Research article

# Public values for integration in natural disaster management and planning: A case study from Victoria, Australia

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A B S T R A C T

Values can be useful for identifying what is important to individuals and communities, yet there is currently not a coherent way to conceptualize, identify, and organize the breadth of values that can be affected by a natural disaster. This research proposes a conceptual framework for how to conceptualize, identify, and organize values, and proposes a concrete, tangible value called the valued entity. The framework is applied in two studies of bushfire in Victoria, Australia: 112 submissions from individuals to the 2009 Victorian Bushfires Royal Commission and interviews with 30 members of the public in bushfire risk landscapes. Our findings suggest that: what people value ranges from abstract to concrete; prevalent abstract values include benevolence and universalism; prevalent mid-level valued attributes include natural attributes of landscapes and human life and welfare; prevalent valued entities are people and properties close to the person. Comparison between the two studies suggests people with more recent experience with bushfire refer less to the importance of natural places and natural attributes. The conceptual framework can act as a boundary object to facilitate researchers and policy-makers understanding the breadth of values affected by natural disaster events and management actions and how governance can better consider values at different scales.

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## 1. Introduction, problem description, and conceptual framework

Incorporating social values can support public accountability and equity in policy and planning for disasters (Novaczek et al., 2011), such as bushfires. Transparent, value-informed decision-making is called for (Lane and McDonald, 2002; Trainor, 2006). Agencies grapple with how to consider values in policy and planning and tend to focus on tangible, mappable assets (Kendal et al., 2015; Brown et al., 2015) in examining what to prioritize and protect in the event of disaster. However, people often value less tangible aspects of a landscape (Kendal et al., 2015) that are formed through relationship and ongoing experience (Beilin and Reid, 2015). Alongside, a tension exists between abstract academic conceptualizations of what is important to communities (Beilin and Reid, 2015), and concrete, practical applications of values (Kendal et al., 2015; Brown et al., 2015). Currently there is not a coherent

conceptual framework that can connect these abstract and concrete values. An approach is needed to conceptualize, organize, and communicate the breadth of values (Reser and Bentrupperbäumer, 2005) that is both relevant to policy and planning and reflects what is important to the public.

This interdisciplinary paper addresses the presented gap by proposing and utilizing a framework for conceptualizing and organizing values at risk to natural disaster from abstract to concrete that can be usable for policy and planning. Although research has begun to consolidate values in relation to abstractness (McIntyre et al., 2008; Kendal et al., 2015), it has not incorporated a full range of value concepts. McIntyre et al. (2008) organized different value concepts along a spectrum from less to more abstract, but did not include highly abstract, core values (Schwartz, 2012), or more concrete values such as one's home and special sites (as identified by Graham et al., 2013), and which can relate to asset identification in policy and planning. Building on McIntyre et al. (2008), we propose and utilize a framework to organize value concepts from abstract to concrete working with two bushfire studies in Victoria, Australia.

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### 1.1. How values are defined and used across the environmental social sciences

Values have multiple definitions and applications and a coherent understanding of their breadth is imperative to avoiding unexpected outcomes in planning. We review value constructs from the environmental social sciences to develop our conceptual framework (section 1.2) that brings together abstract and concrete value concepts (Fig. 1).

In social psychology (and used in environmental psychology), values are abstract, defined for understanding individuals, and can be aggregated to a societal scale. These *core values* are largely stable beliefs held by individuals and are ordered by relative importance (Rokeach, 1973; Schwartz, 1994; 2012). Schwartz (1994) presents a holistic typology of core values relating to all areas of life that are broadly categorized into: openness to change, self-transcendence, self-enhancement, and conservatism (see Section 1.2). Core values provide information on what is broadly important to individuals and can be aggregated to society.

Understanding values is critical for developing natural disaster plans the public supports because these values shape behavior and judgment. Values, in part, underpin individuals' social acceptability judgments of policy (Stankey and Shindler, 2006). In Values-Beliefs-Norm (VBN) theory, Stern (2000) uses an abstract concept, *value orientation* towards the environment, and argues that there is a connection between an individual's values and their environmental concerns, behaviors and policy acceptance. Value orientations also either directly or indirectly shape acceptability judgments towards forest management practices (Ford et al., 2009). Further, they help understand potential value conflicts due to value orientation discrepancies (Voyer et al., 2015). One somewhat less abstract concept, *assigned value*, defined as the importance of an object to a person (Brown, 1984), has been foundational to natural resource management (NRM) studies (eg Ford et al., 2009; Seymour et al., 2010). Seymour et al. (2010) propose that the value assigned to an environmental asset (Brown, 1984) influences individual behavior and argue for considering local community assigned values in environmental decision-making.

NRM has embraced a conceptual shift from seeing natural areas as commodities with monetary use (Rolston and Coufal, 1991), to having non-use value, which can provide insight for what to protect in natural disaster strategic planning. Bengston (1994) analyzed a transition from utilitarian values in forestry to the instrumental and intrinsic value of forests in forest ecosystem management. Later, Bengston and Xu (1995) developed a holistic typology of forest values: aesthetic, economic, recreation, biological diversity, spiritual, historic, future, subsistence, therapeutic, and cultural. This typology has been adapted for identifying community-based environmental values (eg Brown and Reed, 2000) and technologically advanced as public participation GIS (PPGIS) (eg. Brown and Reed, 2009). More recently, PPGIS has also been used to quantify abstract concepts, such as place attachment (Brown et al., 2015).

In NRM, what is important to people at the scale of natural landscapes is emerging as a key concept for bridging local views with policy and planning. Kendal et al. (2015) develop the *valued attribute* as a type of assigned value similar to how values are discussed in policy and planning, defined as "attributes or qualities of the physical environment … [where it is a] concept of value in the object realm that involves plural (multiple) attributes rather than singular preference relationships" (pp. Kendal et al., 2015, p. 225–226). There are five main categories of valued attributes: natural, social, experiential, cultural, and productive use attributes (Kendal et al., 2015). These valued attributes are similar to social values of ecosystem services, (Bryan et al., 2010), including cultural values such as tourism and cultural heritage, or landscape and ecosystem productivity (Daniel et al., 2012), including biogeochemical cycles, such as carbon sequestration. Identifying what valued attributes are important to the public can support the
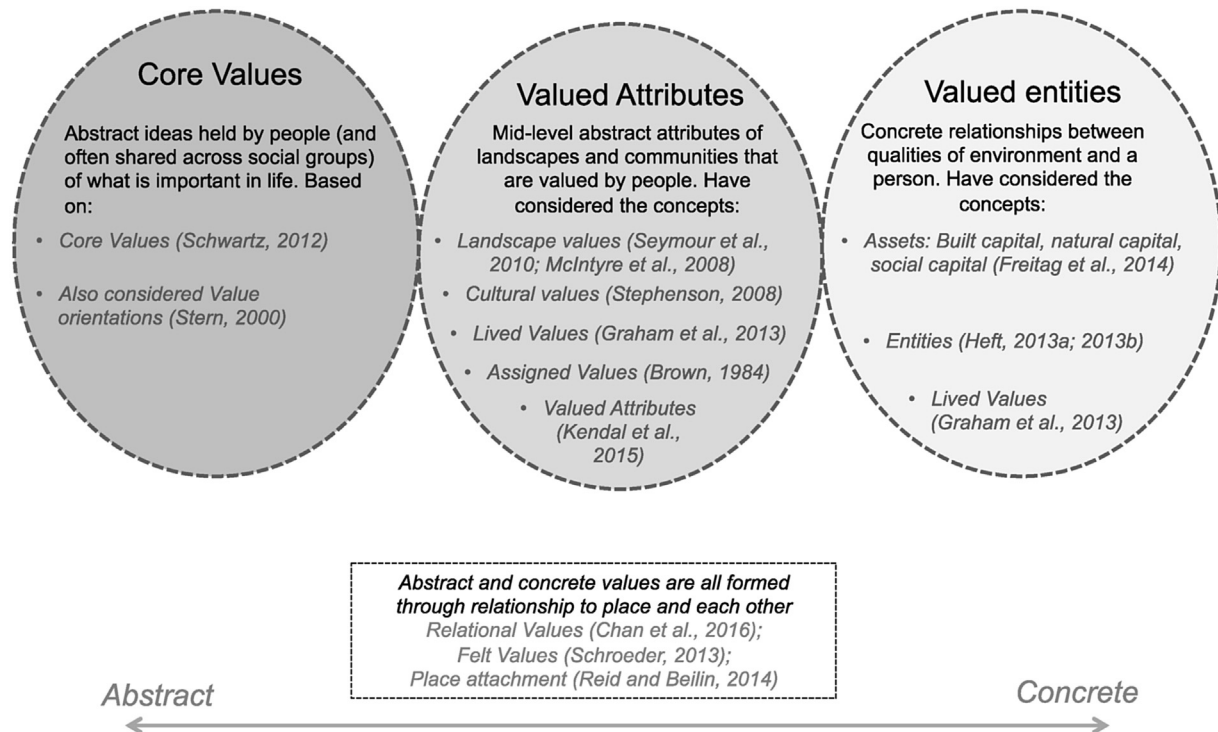


### Core Values
Abstract ideas held by people (and often shared across social groups) of what is important in life. Based on:
- *Core Values (Schwartz, 2012)*
- *Also considered Value orientations (Stern, 2000)*

### Valued Attributes
Mid-level abstract attributes of landscapes and communities that are valued by people. Have considered the concepts:
- *Landscape values (Seymour et al., 2010; McIntyre et al., 2008)*
- *Cultural values (Stephenson, 2008)*
- *Lived Values (Graham et al., 2013)*
- *Assigned Values (Brown, 1984)*
- *Valued Attributes (Kendal et al., 2015)*

### Valued entities
Concrete relationships between qualities of environment and a person. Have considered the concepts:
- *Assets: Built capital, natural capital, social capital (Freitag et al., 2014)*
- *Entities (Heft, 2013a; 2013b)*
- *Lived Values (Graham et al., 2013)*

*Abstract and concrete values are all formed through relationship to place and each other*
*Relational Values (Chan et al., 2016);*
*Felt Values (Schroeder, 2013);*
*Place attachment (Reid and Beilin, 2014)*

*Abstract* ←————————————————————————→ *Concrete*

**Fig. 1.** Visual representation of conceptual framework. Organization of different value constructs from abstract to concrete. The Relational and Felt Values are represented by a dashed grey line encompassing the three value constructs to suggest that all of the values are formed through relationship.