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Cultural theory of risk as a heuristic for understanding perceptions of oil and gas development in Eastern Montana, USA

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ABSTRACT

This paper applies Douglas' cultural theory of risk to understand perceptions of risk associated with oil and gas development in eastern Montana. Based on the analysis of interviews with 36 rural residents, findings show the dominant perception of risk is most closely aligned with an Individualist worldview. Despite direct experience with oil or wastewater spills, most interviewees described spills as "no big deal", viewed nature as resilient, and felt that the economic benefits outweigh negative impacts. Cultural theory was a useful heuristic for understanding this dominant worldview, as well as identifying points of deviation. For example, interviewees discussed the benefits of landowner associations – a more Egalitarian approach to dealing with oil companies. Some landowners relied on external authorities (e.g., sheriff) when dealing with oil companies, revealing a Hierarchical approach to issues they face. Interviewees expressed frustration with the lack of enforcement of existing regulations, which can be interpreted as either support for – or indictment of – Hierarchical solutions. While the Individualist worldview is dominant, our qualitative analysis reveals the complex tensions at work among rural residents. The results suggest areas where policymakers, advocacy groups, and residents may find common ground to address potential environmental and health risks.

1. Introduction

Oil and gas development poses potential risks to environmental and human health — especially when spills occur (Adgate et al., 2014; Colborn et al., 2011; Vengosh et al., 2014). Yet, perception of risk varies among individuals and communities (Boudet et al., 2014). While several studies have carefully catalogued the positive and negative impacts of oil and gas development (Jacquet, 2014; Ellis et al., 2016), fewer studies have sought to understand the socio-cultural factors that underpin differences in risk perception (Malin, 2014; Fernando and Cooley, 2016; Veenstra et al., 2016; Willow, 2014). This paper applies the cultural theory of risk and the associated grid-group typology (Douglas and Wildasky, 1983; Schwarz and Thompson, 1990) to understand the perceptions of 36 residents in six oil-rich counties in eastern Montana (MT). We are particularly interested in identifying and

understanding the dominant cultural worldview of eastern Montanans and how this relates to views of nature and perceptions of oil and gas development. For this, we turn to Douglas' cultural theory of risk.

2. Literature review: cultural theory of risk

Mary Douglas and her colleagues developed the cultural theory of risk in the early 1980s as an alternative to the dominant technical, rational, and psychological approaches used to assess risk perception (Douglas and Wildasky, 1983; Slovic, 1987; Starr, 1969; Tansey and O'Riordan, 1999). Cultural theory views perception of risk as a social process whereby some risks are recognized while others are suppressed depending on one's values and preferred form of social order (i.e., worldview). As Wildasky and Dake (1990) explain, "individuals choose what to fear (and how much to fear it), in order to support their way of

life"[1] (p. 43). According to Douglas (1992), risk is a social construct where individuals assess the same dangers but come to different opinions of risk based on underlying cultural biases associated with their way of life. Cultural theory of risk is, by definition, focused on collective, social, and shared conventions that influence individual perceptions. Cultural theory posits that risk perception is a "culturally standardized response" (Douglas, 1992, p. 40). In short, socio-cultural context is the primary explanation for different perceptions of risk.

While "risk" can be defined as "the probability of an event combined with the magnitude of the losses and gains that it will entail" (Douglas, 1992, p. 40), Douglas notes that "acceptable risk" (i.e., socially desirable notions of safety) is always a political question and never a probability. Cultural theorists assert that there is no set mechanism or formula for determining the level of *acceptable* risk in a society. Acceptable risks are determined based on a particular rationality and notions of what is reasonable (Douglas, 1992). To aid in cultural analysis and make sense of competing preferences and aversions to different risks, a typology is used which classifies risk perceptions into four distinct ways of life or worldviews. Each worldview is differentiated by grid, which is the degree to which social interactions should be constrained by rules and norms, and group, which indicates the degree to which people are incorporated or bonded into social groups. Another way of summarizing these positions is to think of the group axis as answering the question "who am I?" (or "who am I with?") and the grid axis as answering the question "how should I behave?" (Schwarz and Thompson, 1990, p. 6; Tansey and O'Riordan, 1999; Wildavsky, 1987). The resulting quadrants describe four cultural ways of life or worldviews regarding risk: 1) Fatalists (Low Group, High Grid); 2) Individualists (Low Group; Low Grid); 3) Hierarchists (High Group; High Grid); and 4) Egalitarians (High Group; Low Grid).

Using this grid-group typology, Schwarz and Thompson (1990) overlaid four contradictory views of nature to highlight how the worldviews used in cultural theory fit with different perceptions of the resiliency or fragility of the natural world. Their typology suggests different management options to deal with the different cultures of risk perception in regards to environmental hazards (Fig. 1).

For example, Individualists prioritize individual freedom and responsibility (Low Group) over associations and alliances. In terms of behaviors, they favor market-based solutions and self-policing over top-down regulations (Low Grid). As this example demonstrates, cultural preferences shape understanding as well as the appropriate institutional arrangements and policies. According to Schwarz and Thompson (1990), the Individualist worldview corresponds with a perspective of nature that is benign and robust, therefore able to tolerate and absorb the negative impacts from society. People who are aligned with the individualist view are likely to be dismissive of environmental and technological risks because restrictions to personal freedoms would needlessly impede the beneficial extraction and use of natural resources. Thus, faith in nature's resiliency is a necessary precondition for this worldview's coherence.

Egalitarians are also Low Grid, meaning they resist externally imposed controls and restrictions on choice; they favor small-scale organizations and fear that external, hierarchical intrusions will bring about social differentiation, which conflicts with their goal of fostering egalitarian social relations. In stark contrast to Individualists, Egalitarians are more closely bonded and prioritize collectivism, cooperation, and communal forms of organizing (High Group). They want the rules to apply to everyone equally. They view nature as ephemeral and highly fragile, which means even small disturbances to nature's balance should be prevented, as they may result in catastrophic outcomes (Schwarz and Thompson, 1990). Egalitarians promote this precautionary principle
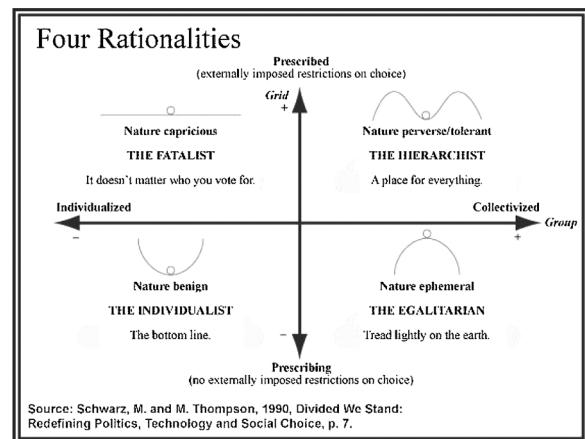
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[1] For cultural theorists, a 'way of life' is a set of values and ideas about social order, as described in Fig. 1. Ways of life are also called worldviews, cultural types, and/or political cultures in the literature.

Fig. 1. Schwarz and Thompson's (1990) diagram of Cultural Theory of Risk's Grid-Group Typology and Views of Nature.
Image from Silverman, 2010.

and strive to protect the most vulnerable members of society from environmental and technological risks.

Hierarchists prefer highly structured organizations with clear rules and well-defined, ranked roles that lead to social differentiation; like a military organization, they are willing to defer to institutionalized authority and bureaucratic government (High Grid). Social bonds and responsibilities are strong among them (High Group). They view nature as "perverse/tolerant" (Schwarz and Thompson, 1990, p. 10). This particular phrasing emphasizes that their view of nature is resilient, *but only within limits* (Schwarz and Thompson, 1990). Therefore, Hierarchists see a need for strict regulations and monitoring to avoid reaching a tipping point that would disrupt a perceived "balance" in nature. Environmental and technological risks are best assessed and managed by experts.

Lastly, the Fatalists are the marginal members of society with weak social ties (Low Group), yet experience many social forces outside of their control (High Grid). Slaves in the antebellum South provide one example of fatalists (Ellis and Wildavsky, 1990). Schwarz and Thompson (1990) use the example of a chronically unemployed person, who wanders from "one welfare centre to another *ad infinitum*" (pg. 8). Unable to influence events in their life, fatalists are unlikely to participate in political life and simply "endure" whatever comes their way. This fits with a view that nature is capricious and therefore cannot be managed.

It is notable that, for Douglas, no individual, firm, or community sits entirely within one cultural worldview or the other, rather each is more or less Hierarchical, Individualist, Egalitarian, or Fatalistic to varying degrees (Douglas, 1992). Indeed, several authors suggest that the grid-group typology should only be used as a heuristic – a tool for thinking about social phenomenon (Malsch et al., 2012; Tansey, 2004; West et al., 2010). Tansey (2004) argues that recent attempts to quantify cultural theory have converted what is a theory of institutional forms into "a psychological theory of risk perception" which is applied to the individual, rather than to a society (p. 27). We use the grid-group typologies as a guide to analyze perceptions of oil and gas development and understand why many eastern Montanans view oil and gas development as an acceptable risk.

3. Case study

Eastern Montana is 'Big Sky Country,' known for its wide-open landscapes and the western sensibilities that embody the pioneer spirit: independence and grit. This stark and isolated landscape largely depends on the Missouri and Yellowstone River Basins to provide the necessary moisture to sustain its rural agricultural economies (Wyckoff,