**Shaping and Sharing Responsibility: Social Memory and Social Learning in the
Australian Rural Bushfire Landscape**

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Sharing responsibility in the bushfire landscape

Abstract:

Responding to increased frequency and severity of bushfires, Australian governments called for ‘shared responsibility’ for bushfire preparation and mitigation. This requires engagement between all sectors of community – government agencies, businesses, not-for-profit and residents. Fire management agencies remain concerned about whether all communities in fire-prone landscapes are equally equipped to participate in sharing responsibility. A related question is how experience of bushfire influences subsequent community fire management practices. This paper addresses social learning and social memory in a landscape that has experienced repeat bushfires between 2006 and 2013. It examines the relationships between memory, learning and practice among a farming community in western Victoria and government agencies with bushfire management responsibility. Findings suggest that social learning and social memory interact and new practices emerge as the participants embrace ‘shared responsibility’. However, ambiguities remain about ‘what’ is being shared and what being ‘responsible’ means at different points in preparation and response.

Introduction

Historically, governments have funded fire and land management agencies to combat wildland fire ('bushfire' in Australia). However, increases in the frequency and severity of bushfires, combined with diminishing budgets, have led to policies in several countries which emphasise the need for landholders and communities to take action in preparing properties to mitigate bushfire risk (Moritz et al. 2014). Australia's *National Strategy for Disaster Resilience* advocates "shared responsibility between governments, communities, businesses and individuals" (Council of Australian Governments 2011, p.ii), and recognises the importance of effective community engagement. A key associated practical concern among management agencies is whether communities residing in fire-prone landscapes are equipped with appropriate knowledge of, and are sufficiently engaged with, bushfire risk and mitigation behaviour. Even among communities that have had direct experience with bushfire – no matter how devastating or inevitable – there is a remarkable capacity to collectively forget (Griffiths 2009). As a result, management agencies often question whether all communities are capable of effectively sharing the responsibility that should ideally bridge citizen, community and agency boundaries.

The question of how experience of bushfire influences practice in relation to preparedness and management practice is of significant interest to land and fire managers and academic researchers. Our research adds to the growing body of literature (McCaffrey 2015, Champ *et. al.* 2012, Brenkert-Smith *et. al.* 2012, Wolters *et. al.* 2017, Fischer *et. al.* 2014, Paveglio *et. al.* 2016) by addressing the question of how knowledge and practices associated with bushfire are sustained, modified or rejected in a landscape where multiple fires had been experienced. First, we review recent research literature that addresses the impact of experience of bushfire on community risk preparation and mitigation practices. We then discuss social memory and social learning and how these processes shape residents' and land

managers' constructions of their past bushfire experiences in relation to their understanding of current and future risk. A case study investigating these constructions and practices among landholders and local fire and land agency managers in a rural-agricultural community in western Victoria, Australia is presented. We conclude by reflecting on how the evolving management practices, framed by iterations of social memory construction and social learning processes, align with the various understandings and expectations of shared responsibility.

Narratives of bushfire experience

Bushfire is recognised as posing a threat to communities and natural resources (forests, pastures and crops, water catchments, and ecosystems) in many countries. There is widespread agreement that impacts of this natural hazard are being exacerbated in many regions by both climate change and extension of human settlements into what was previously bushland (Bracmort 2012; Gibbons *et. al.* 2012; Gill *et. al.* 2013; Liu *et al.* 2010). It can therefore be expected that more communities will experience bushfire at an increased frequency and intensity. One of the associated uncertainties is how communities are to assimilate this increased experience and risk of fire into their everyday understanding of their landscape.

Recent social research has investigated the influence of prior experience of bushfire on subsequent practices (McCaffrey 2015); however no clear consensus has emerged. For example, in their study of contested meanings of bushfire mitigation among diverse stakeholders in Colorado USA, Champ *et. al.* (2012) found a clear agreement among participants that direct experience – defined by those authors as either witnessing or being threatened by bushfire – results in increased community support for fuel reduction measures. Other studies however, reveal a more equivocal picture. Brenkert-Smith *et. al* (2012) and Wolters *et. al.* (2017) each measured the effects of different types of bushfire experience –

(1) having been evacuated due to fire and (2) fire near their property – on subsequent mitigation practice. The results of these two studies produced mixed results about whether practice change results from either experience of evacuation or adjacent fire. Other studies suggest that previous experience with bushfire is one of a complex of factors that influence landholders' approaches to mitigation practices. These factors include their understanding of risk and the fuel conditions on their land, the values that may be compromised in the event of bushfire anticipated efficacy of protective measures, and social relationships among community members (Brenkert-Smith *et. al.* 2012, Fischer *et. al.* 2014). Taking a slightly different perspective, Paveglio *et. al.* (2016) concluded that while prior experience of bushfire is commonly cited as a predictor of mitigation actions, residents' such experience had the effect of reinforcing rather than altering their bushfire narratives. Those narratives in turn arose from other aspects of local social contexts such as vegetation preferences, social identity, desire for privacy and willingness to participate in collective actions. Champ and Brenkert-Smith (2016) also investigated whether risk perceptions change over time. They surveyed residents in two Colorado counties in 2007 and 2010 – significantly, 2010 was a major fire season in both counties. Their findings indicated little change in fire risk perception between 2007 and 2010. This is a significant finding because it challenges two common but contrasting assumptions – that experience of fire is a “wake up call” that increases risk perception; or the contrary view that householders believe that a fire reduces fuel loads – and hence risk – at least in the in the short term. Edwards and Gill (2016) present a complex picture of landholders learning about bushfire through their experience of immersion in fire-prone landscapes. They observe that “some settler Australians are learning to co-exist within fiery assemblages by experimenting and adapting to the brute force of fire and through the more gentle accretion of experience” (p. 1094). This suggests that ways of

knowing about bushfire are as much linked to the ongoing experience of landscape as to discrete bushfire ‘events’ alone.

We build on this body of previous work by exploring relationships among social memory, social learning, and practice change in a landscape where multiple fires have been experienced, and within the context of ‘shared responsibility’ for fire management.

Social memory and learning in the bushfire landscape

Social-ecological memory (or social memory in non-natural resource management contexts) has been defined as the “combined means by which knowledge, experience and practice of ecosystem management are captured, stored, revived and transmitted through time” (Barthel *et. al.* 2015, p.1326). Mistry *et. al.* (2014) contended that social memory makes the link between present, past and future. They highlight the *processes* that support and evolve social memory – for example, learning by experience and imitation, or story-telling traditions. These authors also demonstrated the importance of narrative to social memory. Narratives both help to construct and maintain identity and establish and maintain the rules-in-use of conventional practices. Mistry *et. al.* (2014) also briefly touched on social forgetting, speculating that forgetting may also be linked to identity – practices considered inconsistent with community identity may be omitted from management narratives.

Similarly, Nykvist and von Heland (2014) argued that social-ecological memory is strongly linked to community identity – practices associated with identity sustain social-ecological memory in the face of disruptors such as fire or other disasters. However, strong links between identity and social memory may also have a limiting effect if communities restrict themselves to “the specific social-ecological memory of the pathway of which they are a part” (p.79). If, as the authors assert, this is the case, then we argue that managers need processes that allow alternative pathways to be imagined – strong community engagement may allow opportunities for new pathways to emerge.

Barthel *et. al.* (2013) introduced the idea of stewardship memory as a sub-category of social-ecological memory. Stewardship memory of local conditions and social adaptations to changing conditions are “carried forward through time by soils and locally adapted crops, by landraces, as well as by embodied ceremonies and rituals, oral traditions, written materials, and by self-organized systems of rules” (p.1144). These authors emphasized that stewardship memory is about more than simply extracting and collecting environmental information, but is a “deeply integrated connection between observation and meaning among groups of people” and as such is strongly connected to place (p.1144). We suggest however, that stewardship memory may also reinforce a form of path dependency (Nykivist and von Heland 2014) where the intent is to preserve “place” as an idealised past state.

In his review of social memory in the community resilience context, Wilson (2015) notes that any system carries with it the in-built memory of past decision-making trajectories. He argues that a community’s capacity to adapt will in part depend on past and present learning, usually understood as *social learning*. Wilson (2015) describes social learning as a complex process where both individuals and communities reflect on past experience (or social memory), interpret information and reflect on established practices. He also emphasises the importance of imagination and anticipation. Schusler *et. al.* (2003, p.311) defined social learning in the context of natural resource management as “...learning that occurs when people engage one another, sharing diverse perspectives and experiences to develop a common framework of understanding and basis for joint action”. Muro and Jeffrey (2008) identified different types of learning outcomes (new knowledge; acquisition of social and technical skills; and trust and relationship building). They also distinguished between communicative learning (which is represented as individuals constructing inter-subjective understandings of situations with other) from transformative learning (which is triggered by an interruption to ‘business as usual’ and leads to critical reflection leading to altered

perspectives). Brummel *et. al.* (2010) described transformative learning as reflection on frames of reference and identification of opportunities for improvement and change. They proposed that instrumental learning (acquisition of new skills and information) and communicative learning (recognition of others values and goals, creation of group identity, learning how to work together) were crucial prerequisites for learning that was truly transformative. Muro and Jeffrey (2008) highlighted the potentially negative outcomes of social learning by pointing to examples from the literature where social learning processes led to mistaken (counter-productive) learning, intensification of conflict, or failures to reach agreement. Benson *et. al.* (2016) emphasised the differences between individual and community learning and proposed an individual-community learning interaction model. Individual learning is characterised by acquisition of new knowledge, or a deeper change (transformation) in individual understanding. Community interaction learning is characterised by the development of trust, community network connections, collective agreement and integration of community preferences in management.

Rodela (2011) noted multiple disciplinary influences on the social learning literature. An individual-centric perspective assumed that social learning takes place when, as a result of interaction with others, an individual learns how their interests are linked to that of others, leading to strengthened social relationships. A network-centric perspective assumed that social learning occurs when members of a social network engage so as to share experiences and knowledge leading to changed resource management practices or resource use. A systems-centric perspective conceptualised social learning as a change process within a social-ecological system, taking into account environmental responses to resource management.

Few studies have specifically investigated social learning in a bushfire context. Brummel *et al.* (2010) and Jakes and Sturtevant (2013) both reported on social learning

associated with policy-mandated collaborative fire planning in the United States. Community Wildfire Protection Plans (CWPPs) were established to provide the incentive of federal funding to participating communities through the Healthy Forests Restoration Act of 2003. To qualify for funds a community must collaboratively develop a plan involving fire agencies, state and local forestry departments, land managers, the public and community leaders (FAC 2015). Brummel *et. al.* (2010) studied three CWPPs communities in the eastern US which had completed CWPPs, with the aim of investigating the extent of learning in a policy-mandated participatory process. They found that the most frequently observed form of social learning was communicative, rather than instrumental, learning. Transformative learning was observed in only one of the CWPP groups studied, where partners committed to collaborative implementation of the plan, involving a transformation of institutional and organisational perspectives about planning for wildfire. Jakes and Sturtevant (2013) studied four communities that experienced a wildfire after implementing a CWPP. They concluded that the structured approach to CWPPs fostered dialogue about wildfire which encouraged social learning about wildfire management and also about forest health and community wellbeing. Observed outcomes were increased leadership capacity and technical knowledge, relationship building among participants, and increased community capacity to leverage additional sources of support and funding. Larsen *et. al.* (2011) studied environmental learning in the context of the everyday social life of amenity residents in an exurban landscape in Colorado. The study found that most amenity residents participated regularly in social learning, as knowledge-seeking, about the environment through a variety of interpersonal and organizational behaviors. In addition, they were responding collectively to environmental risks and opportunities associated with wildfire, noxious weeds and invasive grass species, prospective uranium mining, and restoration of cultural-landscape features.

The present study

In the study reported here we build on the literature review, intending to broaden the research perspective. Our research encompasses the *interactions* between the construction of social memory and social learning in everyday practices (both formal and informal) of planning for, and responding to, bushfire; and, in the context of policy associated with shared responsibility. The assumption that underpinned our research was that a linear approach to conceptualising knowledge (as risk perception) and action may not be adequate to explain decisions made by residents living in fire-prone landscapes. The common assumption about the relationship between knowledge and practice is that knowledge necessarily precedes and enables action, or that practice is informed by knowledge and constrained by context. An alternate view is that knowledge, practice and context are mutually constitutive. Cook and Wagenaar (2012, p.27) argued that practice is active and that “among its active traits is that it gives shape to knowledge and context, that the contents of knowledge and context are accepted, sustained, and modified or rejected through practice.” Our research therefore addressed the question of how knowledge and practices associated with bushfire are sustained, modified or rejected by residents in a landscape where multiple fires had been experienced. Our aim was to extend understanding of the processes of social memory construction and social learning by examining the narratives of fire and management practices among residents and local fire management agency personnel, noting that agencies are required to implement shared responsibility policies and community engagement processes.

Method

The research undertaken expands on prior research which investigated the social construction of bushfire risk, and concepts of place and assets in two Australian bushfire-prone rural landscapes in 2011 (Beilin & Reid 2015, Reid & Beilin 2015). One of those sites

was in the (south-eastern Australian) Victorian Shire of Southern Grampians, a farming area to the south-west of the Grampians National Park encompassing the Victoria Valley and the township of Cavendish.

The original case study involved interviews with 18 Southern Grampians residents and participant-observation of the workings of the Southern Grampians Integrated Fire Management Planning Committee over a two-year period. The Committee included representatives from local government, Country Fire Authority (CFA, responsible for fire management on private land), Victoria Police, and Parks Victoria (responsible for managing fire on government-owned land including National Parks). At the time of the original study, the most recent major bushfire had occurred in 2006. Subsequent to that study, major bushfires again threatened the Southern Grampians in 2013. The current study involved a return to this site. The aim was to learn how repeat experience of bushfire influenced bushfire risk perceptions and responses among residents and bushfire emergency managers. In this subsequent study, we purposively sampled key informants who we identified as occupying key community engagement roles, either as long-time residents active in community bushfire safety endeavours or in the two fire management agencies (CFA, Parks Victoria). Data was generated via in-depth, semi-structured interviews and participant-observation. Fieldwork was conducted with five fire management agency staff, and six landholders who farmed or resided on rural 'lifestyle' properties. (Five of the landholders and two of the agency personnel had been involved in the original study – the others were newly recruited for the follow-up based on the direct relevance of their experiences post-2006). The fieldwork focussed on participant accounts of what they *did* to prepare and manage before, during and subsequent to the 2006 and 2013 bushfires; *who else was involved*; the *outcomes* of individual or collective *actions*; and how they *imagine future processes*. Data in the form of field notes and interview transcripts were analysed using thematic narrative analysis

(Reissman 2008). Specifically, this form of analysis is case-centred and is intended to build or “thicken” theory rather than produce generalisations. The unit of analysis is an intact telling of an event or biographical account rather than categories or themes from across cases. The interviewer uses broad questions, endeavouring not to direct the narrative. While thematic narrative analysis is commonly used for interview research, in this study we also used participant-observation which placed the researcher in the landscapes under discussion giving an extra layer of context to the interviews. In the first phase of analysis we identified the stories told and sense-making at the individual level. The second phase identified common themes (or anomalies) from across the case study to gain a sense of collective story-telling, social learning and social memory construction.

Results and discussion

Our findings suggest that repeat bushfire experience resulted in an interplay between social learning and social-ecological memory about bushfire risk within the case study community. Repeat bushfires, coupled with changed management regimes in the National Park, disrupted established social-ecological memories of ‘how things are’. Old ways of doing were replaced by new ways via a forward-reconstruction process, generating new landscape narratives. We noted that Benson et al. (2016) in particular had described a similar process associated with repeat flood events in two regions in England.

Social learning outcomes: positive and negative

Each of our interviewees described learning at an individual level. Robert, a Fire and Land Manager spoke about what he had learnt about the changing vegetation and its ecology.

“I look at [the landscape] probably with greater understanding of the vegetation, my understanding of the vegetation’s increased a lot over the years...I can see why things happen like the firebreak burning instead of using herbicide to create the firebreaks,

spraying at the right time of year, which gives you a bare strip to burn to. This year, they've gone out with graders and graded it and that provides a lot of opportunity to introduce weeds and so that's negative for the native grasslands but I can see why they did it."

This is an example of individual transformational learning (Benson *et. al.* 2016) as Robert demonstrates that he has a new understanding of the trade-offs made between managing for fire or managing for the health of the grasslands. Arguably, he has also adopted a systems-centric position (Rodela 2011) recognising the relationships between the social and ecological in the system.

Communicative social learning about trust and relationship building (Muro & Jeffrey 2008) was clearly evident in the data. Sam (Fire and Land Manager) described an incident where community-agency trust was compromised when one of the key fire agencies was not represented at a community meeting during a bushfire:

[The community] saw no ... uniform...They didn't connect these guys [at the community meeting] to us up here, up in the incident control centre...and I think they saw that as a "don't care." That's something that I've really learnt...you have to have all key agencies [there]...don't pull in somebody that [the community] don't know. Don't pull anybody in that doesn't understand the landscape.

Sam had apparently listened to the stories about fires told by the local residents and saw how those accounts accumulated to form a coherent community narrative. He described taking from that learning experience a better understanding of processes critical to ongoing community-agency relationships: how agencies can demonstrate that they know and care about the landscape and community:

We put a lot of work into those relationships. It can be simple, like when Bob is out fox-baiting, he'll...knock on the door...it's about Dan, when he's down there often will call in for a coffee...it's about [community] knowing who's who...it's about putting the right people in charge down there. Like, having Dan down there in charge on ground, he was respected. If we had put one of our other staff, who has the same accreditation but from [another region of the department] if the farmers didn't know them it would've maybe been a bit different.

Sam's observations highlighted the importance of personal relationships in building trust between fire and land management agencies and the community. However, anecdotal accounts suggest that agencies' formal organisational structures rarely take account of personal relationships in deployment or redeployment of personnel. Thus, a system built on personal relationships between key personnel and their community can be vulnerable to staff turnover or substitution.

Andrea (Fire and Land Manager) reflected on how community-agency relationships had changed between the 2006 fire and the present. She attributed improved working relationships and trust to a more focussed approach by agency staff to community engagement:

There's a lot of the conversations we have at the farmer's gate or over the fence or on the road with the utes, that's all good informal stuff, but it's not necessarily documented...but I think those partnerships and those relationships in the last five years, maybe ten years, have really improved on both sides. It's not as adversarial as it used to be. I know after Mount Lubra [fire] in 2006...there was quite an adversarial relationship between the department and the farming community, whereas now there's a level of understanding on both sides...we can't just point the finger at

the other person. It really has to be a collaborative approach to undertake these bigger fires.

The interview data indicate that farmers corroborated the positive change in agency-community relationships since the 2006 fire. John, a farmer and volunteer with the Country Fire Authority gave this perspective on the breaking down of once rigid boundaries of perceived responsibility:

The fire was on their [Parks Victoria] patch. We were trying to help them as much as possible, too. They were helping us, we were helping them. And I think we ended up building a very good relationship with them and we're nurturing that as much as possible...the fire brigades and groups that surround the southern Grampians...we meet with Department of Environment and Parks once or twice a year if we can, and that relationship's working very well. Because the boundaries are not there. They might see that country there as their country and this is our country or CFA country when in reality it's all the same fire. And I think everyone's starting to realise we all need everyone else.

Here practice and knowledge, are mutually constituted (Cook & Wagenaar 2012). New social relationships – development of trust – (Muro & Jeffrey 2008) and new ways of knowing the problem – transformative social learning (Brummel *et. al.* 2010) led to the breakdown of boundaries between public and privately managed land and who 'owns' the fire. New possibilities emerged for more effective ways of managing land and bushfire.

Interviewees described several examples of positive outcomes from social learning between the 2006 fire and the present. However, they also described instances where the social learning that emerged from bushfire experience were not positive (Muro & Jeffrey

2008). For example, Robert (Fire and Land Manager) spoke about landholders who were dissatisfied with the agencies' response to the 2006 fire.

I think often that the highest emotions and the most finger-pointing comes from those that aren't burnt...those that are stressed as a result of being threatened...it's a bit of a paradox really that those that have more damage often end up more appreciative and have less blame...the people that have got physical damage get the services...they can probably see more readily...the efforts that went in to try and support them.

Whereas those that are on that next rung...don't necessarily see the efforts that went in...there's assumptions that the efforts weren't made...

The issue of perceived across-territory inequity in agency fire suppression response efforts that Robert identified thus indicated some weakening of social cohesion.

Risk, response and memory

The interviews indicated that most participants were aware of the risk posed by bushfire. However, their accounts demonstrated the elusive character of what living with that risk meant at any point in time. Fire and Land Manager Robert used the memory of a remote (in time) event--the February 1983 Ash Wednesday bushfires, and 25th anniversary commemorations in 2008-- to make sense of bushfire recovery practice today:

I reflect back to 25 years after Ash Wednesday, we had an exhibition in Warrnambool...because the Cudjee fire was the biggest fire of Ash Wednesday. Nine people died in it and it was clear that a lot of the people 25 years on still have a lot of stress associated with it. They hadn't been able to really grieve and move forward individually...because when they were impacted by something like that, back then it's, "Okay, we've got to deal with our fences; our stock water." The physical things, I suppose the hierarchy of needs doesn't get to the emotional health...so it was with the

Victoria Valley fire [in 2013], the recovery side of things; got into the normal recovery things of fences and water and reinstatement of fire breaks and pastures...there was also quite a good response to visiting each individual household and looking at the recovery the emotional health recovery in each household.

Dallas established a small property at Mirranatwa (Victoria Valley) about 10 years before this study. He experienced both the 2006 and 2013 bushfires. When asked whether he was concerned about it being fire prone landscape when he first moved onto the property, he replied:

Well, it wasn't...they'd had fires but they were mostly smaller but now it's obvious that fire is ramping up, that it's drier so much more often for longer and more intense longer periods of dry...very different to how [neighbour's name] growing up...it wasn't common and now it's every year pretty much.

Dallas' response demonstrates the narrative tradition process of social-ecological memory (Barthel *et. al.* 2015, Mistry *et. al.* 2014). He has developed a complex understanding of the landscape, incorporating climate change heightened fire risk (the social-ecological nexus), based in part on narratives of fire related by neighbours. Integrating his experience of fire into the narrative built a rich social-ecological understanding of a landscape in transition.

Some landholders interviewed recognised the fact of potential bushfire threat, but weigh up the risk against memory of past fire behaviour and acknowledgment of bushfire as part of their landscape. Ross has lived in the Victoria Valley all his life. He takes the potential for bushfire seriously, but at the same time his social memory reassures him that it would be a rare set of circumstances – time of year, weather conditions – that would bring fire to his farm.

We were prepared [for the 2013 fire] but we didn't ever seriously expect that it would get to us...the probability of a really strong north-easterly at that time of the year is pretty remote. I won't sit here and say it can't happen but it would be unprecedented in our memory anyway...we're conscious of it and we don't want it to happen, but we're not stressed by it...if we were really bothered by fire, I don't think we'd live here...

Fire as part of the landscape is consistent with Ross' memory of what it is to live there; the 2013 Victoria Valley bushfire did not impact his farm or the properties of his immediate neighbours, therefore the continuity of his social memory of bushfire risk remains uninterrupted. While he takes action to prepare for bushfires, and concede it may conceivably impact his property, his experiences to date have continued to confirm a strong social memory of how fire acts in his landscape. Future conditions may compel him to review his thinking about 'preparedness'.

Current bushfire safety policy in Australia – including 'shared responsibility' – has been shaped as a result of the catastrophic Victorian "Black Saturday" fires of 2009 (McLennan et al. 2015). While fires of comparable intensity are expected to become more frequent (Jolly *et. al.* 2015), the everyday experience is of the ever-present threat of bushfires of low to moderate, manageable, intensity. It is this everyday memory of manageable bushfires that led John, a farmer in the Victoria Valley, to reflect on the State's *Fire Ready* bushfire safety policy (designed with "Black Saturday" intense bushfires in mind) – that leaving is always the safest option. John lives in a house surrounded by paddocks which he burns before every bushfire season to reduce fuel. The roads in his district are, however, all densely tree-lined. His knowledge of his landscape and imagination of how fire will behave in that landscape lead him to question whether the policy is therefore useful to him.

[Fire Authorities] appear to be building their strategies around getting the people out so they don't become a statistic. But why on earth would you leave an area like this...where you almost can't be burnt. And it's hard to imagine the circumstance that could actually kill us here in a bushfire. Because if the house catches on fire you walk out there [a large open paddock] where there's nothing to burn... [but] you get on the road and start driving somewhere and you've got all the trees...

John uses his social memory and experience of manageable fires to reinforce his belief that his property is not likely to be seriously threatened, that he will still be safer there than evacuating along a tree-lined road. Reid and Beilin (2014) similarly observed that on a day of extreme fire risk, residents recognised that the levels of risk while evacuating – on possibly unfamiliar roads and potentially into an oncoming fire – is as high as staying with one's well prepared property.

There were also examples provided where memory and stories are now more formally recognised in management practice. Andrea (Fire and Land Manager) told how fire stories are shared as part of business as usual:

We've had a lot of experience in the wake of fires over the last few years, so there's been forums for the community to come together either in after-action reviews or the round table meetings or at advisory group meetings, and we'll continually tell the story of what we believed happened in those events, and there's always numerous alternative views of what happened, depending on where you were or what you saw and hopefully over the period of the time all those views marry up and we can have one common understanding. But as I keep saying, we almost need a specialist branch of people to just undertake community conversations around fire.

The practice that Andrea described represents a change in organisational response to bushfire. Whereas in the past a land manager may only experience large bushfire once or twice in a working life, sharing fire stories creates an expanded social memory of ‘shared’ fire narratives. These inform institutional narratives, and in the case of new employees or deployment to a new region can provide background they might not otherwise have to draw upon. This emergent social memory can also form the basis of a more nuanced approach to engaging with local communities and sharing responsibility. Past practices are examined and new experiences are added to how they make sense of how communities translate what is happening to them. It may also create understanding that allows for varying perspectives – rather than ‘one common understanding’ – because it is one way of allowing for varying responses that make sense of the conditions. It demonstrates an understanding of how memory and narrative are constructed and their meaning emerges as local bushfire knowledge; emphasising how social learning occurs.

Significantly, the Fire and Land Managers have identified a misalignment between farmer memories of the how the Grampians was managed before it was a National Park and contemporary management practice¹. Andrea reflects on the different expectations of farmers and the management agency:

Up until the early 80s...it was managed as a timber resource, as a grazing resource...and there was a shift to conservation during the 80s and 90s and early 2000s which was rightly or wrongly thought to be a lock it up and throw away the key type approach to conservation, I don't think anyone was even subconsciously locking stuff up, but I think it's through limited resources and prioritisation. Often when you've got a park of this size with the track network and the weeds and the pests, there's always going to be elements of the job that you have to drop off...so if it's

¹ as detailed in Parks Victoria (2003)

grading access tracks and maintaining boundary line fences, all those things that farmers are very keen on seeing, sometimes it doesn't necessarily hit the top dozen priorities that we have from our point of view where our priorities may be clean facilities for the incoming tourists or grading the major road thoroughfares or killing the fox or whatever it might be.

Sam explicitly links the misalignment of expectations to farmer memories of practice:

They [farmers] have long memories where they used to just go in there and burn and they believed that was the right way. I wouldn't say that was the right way and I don't think our way of closing the gates to them was right either.

There are multiple effects that flow on from the change of management from forest resource to conservation as a National Park. From a landholder perspective, the practice of their forebears (occasional small burns on crown land) has been curtailed. Their sense of control over the vegetation and hence bushfire risk has been diminished. The inter-generational social memory of how to live safely in the landscape, while still highly relevant to the landholders, is made to appear irrelevant. From the perspective of Park managers, it is about prioritising what they can achieve with the limited resources allocated to conservation on crown land while managing public expectations of a National Park (which may not include managing the bushfire risk of neighboring landholders. We return here to the point made earlier about social-ecological memory having a limiting effect where identity linked to traditional practice and past ideals about 'place' reinforces 'path dependency' (eg. Nykvist & von Heland 2014). There are different idealised views of what the landscape 'should' look like depending on assumptions about management objectives (production, conservation, recreation). It also shows the importance of social learning in community engagement activities that provides a forum for discussion of diverse management options and for shared responsibility to emerge.

Implications for ‘sharing responsibility’

In this study, we have investigated the interplay between experience of bushfire, and its relationships with the processes of social-ecological memory construction and social learning. We made the case that community engagement can provide a platform that enables these processes to inform practice change and shared responsibility. There are however, some examples from our data that point to a disconnect in the framing of ‘shared responsibility’. There appears to be a ready acceptance in practice of shared responsibility for effective bushfire management among landholders and local fire managers. Residents interviewed understood shared responsibility to be making decisions from preparation through the fire to the consequences on the other side; but agencies intend the phrase about sharing responsibility to only apply up to the event. There appears to be a gap in explaining how the different interpretations work in practice; the policy in many instances does not assist local decision making.

Dallas, who has a small landholding at Mirranatwa (Victoria Valley) was one of the few participants in our study who self-evacuated during the 2013 bushfire. He relocated to a nearby town where his only option was to stay in a motel. Consequently, he was socially isolated from his community during the fire emergency. Unable to attend his Mirranatwa community’s emergency meetings, he attended meetings in the town to which he had evacuated, only to find that the information provided was not relevant to his property. This is a unique example within our study, it points to the impacts on community cohesion of who stays and who – following the advice of fire authorities – evacuates during an emergency, an issue which has received little attention from researchers. Another example is John, a farmer who prepares his property for the fire season by burning the paddocks around the farm buildings. His social-ecological memory of bushfire tells him that he is safer staying on his property than leaving. The broader issue here is that national policy on community bushfire

safety (which emphasises the desirability of timely evacuation by residents if threatened) does not reflect that all fires and all places are different. The underlying message is that by not evacuating, landholders like John are being ‘irresponsible’ even when their knowledge of landscape tells them that they are safer on their well-prepared paddock than on the tree lined roads. On the other hand, a ‘responsible’ landholder like Dallas is placed at a social disadvantage by complying with the ‘leave’ message.

Conclusion

In this paper, we present evidence that through effective practices of community engagement, social memory coupled with social learning plays a significant role in shaping and enhancing landholders’ and fire managers’ practices in relation to bushfire risk. Sharing of local social narratives of previous bushfire events serves to maintain current perceptions of bushfire risk. However, new experiences that cannot be assimilated into the existing narrative can lead to the emergence of new, changed narratives as a consequence of the social learning that occurs through community engagement. The changed narratives of most South Grampians landholder and fire managers resulting from post-bushfire social learnings were about the likely increase in the frequency of severe, unmanageable bushfires in the future; and the impracticality of a narrative that every fire originating in the Grampians National Park could be suppressed so as to protect landholders. (The notable exception is Ross, whose experiences to date reaffirm his memory of his property as unlikely to be impacted). It appeared that social memory and social learning in relation to fire events and threats serves as a basis for ongoing discussion; not as a static template for future action but as a starting point for imagining how to manage fire risk in a changing future and laying the platform for shared responsibility. Social learnings such as those resulting from landholder and local fire and land management agency staff can both reinforce social memories and disrupt others by opening up practices to scrutiny and re-negotiation. An example is collapse of boundaries between

whose ‘patch’ is being managed – Parks Victoria or private land – and the emergence of collaboration between Parks Victoria and the farming community (as noted by participants Andrea and John at page XX).

Since 2009, Australian bushfire policy has emphasised ‘leave early’ as the safest option under all levels of bushfire risk (*cf* Australasian Fire and Emergency Services Authorities Council, 2012). While landholders are seen to take responsibility for preparing their properties for bushfire, there remains an expectation from the fire agencies that people will leave under all bushfire conditions. In effect, the agencies expect householders to take responsibility in the planning, preparation and mitigation phases of bushfire management. But during an event the agencies take back responsibility, taking it away from householders. The ‘shared responsibility’ narrative lacks clarity about what is being shared, who it is shared between, and at what times responsibilities are unequal. In effect, ‘shared responsibility’ is being used to prepare people through community engagement where a joint narrative emerges. It is not being used as a policy for action during an event and this is the crucial aspect that has not been adequately discussed between government, agencies and communities.

To conclude, our research suggests a need for local agencies and communities to work together to develop and maintain dynamic narratives of both fire-relevant changes in the local landscape, but also changes in the social makeup of landholders, changing patterns of land use, and the expressed priorities of residents of the communities including those which conflict. This could serve an important function in orienting new staff to the important social dimensions of their ‘patch’. This implies a need for agencies to foster local joint agency-landholder initiatives that serve the function of the “round table” described in this case study. Such a forum, promotes diverse narratives of landscape, bushfire and risk, allows

disagreements to be aired, and facilitates the emergence of new and more nuanced understandings where bushfire safety responsibility can be more truly ‘shared’.

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