

## Discourses About Fire in New Jersey and New South Wales

### Introduction

Over the past half century, the developed world has seen the emergence of a new landscape type – the urban-wildland interface – that puts a twist on one of humanity’s oldest environmental management questions – wildfire. The decline of agriculture and the expansion of populations in formerly rural areas have brought large numbers of people to homes abutting or within “wild” areas. This landscape is growing in the most fire-prone ecosystems (Kennedy forthcoming).

The urban-wildland interface presents a challenge for wildfire management (Davis 1989), as the goals of different stakeholders come into conflict. Dense vegetation that homeowners see as beautiful scenery, fires use as fuel. People and property are more dispersed than in cities and hence are difficult to defend, yet residents demand high levels of protection. Ideas of private property create resistance to regulatory solutions.

Management of wildfire has long forced humans to make difficult choices about what kind of environment they want to live in (Pyne et al. 1996). Early in the twentieth century, the United States was convinced that fire was detrimental to both ecosystems and people, and that it should be suppressed at all costs. Australia, on the other hand, saw frequent fires as the “natural” solution to maintaining its biota and protecting its citizens. Both of these consensuses began to unravel in the 1970s, as Americans saw suppression leading to dangerous fuel build-up and Australians considered the ecological damage that could be done by too-frequent burning (Pyne 1991, 1995). This reopened the question of what ends fire management should serve.

A voluminous literature has grown up on the ecological aspects of wildfire (see Whelan 1995 for a summary), remote sensing and computer modeling of fire events have made great strides (e.g. Finney 1998), and we have extensive histories of wildfire (Pyne 1982, 1991). Yet the human side of wildfire management is understudied (Kumagai et al. 2004), making it difficult to know how well current management practices are satisfying the preferences of at-risk communities. The few studies that have been performed are largely technocratic in motivation, asking how officials can best influence residents to follow the “correct” fire management practices. This type of study is insufficient for several reasons, however. It fails to recognize the negotiated character of fire management practices, the divergent views of the use and protection needed in the urban-wildland interface, and the major lessons from risk-hazard studies about reconciliation of these views that might lead to improved practices (Renn et al. 1995). A clear understanding of the perspectives of interface residents, and their relationship to social structure and national context, is necessary for making responsible and effective decisions about managing the hazard of wildfire in the growing interface landscape.

This research examines discourses about the goals for wildfire management and perceptions of success in meeting them among residents of the urban-wildland interface in the Pine Barrens of New Jersey and the outer suburbs of Sydney, Australia by carrying out a series of “Q method” card sorting exercises. A discourse is defined here as a coherent, shared way of thinking or speaking about an issue. I aim to answer the question: How do residents of the urban-wildland interface in New Jersey and New South Wales think about wildfire? More specifically, I ask:

- \* What are the principal “schools of thought” about wildfire?
- \* How do people’s assessments of the factual situation relate to their normative views?
- \* How do the local-level discourses about wildfire differ in two countries (the United States and Australia) with divergent national-level discourses?

### Literature and theoretical review

#### *The issue*

Recent literature on sustainable environmental management has emphasized that sustainability is goal-relative (Gunderson and Holling 2001, McCay 2002). That is, it makes little sense to speak of “sustainability” in the abstract, but rather, sustainability is measurable with reference to particular goals that people have for management regimes.

The importance of goal-relativity is especially apparent in the case of wildfire. Fire ecologists have stressed that there is no one “natural” or “indigenous” fire regime that is correct for a place (Keith et al. 2003, DellaSala et al. 2004) – rather, communities must choose what values to prioritize. In the middle part

of the last century, there was a consensus about the goals of fire management in the U.S. and a different consensus in Australia (Pyne 1982, 1991). Australia embraced widespread and frequent controlled burning in order to keep fuel loads low, and to maintain its fire-loving native vegetation. In the U.S., the policy of total fire suppression (the “10 a.m. policy”) and the public outreach of Smokey the Bear emphasized the eradication of fires. Since the 1970s, attitudes have begun shifting. American fire managers have accepted the need for both natural and prescribed fires to maintain the environment, though that view has been slower in percolating down to the public (Pyne 1995). In Australia, meanwhile, environmentalists have mounted a challenge to the use of prescribed fire as a panacea, pointing out that too-frequent or low-intensity fires disrupt plants’ reproductive cycles (Morrison et al. 1996) – though here too, public and agency opinion has not fully followed. The result has been the emergence of differing viewpoints among managers and members of the public.

It is thus imperative to have a good assessment of what views the public holds and an explanation of why they hold those views. Fire managers – both officials and homeowners – often rely on stereotypes of others’ perspectives (Tarrant 2003). The need for research into how the public and officials think about wildfire has been recognized in recent assessments of knowledge in both the United States and Australia (Machlis et al. 2002, Tarrant 2003, Cary et al. 2003).

Most discussion of people’s goals for environmental management has tended to establish a pair of opposed attitudes – conservationist versus preservationist, cornucopian versus catastrophist, and so on (Thompson and Rayner 1998). A large literature on risk perception has grown up around differences between “objective” expert risk assessment and more qualitative and value-oriented public viewpoints (Boholm 1998). Others have seen a rift between Western and indigenous perspectives (e.g. Andersen 1999).

One of the most well-known contributions to explaining the diversity of people’s preferences for environmental management is the Cultural Theory of risk (Douglas and Wildavsky 1982, Thompson et al. 1990). Cultural Theory argues that patterns of social relations instill worldviews, or “cultural biases,” that draw attention to certain risks in a way that reinforces the social structure. Cultural Theory is best known for the particular typology of ways of life that its founders proposed. Axes representing “grid” (imposed limits to choice) and “group” (communal solidarity) produce a four-box matrix of hierarchical, egalitarian, individualist, and fatalist ways of life. Cultural Theory argues that a diversity of ways of life is beneficial. Since each bias captures some, but not all, of the truth, a society dominated by a single bias would be unsustainable in the long run. The trick is to find a way to integrate the contributions of the various ways of life to create better policy, a task that is only in its rudimentary stages (Klitgaard 1997).

Much research on public views of wildfire has been done in the urban-wildland interface (UWI), a landscape formed by the expansion of settlement into rural and wild areas (Davis 1989). The UWI is distinguished from traditional rural settlement by the tendency of residents not to make their subsistence from the land, thus leaving it in a more “wild” state (Snyder 1999). The presence of residential settlement abutting “wild” areas can create a host of concerns, including invasions by exotic species, nutrient runoff, and ecosystem fragmentation (Gill and Williams 1996). New residents are often (though not always) wealthier than longtime inhabitants, and take different views of the proper use of the landscape – e.g. favoring aesthetic values over traditional land use (Shands 1991). They also demand high levels of public services such as fire protection, comparable to what they experienced in the city (Lee 1991). Because the UWI landscape is so new, the ability to rely on historic fire regimes as a guide for present-day management is limited (Whelan and Muston 1981).

UWI residents are frequently new to the area and are often not engaged with their biophysical surroundings on a day-to-day basis in the way that more traditional rural communities were (Pyne 1995). Pyne (1991) argues that Australians take a fatalistic attitude toward fire, believing there is little they can do to reduce the danger, and Winter and Fried (2000) concur with respect to UWI residents in Michigan.

Wildfire in the UWI presents a situation in which public input into decision making is vital (DellaSala et al. 2004). Homes are located close enough to each other to create a collective action problem for residents, as safety requires cooperation by all homeowners (Winter and Fried 2000). Davis (1989) suggests that UWI residents are very interested in participating in fire management. At the same time, Gardner and Cortner (1988) found that people in San Bernardino County, California wanted state and federal agencies to take the bulk of the responsibility for fire management. UWI residents resist regulations that would intrude on their rights to use their property as they see fit, but do support landscape modification strategies pursued on public land or voluntarily on private land (Winter and Fried 2000). Campaigns based on public education have proven popular and shown a degree of success, though official communications are not people’s most important source of information (Loomis et al. 2001, Rohrmann 2003).

### *The case study areas*

While there have been some intra-national comparisons of public attitudes toward, and management of wildfire (e.g. Manfredo et al. 1990, Steelman et al. 2004), systematic comparisons of nations have not been made. Cultural Theory claims that the same four perspectives are present in all societies, though different ones may dominate. On the other hand, numerous studies have shown significant cross-national differences in how hazards are handled (e.g. Jasanoff 1987, Slovic 1992). In the case of wildfire, we know that at the national level discourses about and management of fire differ greatly between the United States and Australia, but it remains unclear how this difference plays out at the local level. This study will address this issue by comparing two regions with broadly similar biophysical and demographic characteristics.

This study will examine two case study regions – the outer suburbs of Sydney and the Pine Barrens of southern New Jersey. Both regions are experiencing rapid growth of the UWI in fire-prone ecosystems. Yet the social dimensions of fire in New Jersey and New South Wales have been comparatively understudied. The bulk of studies in the US have focused on the west, and secondarily on Florida and the upper Midwest. In Australia, the few studies that have been performed focused mostly on Victoria.

Prior to European colonization, the Sydney region was composed of two major ecosystems – a eucalypt forest on the Cumberland plain, and heath and woodland on the surrounding sandstone plateaus. Settlement spread first into the comparatively fertile plain, leaving the city surrounded by “bush” dominated by *Eucalyptus* trees and shrubs including *Banksia*, *Acacia*, and *Hakea* (Benson and Howell 1990).

Two major fires have hit the Sydney area in the last decade. In January 1994, conflagrations propelled by hot, dry west winds in Royal National Park, Ku-Ring-Gai Chase National Park, Glen Reserve, and the Blue Mountains consumed 230 houses (Gill and Moore 1996). December 2001 was dubbed “Black Christmas” as fires consumed 82 homes and did \$25 million in damage in the southern suburbs (Henri 2003).

Within the Sydney region, the outer areas have experienced rapid population increases. The Outer South Western, Central North, and Gosford-Wyong statistical subdivisions grew 8.2%, 8.9%, and 8.9% respectively from 1997 to 2002, compared to only 6.1% for the Sydney area as a whole (Australian Bureau of Statistics 2004). This creates extensive areas of UWI.

Though set amid the relatively fire-free forests of the northeast, the Pine Barrens of southern New Jersey have a natural fire regime that brings to mind the famously flammable Southern California chaparral (Pyne 1982) – and by extension the forests and heathlands of New South Wales. The pines that give this area its name are mostly pitch pines (*Pinus rigida*) and shortleaf pines (*P. echinata*), mixed with various species of oaks (Little 1964).

Fire suppression was initially effective in the Pine Barrens, dropping the point fire interval from 22 years before 1940 to 72 years from 1940-1980 (Forman and Boerner 1981). Despite increased use of prescribed burning, several major fires have hit the Pine Barrens in recent years. A May 1992 fire forced the Oyster Creek nuclear plant to shut down. In 1997, the region’s biggest recent fire consumed 52 houses in Berkeley Township. Then in 2002, a large fire shut down part of the Garden State Parkway (Batcha 2003).

The Pine Barrens are boxed in by three areas of rapid settlement growth -- the New York City metro area in the north, the Philadelphia metro area in the west, and the Jersey shore in the east. Ocean, Burlington, and Atlantic Counties grew by 6.9%, 5%, and 4.3% respectively between 2000 and 2003, outpacing the state average of 2.7% (U.S. Census Bureau 2004). This growth places increasing numbers of people in close proximity to the region’s fire-prone wildlands.

Each of these regions is faced with a high risk of wildfire in an area experiencing rapid growth of the UWI, making them useful case studies for examining discourses about wildfire management. They also share broadly similar demographic and ecological conditions, making them well matched for performing an international comparison.

### **Methods**

This research is being carried out in two phases. First, the technique of “Q method” was be used to get a detailed sense of the content of the perspectives held by UWI residents and distinguish rival camps. The Q results will inform the design of a mail survey that will add generalizability to the Q, as well as establish correlations between views of wildfire and social structure. The study as a whole will thus combine the strength of Q for allowing subjects to reveal their own mental constructs with the ability of “R method” – traditional quantitative surveying – to test the relationships among researcher-defined categories



**Knowledge**

5. Scientific information about (forest/bush) fires should be easily available, so that people can make up their own minds about the risks / Scientific information about (forest/bush) fires is easily available, so that people can make up their own minds about the risks (I)
6. Science will never fully understand (forest/bush) fires / Scientists do not fully understand (forest/bush) fires. (F)
7. Fire policy should be based on the best science available / Fire policy is based on the best science available (H)
8. We should learn from (Native Americans/Aborigines) how to manage fire / Our current fire policy is based on the way (Native Americans/Aborigines) use fire (E)

**Controlled burning**

9. People who do controlled burns responsibly should not be able to be sued if there is an accident / People who do controlled burns responsibly cannot be sued if there is an accident (I)
10. Controlled burning should be avoided because burns often escape from control / Controlled burns often escape from control (F)
11. Controlled burning should only be done under the safest conditions / Controlled burning is only done under the safest conditions (H)
12. Controlled burning should try to mimic the natural fire regime of the area / Controlled burning mimics the natural fire regime of the area (E)

**Private Property**

13. Farming, logging, and other land use can be relied on to reduce the fire danger / Farming, logging, and other land use reduce the fire danger (I)
14. I shouldn't be expected to spend all my time worrying about fire, because I'm busy with other things that are important to me / I don't spend all my time worrying about fire, because I'm busy with other things that are important to me (F)
15. There should be building codes that require homes to be fire-safe / There are building codes that require homes to be fire-safe (H)
16. People have a responsibility to the community to reduce the fire risk on their property / People recognize that they have a responsibility to the community to reduce the fire risk on their property (E)
17. Fire safety shouldn't come at the expense of lowering the value and beauty of my home / Fire safety can be achieved without lowering the value and beauty of my home (I)
18. I shouldn't have to spend so much time and money on making my home fire-safe / Making my home fire-safe is too expensive and time-consuming (F)
19. If someone's property presents a fire risk to their neighbors, the authorities should make them fix it / If someone's property presents a fire risk to their neighbors, the authorities will make them fix it (H)
20. The (Forest Fire Service/Rural Fire Service) should inform the public about what they're doing and why they're doing it / The (Forest Fire Service/Rural Fire Service) informs the public about what they're doing and why they're doing it (E)

**Decision Making**

21. Individual property owners should have the right to decide how to balance the risks and costs of fire safety / Individual property owners are able to decide how to balance the risks and costs of fire safety (I)
22. It's smart to prepare your own home and family for a fire, rather than relying on other people / You can't rely on other people to keep you safe from fire (F)
23. Fire management in this state should be centralized / Fire management in this state is centralized (H)
24. Fire management should be coordinated at the neighborhood or town level / Fire management is coordinated at the neighborhood or town level (E)

**Spatial arrangement**

25. Measures to reduce the fire risk should focus on areas closest to people's homes / Measures to reduce the fire risk focus on areas closest to people's homes (I)
26. Nobody in this region should assume that because of where they live, they're safe from fire / A major fire could strike anywhere (F)
27. Some parts of the environment should be protected from any fires / Some parts of the environment are protected from any fires (H)

28. Controlled burning should be done in small patches, rather than burning large areas all at once / Controlled burning is done in small patches, rather than burning large areas all at once (E)

### **Development**

29. People should be able to build houses wherever they want / People are allowed to build houses wherever they want (I)
30. If you live in this area, you just have to accept a certain level of risk from fires / People in this area recognize that living here brings a certain level of risk from fires (F)
31. New housing developments should be restricted in order to reduce the fire risk / New housing developments are restricted in order to reduce the fire risk (H)
32. People should understand the fire risk before moving to this region / People moving here from other places understand the fire risk (E)

### **Firefighting**

33. You should stay in your house when a fire is nearby to help to save it / Most people stay in their houses when a fire is nearby (I)
34. When a fire is approaching, you should evacuate quickly / When a fire is approaching, I would evacuate quickly (F)
35. Once a fire breaks out, the (Forest Fire Service/Rural Fire Service) should have complete command of the situation / Once a fire breaks out, the (Forest Fire Service/Rural Fire Service) has complete command of the situation (H)
36. Trust between firefighters and the rest of the community should be encouraged / There is a lot of trust between firefighters and the rest of the community (E)
37. Fire management should not be political / Fire management is not political (I)
38. Even with the best policies and practices, it's impossible to stop a really bad fire once it's burning / The way fires are currently handled, it's impossible to stop a really bad fire once it's burning (F)
39. Unplanned fires should be quickly suppressed / Unplanned fires are quickly suppressed (H)
40. Nature should be allowed to take its course without human interference where it's feasible / Nature is allowed to take its course without human interference where it's feasible (E)

### **Fire Services**

41. Bureaucratic and legal barriers that inhibit fire management should be lowered / There are few bureaucratic and legal barriers that inhibit fire management (I)
42. People should be able to rely on the (Forest Fire Service/Rural Fire Service) to protect their home and the environment / People can rely on the (Forest Fire Service/Rural Fire Service) to protect their home and the environment (F)
43. The state should provide lots of money for fire management / The state provides lots of money for fire management (H)
44. All stakeholders should be involved in making decisions about local fire management / All stakeholders are involved in making decisions about local fire management (E)

### **Ignitions**

45. Off-road vehicles should be restricted, because they can cause fires / Careless use of off-road vehicles is a major cause of fires (I)
46. There's no way to stop arsonists – they're just crazy / Arson is a major cause of fire (F)
47. During fire season, activities that might start a fire should be banned or require a permit / During fire season, activities that might start a fire are banned or require a permit (H)
48. We should be able to count on people in this region to be pretty responsible when it comes to handling things like campfires that could start a (forest/bush) fire / People in this region are pretty responsible when it comes to handling things like campfires that could start a (forest/bush) fire (E)

### **Planning**

49. It's important to gather data on the condition of the land and the success of fire management / Lots of data is gathered on the condition of the land and the success of fire management (I)
50. People should change their lifestyles to accommodate our naturally fire-prone environment / People in this area have adapted to living in a naturally fire-prone environment (F)

51. Detailed fire management plans should be in place for all large wild areas, such as (State Forests/National Parks) / Detailed fire management plans are in place for all large wild areas, such as (State Forests/National Parks) (H)
52. Fire management should be tailored to the specific local situation / Fire management is tailored to the specific local situation (E)

**Goals (not stratified by Cultural Theory)**

53. Protecting human life should be a priority / Human life is well protected
54. Protecting property should be a priority / Property is well protected
55. Protecting the environment should be a priority / The environment is well protected
56. Human safety and environmental health should not be at odds in fire management / Human safety and environmental health are not at odds in fire management

**Table 1:** Q statements. *The slash separates each normative statement from its descriptive counterpart. Boldface headers indicate issue groupings, letters in parentheses after statements indicate the a priori assignment of each to a Cultural Theory worldview (I = Individualist, F = Fatalist, H = Hierarchical, and E = Egalitarian). Words in parentheses indicate wording changes between the New Jersey and New South Wales versions of the statements.*

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In Q method, because the people are mathematically the variables, and because no claims are made as to the prevalence of the discourses identified, it is not necessary to have a representative or random sample of individuals to do the sorts. All that is necessary is breadth -- that no important discourses go completely unrepresented in the study. I contacted churches and civic organizations around the region and used snowball sampling to select individuals to participate. In all, 23 people in New Jersey completed 22 pairs of sorts (13 women and 10 men, with one opposite-sex couple collaborating on a single pair of sorts) and X people in New South Wales (Y women and Z men) participated.

The data was analyzed in four groups (normative vs. descriptive and New Jersey vs. New South Wales). Each group was subjected to Principal Components factor analysis and Varimax rotation using the PQMethod software (available for free online from qmethod.org). The number of factors to use was selected based on inspection of results from 3, 4, 5, and 6 factor solutions, aiming at a solution that maximized the unique loadings of sorters (i.e., each sorter would load significantly on one and only one factor), as well as reducing the presence of factors defined by only one or two individuals.

## Results

### *New Jersey normative sorts*

A three-factor solution, which accounted for 57% of the variance in the data, was selected for the New Jersey normative sorts. Of the 22 sorts, 10 loaded on Factor A, which explained 24% of the variance. Factor B, which accounts for 17% of the variance, is defined by five individuals. Factor C, which accounts for 16% of the variance, has seven individuals loading on it.

The most striking result of this analysis was how much agreement there was between all individuals. The three factors were correlated between 0.5 and 0.7. There was strong agreement among all sorters that protecting human life should be a high priority (53), that people have a responsibility to the community to reduce the fire risk on their property (16), and that there should be detailed management plans for all large wild areas (50). All sorters agreed in strongly rejecting the idea that arsonists can't be stopped (46), that fire safety should be compromised in favor of property values (17), or that development should be unrestricted (29). The overall tenor of the consensus statements is that fire management is a collective and managed project. In addition, many statements were agreed to be of indifferent importance. This group includes many of the statements about the programs and operations of the Forest Fire Service, thus reflecting the institutional position of the sorters. Overall, the sorters were more favorable toward those statements identified a priori as Hierarchist, somewhat less favorable toward Egalitarian statements, and in disagreement with Individualist and Fatalist ideas.

### **Factor A:**

The importance of active management by government is central to what makes Factor A's perspective distinctive. Loaders on Factor A look for a division of labor in which specialists take charge. In Cultural Theory terms, Factor A leans toward the Hierarchical pole.

Individuals loading on Factor A emphasize the expertise of official fire managers, agreeing that the Forest Fire Service should be in control whenever there is a fire (35), and that risk can be successfully avoided (30). They are less concerned than loaders on the other factors about listening to homeowners' knowledge (4), involving all stakeholders in decision making (44), or learning from Native American practices (8). Interestingly, Factor A is the least concerned with science (7), though they do not *reject* science. That *active* management is important is shown in the fact that they agree more than the other factors that controlled burning should mimic the natural fire regime (12), but more emphatically disagree with letting nature take its course (40), because they believe very strongly that controlled burning should only be done under the safest conditions (11) and that activities that could cause unplanned fires should be restricted (47).

While the guiding role of the authorities is strong in Factor A's view, they also believe that residents must pitch in and do their part. Factor A is the most emphatic in rejecting the idea that other concerns should take priority over fire safety for individual residents (14, 18). They also express moderate disagreement with the individualization of risk through differential insurance rates (1) or allowing homeowners to balance risks and costs for themselves (21).

#### **Factor B:**

Factor B is the most concerned of the three with protecting property. In some ways they most resemble the Individualists of Cultural Theory. They strongly agree that property protection should be a priority (54), and that risk reduction should focus on areas close to homes (25). While they strongly favor prompt evacuation (34), they are also the most favorable group toward the idea of staying behind during a fire to protect one's home (33).

Factor B's interest in property comes from a somewhat libertarian viewpoint, as they are least favorably inclined toward the authorities forcing people to reduce the risk on their property (19) or having to alter their lifestyle to accommodate fire (50), and show comparatively mild disagreement with having other priorities than fire safety (14, 18). They also reject the idea of restricting off-road vehicles (45) or of letting the Forest Fire Service take control during a fire (35). This group's distrust of the Forest Fire Service is suggested by their disagreement with the need to lower bureaucratic barriers to fire management (41) and with quick suppression of unplanned fires (39). Yet in contrast to the stereotype of libertarianism or Individualism, Factor B is indifferent to -- where the other factors strongly support -- taking individual responsibility for one's fire safety (22).

Interestingly, Factor B is generally indifferent to the politicization of fire management (37). They also believe that science will be able to understand fires (6).

#### **Factor C:**

Factor C is characterized by distrust and an elevated sense of risk. There is an element of Cultural Theory's Fatalism in this perspective.

Factor C is concerned that others' activities will create fire risks. They fear that controlled burns will escape from control (10) and want to retain the ability to sue those who start escaped burns (9), reject the idea that logging or farming will reduce the fire risk (13), and feel that others cannot be trusted to be responsible with campfires and other ignition sources (48). Their elevated concern with risk perhaps explains why they are less inclined to prioritize protecting the environment (55) or property (54). Their concern with sensationalism in the media is lower than loaders on the other factors (2).

Yet in contrast to the Cultural Theory's claim that Fatalists see the world as inherently unpredictable, Factor C thinks the world is comprehensible in principle but unknown to them at the moment. They are the strongest advocates of collecting more data (49), and least likely to think that a fire could strike anywhere (26).

#### *New Jersey descriptive sorts*

A 3 factor solution, accounting for 45% of the variance, was also chosen for the descriptive sorts. Factor X was defined by 8 individuals, and explained 19% of the variance. Seven individuals loaded on



Factor Y, accounting for 14% of the variance. Five individuals, accounting for 12% of the variance, made up Factor Z.

In the descriptive sorts, there was across the board uncertainty about, or indifference to, many of the statements relating to the law and practices of the Forest Fire Service. Sorters lacked strong feelings about whether the Forest Fire Service holds educational programs (3), whether fire policy is based on the best science (7), whether controlled burning was done under the safest conditions (11), whether there are management plans for wild areas (51), and whether controlled burners can be sued (9). Sorters were unsure whether fire management is centralized (23) or coordinated locally (24), though they tended to favor the latter. Indeed, during the sorts many participants verbally expressed their lack of knowledge about these issues.

#### **Factor X:**

Factor X expresses a general optimism about the effectiveness of the Forest Fire Service, as well as the community, in managing the risk of fire. Loaders on Factor X believe that unplanned fires are suppressed quickly (39), that those whose property presents a fire risk are made to fix the problem (19), that fires will not strike just anywhere (26), and that arson is uncommon (46). Factor X takes the most positive view of residents' responsibility about reducing fire risks (16) and adjusting their lifestyles to fire (50). They also have a positive outlook about how well the environment is protected (55), feeling that controlled burning mimics the natural fire regime (12) and that no parts of the environment -- which is, after all, a pyrophilic ecosystem -- are protected from all fires (27). In a general sense, Factor X represents a belief that Factor A is being successfully applied.

#### **Factor Y:**

Factor Y is also optimistic, but from a homeowner-centered viewpoint. Loaders on Factor Y do not feel that they have had to compromise other values about their home to be fire safe (17), and feel that risk reduction has focused on areas closest to homes (25). They are also more in agreement that they have other things to worry about besides fire (14). Factor Y is the only group that believes the media sensationalizes fire (2).

Loaders on factor Y find government intervention to be unobtrusive, tending to put less emphasis on the presence of building codes (15) and management plans for wild areas (51), and to feel that people are able to build wherever they want (29, 31). They agree that property owners are able to balance the risks and costs (21), and that people make their own homes fire safe rather than relying on others (22). Interestingly, this factor is both the most likely to believe that science is incomplete (6), and to believe that scientific information is accessible to individuals (5).

Nevertheless, Factor Y is more pessimistic about fire management's effects on the environment. Loaders on this factor have the lowest opinion of how well the environment is protected (55), of the degree to which controlled burning mimics the natural fire regime (12), and of the ability to protect both safety and the environment simultaneously (56).

#### **Factor Z:**

Loaders on Factor Z tend to see the current situation as one of active coping with a fire-prone environment. They believe strongly that a major, unstoppable fire could strike anywhere (26, 38) and that people accept a certain level of risk (30, 32) and adjust their lifestyles accordingly (50). They do not see fire management as being targeted to areas near homes (25) or tailored to local conditions (52). Yet they strongly disagree that controlled burns escaping from control is a substantial part of the fire risk (10).

Factor Z sees government as taking an active role in managing (though not eliminating) the fire risk. They believe that the Forest Fire Service is reliable (42), not underfunded (43), and communicating well with the public (20) -- though they are also the most concerned that bureaucratic barriers are getting in the way of fire management (41) and do not believe that the authorities would step in if someone's property presents a fire risk (19). In contrast to Factor Y, Factor Z sees the science as relatively complete (5) but not accessible to individuals (6). They also reject individualistic fire safety measures (22) and relying on farming and logging to reduce the fire danger (13).

#### *New Jersey comparison of descriptive and normative factors*

A cross-tabulation of the two factors shows some tendency for adherents of Factor A to also hold Factor X, and for adherents of Factor C to hold Factor Y. However, little weight should be put on this

finding since the sorters were not chosen randomly from the population of South Jersey residents, and because all possible combinations of normative and descriptive factor are represented.

	<b>Descriptive Factor</b>			
<b>Normative Factor</b>		<b>X</b>	<b>Y</b>	<b>Z</b>
	<b>A</b>	5	2	3
	<b>B</b>	2	2	1
	<b>C</b>	1	4	2

#### *New South Wales normative sorts*

[data collection not yet complete -- expected April-May 2006]

#### *New South Wales descriptive sorts*

[data collection not yet complete -- expected April-May 2006]

#### *New South Wales comparison of descriptive and normative factors*

[data collection not yet complete -- expected April-May 2006]

#### **Comparison of New Jersey and New South Wales**

[data collection not yet complete -- expected April-May 2006]

#### **General Conclusions**

[data collection not yet complete -- expected April-May 2006]

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