

The future of wildland fire management in a world of rapid change and great uncertainty: Overview of a futures research project

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Abstract:

Past efforts to examine the future of wildland fire management have relied heavily on expertise from *within* the wildfire community. But changes in seemingly unrelated *external* factors – outside of the world of wildfire and fire management – can have unexpected and profound effects. This paper describes an ongoing study of the future of wildland fire management in which a broader approach is taken to explore alternative futures and identify emerging trends. The goal of the project is to gain practical strategic foresight into wildland fire management. We will assemble a panel of academic and professional futurists from multiple areas of expertise to provide their views and insights about developments outside of fire management that will likely affect fire management in the future. The panel will be convened via a series of text-based asynchronous computer conferences, with panel members reacting to and building on each other's ideas, using methods such as futures wheels and wild card brainstorming, and providing reactions to exploratory forecasts and mini-scenarios developed by the project leaders. A key advantage of asynchronous computer conferencing is its capacity to support reflective interaction among the participants, independent of the pressures of time. The final output will include action steps for wildland fire managers and policy makers.

Additional Keywords: Futures research, strategic foresight, asynchronous computer conferencing

Introduction

Past efforts to probe the future of wildland fire and fire management have relied heavily on expertise from within the wildfire community. For example, a 1987 symposium titled “Wildland Fire 2000” included a small-group futuring process to develop visions of the future for nine topic areas and then outline strategies for achieving the visions (David and Martin 1987). But almost all of the participants were from within the wildland fire and fire management community. The 2005 and 2009 Quadrennial Fire Reviews (QFR) were developed by fire experts from federal, state, local, and tribal agencies, with input from the fire and natural resource research community and non-governmental organizations (USDA and USDI 2005, 2009). The researchers who contributed “new assumptions” presentations to the advance briefing report for the 2009 QFR (The Brookings Institution 2008) were overwhelmingly from wildfire and natural resource management backgrounds. Additional examples of wildland fire futures efforts based primarily

on internal expertise could be described (e.g., Global Business Network 2008, Nydick and Sydoriak 2011).

An important limitation of focusing solely or mainly on internal expertise to study the future of some field or area of concern is that specialists are often unaware of developments outside their fields that may have significant effects in the future (Bell 1997). Specialists tend to see what they are trained to see. This phenomenon has been termed the “educated incapacity” of experts with respect to perceiving the future: Experts generally “... know so much about what they know that they are the last to see that future differently” (Weiner and Brown 2005, p. 2). Because of the educated incapacity of experts, we should not turn solely to health care management professionals to explore the future of health care, to military strategists to define the future of national defense, or to wildland fire experts to shed light on the future of fire management. Outside perspectives and knowledge are also needed to see a wider range of possible futures and gain strategic foresight (Weiner and Brown 2005).

This paper describes an ongoing study funded by the Joint Fire Science Program that takes a broader path to exploring the future of wildland fire management by enlisting diverse and cutting edge perspectives from futures research. The objective of the project is to gain practical strategic foresight into wildland fire management. Futures research is a transdisciplinary social science approach that uses an array of methods and perspectives to examine alternative possible, probable, and preferable futures (Bell 1997). The goal of futures research is to produce strategic foresight, defined as “... the ability to create and maintain a high-quality, coherent and functional forward view, and to use the insights arising in useful organisational ways. For example to detect adverse conditions, guide policy, shape strategy...” (Slaughter 1999, p. 287). Futurists take a big picture, systems approach to scanning for emerging trends and studying alternative futures because they have learned that changes in seemingly unrelated external factors can have unexpected and profound effects (Bengston et al. 2012).

The origins of futures research are often traced to work on the future of military technology carried out by RAND Corporation in the 1950s, and development of the field accelerated during the turbulent 1960s and 70s (Cornish 2004). Many futures organizations were founded at this time, including the USA-based World Future Society in 1966 and the internationalist World Futures Studies Federation in 1967. Futures research is now a mature transdisciplinary field of study with a considerable body of literature (see Bengston et al. 2012 and works cited therein), specialized journals (e.g., *Futures*, *Foresight*, *Journal of Futures Studies*), professional organizations (e.g., Association of Professional Futurists, World Futures Studies Federation), and an array of distinct methods for exploring alternative futures. Futures researchers have developed important insights into the nature of change and perspectives for thinking creatively and deeply about the future. The majority of futures research remains invisible to the scholarly community and the public because it takes place in military units, intelligence agencies, and corporations and therefore is often confidential and proprietary.

The next section describes the methods to be employed in our study of the future of wildland fire management. This is followed by an exposition of the possible contributions of our study and a brief concluding comment.

Exploring the Future of Wildland Fire Management

While the future of wildland fire management – or any aspect of complex social-ecological systems – cannot be predicted with accuracy, there are transdisciplinary perspectives and

foresight methods for exploring alternative futures that can improve planning and decision-making. We will use two approaches to explore the value these perspectives and methods can have for wildland fire management and develop a wider, synoptic view of possible and plausible futures of fire management.

First, we will review and synthesize futures research literature to answer the question: What can futures research contribute to wildland fire management and policy? This work will include a review and assessment of the methods of futures research and a description of illustrative cases in which futures research has made important contributions to planning, decision-making, and policy in various sectors. Examples of methods to be reviewed include trend interaction analysis, horizon scanning, scenario planning, “wild card” exploration, and normative forecasting. Trend interaction analysis is used to identify major trends in society, technology, economics, the environment and politics and uses methods like cross-impact matrices and futures wheels to explore how these trends could have non-obvious secondary, tertiary, or further consequences on specific areas (Glenn 2009, Heuer and Pherson 2011). While trend interaction analysis tracks continuities and their impacts, horizon scanning is used to look for newly emerging ideas and perspectives, technical innovations in their early stage of development, organizational innovations, and other developments that could become the source of new trends and influence how the future unfolds (Gordon and Glenn 2009). Scenario planning uses alternative plausible stories about how a number of variables might interact to produce different future states (Bishop et al. 2007). Working with scenarios can promote strategic conversation among decision makers and help them develop contingency plans and identify robust options for action likely to work well across a variety of future circumstances. Wild card exploration helps detect unlikely but possible developments that would be total “game changers” (for better or worse) if they should actually occur (Petersen 1997, Petersen and Steinmueller 2009). Normative forecasting explores positive images of “what could be” that might act to guide and motivate change, and involves “backcasting” the kinds of developments and efforts needed to bring these futures into existence (Coates and Glenn 2009). These and other futures research methods will be reviewed and assessed in terms of their relevance to exploring wildland fire management futures.

Second, we will convene a panel of academic and professional futurists from multiple areas of expertise to provide their perspectives on emerging issues and trends in the external environment that will likely affect fire management in the future. Diverse areas of expertise will be included in our panel of futurists, including technological change (Olson and Rejeski 2005), education (Harkins et al. 2002), homeland security (Krepinevich 2009), the biophysical environment (Alcamo 2008), socio-cultural factors (Razak 2000), general futures (Hines and Bishop 2007), and other areas to be determined. In addition, two or three experienced wildfire management and policy professionals will be included on the panel to provide their perspectives and insights.

The project’s panel of experts will interact using the kind of text-based asynchronous computer conferencing that has become ubiquitous in most higher education e-learning courses. Asynchronous computer conferencing is a form of computer-mediated communication in which there is a delay in interaction between contributors. It is in contrast to synchronous computer conferencing in which users communicate simultaneously in “real time.” Asynchronous computer conferencing has many advantages: it avoids costs of travel, participants can take part at any time, they have time to reflect before posting a message, and messages are stored and can be searched and studied later. Its compelling advantage is its capacity to support reflective

interaction, independent of the pressures of time (Wu 2004). This is especially important in the context of developing high-quality and coherent strategic foresight.

Computer conferencing achieves its best results when it is carefully moderated (Collison et al. 2000, Heuer and King 2004). The moderator needs to make participants feel welcomed and valued and has to manage the discussion. This involves providing instructions to set the discussion parameters so that participants have a clear idea of what is expected of them. It also involves facilitating the conversation by posing questions, keeping the conversation on track, summarizing the discussion at appropriate points and identifying emerging themes and common points of agreement and disagreement—a process often called “weaving.” One of the principal investigators in this study has moderated computer conferences over several years involving hundreds of participants.

Our plan for computer conferencing involves three separate conferences about two months apart, each continuing for at least ten days. Before the first computer conference, panelists will each prepare short (2-page) documents identifying the most significant emerging developments and trends within their respective areas of expertise that they believe have potential implications for wildland fire management. Using a web-based conferencing platform, the initial conference will focus discussion on those papers, with panel members reacting to and building on each other’s ideas.

A second conference will be based on questions developed by the project leaders and discussion exercises using selected futures research methodologies such as futures wheels and wild card brainstorming. Panel members will also provide reactions to exploratory forecasts and mini-scenarios developed by the project leaders. This will directly test the relevance of futures research methods for wildland fire management.

After the second computer conference, participants will again prepare brief papers based on all they have learned in the online discussions. These papers will address: 1) participants’ views of the most important insights that have arisen in the discussions and 2) potential action steps they recommend. The third and final round of computer conferencing will focus discussion on these papers, exploring the degree of consensus and dissenting views of the insights and recommendations for managers and policy makers. When creative thinkers interact, the discussion can take surprising and valuable turns, so we will be open to modifications in this discussion plan if they seem justified.

The transcripts of the online discussions from all three computer conferences will be analyzed using qualitative text analysis software such as NVivo and using content analysis methods and coding schemes that have been developed for the analysis of computer conferences (Rourke 2001, De Wever et al. 2006). The results of the analysis will be summarized in our final report.

Anticipated Benefits and Contributions

The potential benefits of enhanced foresight resulting from our project may be helpful in preparing for and shaping the future of fire management in a world of rapid change and great uncertainty. Possible contributions of this project include:

- Creating a longer-term perspective: The temporal scales considered in futures research are beyond the range usually considered in planning and decision making. This longer-term perspective may help identify issues of concern as well as opportunities that could be overlooked in the prevailing shorter-term view.

- Integrating multiple external perspectives: The diverse backgrounds, expertise, and perspectives of our panel members will offer fresh and innovative insights into the futures of wildland fire management.
- Exploring key uncertainties and potential surprises: Futures research can help identify fundamental uncertainties and potential surprises, especially those arising from other domains that could affect fire management, thereby facilitating the development of policies to increase adaptive capacity to deal with surprises (Bennett et al. 2003).
- Decreasing reaction time to rapid change: Insights about possible and plausible futures can help decrease reaction time as events rapidly unfold (Bengston et al. 2012). Decision makers can explore possible responses in advance and react swiftly to change as it occurs. A classic business example is Royal Dutch Shell's quick response to the 1973-74 OPEC oil embargo and price shock (Schwartz 1991).
- Anticipating unintended consequences: The methods of futures research can help identify potential unintended consequences of new technologies, proposed policies, and social and cultural trends. A better understanding of potential consequences of change can help in the design of policies and strategies that will minimize negative consequences and enhance resilience.
- Encouraging thinking big: Futures research promotes thinking big in terms of multiple disciplinary perspectives, creative problem solving, and a systems perspective, and can help all stakeholders take a broader and more creative view.
- Shaping a preferred future: A preferred future or vision is a compelling statement of the future that a group or organization wants to create based on shared deep values and purpose (Bezold 2009). A clear, shared understanding of the preferred future enhances options and possibilities in the present. The results of our study may be helpful in identifying and choosing a preferred image of the future for wildland fire management.

Concluding Comments

This project will not attempt to “predict the future” of wildland fire management. It is simply not possible to predict the future of complex social-ecological systems for long time frames because of the prevalence of surprise (Gunderson and Longstaff 2010) and irreducible uncertainties (Carpenter 2002). But wildland fire managers and policy makers must still anticipate and prepare for change in a rapidly changing world. This study maintains that futures research offers a productive set of approaches to this challenge. Our project will develop innovative ideas in fire social sciences with a transdisciplinary group of social scientists (futurists), and will push the frontiers of knowledge about alternative futures of wildland fire management.

Acknowledgements

The authors thank Sarah McCaffrey, Stanley Asah, and Lynne Westphal for helpful comments on an earlier version of this paper. This study is being funded by the Joint Fire Science Program.

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