

Proceedings of Bushfire CRC & AFAC 2012 Conference Research Forum 28 August, 2012 Perth Convention & Exhibition Centre



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Published by:
Bushfire Cooperative Research Centre
Level 5 340 Albert Street
East Melbourne 3002 Australia

Citation: R. P. Thornton & L.J. Wright (Ed) 2013, 'Proceedings of Bushfire CRC & AFAC 2012 Conference Research Forum' 28 August 2012, Perth Australia, Bushfire CRC

Welcome from Editors

It is our pleasure to bring to you the compiled papers from the Research Forum of the AFAC and Bushfire CRC Annual Conference, held in the Perth Exhibition and Convention Centre on the 28th of August 2012.

These papers were anonymously referred. We would like to express our gratitude to all the referees who agreed to take on this task diligently. We would also like to extend our gratitude to all those involved in the organising, and conducting of the Research Forum.

The range of papers spans many different disciplines, and really reflects the breadth of the work being undertaken, The Research Forum focuses on the delivery of research findings for emergency management personnel who need to use this knowledge for their daily work.

Not all papers presented are included in these proceedings as some authors opted to not supply full papers. However these proceedings cover the broad spectrum of work shared during this important event.

The full presentations from the Research Forum and the posters from the Bushfire CRC are available on the Bushfire CRC website www.bushfirecrc.com.

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June 2013

ISBN: 978-0-9806759-6-2

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Adapting to climate change: reflecting on our shared and uncommon knowledge

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Abstract

Across the country, fire management faces the common challenge of adapting to a changing climate. However, alongside social, environmental and economic changes, climate change will manifest differently across the country. If fire management is to support the capacity of our social-ecological systems to adapt to these interacting changes, the sector itself must be adaptive. Insights from literature across a range of disciplines highlight adoption of a 'reflexive learning approach' could enable such a capacity.

Reflexive learning in policy sectors involves exploring the frames and informal institutions that influence the shared (and assumed) knowledge underpinning current practices, policies and governance. It also involves exploring uncommon knowledge for additional ways of framing fire management and its issues. This paper presents research that used this theoretical position to explore the frames and informal institutions of Victoria's fire management sector.

The analysis indicated a highly institutionalised emergency management frame that, without an explicit reflexive practice that taps into a diverse range of perspectives, fire management's capacity for reflexive learning and thereby, adaptation may be constrained. Implications for disaster risk reduction (DRR) and adaptation (CCA) efforts within the sector, and for interchanges between DRR and CCA more broadly are discussed.

Introduction

Beyond biophysical projections for increasing likelihood of fire conducive weather, climate change has the potential to alter, if not increase, the complexities and challenges that infuse the sector's twin objectives of DRR and ecological management, and most certainly their interactions (Bosomworth and Handmer 2008). Because climate change will interact with our already dynamic socio-demographic, -economic and -ecological systems, lending it the capacity to exacerbate fire management's existing challenges, fire management requires considerable adaptive capacity across its policies, practices and governance. The challenge is that a sector's adaptive capacity relies on its ability to reflect on and possibly change the frames and informal institutions that influence the shared (and somewhat assumed) knowledge underpinning current practices, policies and governance. It also involves exploring uncommon knowledge for additional ways of framing fire management and its issues. This kind of 'reflexive learning' confers an adaptive capacity through an 'opening up' of a wider range of policies and practices upon which the sector can draw in response to change, uncertainties and novel events.

Reflexive learning enables adaptation in policy sectors

Reflexive learning is more than 'adaptive management'. It comprises three orders of learning. The first and second orders involve learning about and possibly changing existing policies or dominant policy instruments within the existing institutional landscape (Hall, 1993). This concept mirrors ideas of single and double-loop learning (Sabatier, 1999; Schön & Rein, 1994), and the intent of 'learning by doing' used in references to adaptive management. However, reflexive learning requires an additional, third order of learning that involves the potential for change to overall goals and shifts in the institutional landscape (Hall, 1993). This concept of learning is very different to that which sees learning as simply the acquisition of more information. "Gathering evidence is not always the same as learning" (Hudson, 2007:211), particularly when that evidence is gathered from the perspective of a particular and/or dominant frame. It requires influential actors to consider how they are conceiving of a policy sector's context and issues, how this directs preference for particular policies and programs, and how the sector's formal and informal institutions (cultural-cognitive practices) reinforce these ideas. Reflexive learning even asks that we reflect on how these frames, structures and patterns of action contribute to the persistence of policy 'problems' (Hendriks & Grin, 2007; Voss & Kemp, 2005). It demands that actors consider a broader range of different perspectives from which additional possible approaches might be illuminated.

The frame reflection component of reflexive learning is crucial for adaptation in a public policy sector. Every government department and agency has 'deep structures' of policy - the implicit collection of beliefs about aims and intentions of the department, agency and policies therein and about the relevant actors who influence or benefit from the policy (Parsons, 1995:146). These deep structures are based on a set of ideas about what constitute the main features and problems of the sector, and how these can be governed the best possible way (Boin & Hart, 2000). These ideas or frames, are a way of thinking about a problem or subject than an assemblage of facts (Fischer, 2003:103). While they vary in their internal

coherence, their ability to provide cogent warrants for policy claims, and their congruence with empirical reality (Fischer & Forester, 1993), they influence how actors perceive the validity of policy options (Schön & Rein, 1994) including the information, research and perspectives that inform those options. Different frames direct attention to different aspects of a situation and tell a different story about what is going on, and what should be done (de Boer, *et al.*, 2010:464; Dewulf, *et al.*, 2004; Dewulf, *et al.*, 2007; Spence & Pidgeon, 2010). “Like a window, we see the world through frames that determine our perspective while limiting our view to only a part of a complex world around us” (Creed, *et al.*, 2002:36). It is often conflicts or differences between policy frames that are the source of ‘policy controversies’ (Schön and Rein 1994).

The strength of policy frames lies in their institutionalisation, the degree to which they inform a sector’s ‘informal rules in use’. These ‘rules in use’ might be understood as expressions of ‘the way we (have to) do things around here’. Consequently, a sector’s institutional landscape is as equally important as the construction of the ideas (frames) (Schmidt, 2009:197-8) that inform policies and practice. Over time, as frames are repeated in discussions, practice and research, they become unreflectively taken-for-granted, scarcely noted by the actors who employ them (Fischer, 2003:74). When institutionalised, frames define the terms of discourse within the bureaucracy of a policy sector, constraining and enabling the sphere of discussion regarding a sector’s purpose, its policies and practices (Hall, 1993:292). By influencing these terms of discussion and practice, frames and institutions can constrain or enable reflexive learning, and certainly the introduction of new ideas that might shift, change or complement existing informal institutions, as well as their formal counterparts (policies and procedures).

Exploring policy frames and informal institutions

This paper discusses an exploration of policy frames and informal institutions within the public administration of Victoria’s fire management sector, and the influence they have upon the sector’s adaptive capacity. By taking its perspective from the sector’s bureaucrats in state and local government, the study provided an insight into the public administration space in which the concept of adaptation will have to interact with the practical realities of policymaking in the complex sector of fire management. Through interviews and surveys, the study sought descriptions from a range of the sector’s bureaucrats of the fundamental purpose of the sector, alongside barriers to attaining that purpose and actions to attain it or address those barriers.

The frame analysis identified two dominant master-frames: emergency management and sustainability. The majority of bureaucrats drew upon the sustainability frame. While recognising it as somewhat idealised, they described the sector’s purpose in terms of trying to achieve a balance between safety and ecological conservation. This narrative reflects the globally popular storyline of humans living in harmony with nature. In this frame, a key barrier to attaining this ‘balance’ was described as a societal lack of environmental or landscape awareness. Consequently, a key action was to have community development aimed at a broader landscape-sensibility and thereby appreciation of fire risk and fire’s role in landscape ecology. In contrast, the second identified master-frame was risk and

emergency management. This narrative drew on another globally popular storyline, that of humans controlling nature. In this master-frame, a major barrier to attaining the risk management goal was described as a lack of community awareness of bushfire risk. Consequently, in this frame, the role of community development is raising bushfire risk awareness.

The presence of these two master-frames was unsurprising given the sector's two main objectives. In an interesting contrast, while most participating bureaucrats framed fire management as a sustainability challenge and climate change as exacerbating existing issues, risk management was framed as the approach for adapting to climate change. The question was, why is fire management a complex issue of sustainability, yet adapting to climate change is an issue of risk management? It was here that the institutional analysis provided much insight into the practical realities of policymaking in this sector.

As outlined earlier, informal institutions are 'the rules in use', the 'way things (have to) happen around here'. The institutional analysis of this study therefore sought to appreciate the prescriptions concerning what actions (or outcomes) are required, prohibited, or permitted, individuals perceive they have when making decisions. These 'rules-in-use' are those to which participants refer if asked to explain and justify their actions (Ostrom 2005:19). In this case, in relation to the conduct of policy administration generally, as well as more specifically to obtaining and sharing knowledge, and to questioning of the existing policy paradigm and its various components. The institutional analysis suggested that the participating bureaucrats share a sense that the fire management sector is obliged to be demonstrably reactive and to make infallible decisions. Reactive decision-making without underlying reflexive practice will rely on (and potentially entrench) existing frames and approaches. Perceived as constraints on decision-making, these institutions appeared drawn from a perception of a broader societal rationality of control and a rational model of public administration. They also appear to explain the presence of a number of other informal institutions.

These other institutions included a tendency toward 'scientism': that idea or argument that science, as the ultimate, neutral arbiter, can provide 'the solution'. The challenge to that institution is that a number of the issues facing fire management are value-based, and the issue of science or evidence-based policy, raises the obvious question of which and whose science? They are therefore political, not scientific questions. Viewed from the idea that science will provide the answer, it is apparent as to why fire-fighting and fuel management knowledge was perceived to have a greater level of legitimacy than other knowledge within the sector. Akin to the sector's 'conventional wisdom', these essential bodies of knowledge sit comfortably with a quantitative approach to science and risk management, where risk is assumed to be readily quantifiable and thereby, readily treatable. Such a focus however, is likely to ignore underlying drivers of vulnerabilities¹ to altered fire regimes and climate change impacts. That said, it is not the subject matter per se that has implications for reflexive learning, rather it is that tight demarcation of what is considered legitimate and common knowledge, irrespective of the matter, that can exclude other perspectives.

1 'Vulnerabilities' is used as a means of conveying the fact that we are all vulnerable to different hazards, at different times, for different reasons. As Barnett *et. al* (2008) argue, vulnerability is context specific, not a generic condition.

Maintaining such a limited frame is an anathema to the concept of reflexive learning and adaptation.

Finally, there was an institution surrounding competition for reputational capital. This institution draws on the same perception that there is 'a' solution to the fire management 'problem', and consequently, there is an implicit competition between the agencies to have 'the solution' – in this case study, either fuel reduction burning or community engagement. Again, this is more liable to entrench positions and arguments for a particular policy, than it is to expand the dialogue and openly question fundamental directions, purpose, and policy options.

When viewed collectively, the identified institutions ('rules') suggest a high degree of institutionalisation of the risk and emergency management frame, as an expression of the rational model of public administration and a societal rationality of control over nature. The institutionalisation of this frame emphasises physical, technical or engineered responses because they are visible and readily quantified, and has several implications for the sector's adaptive capacity. Maintaining an institutionalised need for demonstrable reactivity will reinforce a 'rationality of control', even though participating bureaucrats identified it as constraining their ability to explore additional frames, policies and practices. In the face of projected increases in extreme weather events, quantifiable approaches will predominate and dictate the kinds of 'science' or evidence studied and used to inform policies.

The appeal of the institutionalised risk and emergency management frame likely lies in its implied depiction of hazards as amenable to conventional procedures of calculation, management and control within the capacities of established institutions (Pidgeon & Butler, 2009:679). It appears reliable in the face of a multitude of changes and degrees of uncertainty. Implications for the sector's adaptive capacity lie in the inherent tendency of these sorts of institutionalised frameworks to neglect the systemic nature of contemporary hazards (*ibid*) that are embedded in dynamic, complex social-ecological-political systems. These kinds of institutions, which draw upon reductionist, positivist perspectives, often exclude many social, ecological and political considerations. This is often because these factors or consequences lie outside prevailing scientific risk-knowledge, and are therefore conceived as indescribable, unamenable to use of probability calculations or cost-benefit analyses so often used in risk management, and consequently are simply not given any standing (Cannon 2000; Wynne, 2002:469; Jasanoff, 1993).

Discussion

Overall, the findings suggested that it may be challenging to introduce frames or ideas that counter or do not 'fit' the sector's current institutional landscape, which currently places emphasis on readily quantifiable and visible actions. Arguably, the institution of quantifiable reactivity is ubiquitous in public administration, and equally likely to constrain reflexive learning, particularly where knowledge from alternate but equally relevant, but less quantifiable perspectives are considered less legitimate. If these sorts of informal institutions shape the sector's decision paths, ignoring the systemic nature of the issues faced, fire management's capacity for reflexive learning may be limited. However, institutions are only path-shaping they are not path-determining, because institutions are created by people and

people can de-construct and change them. There are at least two ways in which the participating bureaucrats framed fire management, which together present a basis for exploring shared and uncommon knowledge. Exploring uncommon knowledge and perspectives would reveal additional perspectives, including ideas for challenging and expanding the sector's current institutional landscape. By looking through different frames, the sector may find a broader range of policy options and build upon the somewhat implicit adaptive capacity that exists within the more uncommon knowledge of its practitioners, researchers, and communities.

Acknowledgements

The authors would like to acknowledge the research participants who gave freely of their time. We would also like to thank the Bushfire CRC and RMIT University for their support and funding of the PhD research from which this paper is drawn. Finally, we take sole responsibility for the content and conclusions of this article.

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