LANDCARE AND THE LIVELIHOOD OF KNOWLEDGE

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ABSTRACT

This paper explores how communities generate effective ecological solutions using both implicit narrative construction and explicit processes of knowledge creation and knowledge application. We argue that the act of developing a narrative frames our understanding of the environment and governs our relationship with our environment. We identify micro-narratives extracted from the interviews with members of Australian Landcare organizations and link these micro-narratives to knowledge creation and dissemination processes. We conclude that social change toward sustainability comes about through the rewriting of the environmental story within which we situate ourselves.

Keywords: organisational change, sustainability, change narratives, environmentalism

This paper explores how communities generate effective ecological solutions using both implicit narrative construction and explicit processes of knowledge creation and knowledge application. We argue that the act of developing a narrative frames our understanding of the environment, governs our relationship with our environment and allows change to take place through a process of exchanging what we term micro-narratives. Our research revealed a connection between the narratives used to describe and define the landscape and the way people engaged and identified with that landscape.

Empirical research was undertaken in two regional areas in New South Wales, the Northern Rivers and the Hunter Valley[1] where Landcare groups are actively involved in environmental restoration (We discuss what Landcare is in more detail below). The aim of the study was to explore how these groups approached and achieved their ecological aims.

A LANDCARE NARRATIVE

European colonisation has significantly altered the Australian landscape, leading to major soil and biodiversity losses, weed and animal pest infestations, greatly reduced water quality and inappropriate

[1] To give a sense of the two regions, both were settled early in European colonisation of Australia, and have undergone substantial alteration of the pre-colonial landscape. The Northern Rivers now has a resurgence in population growth particularly 'sea changers' consciously looking for alternate lifestyles to modern high-pressure professional city occupations, and its agriculture includes orchards (banana, macadamia, stone fruit, tropical fruits) and beef production. The Hunter may be characterised as more established and is now dominated by viticulture, horse studs, meat production (cattle and sheep), and mining, particularly for coal. In recent years it is the mining activities that have dominated the concerns and strategies of a number of Landcare groups in the Hunter, particularly the expansion of open cut mining to meet export demands.

land management practices. Active organising to redress these problems at local and regional levels was initiated during the 1960s and gained momentum in the 1980s. This culminated in the formation of a national programme, the National Landcare Program (Youl, Marriott, and Nabben 2006), that had its origins in an agreement between the National Farmers Federation and The Australian Conservation Foundation, and Landcare now encompasses some 5000 community based groups throughout Australia.

Typically Landcare groups are from the same local community, are often neighbours, and have come together over a common cause. There is an ethos of helping one another out, sharing information, and capacity building through networking in a number of ways, ranging from individuals sharing new knowledge and experience in conscious casual conversations, to organised field days and events that allow many Landcare groups and other stakeholders to come together to exchange ideas and build relationships.

We explore how relationships between Landcare's multiple-stakeholders lead to the creation of a new narrative that enables local communities to improve the viability of their ecological environment. Our view is that narrative construction of the environment is embedded in each culture and is told and retold through myths, stories, images, and actions. In the Australian environment the colonisation by Europeans pushed aside the indigenous narratives and supplanted them with an imported one derived from experience with European ecology (Sveiby and Skuthorpe 2006). Our research shows that the Landcare movement is rediscovering the land care principles underlying the indigenous narratives predating colonisation and recreating them to suit our times.

METHODOLOGY

The research team comprised four members. The research approach involved semi-structured interviews and focus groups with Landcare members from two broad regional areas of New South Wales: the Hunter Valley and the Northern Rivers. Interviewees were drawn from landcarers, businesses, NGOs, and government, and were identified using a snowball technique. All interviews were recorded and then transcribed, and in total we held 16 interviews in the Northern Rivers and 29 interviews in the Hunter Valley. Initial analysis led to the development of a conceptual map (Figure

one) used for coding data and for developing conceptual models of narratives in use using the software analysis tool Nvivo[2].

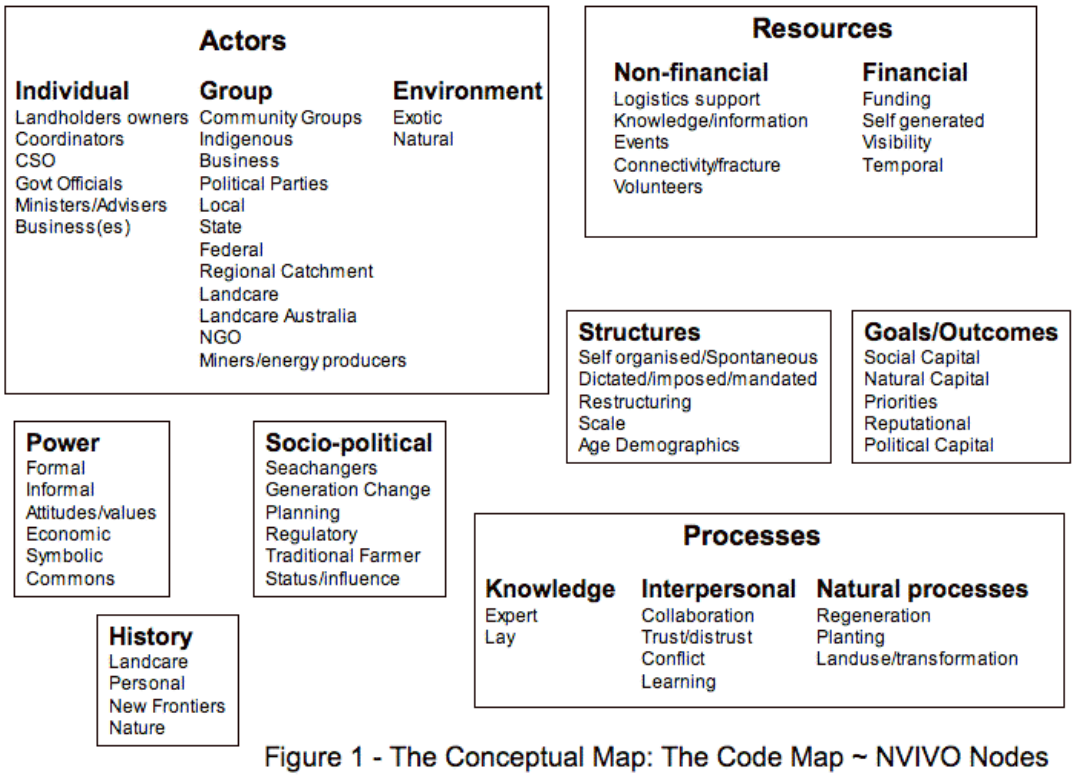

Figure 1 - The Conceptual Map: The Code Map ~ NVIVO Nodes

The Nvivo coding was not line-by-line coding but more akin to selective or focused coding. This form of coding is more conceptual and spans larger amounts of verbal data (Charmasz 2000:516). Instead of coding each phrase or sentence for concepts, we identified underlying themes for narrative fragments (multiple sentences, paragraphs); themes equate with codes on our map (Figure one). These narratives fragments could be coded with multiple themes. Overall the relevant sections of the text provided a context for each theme such that we were able to deal with high-level abstraction and still situate it in the discourse of a respondent and their group. Using this concept mapping method allowed the researchers to link micro-narratives (we explain this term below), which provided rich descriptions of the ways processes and concepts in Figure one were interpreted in the everyday lived experiences of the interviewees.

[2] Nvivo is a qualitative research tool from QSR International Pty Ltd ©. Nvivo enables text to be imported into project databases where it can be searched and modelled for thematic analysis and retrieval. Multiple thematic schemas may be developed for the same data.

THEORY

Narratives and Organisational Research

In working with narrative we are not pursuing a semantic or semiotic course, rather we are exploring the ideas, norms and meanings conveyed in the narratives told to and observed by us; this broad view is best captured by Barthes:

> Narrative is first and foremost a prodigious variety of genres, themselves distributed amongst different substances…. Able to be carried by articulated language, spoken or written, fixed or moving images, gestures, and the mixture of all these substances: narrative is present in myth, legend, fable, tale, novella, epic, history, tragedy, drama, comedy, mime, painting…stained glass windows, cinema, comics, news item, conversation….narrative is international, transhistorical, transcultural, … (Barthes 1977:79 quoted in Czarniawska 2004:1).

Narrative is both a mode of knowing and a mode of communication (Czarniawska 2004, Rhodes and Brown 2005, Boje 2001) and is used by individuals and groups to create and share meaning, in other words it is an example of sense-making (Weick 1995). The strength of narrative is its capacity and ability to explore complex ideas that may be characterised by ambiguity or lack of clarity; it is a way of knowing that allows for competing interpretations (Czarniawska 2004:7). The construction of meaning through narrative requires plot, for it is plot that situates the narrative in time and space (Czasrniawska 2004, Boje 2001) and links the actors and actions together, enabling interpretation. In this sense the narrative may also be viewed as a story. We have not drawn a distinction between a story and narrative in terms of their form or content as some authors do, notably Boje with his defining of 'story' as antenarrative, or structure without 'governing' plot that gives by definition an overarching coherence (2001). Boje's distinction to order story as antenarrative is, in our view, not helpful in analysing the meaning that people create for their circumstances and their development of the knowledge and social structures with which they live their lives. Our view is that story and narrative are interchangeable terms and concepts that take their meaning from the context in which they are used; our objection here is in structuring an implied hierarchy of importance between them. The difference for us is that the plot of a story is conscious, known by the teller, whereas the plot of the narrative only becomes conscious on reflection by the participant or observer. The narrative plot here

is given coherence by piecing together the narrative fragments, the antenarratives in Boje's terms, to create a plot based on the interpretation of the researcher. The term we use to describe these narrative fragments is micro-narratives, and it is from these micro-narratives that the narrative(s) of Landcare emerge. Yet we concur with Boje (2001) that narrative and storytelling are dynamic and plurivocal; they are the continual construction of networks of meaning, and this constructive process is never fully rational or coherent.

Dynamic patterns of relationships, intellectual and social capital as narrative construction

Whilst there is considerable debate on the differences or similarities between individual and organisational learning (Tsoukas and Vladimirou 2004, Kim 2004), there is general agreement that the construction of knowledge is a social process. By construction of knowledge we include all aspects of working with knowledge, including creation, sharing, exchanging, codifying, storing, learning, forgetting and losing. At an organisational level the construction of knowledge builds intellectual capital, the body of knowledge held collectively that facilitates organisational purpose. In the process of building intellectual capital, the building of social capital also takes place, both being preconditions for each other (Nahapiet and Ghoshal 1998, Adler and Kwon 1999, Benn and Onyx 2003, Senge 1990).

We take a broad perspective of Intellectual Capital that spans practical and theoretical knowledge, procedural (know-how) and declarative (know-what), and, tacit and explicit knowledge (Nahapiet and Ghoshal 1998).

Learning is a social process that encompasses two meanings of acquiring knowledge and skills (Kim 2004), the acquisition of skill or know-how, and, the acquisition of know-why. In this process individuals and organisations change their mental models through the learning process of what constitutes (in our case) sound land management practice[3].

Knowledge is constantly modified and the energy for this movement comes from those who pick up and transmit the ideas in a process of translation (Feldman , Khademian , Ingram & Schneider 2006).

[3] Landcare was originally motivated by the need to redress the degradation of productive farming land. This aim has been broadened to encompass ecologically sustainable land management practices.

This process of translation is also the same process that creates and recreates our narrative construction of our relationship with nature (the environment). What we view as 'nature' is in fact a social construct.

This recreation or redescription of the world uncovers new meanings and hidden patterns (Rhodes and Brown 2005). Here in the creation of new meaning is the interplay of micro-narratives and reflection and a growing awareness in Landcare of the significance of the natural environment as an active agent in a recreated network of recreated narratives (Callon and Latour 1992; Newton 2002).

MICRO-NARRATIVES OF KNOWLEDGE, TRANSFER, CREATION AND ENACTMENT

Knowledge Transfer or Borrowed Knowledge - learning from different sources

Our data analysis shows that the transfer of 'borrowed knowledge'[4] (Kuhn,,Woog and Hodgson 2003), particularly scientifically based knowledge, plays an important role in the functioning of the Landcare groups. The search for borrowed knowledge by Landcare groups is a response to the recognition by landcarers of the need to tap expertise external to their networks in order to make improved and effective interventions in the environment. To do this they also need to share expertise and skills within their networks: *'I suppose the starting point is that, when we set up the Landcare group, a lot of our activities would simply revolve around learning experiences, having people who were expert in particular areas such as people who could show us how to identify plants, especially weeds.'* Respondents commented that access to borrowed knowledge through the collective of the Landcare group enabled them to access information otherwise unavailable to them individually. This highlights the way in which the capacity of the individual is increased through the collective agency of the Landcare group and demonstrates that there are clear advantages in collaboration when building expertise and skills and undertaking informed decision-making. We see here the positive mutually reinforcing relationship between social capital and intellectual capital: *'You need that educational basis to get Landcare groups going in the first place and the good news is that very frequently people*

[4] Borrowed knowledge is "characteristically held in libraries (or equivalent), in books or other media, via formulas calculations, texts and other recordings and is commonly brought into organisations by consultants, or via staff (agents) returning from conferences or from educational institutions" (Kuhn et al, 2003)

will go off and be inspired to learn independently and then bring that knowledge back to the group. That's been my experience with a lot of these groups'.

In the early period of the development of the Landcare groups we studied, landcarers were particularly reliant on academic or bureaucratic assistance and research to understand the local ecology and the practices needed to regenerate degraded environments. Borrowed knowledge was and is sourced from 'experts' and this remains a conscious strategy for capacity building and increasing the sustainability of agricultural practices in both the Hunter and Northern Rivers areas. When Landcare was formed in late 1980s, the experts drawn on tended to come from universities and other institutions recognised as having bodies of scientific or specialist knowledge. Our data analysis shows that over time the definition of 'expert' has changed and broadened, as landcarers have come to recognise that the bush regenerators and landholders themselves, have a different but important form of local knowledge (Wynne 1996) or expertise developed from observation that can augment, illuminate and correct borrowed knowledge from scientific and academic sources: '*People like [...] have been in the area for 50 years and he, for example, could say that in the [...] area he'd taken out the round leaf gum. He could also tell us that by the time he'd got there all of the cedar and turpentine had been cut out by earlier timber-getters, and that the reason that they cut out the sandpaper fig is because in that area they had orchards, particularly peach orchards, and the sandpaper fig attracted bats, probably the grey spectacle bat. They believed that the bats would be harmful to the fruit so they cut it out ... That local knowledge particularly from old people, is enormously valuable. It becomes elusive with time.'*

Knowledge creation or generated knowledge - developing new local knowledge

Knowledge creation, 'generated knowledge'[5] (Kuhn et al 2003), emerges from individual and collective experience and is usually embodied in stories. Here we see the development of practitioner as expert and the changing nature of how expertise is defined and experts acknowledged. Generated knowledge in the Hunter and Northern Rivers Landcare operations tends to be practical and built on the application of borrowed knowledge reworked by practical experience acquired in its application:

[5] Generated knowledge, that which is created, exists within the context of the local group or organisation It may derive from, other forms of borrowed knowledge, extending or adding to that borrowed knowledge or applying it in new ways, or, radical new conceptions and understandings of problem situations.

'Here it seems that one of the things that's really unusual is the way in which scientific knowledge has been brought together with local knowledge in practical projects.'

In effect what has developed over time is a tight coupling of generated and borrowed knowledge. In the Northern Rivers, rainforest knowledge was captured in the Weed and Rainforest Regeneration Manuals that are now classic reference texts used by many groups throughout the eastern seaboard of Australia: *'The university helped us with the layout of those things. So one of them was to decide what's the most cost effective way of doing your re-vegetation, establishing rainforest in cleared areas or areas where its been removed. The other one was looking at plants and fertilisation because we were getting big losses in our plantings and we didn't know what the reason was and we discovered that it was a fertilisation issue. So we did that and we also did some trials on the most effective way of killing camphors. We accumulated some information and then we set about producing a rainforest restoration manual and a rainforest weed manual. Tomorrow I'm going to look at the pre-production view of the second edition of the restoration manual; we've already done the second edition of the weed manual. Now those manuals get sold from southern New South Wales to you know central Queensland because now they're sort of the definitive data sources.'*

The equivalent in the Hunter was the development of long-stem tube stocks where Wollombi Landcare developed a technique to enable plants to be established deep in the soil in a way that maximises their chance of survival and mitigates the effect of flood and wind knocking them over. This technique is now used throughout the Hunter and has been 'exported' to other comparable areas of Australia.

Enacted Knowledge and enabling structures - mechanisms for exchange of knowledge

A third theme revealed in the interview transcripts was the way in which Landcare networks enabled access to both borrowed and generated knowledge, and also, the importance of new knowledge in stimulating action and change: *'And the local knowledge even was like with us we had no idea so we learnt through fortunately people like [...] and other rain forest regenerators who lived here and were able to instruct us on how important our property was. We didn't know, we bought it because it looked beautiful and then the problem was how to rid our property of weeds and then re-plant.'* To achieve the goals and aspirations of landholders while sustaining the environment, there had to be changed

ways of knowing what constitutes good land management practices and changed behaviours that embody this new knowledge. The change in awareness happened in small ways and at first often led to unforeseen developments. The process itself became exciting and important to land carers. *'I'm a farmer and I work land with my 5 brothers on the escarpment. My interest in trees started about 14 years ago when I was just curious as to what trees I had on my property. I didn't know the names of them so got [an expert] down to have a look. I remember that day as if it was yesterday. He got us all excited, my brother and I, about what species were in this gully. We learned a lot that day and we've continued to learn since.'*

This cognisance happened at multiple levels within the Landcare movement, and in the main it was focused at the level of immediacy, 'the arguable line of sight' which includes sharing of knowledge between individuals in close neighbourhood proximity: *'You get a call from someone and they've just moved to the area, they've heard about Landcare and think they've got some native vegetation. The best place to start with is just to give them that little taste of information and encourage them to ring round, go to field days, and not to do anything with their farm until they've probably spent six months talking to people. I mean you could inundate someone with too much information.'*

Yet, respondents understood that the focus of organisation needed to extend well beyond the line-of-sight, and this led to the creation of semi-representative groups whose aim was to support the local clusters of Landcare members, as well as those beyond their region. Good examples of this are the development of the Big Scrub Landcare Group in Northern Rivers and the Hunter Valley Regional Network whose aims are to leverage the Landcare network through the creation and sharing of knowledge both in artefacts (manuals, guides, flyers, newspapers, and the like) and activities (events, demonstrations, working bees, etc): *'I wouldn't have known about it except for the (local) Landcare network and I've been in a position where because of the network I'm out there showing people from, for example, (Local Landcare group) how to use the water lance, how to use long-stem tube stock and know the advantages of it. There's no way in the world that I would have known about that or learned about those techniques if it were not for the existence of the network'.*

Finally we argue that the primary enabling structure is the constructed narrative itself that emerges in the networks from the creation and interconnectedness of the micro-narratives in everyday use. We argue that the emerging narrative is implicit and created simultaneously with the explicit knowledge processes described above. We have set out below our interpretation, of one aspect of the Landcare narrative for the Hunter and Northern Rivers regions, using phrases, themes and words constructed from the micro-narratives relating to bush regeneration in the meaning creating process.

Constructed Narrative

The landscape is unhealthy because it is degraded and imbalanced. We haven't managed it well, sometimes knowingly so but most times because we didn't understand the generative and regenerative processes at work in the environment. Not only is the land physically affected but so are we and our families, from the obvious drop in productivity to the well-being of our spirit. We now realise that we have to restore and re-establish large areas of bushland because earlier generations cleared too much either because they were forced to or they simply didn't understand how nature works here. For many of us now it is still difficult to understand the logic of the science behind this but we have seen proof that regeneration works. It took the courage of a few individuals sticking their necks out in the '70s and earlier, much of the time being laughed at or tolerated providing they didn't interfere too much with their neighbours. Then in the '80s a new group of people settled in the district and brought with them strong conservation values and some science to back this up. This group were not radical dropouts but they were still on the fringe. However, they made sense if you took the time to listen. They were advocating weeding and replanting of bushland to fix up waterways and stop soil erosion and improve overall fertility. At least these were the winning arguments at the time. So we still do this but it's a funny thing, once we started the Landcare groups and got stuck into working on our properties we engaged in an extensive learning process. You might set out to be a good weeder but to do that you had to learn what to dig up, what to leave, when to dig it up and then you had to learn not only what was best to replant but its whole life cycle and interdependencies. This then started you on the path of connecting the dots and blow me if it didn't back up what the whackos' of the '70s were on about. So now on my property I'm looking at targeting 30% to 40% as regenerated bushland and the

rest is devoted to crop production; it started out at around 10% scattered in little clumps all over the place. And the others in our little group are doing the same so when you look out over the landscape now and compare it with pictures of 10 to 20 years ago there is a huge difference. And the other bit I'm still getting my head slowly around is I'm still making a reasonable living.

DISCUSSION AND IMPLICATIONS

By examining the micro processes of change as they occur through the locally situated dialogue of actors, in both the human and non-human form (Starik 1995, Callon and Latour 1992; Newton 2002), in the Hunter and Northern Rivers areas, we are able to understand the way in which knowledge of Natural Resource Management techniques has been translated through the Landcare regional networks. Our analysis tells us that micro-narratives emerged as a direct result of the purpose (earlier outlined) of Landcare but the ways in which this has been shaped by the physical environment and the purpose of the activity reflect regional differences.

We took the view that the landscape is also an active stakeholder (Starik 1995) whose visibility and importance becomes more prominent with time. As a stakeholder the landscape is not homogeneous, but is localised and engages in a dialogue with the Landcare groups that is observable through knowledge creation and action focused on creating sustainable land management practices that are locally attuned and appropriate. In this view, landscape itself enacts its narrative; this is exemplified in the understanding of indigenous landcarers narratives, in their 'dreamtime stories' (Sveiby and Skuthorp 2006). We suggest that the Landcare narrative is characterised by a reflexive response (Hardy and Clegg 1997, Rhodes and Brown 2005) generated by a conscious learning process (Kim 2004) engaged in over time by Landcare members. The patterns of this reflexivity also include the environment or landscape as an actor in the learning process. An example of the landscape engaging with landholders' narrative follows this pattern: *When we bought this property it was the beauty of the area that captivated us and it was some time later that we realised that the remnant rainforest on our block needed looking after*. This stimulates a cycle of engaging experts in local vegetation, bush regenerators, that leads to increased understanding of what an ecologically sustainable environment should or could be.

The process that land holders undertake when engaging with the landscape may be better described as reworking their narrative and adjusting it in ways that fit into the wider narrative construction of their Landcare community. The steps of knowledge acquisition and sharing described above are the mechanisms of narrating the world, of adding to and retelling the story of your land, their land, our land, and the land, and how all these fit together. The use of story to situate knowledge and learning in the narrative construction is important to Landcare members: *'Knowledge is through telling stories not through dry scientific jargon and stuff and not being able to put your knowledge into a story that your average man relates to'.*

This dialogue with the landscape takes many forms. Traditionally the dominant narrative has been about controlling the environment rather than collaborating with it. The Landcare lesson is to engage in collaborative dialogue to perceive the environment differently, to understand its unique character and needs and to act responsively and responsibly in relation to it. For example, in the late nineteenth century when European settlement was expanding in the Northern Rivers area, originally known as the Big Scrub rainforest, all government sponsored farms had to be cleared, failure to clear lead to revocation of land title. Whilst the clearing of the Big Scrub was generally thorough, many patches of remnant forest that remained. In the Hunter similar practices were followed and land was also comprehensively cleared by European farming practices; a brief history on the valley around Lake Liddell was provided by one of our interviewees: *'It's also probably the area that's been de-forested for the longest period of time. It was surveyed in the 1830's and 1860's and as far back as the 1860's the surveyor said they could find no native vegetation growing on the farms that existed there at the time. So it wasn't the mines that did the damage, it was done back between the 1820's to the 1860's.'*

The relevance to narrative creation and in particular the dialogue of the landscape is that land carers have pursued a deliberate reflective process to better understand what is needed to restore their lands. Our argument is that the environment communicates in indirect ways that need interpretation and that this interpretation is fashioned by our narrative constructions (worldviews). For example the focus of land management practices in the Hunter and Northern Rivers areas has, over the last hundred odd years, shifted from the primacy of production to the primacy of regeneration. There is general

recognition that an imported/exotic model of land management has debilitated the environment and this needs to be reimagined. The resulting shift to regeneration is the result of this re-imaging and is in our view only possible because the narrative of 'our' engagement with the land has been recreated. As we have argued this constructed narrative is implicit in the day to day micro-narratives and is in large part a reflexive process, and we suggest this approach can be taken into other areas such as organisational management as well as replicated elsewhere.

What is of interest for us now is how do we transfer and adapt into organisational management practice the insights and lessons about the increasing ability of these Landcare groups to support changes in practices towards ecological sustainability? What are the factors that will support the adoption of new narratives to facilitate the changes required for commercial organisations to shift to ecological sustainability? These questions and our research findings have lead us to develop the following conclusions: 'for social change toward sustainability to take place, there must be an active rewriting of the story within which we situate ourselves in relation to our environment'. We will be exploring this further in subsequent research.

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