pretty (1995: 202) explained, 'control' within the innovation system is still linear and top-heavy;

> '*The term participation is interpreted in many different ways, most of which are characterised by no giving up of control to local people. They may be passive participants, listened to or even consulted, but rarely do they fully interact with the opportunity to take control'*

Participation and engagement in extension practice are often framed as obligatory and are related to the *incorporation* of local knowledge rather than the *integration* of local knowledge. Incorporation is merely including, or adding this knowledge, while integration is allowing for the bottom-up effect to influence the top-down approach and share 'control' over the innovation system, as Antweiler (1998: 490) explained;

> *'The plea to civil servants, development practitioners, and researchers to carefully integrate external and local knowledge, instead of just adding them together…will fade away unheard unless new ways of cooperation are practiced on a day-to-day basis'*

The argument by Carolan (2006b) for 'interactional expertise' begins to open up new ways for cooperation, however as Fortmann (2008), Iivonen et al. (2011), Wolf, (2008) argued, this interaction needs to be integrated into the whole innovation system. Having farmers on project steering committees, involved in not only co-science but co-publishing of science, and formally designing and leading communication and

[134] For more on Steve Pinker, visit http://stevenpinker.com/

facilitation of practice change on the ground, is largely absent. Participation and engagement are therefore only occurring within a small part of the entire RD&E spectrum, especially since the demise of Landcare and other public extension services (Bartel & Barclay, 2011). Change agents retain control of the direction of their projects and programs due to the institutional barriers they face in meeting bureaucratic requirements (Barr, 2011; Rodriguez, et al. 2009). This is largely why innovators have had more success in the realm of private extension where such constraints are not dictated by a national system; as Barr (2011: 138) argued, 'role conflict is now likely to be an inevitable experience for the government extension agent'.

The main source of knowledge exchange came from within the innovator sub-culture, from innovator groups based on trust and respect; where sharing experiences led to alternative medium sharing, 'things to read', 'programs to try' and an evolving advice network. The successful change agents became part of this knowledge domain and brought their expertise through interpersonal interaction to the network 'hub' (Carolan, 2006b; Iivonen et al., 2011). This integration of knowledge creates interdependency, holism and a convergence in biocentric thinking. Convergence between change agents and Innovators/Innovator groups is largely based on the realisation of compatible philosophies within an equitable and mutually beneficial relationship. Raymond et al. (2010: 1774a) argued that extensionists need to adopt 'epistemological pluralism' to acknowledge multiple ways of knowing and the social values and processes involved in knowledge production, where the philosophical dimensions of the integration are recognised (Eigenbrode et al., 2007 cited in Raymond et al., 2010a). This type of integration, as opposed to incorporation, does not only allow for more 'control' to be devolved down through the system, but allows for change agents and farmers to share philosophical ideas, stories, and personal relationships (Iivonen et al., 2011). Raymond et al., (2010a) further argued that adopting epistemological pluralism would also recognise the ongoing negotiation required to nourish the integration of knowledges.

To realise epistemological pluralism, reframing change agents as 'knowledge/innovation brokers' rather than knowledge providers, recognises them as conduits for inclusive, integrated knowledge transfer (Franz et al., 2010; Klerkx et al., 2010; Klerkx & Leeuwis, 2008; McKenzie, 2013; Reed et al., 2013). Becoming players within local networks who infer knowledge and connect people within and between separate spheres, Klerkx et al. (2010: 399) argued that knowledge brokers assist in;

> *'Vision formulation and reformulation, continuous network formation and adaptation, and facilitation of multi-stakeholder interaction by means of network coordination and meditation'.*

While McKenzie (2013: 93) argued for a similar approach; 'extension agents could be retrained as network facilitators, whose role includes creating 'space' for stronger interactions and learning across a whole range of actors involved in innovation'. Knowledge brokers perceive farmers to be sources of innovations and knowledge (McKenzie, 2013). Lambert and Elix (2003) have argued that knowledge brokers need to be 'cultural translators' in interpreting and passing on knowledge and igniting dialogue between sub-cultures. However, as Antweiler (1998) discussed, there also exists the ability for change agents to negatively exploit and 'hand-pick' local farming knowledge. Raymond et al., (2010a: 1770) referred to this as 'intellectual robbery', where knowledge is exchanged and no benefit is returned to the farmer. The following innovator explained his concern with exploitation of Intellectual Property (IP) by change agents and their agencies;

> [We are] starting to get down to my intellectual property…my ideas, being abused by industry/government…selling my ideas? Picking my brain and my research…all this has cost money…[I] should get a percentage…we'll send you DVDs? No I don't want them…Email you expecting you to reply and give them your research …huge IP around farming systems…stir people up…'coming to rob us farmers again'? (ME 2, CWCMA)

In recognising Innovators as change agents with the knowledge of practice change, Wolf (2008) argued for the professionalisation of farmers into knowledge-brokers, in an effort to both legitimise and ensure benefits are returned through innovation systems, in exchange for their local farming insights.

However, while farmers consider themselves to be innovators, the agricultural innovation system usually accredits innovation to science. This mentality remains in agriculture. Drawing on the dichotomy described in Chapter 4 (Section 4.2.1), productivist framings of progress still define the understanding of the innovator ambiguously, as the following innovator explained;

> [It] depends on who you talk to and what their definition of innovation is…[most] think that new technology is innovation…So it depends on what your definition of what innovation is – that's where you go back to [Government], they ask the wrong questions to start with (ME 8, CWCMA)

Another private extensionist explained that she thought the whole innovation system needed 'turning on its head' in order to formally recognise and utilise the RD&E that all takes place within the local context. Rather than farmers being considered 'end-users' and 'adopters' within a theoretically 'dynamic innovation system', there needs to be a change in the archaic language that still dominates the notion of practice change (Reed et al., 2013; Röling & Jiggins, 1998; Russell & Ison, 2000). How can there be an 'end' point in a dynamic system? Shouldn't the 'end' recycle back to the 'beginning'? This would begin to develop the

‘two-way’ process in extension, where the ‘bottom-up’ actually engages with and has influence over ‘top-down’ exponents (Reed et al., 2013; Stringer et al., 2008). Certain extensionists are going one step further and calling for a ‘multi-directional’ RD&E, which accounts for the vertical and horizontal aspects of networking, but further adds multi-dimensionality by understanding extension as an ongoing process (McLennan, 2013). These dimensions sit outside the ‘agricultural’ innovation system and migrate into a holistic understanding of farmers as individuals, with many diverse and varied needs – which if not met, can drastically inhibit practice change. To provide an example of ‘multi-dimensional’ extension, one extensionist explained that she preferred to think of herself as ‘social entrepreneur’, helping farmers with whatever they needed; from writing grant applications, finding specialist farming or environmental information, finding counsellors and even baby-sitters. Change agents employing multi-directional, integration within the innovator sub-culture are distinct actors in the innovator’s change journey. Their expertise in connecting with farmers and innovators as knowledge-brokers and more importantly, as humans, has been pivotal to sustainable practice change. The main programs and the associated change agents in the journey, reside outside of mainstream science and innovation within the national system, but are successfully integrating expert and farmer knowledge to form ‘holistic knowledge’ (Lambert & Elix, 2003: 3). Recognition and investigation of these networks and the knowledge being co-generated at the grass-roots level is imperative for integrating innovative systems towards sustainability.

6.8 Recommendations for ‘agents of change’

This section makes recommendations for change agents based on previous discussions. As Cerf et al. (2011) argued, change agents ‘need to step out of their historically built professional model and, specifically, to invent new ways of intertwining scientific and technical knowledge with farmers’ own knowledge’. However developing interactional expertise through integration (Carolan, 2006b) requires the following understandings to underpin the process; that practice change is personal and requires changing ‘hearts’ and ‘minds’ via a respectful, trust-building process, with innovator/farming knowledge needing to reach parity with the national innovation systems. Finally, it is recommended that change agents become ‘innovators’ themselves, taking journeys into the unknown and becoming cultivators, knowledge brokers and cultural facilitators to improve their assistance in sustainable practice change.

6.8.1 Changing hearts and minds

How do you open this door in the brain?

(PRA interviewee 7, LCMA)

Certain change agents have emphasised the need for attitudinal, emotional and philosophical change to be recognised alongside behavioural/practice change. Bruce Howie[135], private consultant, argued that the real extension work is about reaching into people's hearts and minds. Similarly Mandi Stevenson of Landcare NSW Inc. described her work as changing hearts and minds (Personal Comm. 2012). This acknowledges the fact that when a change agent interacts with farming or communities about practice change, insisting that, *'how you farm becomes who you are'* (ME 12, MCMA), essentially is asking people to change themselves. This means a transformation in beliefs, values, attitudes, behaviours and philosophies – the core aspects of a person's identity. Innovators redefine themselves throughout a continual process of change. To become a part of this process, change agents need to accept that in striving to change hearts and minds, they may not see the fruition of their efforts due to the long-term and ongoing nature of the journey required. Some recipients are not ready for types of change; others may get messages years later, while in some cases, messages will never hit home. This indicates that change agents need to accept uncertainty, allow for interdependent control, and practice a sustained journey along biocentric principles which will not suffer from linear and quantifiable outcomes.

To change hearts and minds through meaningful integration, interpersonal relationships are required, which focus on understanding that "people don't care how much you know until they know how much you care" (Manjala, 2009). Graeme Hand (from Stipa Native Grasses Association, Personal Comm, 2012) explained that he thought he was a successful change agent due to his previous career as a counsellor and social worker. He was pre-skilled in forming bonds, mediate change and help people find solutions. These interpersonal relationships should be based on mutual trust, passion, persistence and reflection through shared attitudes and philosophies. Change is a personal process based on self-organised emotional and psychological transformations, therefore a key recommendation for change agents is to integrate into project and program designs as organically as possible.

Understanding that the best educators on change are those that have appropriate life experiences is invaluable in extension. Utilising innovators and innovator networks as knowledge-brokers, to share experiences and stories with farmers, will catalyse practice and cultural change (Ampt, 2013; Klerkx et al.,

[135]Director of C-Qual Agritelligence Pty. Ltd, for more visit http://www.c-qual.com/about.html

2010; Klerkx et al., 2012a; Klerkx et al., 2012b; Manjala, 2009). Employing specific literature that inspired innovators along the journey would also begin to solidify this knowledge bank amongst Change networks. Therefore, recommendations for change agents who aim to 'change hearts and minds' in agriculture, is to learn from the experiences of innovators and utilise these networks in practice.

6.8.2 Respecting the change process

'Farmers are enlightened by different means; they change for different reasons'
(ME9, CWCMA)

In order to respect change as a process, there is a desire to re-emphasis a key premise of this thesis; that all farmers are different; hence their journeys of change are propelled at varying trajectories. To change hearts and minds, there is a need for trusting and respecting farmers' choice to choose this trajectory. As another extensionist explained, he aimed to help farmers make decisions they were happy with, regardless of whether he thought it was the correct decision to make. Being a part of the change process without a preordained agenda, and an open mind allows extensionists to accept farmers' decisions as rational, rather than opposed to the old paradigm where 'non-adoption' is considered irrational (Long, 2013; Pannell et al., 2006; Rodriguez et al., 2009). As Pretty (2002: 150) argued;

> *'Rarely do scientists, policy makers and extensionists question the technologies and the contexts that have generated them. Instead, they blame the farmers, wondering why they should resist technologies with such 'obvious' benefits. It is they who are labelled as 'backwards' or 'laggards.''*

While this thesis has integrated the concept of the 'innovator', Roger's (1976) adoption-diffusion model posits this against the 'laggard' – terminology which should be rejected by change agents and their agencies. 'Laggard' is a derogatory, top-heavy label, which does not recognise, and more importantly, respect rationality (Lawrence et al. 1994; van der Veen, 2010). As Diederen et al. (2003) argued, a farmer chooses to be an 'innovator' or a 'laggard' when it comes to adopting or integrating different ideas and behaviours. Relationships should be built on trust and respect, however, if change agents are projecting stereotypes upon farmers via comparison with other farmers; this method will not respect the complexity of practice change. As some have argued, this terminology is confusing as it is one dimensional; it does not take into account that from different perspectives 'laggards' can be 'innovators', and 'innovators' can be 'laggards' (Essen & Ostlund, 2011; Gilles et al., 2013). The 'adoption' terminology needs replacing with adaptive and integrative change terminology (van der Veen, 2010). To respect the change process and avoid

differentiation with farmers, farmers should be thought of as 'partners, entrepreneurs and innovators exerting demands' (Klerkx et al., 2012a: 55). Therefore interactions need to be based on fluidity, as 'there is no 'one size fits all' when it comes to [living] sustainability' (Pretty, 2007: 142). This allows for 'paradigm shifting', as Schiere et al. (2012: 350) warned that farmers shift in different directions, and they don't shift from 'one 'monolithic' system into another'. In order to respect the change process, Barrow (2011) reframed the change agent from the educator to the cultivator to acknowledge their role as nurturers in building relationships via integration to support practice change. Barrow (2011) depicted his recommended changing role of the cultivator, with regards to nurturing the change journey (see Figure 6.15)[136].

Table 1
Integrating Ideas from Howells (1982) and Clarkson (1994)
with the Role of Educator as Cultivator

Level (Howells, 1982)	Clarkson's Categories (1994)	Level of Discount	Role of Educator as Cultivator
Unconscious Incompetence	The Fool	Existence	Recognize
Conscious Incompetence	The Apprentice	Significance	Reassure
Conscious Competence	The Master	Options	Reconnoiter
Unconscious Competence	The Mechanic	Personal Capacity	Reflect

Figure 6.15 The Change journey and the educator as the cultivator (borrowed from Barrow, 2011: 309)

6.8.3 Who else needs to change?

As demonstrated in Figure 6.15, whilst aiming to inspire and support practice change, change agents need to similarly embark upon a journey into an 'alternative' frame of mind and practice. In order to (co)develop knowledge, a (co)journey of (co)discovery and (co)change between change agents and innovators must be made to achieve a co-learning forum (Klerkx et al., 2010; Klerkx et al., 2012a; Klerkx et al. 2012b ; Percy, 2005; Russell & Ison, 2011). In order to build capacity in others for change, change agents first need to

[136] Parts of Figure 6.15 are used by GfP educators as depicted in Figure 6.10

build this capacity within themselves. Change agents need to ignite their own passions, form persistence and critically reflect on their own journey; trusting innovators and their intrinsic knowledge and experience is also vital. This allows for experiential learning, where increased reflection would lead to increased empowerment, and transformative learning will occur amongst all actors involved in the interaction (Percy, 2005). A lack of challenging one's personal beliefs was identified as inhibiting change, as Rodriguez et al. (2009: 69/70) found; 'change agents' beliefs about sustainable agricultural practices were identified as an important barrier causing the lack of support for these practices…Some of these beliefs are tied to lack of information and knowledge'. The following innovator described this disconnect between attitudes and beliefs in a change agent;

> Where are we starting education about agriculture? In schools, in TAFE in agriculture, what do they teach you? [My] cousin, taking what he learnt to East Timor…traditional agriculture, [more] herbicides, fertilisers …but [he] comes here and says it's lovely, love what you're doing…[so] why [is he] taking an agriculture to another country that doesn't work here?…he doesn't connect them…can't get the connection between what he knows and what he is going to teach in East Timor… …told him[I had] no fly problems [with the sheep], he said oh, you've gotta have flies, [he] can't connect it (ME 2, CWCMA)

To resolve this issue, Iivonen et al., (2011) and Leeuwis & Aarts (2011) advocated for change agents to connect with the mindsets of innovators. Iivonen et al. (2011: 37) argued, 'as a practical implication, we suggest that through adopting specific features of an entrepreneurial behaviour and acknowledging the preconditions for building trust, researchers could pave the way to innovativeness of rural entrepreneurs'. This sentiment calls for change agents to align their philosophies, attitudes and behaviours with innovators through interdependency in order to develop their own ecological selves and build self-integrity. Glavovic et al. (1997, in Lambert & Elix, 2003: 11) argued that effective cultural translators, or knowledge-brokers, have dynamic qualities, for example;

- Advocacy for sustainable development
- Environmental, rural, science and public policy literacy
- Significant life experience
- Commitment, integrity and trustworthiness
- The ability to [integrate] different dispute resolution styles and behaviours
- Superb planning and organisational capacity

These qualities are reflected in innovators whom exhibit more effective communication skills, and hence, smoother translations. Further to this, Ison and Russell (2011: 58) promoted the idea of the change agent as the choreographer, where the 'research and the researched is the same and in the process one is open to self-change – to an unfolding of responsibility and response-ability.' This implies an adaptive process of interaction where space is maintained for improvement and realisation of opportunities (Klerkx et al., 2010). These interactions are formed via 'communication' and 'overlapping discourses' and space for adaptation is maintained, reflected on and produced (Leeuwis & Aarts, 2011: 28) by 'shifting conversations' (Ford, 1999 in Leeuwis & Arts, 2011: 28). It is argued that there is, in general, a gap in the skill-sets of extensionists which needs filling for true transformation into agents of change. Extensionists need to be multi-skilled in order to enact integration in terms of both agro-ecology and knowledge/innovation brokering.

The need for change to not only happen within change agents, but within change agencies and beyond is articulated by Rodriguez et al. (2009: 70); 'it is clear that change agencies need to address their efforts not only to farmers, but to change agents, communities and the general public as well. This can help [transform] some of the beliefs and perceptions that are hindering adoption.' Transforming dominant paradigms in agriculture is required so that institutional role conflict will not hinder the longevity of relationships and progress of change agents and innovators in their transformations (McKenzie, 2013; Pretty, 2002). As Pretty (2005: 203) surmised;

> *'It is clearly time to let go of the old paradigm of positivism for science and embrace the new alternatives…but it is only when some of these new professional norms and practices are in place that widespread change in the livelihoods of farmers and their natural environments is likely to be achieved'*

If change agencies adopted the principle of 'innovation brokering', they could aid in their own transformation by providing the resources for more integrative professional development opportunities for staff.

However, change agencies are also afflicted by multiple constraints which maintain a 'business as usual' approach to dealing with the complexity of practice change as exposed throughout this thesis. In the private extension sphere, there exists economic rationale in the business model; consultants need to sell a product, idea or service and have to maintain a level of competitive advantage and industry representatives' focus on increasing production. In both these cases, compromises must be made for

profit building. In public extension, which has largely dwindled in the landscape, agencies are dealing with political changes and short-termism, restructures and closures, reduced funding, a reliance on project delivery, lack of connectivity and long-term strategy, and lack of flexibility and integration (Robins & Kanowski, 2011; Roux et al, 2006). Political and economic systems both nationally and globally interact with the Australian agricultural system and in many ways are constricting real change in agencies, agents and on farms (see Burch & Lawrence, 2005; 2007; 2009).

6.9 Part 2 summary

Part 2 of this chapter discussed the implications of understanding the change journey, in Part 1, for change agents in the realm of sustainable practice change within a new alternative paradigm. This section offered insights from innovators regarding their successful and unsuccessful interactions with and as change agents. Using these lessons and insights from the change journey, a case was made for the integration of innovator knowledge into the innovation system. Finally, some specific recommendations for change agents who want to 'upskill' and improve their ability to be a part of practice change have been outlined. As Ikerd (1997b: 1) concluded, the successful change agents are those who have;

> *'Expanded beyond their original scope of dealing with farm, individual, or business decision making… seem to agree that the same paradigm of decision making is both necessary and sufficient at all levels of aggregation, from managing one's personal life to managing the resources of the biosphere…have rejected mechanical-industrial models and have adopted organistic-sustainable approaches instead…[And] are based on the beliefs that there are limits to growth, that everything is interconnected, and that our decisions must be ruled by inviolate laws of nature.'*

In summary, change agents need to be a transformative part of the journey of change and so need to connect, align and interact with innovators' emotional and mental models. Therefore change agents (and agencies) should naturally embark upon their own innovative journey of personal improvement through being a part of the experience of sustainable change.

6.10 Chapter summary

Chapter 6 has been engaged with answering the 'what does it all mean?' question with regards to Chapter 5's detailed recount of the innovators' change journey. Part 1 of this chapter dissected the change journey into the elemental drivers and explored the base emotional and mental processes associated with change. This section provided multiple understandings and explanations of the change journey, and builds a rich picture of the underlying factors at work in successful and sustainable practice change. These are the special stories of hope in an unstable and declining family farming tradition. Understanding how these factors mould and transform the journey is crucial in improving the efficacy of change agents and change agencies. These journeys have the ability to instigate critical self-reflection and rehabilitation for change agents. This Chapter opened the door to understanding what is entailed in practice to change to understanding how this can be supported, accelerated and encouraged in the Australian landscape. Analysing how innovators have changed, and the role of control and choice in enabling and constraining this journey has been paralleled with the journey of the successful change agent. Therefore, change agents also need to become '*in*novators' within change agency sub-cultures and innovator networks. Becoming an effective innovator is no easy task (cakewalk) as evident within this thesis; comprehending the process through lived-experiences and stories sheds light on the immensity and intensity of adopting change.

'*Innovation is hard work. We have to teach future innovators the skills and knowledge of their new profession as innovators…and how the process invokes powerful creative/destructive [forces] ….The myth of Prometheus*[137] *speaks to the forces arrayed against innovators and the promise of eventually prevailing. As the saying goes: forewarned is forearmed, and more innovators will succeed if we enable them to prevail by understanding the difficulties of the journey'*

(Fortino, 2011: 204)

[137] The myth of Prometheus and its relation to innovation, Fortino (2011); as described and discussed in Chapter 6 Section 6.2.4

CHAPTER 7 – CONCLUSION

In summary, this thesis has been concerned with producing a contemporary story for a 'new' agriculture by amalgamating farming narratives from landholders across central NSW. This narrative is ultimately one of socio-cultural change amidst an increasingly uncertain and volatile era in the human history of resource depletion. Fragmentation in dominant epistemologies, paradigms and systems are resulting in increased social, economic and ecological stress worldwide. This has resulted in pressures on farming which are fast predicting the demise of the family farm and subsequently the farming sub-culture in Australia. A holistic and sustainable paradigm is the proposed resolution to overcoming much of this fragmentation.

This thesis has established a 'new' story by focussing on sustainable and holistic trends and transformations in agriculture at the community level; first from the perspective of the farming sub-culture, and then from the perspective of the innovator sub-culture. Concentration on the mythological and living farming 'innovator' has framed this investigation. The innovator emerged throughout this work based on a complex web of definitions and perceptions to explain why certain people adapt to change better than others.

By investigating 'practice change' as an individual change, the story of the innovator evolved into a multi-layered narrative based on intellectual and emotional transformations in personal attitudes, behaviours and philosophies. 'Adoption' of change, biocentrism and uncertainty characterised this transformation to sustainable agriculture in the 'new' alternative paradigm. This thesis utilised insights into the journey of farming change to inform current efforts to instigate and encourage sustainable change and improve NRM in agricultural landscapes. The success of the 'innovator' is in sustaining and maintaining the process of change – essentially maintaining dynamism in their relationships and interactions with their own sub-consciousness, the environment, and people. The physical outcomes of change, while important, are secondary and ephemeral in the context of the change journey.

To conclude this thesis, the following sections provide a detailed summary of the main achievements of the research, reflections on the research process, and finally, a reflection on change in agriculture. Section 7.1 summarises the preceding chapters and offers an overview of the entire thesis. Section 7.2 addresses the theoretical contributions of this thesis by summarising the main results and readdressing the original aims, while Section 7.3 presents a personal reflection on the research process. Finally, Section 7.4 speculates on the implications arising from this body of work for the future of agriculture.

7.1 Thesis Summary

This thesis has cultivated and presented a carefully constructed layering of knowledge to uncover the heart of agricultural change and sustainable practice change. This thesis aimed to take the reader on a journey which navigated through academic, sub-cultural and personal reflections on the state of farming, the need for sustainable change and the promise of regenerative forms of agriculture. The first chapter outlined the tension between conservation and production in agriculture; the interactions between Natural Resource Management (NRM) and farming were discussed with dualities between the productivist or 'human-centric' and the sustainable or 'eco-centric' paradigms emerging (see Section 1.1). Theoretical and personal justification was also provided for the lines of inquiry that guided this thesis (see Sections 1.2 and 1.3). This inquiry led to the formation of three consecutive aims, these being: to re(define) the farming innovator based on insights from the farming sub-culture (addressed in Chapter 4), **to re(define) the innovator based on experiences of change** (addressed in Chapter 5) and to reflect on the implications of the innovator's change journey for future transformation (addressed in Chapter 6).

To begin addressing these aims, Chapter 2 presented a literature review on agricultural practice change. This literature provided a broad background and context for the research presented in this thesis. The first section (Section 2.2) focussed on historical and current social, economic and environmental trends in the farming arena. The second section (Section 2.3) introduced the socio-cultural context of practice change and utilised adoption literature to summarise what is currently known about farmers' resistance to and/or acceptance of change. This literature predominantly focussed on the 'attitudes' and 'behaviours' of farmers as situated within the farming sub-culture /community. The third section (see Section 2.4) of this review boiled down to the categorical representations of farmers' attitudes and behaviours towards sustainable practice change. The 'innovator' is one such category, and certain behavioural and attitudinal traits are attributed to this culturally constructed character. This literature also identified that while the innovator had been theoretically defined, they had rarely been investigated in reality. Therefore the final part of this literature review defined the innovator through academic literature to provide a platform for (re)defining the innovator through interviews with current farmers living in NSW.

Chapter 3 outlined the emergent nature of the qualitative methodological approach that was crafted, triangulated and employed to enact this investigation. This chapter introduced the preliminary investigation of the chosen case study in NSW through the CiL project (see Section 3.2). This project instigated the PRA process, a study into the current sub-cultural state of farming and the identification of the farming 'innovator'. The main results stemming from this methodology are presented in Chapter 4. After

conducting the PRA, subsequent methodologies were developed to build upon this initial process and the information generated. The ME process was developed to conduct in-depth interviewing and informal conversation with peer and self-identified innovators (see Section 3.3); these results are presented in Chapters 5 and 6. To complement this process and to triangulate the methods, farmer-owned research was also collected and informal discussions with 'Agents of Change' were deployed. A reflexive approach tied together these methodologies together (see Figure 3.3) and was utilised to acknowledge the social constructivist approach that was employed to analyse and interpret the data.

Chapter 4, as mentioned, utilises data collected during the PRA process to discuss agricultural change from the perspective of the farming sub-culture. This chapter begins by constructing a rich picture of the shared norms, values and beliefs of the farming sub-culture through a broad investigation of place attachment and belonging (see Section 4.2.2). Place and belonging were elucidated via common themes which typified the current sub-culture, including tradition and history, stewardship and succession, and community connectivity. Second to this, the positionality of the current farming sub-culture to change was determined (see Section 4.2.3). Through this analysis, a multitude of social, economic, environmental and cultural reasons for change, ways to deal with change, and ways people resist change in farming were determined. Section 4.2.3 aimed to convey farming sub-cultural concerns and hopes for the future. In the farming sub-culture there is widespread consensus that change in farming systems is a 'must', and the 'business as usual' model is becoming too hard to maintain. The next part of this chapter, Section 4.3 begins to position the 'farming spectrum', from traditional to alternative farming practice, as perceived by the farming sub-culture. This section discussed the current conflict in the farming sub-culture regarding which part of the spectrum exemplifies desirable or 'good' farming practice as opposed to 'bad' farming practice. To complement this, traditional and alternative forms of management were differentiated through the sub-culture. While alternative farming practices were commonly perceived to be examples of 'good' farming, there was a healthy amount of scepticism present regarding specific alternative practices and movements.

This analysis set the stage for the (de)construction and (re)defining of the innovator from the perspective of the farming sub-culture (see Section 4.4). The (de)construction of the innovator identified the characteristics of the mythological innovator across the farming spectrum (from the 'techno-innovator' to the 'eco-innovator), and the desirability spectrum (from the celebrated champion to the avoided preacher). The concept of the innovator was further (de)constructed into examples of farming 'eco-innovators' living within the landscape. The identification of these 'living' innovators (re)defined the innovator in this landscape as a practitioner of regenerative forms of agriculture based on the use of native perennial

grasslands (see Section 4.4.3). This chapter addressed the first aim of this thesis, to (re)define the innovator through the farming sub-culture.

Chapter 4 framed the preliminary investigation and introduced the innovators focussed on in Chapter 5. Chapter 5 presented the narrative of the collective 'living' innovator to focus on processes of practice and individual change. This Chapter is split into 3 main parts, motivations/attitudes, behaviours and philosophies to relive the innovator's journey of change. The motivations/influences of change were based on childhood experiences, crisis and eureka moments, and having others co-experience practice change (see Section 5.2). The behaviours of innovators were also investigated (see Section 5.3). Goal setting, simplification and experimentation were all key behaviours that induced sustainable practice change. Innovators reported building sustainability into the environmental, economic and socio-cultural aspects of their businesses. Environmental sustainability was achieved through practices which nurtured rather than controlled nature, for example, building soil and encouraging native grass regeneration. Observing and monitoring changes and building resilience into the landscape were also behaviours which typified these innovators. Economic sustainability was achieving by balancing profit in order to deal with economic variability, take advantage of lucrative opportunities, and connect with consumers through self-developed marketing strategies. These ecological and financial behaviours influenced overall improved well-being in farmers by increasing quality of life through time-saving management practices. Innovators reported reduced stress and risk, and increased 'happiness' and satisfaction in their lives as a result of sustainable practice change. In Section 5.4, to tie together attitudes and behaviours, innovators' philosophies which guided change were determined. These philosophies were based on integration, creativity, holism, biocentrism, attachment to place, ethical practice, spirituality, reflection, intuition, connectivity, and new ways of conceptualising agriculture. The attitudes, behaviours and philosophies of innovators throughout the change journey were utilised to both (re)construct and (re)define the innovator to achieve the second and main aim of this thesis.

Chapter 6 was the final results/discussion chapter which summarised the details of the change journey presented in Chapter 5 into the conceptual journey of the innovator (see Part 1). The first half of Chapter 6 explored the mental models and emotions which underpinned the innovator's change journey. The emotional drivers of change were summarised as a cycle of passion, persistence, reflection within a circle of trust (see Section 6.2). The aspects of the journey which sustained change were the development of the ecological self, the alignment of attitudes/behaviours/philosophies, and an interdependent locus of control (see Section 6.3). To summarise the outcomes of this journey, enlightenment, empowerment, paradigm

shifting, living sustainability and choice creation were concepts used to discuss the psychological well-being resulting from farming transformation (see Section 6.4).

Part 2 of Chapter 6 addressed the final aim of this thesis, to derive lessons from the journey of change for those who aim to trigger and support sustainable practice change in farming landscapes. This part of the chapter first summarised the positive and negative experiences of innovator's with change agents (see Section 6.6). The positive experiences were shaped by collaboration and co-learning with Change Agents, while the negative experiences were based on top-down delivery of information which illegitimated innovator's knowledge. These experiences made the case in Section 6.7 for the wider integration of farmer/innovator knowledge with both 'expert' knowledge domains and the national innovation system.

Finally, set of recommendations for change agents were discussed (see Section 6.8). These can be summarised as the final conclusions of this thesis:

- practice change requires transformation of hearts and minds
- the change process is a quest of discovery in unchartered territory – successes and failures require patience, respect and understanding
- sustainable transformations need to be encouraged in change agents and agencies as well as farmers for the realisation of widespread practice change.

7.2 Theoretical contributions

This section details the theoretical contributions of this thesis and highlights the main findings and conclusions in relation to the original research questions and aims (see Chapter 1, Section 1.4).

Insights into 'practice change'

This thesis has argued that practice change is an ambiguous and multifarious concept in the farming sub-culture. What defines, constitutes and results in 'sustainable practice change' is greatly debated and contested across the farming spectrum. The inability for 'alternative' practices to be broadly defined as a set of 'management guidelines', or to be conclusively proven to be 'sustainable' adds to this confusion. This insight is in agreement with other authors who have explained the futility in defining sustainable farming practice;

> *'We cannot prove through empirical studies that one approach to agriculture is sustainable or that another is not. It would quite literally take forever to collect the data for such a study'* (Ikerd 1997b: 1)

> *'How long should an agrosystem behave sustainably to be considered sustainable and how long should sustainability be assessed? It is extremely difficult to determine whether certain practices are sustainable or not. It is only in retrospect that sustainable practices can be truly identified'* (Rigby & Caceres, 2001: 23)

However, there is a consensus amongst landholders that sustainable change in farming systems is urgently required to sustain farming landscapes in the future. This thesis emphasises that the socio-cultural aspects of farming are fundamental to building both individual and communal ecological relationships with the land. These relationships are essential to sustainable practice change and allow farmers and farming communities to continue exploring and refining their integration of production and conservation. Further, this thesis suggests that these place-based ecological relationships can only be maintained if farming as a vocation is maintained – with personal transformations playing an integral part in practice change and in sustaining practice change. Fostering individual creativity and autonomy is vital for widespread transformation towards sustainability.

Sustainable farming practice change needs to be redefined to reflect the complex processes entailed in transforming farming systems. The attitudinal, philosophical, emotional and psychological transformations that take place internally are understated and misrepresented using this terminology. The understanding that practice change requires maintaining a 'spirit of change' highlights the static nature of this term; 'practice change' implies a behavioural 'shift', rather than the continued practice of 'paradigm shifting' (see Chapter 6, Section 6.4.2). This thesis has also explained that 'practice change' is not only required in the on-farm domain (Chapter 6, Section 6.8.3). Widespread sustainable change will only be realised on-farm if is supported by transformations in change agents and agencies, and ultimately changes in the dominant paradigm. Change is required across all scales of food and fibre distribution and consumption. This is the bottom-up holistic change which is essential to supporting the new territory in farming that innovators are constantly (re)discovering.

(Re)defining the innovator

In Chapter 1, Section 1.2 the 'innovator' was defined using a literary definition. This definition indicated that an innovator was someone who 'introduced new methods ideas or concepts'. While theoretically, this definition indicates that all farmers are innovators in some sense, the 'innovator' label in agricultural vernacular is used to describe a specific type of farmer who is 'ahead of the pack'. The main aims of this thesis were to (re)define the innovator based on the rhetoric in the contemporary farming landscape. To enact this investigation, the 'innovator' was firstly constructed and defined through academia (see Chapter 2, Section 2.3.1), secondly (de)constructed through the farming sub-culture (see Chapter 4, Section 4.4.2 and 4.4.3), and thirdly (re)constructed through innovators' personal journeys of change and self-assessments (see Chapter 5, Section 5.5). These three perspectives of the innovator resulted in a number of definitions, as summarised in Table 7.1:

Table 7.1 The multiple definitions of the innovator

The academic innovator:	Initial 'adopter'/ 'end-user' of an innovation/technology 'appliers' of an innovation/technology 'leaders', 'forward-thinkers', 'organic' farmers, 'learners', 'risk-takers', 'opportunists', 'independent' farmers, 'vocational' farmers, 'expert ecological farmers', 'biospheric' farmers
The farming sub-cultural innovator:	'Pioneers', 'champions', 'mentors', 'advice-givers', 'educators', 'inspirers', 'different/unique', 'greenies', 'hippies', 'optimists', 'cult members', 'preachers', 'evangelists', 'lunatics', 'crazies'
The self-defined and interpreted innovator:	'Resourceful', 'natural resource managers', 'stewards', 'gardeners of the earth', 'sunlight harvesters', 'sunlight, plant and time managers', 'philosophers of the land', 'interpreters of and for the land', 'real scientists', 'farming integrators', 'resilience builders', 'the diversifiers', 'the adaptors'

These definitions build a picture of 'who' the innovator is through multiple mythological interpretations. The purpose of redefining the innovator is to communicate essential processes of grass-roots sustainable change. As Massy (2013) and McKenzie (2013) also concluded, understanding what it takes to change repositions the farmer as the innovator and contradicts the prevailing notion in Australian agricultural

innovation systems that innovation occurs predominantly off-farm. The transformative aspects of these innovators' journeys have been based on grass-roots and sub-cultural networks of knowledge sharing amongst farmers, in cases facilitated by change agents. As the journeys of change portray, the real sustainable and regenerative changes in agriculture are taking place *on the farm* through 'farmer-derived' and 'farmer-driven' innovation (Massy, 2013). There is a desperate need for long-term monitoring and scientific validation of these innovations. This thesis argues for the 'concept' of the innovator in contemporary times to be reframed from the passive player in the 'top-down' process of diffusion into a more organic understanding of the innovator as the 'bottom-up' active challenger of the dominant agricultural paradigm.

Insights into personal change

As 'practice change' requires personal change, the research demanded an analysis of the emotional and psychological concepts which underpin farming change. The concepts discussed in Chapter 6, Part 2 are often in discussions on practice change, but they rarely frame the analysis. In this sense, this thesis has contributed to new ways of interpreting and presenting data as an organic process. While literature informed and supported this analysis, the concepts originated directly from the innovator's narrative. This part of the thesis adds to the emotional geographies literature by concentrating purely on emotions and constructing a 'map' of the interrelations between these concepts.

This thesis reframes farming change as a complex and personal *process* which leads to innovation and sustainability rather than as an *act* of simple innovation adoption. The internal change described in this thesis also adds to literature concerned with promoting sustainability in general. People changing their own 'attitudes' and 'behaviours' towards the environment is necessary for 'living sustainability' to become a reality; adopting/adapting/innovating practices is only a small requirement of the change process. To transform into an example of 'living sustainability' the innovator's narrative has highlighted the need to change perceptions of 'control' in order to generate 'choice'. With current 'wicked problems' limiting choice, there is a need to understand that generating choice provides room for people to change, adapt, transform and create new paradigms. This thesis has aimed to enrich literature on practice change and agricultural sustainability by focussing in on these less-researched socio-cultural substrates of farming.

Methodological contributions

This thesis adopted a novel approach to investigate and explore the research questions and address the main aims. The participatory nature of this research is evident in the exploratory and grounded approach which was employed. The innovative aspects of this methodology were the 'conversation', the inclusion of 'farmer-owned research', and the analysis. The power of the 'conversational' elements during interviews was the predominant strength of this research, and is reflected in the intimate nature of data generated. These conversations meant that 'participants' were in fact 'people' with whom I connected and got to know and vice versa. Having conversations meant that other topics could also be discussed which allowed for farmers' family members to be included intermittently in interviews. This also meant that, during the ME process, my 'co-interviewers' (three friends and my mum) were also involved in the interview process. A conversational approach to interviews, which included some of our nearest and dearest, garnered knowledge and built levels of trust that broke down the traditional 'research barrier'. As the researcher, I was not there to direct the interview, but rather to cover certain themes – ultimately this became a process of learning, innovators were the educators and I the student.

Including 'farmer-owned' research in the research methodology was also a key strength of this thesis. This methodology was a process of collecting both 'local knowledge' – articles, artworks, photos etc. that innovators and other peer-identified innovators had produced and published or presented – and 'expert knowledge' – books and literature which inspired innovators. This information was collated to gain further insight into the journey and to help with interpretation of the innovator narrative. This aspect of the research, whilst only built into this thesis as supporting data, was integral to my comprehension of regenerative agriculture and the change process.

This thesis also applied an interpretive approach to analyse, interpret and discuss collective farming narratives. Hand-crafting this story of agricultural change was undertaken as an organic process, you could say Chapters 4 and 5 'wrote themselves'. This novel approach to analysing sustainable practice change has avoided quantification and in doing so has allowed for the depth of the qualitative data to be realised in this thesis.

7.3 Reflections on the research

'Sustainers of change', the focus of this thesis, were inspirational farmers who let me into their lives, their minds and their hearts. In reflection, these farmers taught me so much about the practice and philosophy of farming, but more than that, about life – I have undertaken my own journey through these interactions. The research, books, organisations and people who inspired innovators provided further learning opportunities and inspiration for this thesis. These innovators introduced me to new ways of thinking in agriculture, to new favourite authors (Aldo Leopold), and to new friendships. In hindsight, these innovators have showed me a way forward in farming which is not only sustainable, but enjoyable, fulfilling, and even uplifting.

Through this research, I have become part of the conduit of knowledge in the quest for global understanding of what it is to be a sustainable farmer in a socio-economic and environmental climate of increasing uncertainty. These stories from the farming sub-culture have been reconstructed and retransmitted and my positionality throughout the whole process has been that of the speculative messenger, rather than the judger or decider. This has allowed for an innovative PhD journey, which has experienced its own crisis and eureka moments, and was emotionally driven by passion, persistence, reflection and trust. The experiences I had with innovators were life-changing and enlightening, and have filled me with hope for the future of Australian farming.

7.4 Stories of hope – the future of 'eco-agri-culture'

> *'…a path towards sustainability. We must now shape this new path. We will, by walking it, also change ourselves. We will adapt and evolve, new connections will be established.'*
>
> (Pretty, 2002: 11)

This thesis has navigated through the farming sub-culture to discover and investigate the 'eco-innovator'. As previously concluded in Chapter 6 (see Section 6.5) the narrative of the 'eco-innovator' is one of hope in the increasingly unstable and declining fabric of farming communities. These are stories of hope amongst stories of fear, as Joel Salatin (2010: 300) described;

> '*Today's conventional farmer lives in a world of fear. Indeed, perhaps we could say our entire culture lives in fear. In sharp contrast, I feel like I live in Forgiveness. I don't wake up every morning worried about an epizootic, economic disaster or ecological calamity. Instead, I can't wait to go out and make animals happy. To participate in a wondrous ecological dance. To embrace my ecological umbilical, and to appreciate the things that are right in my world because I have endeavoured to create forgiveness and resiliency.*'

The success of these farming stories in is the process based 'ecological' and 'cultural' aspects of 'practice' which result in production. 'Eco-agri-culture' is a term which exemplifies conceptualisation of this new farming paradigm. With a future dependent on sustainable resolutions, the journey of the 'eco-agri-cultural *in*novator' concludes that sustainability, to be realised, needs to be internalised. These sustainable and consubstantial relationships with the land are based on love rather than fear and are essential to human well-being. As Pretty (2002:11) summarised;

> *'For all of our time, we have shaped nature, and it has shaped us, and we are an emergent property of this relationship. We cannot suddenly act as if we are separate. If we do so, we simply recreate the wasteland inside ourselves'*

While stories from the sub-culture and literature shaped perceptions of practices, the aim of this thesis was to neither vilify nor champion certain agricultural industries, practices or farmers. While certain movements in this landscape were closely linked to successful change, for example Holistic Management, Grazing for Profit and Stipa, this thesis was not focussed on advocating these alternatives for all farmers. Rather, in the words of innovators, we need a spectrum of agriculture ranging from high-input high-output to low-input low-output based on the suitability of soils, ecosystems and micro-climates. However it is the low-input low-output innovators in the sustainable paradigm who are leading the way forward and discovering new options for agriculture. The applicable lessons to be learnt from these innovators are; the practice of integrating conservation and production and the practice of 'self-sufficiency'. With increasing alarm regarding the global conflict between population growth, food security, and environmental integrity – it is these lessons that are integral to 'feeding the world' – helping people feed themselves through self-sufficiency and utilisation of all environments for integrated multi-functional purpose.

Charlie Massy (2013) referred to these 'eco-agri-cultural' innovators and their movements of change as the 'underground insurgency' – a rebellion against the norm and against the dominant farming paradigm.

While dualistic thinking is simplistic, it is simplicity that best communicates and frames the paradigmatic nature of this 'rebellion'. This thesis highlights the need to change our thinking regarding existing paradigms. Rather than incorporating the biocentric into the human-centric, the future requires integrating the human-centric into the biocentric; we need to (re)align ourselves with nature. In conclusion, while the story presented is focussed on the farming arena, there are broad messages in this thesis for the future of humanity – we all need to change our hearts and minds, generate choice, and aim to become living examples of sustainability for the sake of current and future generations of all life-forms.

The rule of no realm is mine.
But all worthy things that are in peril as the world now stands, those are my care.
And for my part I shall not wholly fail if anything passes through this night that can still grow fair, and flower and bear fruit in the days to come.
For I too am a steward, did you not know?

Gandalf - ('*The Lord of the Rings'* J.R.R. Tolkien)

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APPENDICES

Appendix A: PRA Proforma

<u>The interview:</u>

Let's start with a bit about you:

- What has brought you where you are today?
    - Where did you grow up?
    - Who else lives with you here?
    - Job experiences in life?
- Tell me a bit about your history here on this property:
    - Family history?
        - How long have you lived on this property/in this area?
        - Do you know who owned/ran the property before you?
        - Do you have a family history in the area? In rural Australia? In agriculture?
    - Enterprise history?
        - How long has your property been (insert property use)?
        - Do you make a living from the property (in part or full)?
        - Do you know what sorts of activities have taken place on your property in the past?
    - Environmental history?
        - How has the landscape changed here in terms of the physical environment?
        - How do you think the environment is going on your property at the moment?
        - What sort of things have you tried to change on your property? Has anything gone really well? Or been difficult? Have there been any benefits?
        - Is there any evidence (that you know of) of environmental degradation?
    - Community history?
        - Is there a community here? Where are the boundaries?
        - What communities lie next to you? Do you have any formal/informal ties with these communities or others?
        - Do you know anything about the general history of the area?
        - How would you describe the culture of your community?
            - What sorts of people live in your community?
            - What sorts of people would you like to see living in your community?
            - Is there a community spirit?
        - What sorts of groups/activities take place? Is there a local meeting point? Anything you have achieved together as a community?
        - Are there informal 'groups' in your community?
        - Where do you feel you fit in? Do you know of people who don't feel they fit it?
        - Is there anything people are doing differently around the area?
            - Who (without naming names!) and what?
            - What do you think of it? What do other people think?

- How do you feel about your future here?
    - Are you worried about your future? What do you think will happen?
    - What do you want to see happen? How do you envisage it occurring?
        - Future plans for enterprise
        - Future plans for environmental works
        - Future plans for family (heir?)

        - Future plans for the community?
            - What would you like to see happen in the future to your community? Or this area?
            - Are you worried about the community's future?
    - What are your personal aspirations and aims?

How have you received information about the environment?

- Firstly, have you done any research of your own?
- Have you ever received info from outside sources (from neighbours/family/media/government etc)?
    - Where?
    - Content?
    - Usefulness?
- Has anyone/a group ever approached you about anything to do with environmental management?
    - Who and where from?
    - What was their purpose?
    - What impression did/do they give you?
    - Did they listen to your needs and ideas?
    - Was/has their advice been useful? If not why?
    - What sort of characteristics would you like to see in a person approaching you about the environment?
    - What characteristics would you like to see in a local environmental management group? Who would be involved?
- Have you ever been involved in any trials/field days/courses/workshops of any kind to do with the environmental management of your farm?
    - Where and with whom?
    - What did you learn? Was it useful? Has is led to any changes?
    - Have groups failed to stay together? Why? If not, how do you think they have stuck together?
- What do you think about the coordination of the information you have received?
    - Consistent? Ad hoc? Reliable?
    - What do you want to receive?
- What do you think would motivate you to join a group/get more information/try out different practices?

- What types of connections are there between your community and your environment?
    - Seed collectors?
    - Innovators?
    - Leaders/champions?
    - Problems, emerging issues
- What do you think frustrates you the most about environmental management? (People/programs/advice/limited options etc)
- What do/would you want to gain from environmental management?
    - On a personal level
    - On an environmental level
- How do you think the community would respond if you wanted to make changes to your property/enterprise in terms of environmental management? Why?
- What sorts of changes do you think have to take place for environmental management in this area?

- What types of formal processes do you think could be put in place to help continue projects/groups that are formed within your community?

PARTICIPANT INFORMATION STATEMENT AND CONSENT FORM

THE UNIVERSITY OF NEW SOUTH WALES

Innovators in Natural Resource Management

You are invited to participate in a study regarding concepts of change and control in natural resource management in farming. I hope to explore the key experiences you have had which have motivated and trigged change in farming practices, and new philosophies related to farming. You were selected as a possible participant in this study because of your responses given in preliminary interviews for the Communities in Landscapes project.

If you decide to participate, I will be discussing with you informally your experiences in farming and that of others in relation to change in terms of natural resource management. This will require a couple of hours of your time, preferably on your property at a date and time convenient to you. A follow-up discussion would be ideally conducted approximately 6-8 months later. The idea is to explore and share ideas with regards to alternative farming and concepts of change and control, drawing on your own experiences, philosophies, attitudes and behaviours. Discussion will also be directed towards your insights into other farmers in general, the influence of people external to the farm who are 'extension' professionals, and the future of farming in general.

During discussions, notes will be taken for further analysis. It is hoped that this analysis will provide a rich picture of the **nature of change in farming and issues related to control in terms of natural resource management**. It is hoped that this study will provide new insights into farmers who are operating under different principles to that of traditional farming paradigms. We cannot and do not guarantee or promise that you will receive any benefits from this study.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission, except as required by law. If you give us your permission by signing this document, I plan to discuss and potentially publish the results in order to bring new understandings into light from the farmers' point of view on natural resource management. This information may also be used to help guide certain aspects of the Communities in Landscapes project conducted through Landcare NSW. In any publication, information will be provided in such a way that you cannot be identified.

Complaints may be directed to the Ethics Secretariat, The University of New South Wales, SYDNEY 2052 AUSTRALIA (phone 9385 4234, fax 9385 6648, email ethics.sec@unsw.edu.au). Any complaint you make will be investigated promptly and you will be informed of the outcome.

A summary of the findings from these studies will be sent to you after the second round of discussions by either mail or email. Your decision whether or not to participate will not prejudice your future relations with the University of New South Wales. If you decide to participate, you are free to withdraw your consent and to discontinue participation **at any time** without prejudice.

If you have any questions, please feel free to ask me. If you have any additional questions later, I will be happy to answer them. My contact details are as follows:

Mobile: 0405 707 756
Fax: 02 9663 1015

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Vallentine Annex,
Institute of Environmental Studies
University of New South Wales
Kensington, NSW
2052

Innovators in Natural Resource Management

Pro-forma: micro-ethnographic studies
Themes to be covered in the interviews/discussions:
Questioning relating to both the personal experiences of the farmer and insights relating to other farmers and the future of change and control in farming

History:

- Relating to the farmer's reasons for being a farmer
- Influence of family
- Influence of community, formal/informal groups
- Other related socio-cultural influences that have affected the farmer's decision-making

Contrasts between past and present:

- Past practices, past mindsets, past philosophies: related to farming
    - Lifestyle
    - Satisfaction
    - Perceived barriers to change
- Past risk and stress levels
- Past dependencies

* Perceived change:

- Discussion relating to personal experiences which inspired change – motivations/triggers
- Exploration of poignant moments that marked change
- Internal and external influences for change
- Key individuals external to the farm: their approach – inhibiting or inspiring change
- Current philosophies that guide relationship with farming/nature/life

*Perceived control:

- Discussion relating to locus of control
- Discussion relating to empowerment
- Current perceived levels of independence
- Current perceived risk and stress levels
- Discussion relating to 'self' control through alignment of attitudes and behaviours

Future of farming:

- Future aspirations and predictions –related to future change (rate/influences) and future perceived levels of control
- Key socio-cultural factors which will influence the future
- Key approaches and personalities of individuals which will influence the future

Appendix B: List of Books: Farmer owned research

Author	Year	Book Title	Publisher
Main, George	2005	Heartland	UNSW Press, Sydney, Australia
Leopold, Aldo	1991	The River of the Mother God and Other Essays	The University of Wisconsin Press, Madison, Wisconsin, USA
Leopold, Aldo	1949	A Sand County Almanac and Sketches Here and There	Oxford University Press, New York, New York, USA
Salatin, Joel	2010	The Sheer Ecstasy of Being a Lunatic Farmer	Polyface Publications Inc., Swoope, Virginia, USA
Salatin, Joel	2011	Folks, this ain't normal	Center Street Hachette Book Group, Inc., New York, New York, USA
Fukuoka, Massanobu	1978	The One-Straw Revolution: an introduction to natural farming	Other India Press, Goa, India
Andrews, Peter	2006	Back from the Brink	Harper Collins Publishers, Pymble, Sydney, Australia
Andrews, Peter	2005	Beyond the Brink	Harper Collins Publishers, Pymble, Sydney, Australia
Cluff, Daryl	2003	Farming Without Farming	Stipa Native Grasses Association, Wellington, NSW, Australia
Bird, Christopher & Tompkins, Peter	1998	Secrets of the Soil: New solutions for restoring our planet	Earthpulse Press Inc., Anchorage, Alaska, USA
Cocannouer, Joseph	1950	Weeds: Guardians of the Soil	The Devin-Adair Company, Connecticut, USA
Ping, Alistair	2004	Be	Marlowe and Company, Avalon, New York, USA
Ping, Alistair	2004	Do	Marlowe and Company, Avalon, New York, USA
Chopra, Deepak	2007	The Seven Spiritual Laws of Success: a pocketbook guide to fulfilling your dreams	Amber-Allen Publishing Inc., San Rafael, Canada

Chopra, Deepak	2009	Reinventing the Body, Resurrecting the Soul	Random House Group Ltd., London, UK
Johnson, Spencer	2001	Who Moved My Cheese?	Vermilion, Croydon, UK
Stevenson, Mark	2011	An Optimist's Tour of the Future	Profile Books Ltd., London, UK
Savory, Allan	1988	Holistic Resource Management	Island Press, Washington, DC, USA
Gammage, Bill	2011	The Biggest Estate on Earth	Allen & Unwin, Sydney, Australia
Rolls, Eric	2011	A Million Wild Acres: Two Hundred Years of Man and an Australian Forest	GHR Press, Australia
Pollan, Michael	2006	The Omnivore's Dilemma	Bloomsbury Publishing Plc, London, UK
Doidge, Norman	2010	The Brain That Changes Itself	Scribe Publications, Pty Ltd., Carlton North, Victoria, Australia.
Diamond, Jared	2005	Collapse: How Societies Choose to Fail or Survive	Penguin Group, Camberwell, Victoria, Australia
Mitchell, Mark & Schlueter, Nathan (Berry, Wendell)	2011	The Humane Vision of Wendell Berry	ISI Books, Wilmington, Delaware, USA
Bailey, Kay., Lefroy, Ted., Norton, Tony & Unwin, Greg	2008	Biodiversity: Integrating Conservation and Production	CSIRO Publishing, Collingwood, Victoria, Australia
Berry, Wendell	1998	The Selected Poems of Wendell Berry	Counterpoint Press, Berkely, California, USA

Appendix C: Socio-cultural perceptions of power and participation in NRM

In aiming to 'bridge' the divide/s, or in other words, patch up the 'rips' or amend aspects of fragmentation within the socio-cultural fabric, there have been a number of 'top-down' government programs implemented within this landscape which specifically dealt with NRM at the farm scale.

Perceptions of power and participation within the socio-cultural climate further this exploration of the socio-cultural by piecing together the diverse landholder experiences, interactions and resulting perceptions of NRM governance. In this sense, the 'locus of control' relating to governance of farm management is explored here on a socio-cultural level. Recognising the influence of external structures, processes and agencies designed to deliver and support NRM in a top-down manner to the farm is important in determining issues of power and participation in NRM within the landscape. These relations manifest into relationships of change and control from the grass-roots perspectives, and are indicative of the fragmentation between top-down and bottom-up NRM. These were mainly government-related interactions with farmers through funding and information exchange. Aspects of local Landcare, funding opportunities predominantly through the CMAs and Landcare, and experiences with extension in general frame this discussion. A lack of participation and therefore perceived loss of power was also evident in conversations related to reconnecting with consumers and the urban landscape.

The following sections provide quotes regarding these themes within the sub-culture.

Landcare Relations:

> [The] social aspect keeps it together, and the information exchange (PRA interviewee 8, LCMA)
>
> [Our] Landcare group talk regularly…[we] have good contact with a dozen people around here (PRA interviewees 21, MCMA)
>
> [We are] both involved in the Landcare group…thinks they changed the community…now women work on the farm more (PRA interviewees 21, MCMA)
>
> Landcare is a crock of shit…because [it was] a tight-knit group and dollars [were] hoarded… needs a plan, not money out and chucked out the door…got disillusioned as Landcare is more about people than Landcare, where people are the focus [and] not the need for on-ground works (PRA interviewee 4, LCMA)
>
> [I] wasn't interested, I thought it was a big brother club… [I] didn't want to lock up and fence off the farm…Farm management is personal [and I] didn't want it to be public (PRA interviewee 18, LCMA)
>
> Landcare group was a real boys club. Never got anything out of it, joined 10 years ago. All the money went to a small group (PRA interviewee 3, CWCMA)
>
> Overdosed on Landcare (PRA interviewee 15, LCMA)
>
> No new blood, people get burnt out on committees…Social side of Landcare is big (PRA interviewees 13, MCMA)
>
> Landcare, de-snagged the creek, caused a division in the community…creek has changed for the better now – water has slowed down (PRA interviewee 23, MCMA)
> [I've been] approached about NRM only by Landcare, positive [experience]…They're there to help the landholders, [they] listen to farmers' needs, more so now than 3-4 years ago…People can now see the benefits and results of conservation measures (PRA interviewee 13, LCMA)

Landcare, [in the] early days [was] well-driven [by] dynamic characters…salinity was an issue [at the time], the normal wet [meant that] salinity [was] growing. [Started with] tree planting [and had] good outcomes for saline areas… [these are] now the most productive, [they are] still moist [as the] perennials use [the] water table. Landcare waned a little… [there was a] run of dry [which led to] tree planting failures. (PRA interviewee 4, LCMA)

It is important to understand that it is important to know where *not* to plant trees; the philosophy from Landcare was that any tree was a good tree (PRA interviewee 26, LCMA)

Landcare [is] just fiddling around the edges (PRA interviewees 3, MCMA)

[I] can't wait for salinity to be a problem again! Brought community together and environmental issues to the forefront (PRA interviewee 19, MCMA)

Landcare was more about fixing the effects of bad management, not about correcting the practice (PRA interviewee 4, LCMA)

I have a problem with Landcare supporting tree planting for the environment and yet not providing funding to change machinery to go to minimum tillage (PRA interviewee 26, LCMA)

Landcare group used to do a lot of farm production activities, like controlled traffic etcetera, but the group is now involved in environmental aspects; but there is probably more attraction to farmers if Landcare has a production focus (PRA interviewee 5, MCMA)

Landcare is well meaning [and] people want it to work well… [But] you need to have business that can pay for itself, reliance on handouts is not healthy (PRA interviewees 20, LCMA)

Landcare Australia [is] snookered again because they get corporate dollars, this money doesn't come down to us (PRA interviewee 22, LCMA)
Was involved with Landcare, [but I] don't hear much about it anymore, [I] was a member but not anymore…no support for Landcare from government (PRA interviewee 12, LCMA)

Landcare flopped…not enough interest, not enough people to run them…there's interest as long as there's money (PRA interviewees 1, MCMA)
[We are] in Landcare but negative about it….paid for [our] own tree planting…funds not well spent, focused, not valuing works that were funded by others (PRA interviewee 2, MCMA)

Disillusioned with Landcare, 'bits of paper', 'more money less with it'… driven by community (PRA interviewees 4, MCMA)
[Landcare was] driven by grants (PRA interviewee 4, LCMA)

Structural changes in NRM funding:

Landcare stopped getting funding and disintegrated when the CMA came in (PRA interviewee 16, LCMA)

[When the] Catchment Management Committee [changed] to CMA, the budgets from Landcare went to the CMA…Community lost control of the money, Landcare groups were removed from planning (PRA interviewee 8, LCMA)

When we got funding [we] had to look after the money…no financial people in the group…[we] thought the CMA would take this burden off us when they came in, instead they wanted sole control. No-one

knows what's going on anymore…From the CMA start, they made statements that wouldn't happen…very opaque and with layers. Landcare is not a common thing anymore, the CMA have created [funding] competition (PRA interviewee 22, LCMA)

[I don't] understand the CMA… CMA was Landcare, Landcare staff are now CMA staff. Landcare [was] 70% on ground, 30% in wages, [the] CMA [is] 30% on ground, 70% wages…top heavy [and]over managed (PRA interviewee 15, LCMA)

CMA is causing [the] demise of Landcare… [people] go direct to CMA for dollars…no [community] consultation, don't know what is happening (PRA interviewee 10 LCMA)
Biggest killer to Landcare groups was individual CMA funding – no more need for groups (PRA Interviewee 26, CWCMA)

CMA relations

Frustrating because it is still top-down with CMAs (PRA interviewee 22, LCMA)
[The] CMA caters to a very small subgroup of landholders, and most farmers actually miss out; it creates a culture of "haves" and "have nots"; the CMA eligibility list is too narrow, but possibly because of only limited amounts of funding for projects (PRA interviewee 26, LCMA)

CMA, [I] distrust [them]… [Funding is based on] 'tick a box', staff are not proactive…turnover meant to help, [doesn't]…built a business of themselves (PRA interviewee 19, MCMA)

More and more over governance…problems with the CMA (PRA interviewee 23, MCMA)

Temporary nature of CMA positions has fragmented the system, they can't build relationships with landholders (PRA interviewee 19, CWCMA)

This year they are concentrating on changing management of those who have been educated so they are funding forums and groups; CMA just organises venue and mail out, what happens on the day is up to the farmers, [I] think this works quite well as it is non-threatening [and] a good way of getting knowledge around locally; these days are positive (PRA interviewees 20, LCMA)

Not really involved with the CMA…did some courses, study courses, Healthy soils healthy landscapes…[we got] concessions for soil tests, [and] experts running courses…[it] was good, only a passing thing though….a bit rubs off, but tends to be a bit temporary (PRA interviewees 21, MCMA)

CMA has been good in this area. Have supported triple bottom line approaches (PRA interviewee 1, CWCMA)

Very proud of CW and Lachlan CMAs…has noticed that the focus now is on changing people (PRA interviewee 7, CWCMA)

Don't get any feedback and never hear what happens

The CMA were good… have gone pear-shaped. In the beginning [they] were doing good things, now [it's all] gone to seminars. In the start they were more hands on, less administration. Came out…face to face chats to start you off on a change path (PRA interviewee 23, LCMA)

Stewardship Funding:

The return from the covenant is not as good as the return from livestock (PRA interviewee 15, LCMA)

[We] didn't pursue the [stewardships] the first time due to the Lachlan CMA attitude to the grazing…could only graze at certain times of the year and not at others. Couldn't reach an agreement with CMA over this issue… went through right to the end of the process, but never sent in the final application…There have been other rounds of funding for stewardships, but by the time [we] got to the third round, [we] concluded that we had different goals from them (PRA interviewees 20, LCMA)

LCMA Stewardship…Money thrown everywhere without direction and strategy and then the money dries up (PRA interviewee 24, LCMA)

Some income from the stewardship program, maybe [we will] find a balance between sheep farming and stewardship…Have to reduce grazing under the stewardship program, [we are]a bit concerned with how to manage property now…[we] feel confounded by stewardship program prescriptions. *They [sic government]* need to understand it's a dynamic process and management needs to be adaptive/flexible…requirements not tailored to different local circumstances (PRA interviewees 1, MCMA)

[I don't] like having things inserted in the title to do some environmental work… [I am] sensitive about restrictive conditions in many environmental schemes (PRA interviewees 7, MCMA)

Concerned about some of the stipulations in some of the agreements that prohibit grazing on native pastures…[I] believe that grazing has helped my native pastures (PRA interviewee 12, MCMA)

Interested in BGGW stewardship program but didn't apply – not time – aversion to completing forms (PRA interviewee 17, LCMA)

General perceptions of government funding:

Assistance for funding really helps to give incentive to undertake works PRA interviewee 25, LCMA)

Has had a couple of projects – but money takes ages to come in, and then its stipulated that it needs to be used quickly (PRA interviewee 12, MCMA)

Filling out grants exhausting…Grants = division (PRA interviewees 13, MCMA)
Funds are the problem and also the stipulations (such as the width of the treebreak) (PRA interviewee 15, MCMA)

Catchment management with Wire and Water program – wasted money on infrastructure that is way more than what is required; and it's not the fence that makes the difference, but what you do around that fence; the mental change was not happening, even if the physical change was happening (PRA interviewees 20, LCMA)

Power and participation in extension:

Concerned with [the] mobility of government departmental staff to listen to farmers and consultants on the ground (PRA interviewee 25, LCMA)

Concerned about the level of interference on my property…Systems are complicated…not worth it if you loose control of management (PRA interviewee 6, MCMA)

[An] agronomist is like a doctor, [they] can't leave their office without a prescription…[they] only treat the symptoms (PRA interviewee 3, CWCMA)

I think the people that need educating are the district agronomists (PRA interviewee 9, CWCMA)

[I'm] anti-CSIRO…[I have] a major concern about the integrity of the science of the CSIRO (PRA interviewee 9, CWCMA)

Fragmentation between the rural and the urban:

Don't like the fact that government, media and city folk focus on larger organisations rather than people actually at the cutting edge to get their information and so get the wrong impressions and make decisions based on this (PRA interviewee 2, CWCMA)

'There is a great divide between the greens and the agriculturalists' – the message being sent to the general public 'is schizophrenic' – city folk see farmers struggling in a dust-bowl – this is wrong but so is message sent to rural people (PRA interviewee 7, CWCMA)

Friends down the road are from Sydney – off-farm income, chatting, told them next week a farmer with cash was having 400 trees fenced out, Sydney people were like why? Told them it improves the farm – they were fascinated that farmers would spend money on that (PRA interviewee 10, LCMA)

Impression in Sydney of plunder and rape – media (but the benefits are for the greater good). Enviro fund on improving the image of farmers – better, politically appealing than to spend money on farmers (PRA interviewee 11, LCMA)

Australian stories/quantum – good examples. Need more of this to lift farmer profile (PRA interviewee 11, LCMA)

Concerned about the perception of the city on farming and farmers (PRA interviewee 18, LMA)

Frustrations around NRM: people coming out here thinking farmers aren't doing anything about NRM (mainly policy makers) (PRA interviewee 21, LCMA)

Appendix D: Examples of farmer-owned research - Artworks/Photos collected:

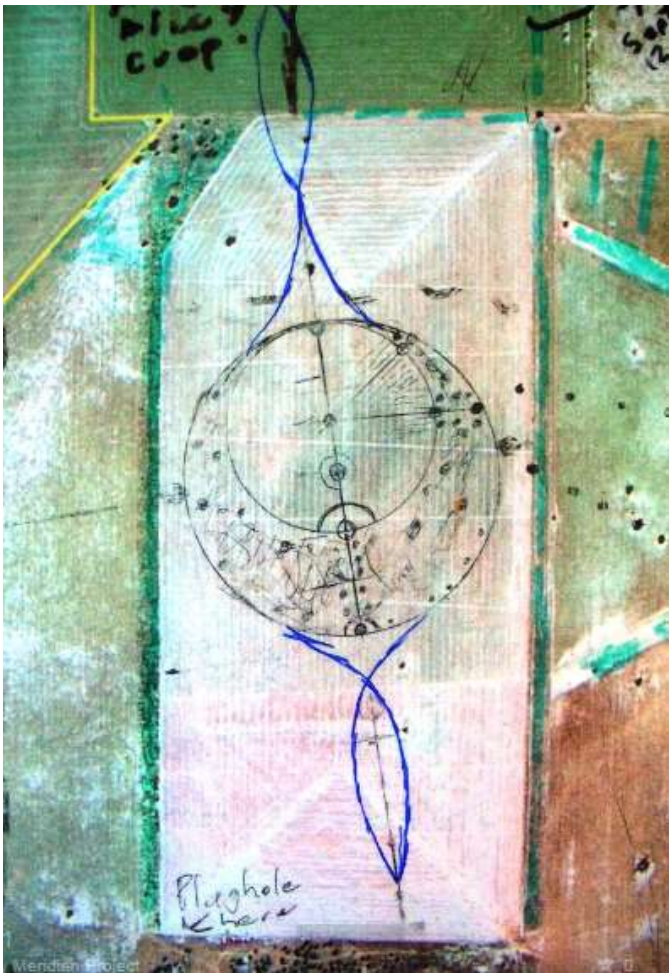

Plate 1: Copyright Graham Strong, The Meridian Project – The Meridian Conversation 2010 (Picture depicts plan for landscape scale artwork on an aerial photograph)

Plate 2: Copyright Graham Strong, The Meridian Project – The Meridian Conversation 2010 (Aerial photo of landscape scale art)

Plate 3: Copyright Graham Strong, The Meridian Project – The Meridian Conversation 2010 (Aerial photo of landscape scale art)

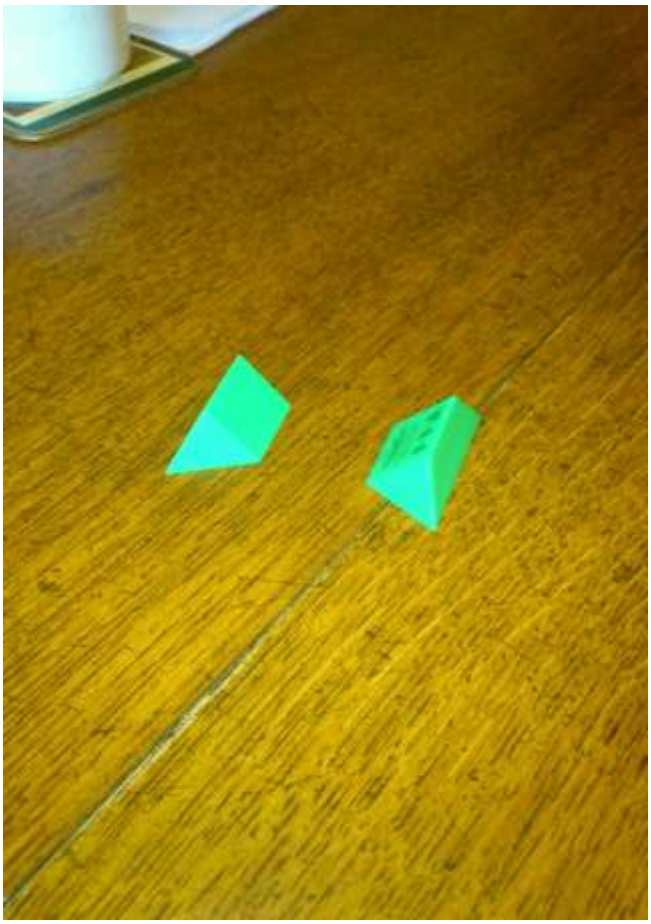

Plate 4: ME 11, CWCMA Triangle puzzle (in half)
(Picture of a plastic puzzle: utilised by interviewee to explain his view on human perceptions of problems and solutions)

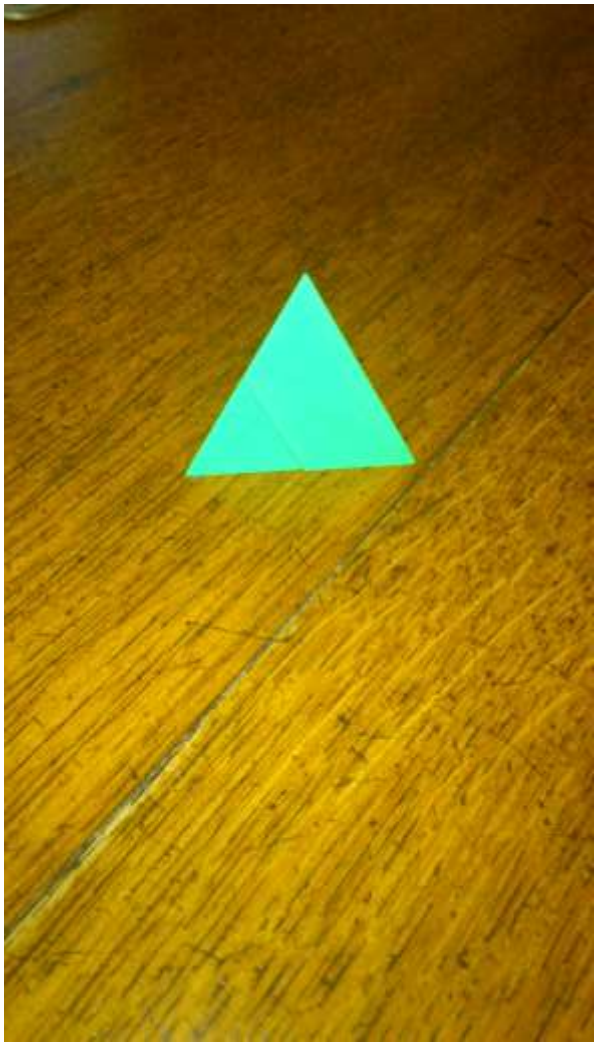

Plate 5: ME 11, CWCMA Triangle puzzle (whole)
(Picture of a plastic puzzle: utilised by interviewee to explain his view on human perceptions of problems and solutions)

Plate 6: Copyright Nita Lennon – *Kurrajong*
(Artwork depicting pieces of 'nature' overlaid by graphs and tables depicting scientific evidence of climate change, overlaid by the words 'life', 'impact' and 'nature')

Plate 7: Copyright Nita Lennon – Close up of left peice of *Kurrajong*

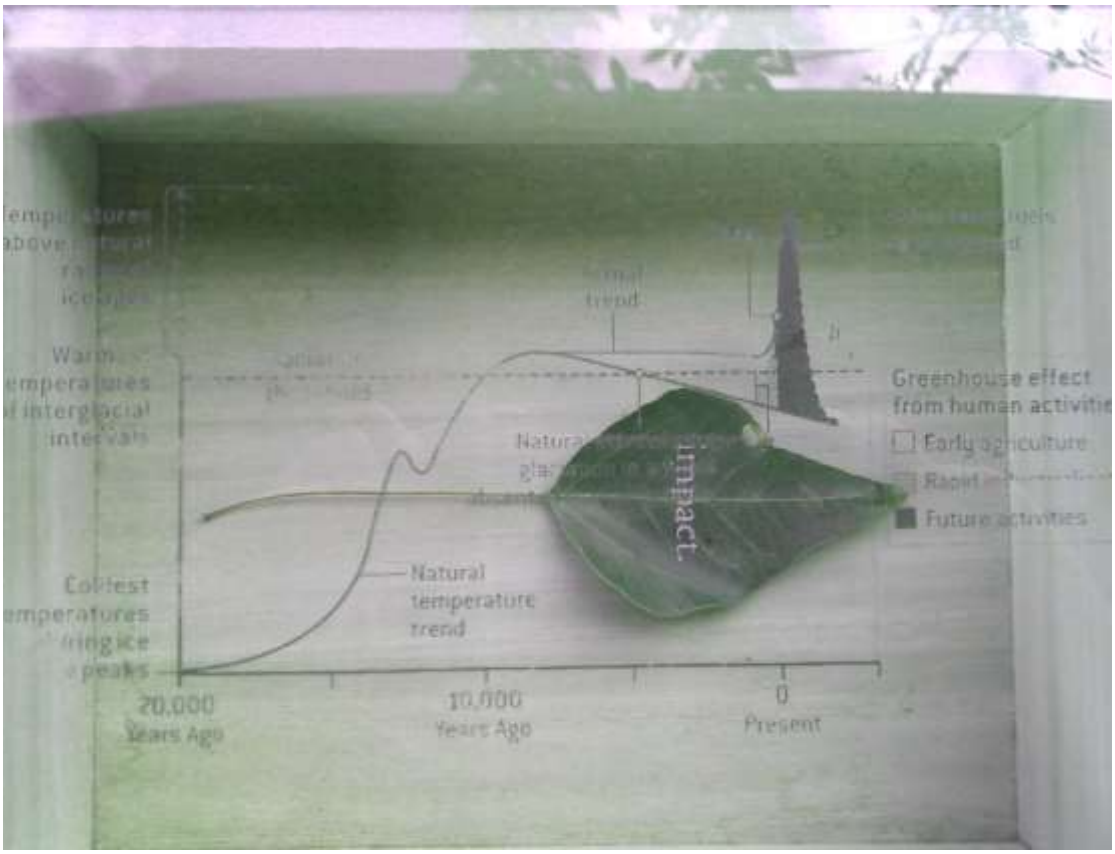

Plate 8: Copyright Nita Lennon – Close up of middle piece of *Kurrajong*

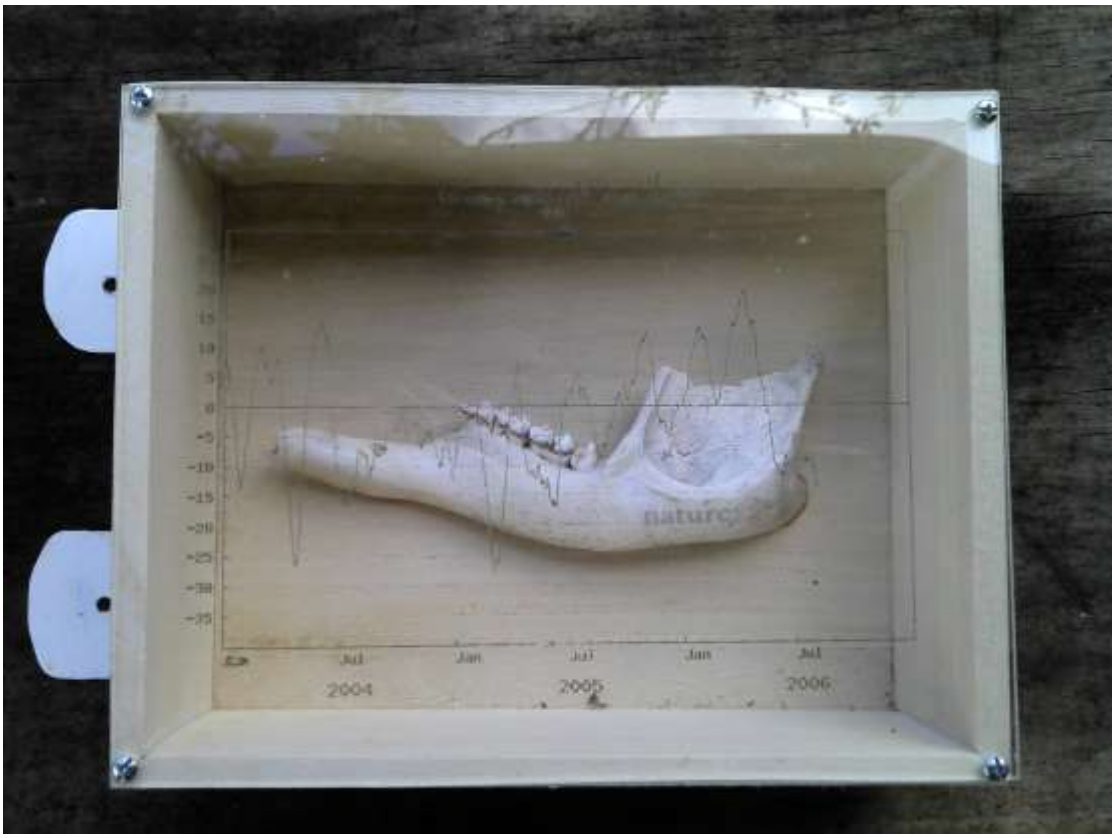

Plate 9: Copyright Nita Lennon – Close up of right piece of *Kurrajong*