An Exploration of Environmental Values in the Asian, Developing-World Context of Dong Van Karst Plateau Global Geopark, Vietnam

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AN EXPLORATION OF ENVIRONMENTAL VALUES IN THE ASIAN, DEVELOPING-WORLD CONTEXT OF DONG VAN KARST PLATEAU GLOBAL GEOPARK, VIETNAM

A Thesis
Presented to
the Graduate School of
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In Partial Fulfillment
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Master of Science
Parks, Recreation, and Tourism Management

by
Madeline Duda
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Accepted by:
Robert B. Powell, Committee Chair
Jeffrey C. Hallo
Brett A. Wright
ABSTRACT

It has been generally assumed that individuals’ environmental values are influenced by culture, experiences, social norms, economic standing, among others. However, to date research on held environmental values has focused primarily on the developed world context. To address this gap, this research explores the environmental values of local people in a developing world context, specifically the Dong Van Karst Plateau Global Geopark (DVKPG) in Ha Giang Province, Vietnam. To examine individual’s value orientation related to sense of place and held environmental values we asked residents of DVKPG a set of two open-ended questions: (1) what is most important to you about where you live, and (2) from an environmental standpoint, what is most important to you about where you live? To further elicit respondents’ underlying values, we followed up the second question by asking, “why?” We used Ardoin’s (2006) four Sense of Place dimensions and Kellert’s (1996) typology of environmental values to categorize residents’ responses. Results suggest that residents’ value orientation related to place focused mostly on the economic and political aspects, followed by the physical environment, and the sociocultural environment. Further exploration of environmental values reflected in responses suggested that a majority held utilitarian values, supporting widely held assumptions that the rural poor hold high utilitarian values. However not all responses coded as ‘utilitarian’ were the same and were focused around meeting basic needs (72%) and enhancing quality of life (36%). In addition to the theoretical benefit, this exploration of environmental values in a developing-world context also provides a better understanding of the people living within Dong Van Karst Plateau Global Geopark to inform future conservation planning and outreach efforts.
ACKNOWLEDGMENTS

Thank you to my committee Chair, Dr. Bob Powell and committee members Dr. Jeffrey C. Hallo and Dr. Brett Wright for their support, guidance, and feedback. Thank you to Dr. James H. Spencer and Dr. Tim Green of Clemson’s Department of Planning, Development, and Preservation for the opportunity to work on the larger project this thesis was a part of that made my research possible. Thank you to the five research assistants who collected data for this thesis, Hung Viet Bui, Thành Đỗ Đức, Thu Nguyen, Nguyen Kim Anh, and Phu Anh Pham, as well as Kathleen Kraft for helping to formulate the line of questioning this research used to elicit environmental values and her role in collecting data. Thank you to the Clemson Department of Parks, Recreation, and Tourism Management for the opportunity to learn and grow my passion for this field. Lastly, thank you to my family for always going above and beyond, and often out of their way to support me.
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INTRODUCTION

In the last 40 years, environmental values have become a topic of interest due to the rise of environmental issues and challenges and the proposed relationship between values, attitudes, and behaviors (Dunlap & Van Liere, 1972; Disch, 1970; Stern, Dietz, & Guagnano, 1994). Applied to natural resource management, research relating to environmental values has generally focused on measuring either the value individuals ‘assign’ to an ecosystem service, often in monetary terms, or individuals’ ‘held’ values (Satterfield, 2002). Kellert (1996) defines held environmental values as a set of closely related attitudes that reflect how people attach meaning to and derive benefits from the natural world. It has been argued that conservation is equally about people as it is about the biology of ecosystems, and incorporating social science data such as individuals’ held environmental values into conservation policy and management can complement biological data to support effective policy and practice (Mascia et al., 2003). Further, when local communities and perspectives are not included in the conservation process, efforts have often been less successful (Ardoin, 2014). In this way, studies of environmental values can be used both to inform management decisions that involve trade-offs between environmental and social benefits, as well as help tailor management strategies to the local social context (Jones et al., 2016). A growing body of literature has examined held environmental values in order to better understand the ways people relate to the natural environment with the practical objective of informing conservation management and outreach efforts (Satterfield, 2002). Most of these studies have generally focused on the developed world context (Corral-Verugo & Armendáriz, 2000; Gooch, 1995; Satterfield, 2002). Some research has examined held environmental values in the developing world context such as studies that have sought to explore
whether the structure of environmental values differs cross-culturally (Bechtel et al., 1999; Betchel, Corral-Verugo, & Pinheiro, 1999; Betchel et al., 2006; Corral-Verugo & Armendáriz, 2000; Boeve-de Pauw & Van Petegem, 2011) or to measure attitudes toward or predict support for conservation projects and policy (Rauwald, & Moore, 2002; Mehta & Kellert, 1998). However, few qualitative studies have explored held environmental values generally in the developing world context. Additionally, it has been assumed that the rural poor hold high utilitarian values, but little empirical data has been collected to support this assumption. Not only is little empirically known regarding environmental values in the developing world, little in particular is known about the values of the large population living in the vast, remote area of Dong Van Karst Plateau Global Geopark (DVKPG) in Vietnam. To explore environmental values of the rural poor in a developing world and Asian context, we interviewed residents of DVKPG. We used a line of questioning to elicit residents’ environmental values that first explores general value orientations relating to Sense of Place in order to frame our more in-depth exploration of held values and specifically apply it to the DVKPG context.

In the developing world context of DVKPG, understanding the environmental values of residents is especially important for park management and planning purposes. Unlike in some areas of the world where humans are excluded from living in parks, there is a large population living in DVKPG. Understanding how residents value and relate to where they live and the natural environment can inform government interventions, development strategies, and outreach efforts. In addition, this exploration of environmental values in a developing world context provides a theoretical benefit in that it examines long-held assumptions regarding the rural poor’s utilitarian attitudes and values toward the natural world.
RESEARCH SITE

Geoparks are areas of international geological significance that are holistically managed to preserve geological heritage, support biodiversity conservation, educate the public on geologic and environmental concepts, and promote local sustainable socio-economic development through tourism (UNESCO, 2016; UNESCO, 2006; Azman et al., 2010; McKeever & Zouros, 2005). The geopark designation is managed by the United Nations Environmental, Scientific, and Cultural Organization (UNESCO), which supports the Global Geoparks Network. The designation recognizes the inextricable links between natural, cultural, and social heritage, and local communities are meant to have a role in the management of geoparks that is more explicit than in national parks or protected areas (UNESCO, 2006; Farsani, Coelho, & Costa, 2011).

Designated in 2009, Dong Van Karst Plateau Global Geopark (DVKPG) is located in northeastern Vietnam, about 320km from Hanoi (Viet Ha et al., 2013; Global Geoparks Network, 2011). The 2,380km$^2$ park borders China and includes area within four administrative districts in the Ha Giang province: Quan Ba (557.2 km$^2$), Yehn Minh (785.2 km$^2$), Dong Van (460 km$^2$), and Meo Vac (577.6 km$^2$) (Viet Ha et al., 2013). DKVP is the first member of the Global Geoparks Network in the country, and was the outcome of almost 20 years of Belgian-Vietnamese cooperative geological research in the region (Dusar et al., 2011).

DVKPG has at least 130 inventoried geological sites that represent 500 million years of the Earth’s history, from the middle-Cambrian to the Cenozoic period including 1261 karst sinkholes and 62 caves (Global Geoparks Network, 2011; Viet Ha et al., 2013). One characteristic of Karst limestone is that it is very fragile and karst dominated regions are vulnerable to natural disasters including flash floods and technological
issues such as water loss/shortage and foundation problems (Dusar et al., 2011).

Because karst regions in Vietnam have limited arable land surface, they are consequently also generally the poorest (Dusar et al., 2011) including DVKPG. About half of the 230,000 people living in the park live below the poverty line. The population of DVKPG is very diverse with over 17 different ethnic groups; the Hmong being the largest (31.3%), then Tay (24.94%), Dzao (15.16%), Kinh (12.13%), and Nung (9.69%) (Global Geoparks Network, 2011). Because of the poverty in the region, creating alternative livelihoods such as tourism and forest management has thus become vitally important and the Geopark designation supports and promotes economic growth through sustainable tourism development (Dusar et al., 2011; El Wartiti et al., 2009; Farsani, Coelho, & Costa, 2011).

To receive Geopark designation, a park must meet certain criteria and is then recertified every four years by the Global Geopark Network (UNESCO, 2016). It is not only through successfully preserving important geological sites that geoparks keep their designation, but also through using these sites to actively promote and communicate “the importance and significance of protecting the Earth’s geodiversity through actively engaging with the local communities” (UNESCO, 2016, p. 3). Because many of the principals of geopark management are based upon knowledge and understanding of the population living within the park boundaries (Farsani, Coelho, & Costa, 2011), we undertook this study to examine the large population living within DVKPG, including their value orientations relating to Sense of Place (SOP) and environmental values.
CHAPTER ONE
LITERATURE

Value orientations relating to Sense of Place (SOP)

Sense of Place has been defined as a “holistic concept that focuses on the
subjective and often shared experience or attachment to the landscape, emotionally or
symbolically” (Galliano & Loeffler, 1999). It has also been described broadly as a link
between geographic locations and subjective experiences (Galliano & Loeffler, 1999;
Jorgensen & Steadman, 2001). Though there is not a sense of place model that is
commonly accepted (Ardoin, Schuh and Gould, 2012), Ardoin (2006) argues for a
holistic view that recognizes the importance and interconnectedness of four aspects of
place to which people attach value and meaning. The four value
orientations/dimensions Ardoin (2006) posits include biophysical, sociocultural, political-
economic, and psychological (Table 1.1). SOP offers a construct for examining and
understanding social and community-based perspectives such as value orientations, and
how these might relate to individuals’ held environmental values.

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<td><strong>Biophysical</strong>: The physical environment that sets the stage for human-environment interactions. Includes both the natural and built environment (Ardoin, 2006).</td>
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<td><strong>Sociocultural</strong>: Community context in which humans interact with places; a cultural backdrop for understanding and interpreting places, includes the individual functioning as part of society and the cultural and symbolic elements that sustain society’s views of and beliefs related to place (Ardoin, 2006).</td>
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<td><strong>Political-economic</strong>: Economies and politics that reflect localized ways-of-being in the landscape; the context which constantly reshapes places, people, and power structures that operate within them (Manzo, 2003; Stokowski, 2002; Ardoin, 2006).</td>
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<td><strong>Psychological</strong>: How humans experience places – first and most directly – internally, as individuals. Includes psychological concepts of place identity and place dependence, which both contribute to place attachment (which moves beyond the purely psychological to include sociocultural components) (Ardoin, 2006).</td>
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It has been suggested that studying such social and community-based perspectives can help inform conservation by providing a platform on which conservation initiatives can build (Ardoin, 2014). ‘Value orientations’ conceptualized as clusters of values falling between values and attitudes in the value-attitude-behavior model (Chase et al., 2016; Homer and Kahle, 1988; Jones et al., 2016) offer one construct that has been used to augment understanding of the environmental attitudes and behaviors of the public. These have been conceptualized as broadly as the distinction between egoistic, altruistic, and biopheric worldviews (de Groot and Steg, 2008). Though, they are often applied to a particular topic such as wildlife conservation (Jones et al., 2016; Vaske and Donnelly, 1999). Wildlife-specific value orientations have been used to explore the wildlife-related interests of diverse publics, and have generally been divided into a domination wildlife value orientation (WVO) and a mutualism WVO, e.g., those who believe the needs of humans are more important than those of wildlife and view wildlife as a resource primarily for human benefit, vs. those who believe wildlife are deserving of caring or rights similar to humans (Manfredo, Teel, and Henry, 2009; Teel and Manfredo, 2009; Chase et al., 2016). Some authors have mapped value orientations toward natural resources in general along a related continuum from anthropocentric (that nature’s value is correlated to its capacity to serve human ends) to biocentric (that nature is valuable simply because it is alive, good in its own right and deserving of moral consideration) (Jones et al., 2016; Steel et al., 1994; Fulton et al., 1996; Vaske and Donnelly, 1999). WVOs specifically have been defined as “networks of basic beliefs that organize around values and provide contextual meaning to those values in relation to a particular domain such as wildlife” (Teel and Manfredo, 2009, 129). This paper uses Ardoin’s (2006) dimensions of place as value orientations to
provide contextual meaning to the residents of DVKPG’s held environmental values as they relate to their community.

**Environmental values**

The term ‘value’ has been conceptualized and defined in many ways in different disciplines (Brown, 1984; Schroeder, 2011; Farber et al., 2002). Applied to the natural environment, values have become a topic of interest due to their proposed relationship with attitudes and behaviors and humans’ role in environmental degradation (Dunlap & Van Liere, 1972; Disch, 1970; Stern, Dietz, & Guagnano, 1994; Dickenson, 2000). Prominent disciplines that have considered environmental values include philosophy’s body of work relating to environmental ethics (Dietz, Fitzgerald, & Shwom, 2005; Reser & Bentrupperbäumer, 2005), psychology and social psychology’s examination of the relationship between environmental values and environmental attitudes and behaviors (Reser & Bentrupperbäumer, 2005), and sociology’s study of the differences in environmental orientation as they relate to demographic factors (Reser & Bentrupperbäumer, 2005). Additionally, economics has sought to apply monetary value to the environment to calculate ‘total economic value’ (TEV) and proposed means of contingent valuation and valorizing ecosystem services (Bateman & Willis, 1999; Dietz et al., 2005; Satterfield, 2002; Costanza, 1998, and Perrings et al, 1995; Brown; 1984; Gregory, 1999).

Satterfield (2002) divides the environmental values literature into two broad categories that are useful for understanding the breadth of work relating to the topic. These two categories are *axiomatic* and *antiaxiomatic or relativistic* (Satterfield, 2002). Axiomatic approaches prioritize some values as “better, “truer,” more important, more
self-evident, and/or more intellectually defensible than others, such as is attempted in environmental ethics (Satterfield, 2002). These include the work of philosophers such as Holmes Rolston (1988; 1994), Arne Naess (1989), Mark Sagoff (2009), and Paul Taylor (1986) as well as the work of ecologists such as Costanza (1998), and Perrings et al. (1995) to valorize ecosystem services (Satterfield, 2002). Anti-axiomatic or relativistic approaches on the other hand do not seek to assign values any relative weight, but rather acknowledge that people might hold many different values to differing degrees (Satterfield, 2002). These include much of the work done in psychology and social psychology as well as sociology.

Environmental values have been studied in the anti-axiomatic tradition, particularly in the social sciences with the practical objective of directly or indirectly informing natural resource management by capturing information about the public (Schroeder, 2011; Satterfield, 2002). This tradition includes studies of values held or assigned by a particular population (Satterfield, 2002). Studies of assigned environmental values generally ask individuals to assign ‘betterness’ to one thing over another in a particular context in what are known as “expressed preferences approaches” (Brown; 1984; Gregory, 1999). These approaches often take the form of contingent valuation surveys, which employ “willingness-to-pay” and “willingness-to-accept” protocols (Perrings et al., 1995; Thirlwal, 1993). Overall, such studies accept the economic assumption that dollars are the most neutral metric for measuring value and that something is of instrumental value to the extent that an individual is willing to pay for it to satisfy a preference (Hargrove, 1992).

In contrast with economic conceptions of value, some environmentalists and philosophers such as Arne Naess and Paul Taylor argue that the environment has
intrinsic value, unrelated to humans and/or that non-human species possess moral rights or are worthy of moral consideration. This tradition, coupled with the psychological and social sciences’ tradition of studying attitudes and beliefs has sparked nonmonetary anti-axiomatic studies of value, most of which emphasize a ‘held’ (underlying ideals that guide decision making and preferences), rather than assigned definition of value (Schroeder, 2011; Satterfield, 2002).

Many classification systems and frameworks for held environmental values have been proposed (Farnham, 2007). These include typologies that broadly distinguish between environmental values as anthropocentric and biocentric such as Dunlap & Van Liere’s (1978) New Environmental Paradigm (NEP) Scale and Bogner and Wiseman’s (2003) 2MEV model. Teel and Manfredo (2008) also follow this tradition and distinguish between domination and mutualism orientations toward wildlife and wildlife management. Instrumental and intrinsic is a second broad dichotomy of environmental values, distinguishing between those things that have value because they are a means for acquiring or accomplishing something else (for instance, bees are instrumentally valuable in the environment because of their role in pollination), and those that are valuable in and of themselves (‘intrinsically’ good. For example, someone might say bees have value simply because they are alive) (Bateman & Willis, 1999). Hargrove (1992) and Bateman & Willis (1999) present a general value typology by juxtaposing an anthropocentric and non-anthropocentric poled axis with an instrumental and non-instrumental poled axis. This results in four quadrants: anthropocentric instrumental value; anthropocentric intrinsic value; non-anthropocentric instrumental; non-anthropocentric intrinsic.
A number of other authors including Dietz, Fitzgerald, & Shwom (2005), Schultz (2000, 2001), Stern and Dietz (1994), Petulla (1980), and Kempton, Boster, and Hartley (1995), have identified various tripartite structures of environmental values, such as egoistic, altruistic, and biospheric (representing concern for the self, others, and the biosphere, respectively). While broad categories and continuums can be useful for understanding environmental orientation, more detailed typologies allow for a nuanced look at people and their held values. Two more detailed typologies of environmental values are those conceived by Holmes Rolston III (who has refined his typology in several iterations (he identified 10 values of nature in 1981 and expanded his typology to 12 values in 1985) and Stephen Kellert (1976; 1996), who developed a typology of 9 values as a way of describing “basic perceptions of animals” (Kellert 1993, 43) and expanded it to study held values and human-nature relations (e.g., Kellert 1981; Kellert 1984; Kellert, 1985; Kellert, 1986; Kellert, 1996; Kellert, 2005).

Rolston’s typology has been adapted and used for many purposes, including Brown & Reed’s (2000) investigation of the relationship between attitudes toward forest management actions and forest values (in this case, specifically Rolston and Coufal’s 1991 iteration of 13 values). Additionally, Brown has used a similar framework of landscape and/or forest values along with GIS analysis to systematically integrate values and biophysical landscape information (e.g., Brown, 2005). While Roston’s typology is considered useful for exploring humans’ relationship to the natural world, some of his value categories have been seen as conceptually overlapping (Farnham, 2007) or eliciting the importance of context (i.e., the environment is valued for a particular use, such as recreational) rather than eliciting the underlying value.
Kellert’s (1996) typology of nine environmental values is described as a framework for understanding basic ways people attach meaning to and derive benefits from nature. Notably, these 9 values are all thought to exist and manifest in various degrees in individuals based on experience (Kellert, 1996) (Table 1.2).

Table 1.2. Kellert’s (1996) environmental values typology

| Utilitarian: Practical and material exploitation of nature. |
| Naturalistic: Direct experience and exploration of nature. |
| Scientific: Systematic study of structure, function and relationship in nature. |
| Aesthetic: Physical appeal and beauty of nature. |
| Humanistic: Strong emotional attachment and “love” for aspects of nature. |
| Symbolic: Use of nature for language and thought. |
| Moralistic: Spiritual reverence and ethical concern for nature. |
| Dominionistic: Mastery, physical control, dominance of nature. |
| Negativistic: Fear, aversion, alienation from nature. |

Kellert’s typology has been applied to a range of contexts, including attitudes toward whales and whaling, the proposed reintroduction of black-footed ferrets in Montana, as well as the relationship between community health and the built environment (Kellert, 2005). It has been used to explore cultural differences between Western and Eastern societies regarding various environmental issues (Kellert, 1996; Kellert, 2005) as well as in the developing world context of Botswana (Mordi, 1991). Kellert’s (1996) typology has also been used in the past as a means of categorizing qualitative responses to explore affective responses to the tourism environment in Antarctica (e.g., Powell et al., 2012; Powell et al., 2016).

For purposes of this exploratory research, we used Ardoin’s dimensions of Sense of Place as a framework for exploring DVKPG residents’ overall value orientation related to their communities. Kellert's typology provided the primary framework for our exploration of residents’ of DVKPG held environmental values.
CHAPTER TWO

METHODS

This investigation was part of a larger study that examined residents’ of Dong Van Karst Plateau’s perceptions of tourism, beliefs regarding the economic diversity, social capital, and ecological resilience of their communities, their level of preparedness to perform activities associated with community-based tourism, and attitudes toward wildlife and predators to inform regional planning efforts (Powell, Krafte, & Duda, 2015).

To explore environmental values as part of this larger study, we asked a series of two open-ended questions to residents of DVKPG: (1) what is most important to you about where you live, (2) and from an environmental standpoint, what is most important to you about where you live? And to further elicit respondents’ held values, we followed up the second question by asking, “why?”

We also investigated respondents’ reliance on the natural environment for food and income. Residents indicated their reliance on the natural environment for both food and income on a 5-point scale: “completely (5)”, “a lot (4)”, “somewhat (3)”, “little (2)”, and “not at all (1)”.

Research Team: Four researchers and 5 Vietnamese research assistants aided in data collection. Training for research assistants included sampling procedures, survey research, data collection instruments, interviewing skills, and ethical treatment of human subjects.
Sample and procedures

Village selection: To explore residents' value orientations related to SOP and environmental values we approached households in 5 villages in each of DVKPG's 4 districts. Within each district, the Peoples' Committee of Ha Giang designated certain villages as “cultural tourism sites” to promote tourism development. Of the 5 villages per District we sampled, 4 were rural villages, 2 of which had “cultural tourism site” designation and 2 did not have this designation; and 1 was an urban center. Villages needed to have at least 40 households and we also requested that the location maximize geographic distribution across each district as well as cultural variation. The Peoples’ Committee in each District ultimately selected the villages for this study based on our criteria.

Household sampling: Researchers conducted household surveys in four rural villages (two of which had “cultural village” designation) and one urban community in each of the 4 Districts in DVKPG. The first two villages in the District of Quan Ba were used as a pilot study to investigate the reliability of implementation of surveys/interviews. Upon arriving in each village, the research team walked the area and surveyed the distribution of households. Systematic household sampling procedures were developed and agreed upon prior to the start of data collection based on number of households and accessibility. Following recommendations by Chambers (1983) for rural household sampling, the team started in a central position based on observed village layout, and sent research assistants in different directions into the village from this point. We then systematically selected every k\textsuperscript{th} household (K was unique for each village and was developed by dividing the number of houses by 20). If an adult was home we asked if
they were willing to participate in the research. If people were not home or did not speak the Kinh language (the predominant Vietnamese dialect), we moved to the next immediate household. Surveys were given orally in each household and each of the 5 research assistants collected between 3 and 5 surveys per village.

At the conclusion of data collection, 414 individuals participated in the study. Response rates approximated 100% in most villages. Persons that denied our request usually indicated that they did not speak Kinh. Though every respondent was asked the qualitative questions to elicit environmental values, a subsample were recorded using three audio recording devices. The three recording devices were assigned to Vietnamese research assistants administering surveys and were systematically rotated each day so that all assistants collected recording data. In total, 171 high-quality recordings of open-ended questions were collected. We used this recorded data for this exploration of environmental values.

**Data Analysis**

Only the 171 recorded qualitative responses and corresponding demographic data were analyzed for this research. All 171 recordings were transcribed verbatim in Vietnamese and then translated into English by Vietnamese research assistants. Once translated we used a-priori themes generated from Ardoin (2006) and Kellert (1996) to code the responses following Miles and Huberman’s (2013) recommendations for qualitative data content analysis.

To code responses to the first open-ended question, “What is most important to you about where you live?” we used Ardoin’s (2006) four dimensions of Sense of Place because they provide a broad value orientation related to place. The four dimensions
include biophysical, sociocultural, political-economic, and psychological and responses were coded into all categories that were identified. Final operational definitions were refined based on an inductive analysis of the data to complement the deductive coding derived from the literature (Table 2.1).

Table 2.1. Sense of Place categories and definitions for Dong Van Karst Plateau Global Geopark context

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<th>Biophysical: Responses reflect the importance of the actual physical environment or setting, and all that occur in that setting, including the landscape and plant and animal species in the ecosystem (adapted from Ardoin, 2006). Responses might include that houses or the forest are most important things to the respondent about where they live.</th>
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<td>Sociocultural: Responses reflect the importance of cultural practices and demographic conditions (adapted from Ardoin, 2006). Includes community attachment, family, education, and healthcare. Responses might include that the people also living in the area or having a good social support system are the most important aspect(s) to a respondent about where they live.</td>
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<tr>
<td>Political-economic: Responses reflect the sentiment that job opportunities, financial considerations, and political boundaries are important aspects of where respondents live (adapted from Ardoin, 2006). Responses might include that respondents want a better life / living conditions for themselves or their family.</td>
</tr>
<tr>
<td>Psychological: While arguably a derivative of or symptom connected to one of the other three underlying categories, which represent aspects of a place, responses coded as psychological reflected that a respondent felt that feelings or emotions, peace of mind, or a mental state were most important to them about where they live (adapted from Ardoin, 2006).</td>
</tr>
</tbody>
</table>

We adapted Kellert’s (1996) typology of environmental values and corresponding operational definitions for the Asian and developing-world context of DVKPG (Table 2.2) following procedures outlined by Powell et. al 2012 and Powell et. al, 2016 to code residents’ responses to the second open-ended question and follow-up, “From an environmental standpoint, what is most important to you about where you live?” and “Why?” Kellert’s (1996) values are conceptualized to be distinct and all are thought to exist in varying degrees in different people. An individual’s response might reflect more than one distinct value and we categorized them accordingly into all categories deemed present.
**Utilitarian.** For purposes of this research, a utilitarian response indicates that nature is important insofar as it benefits humans by meeting basic needs such as food, income, or for health (Kellert, 1996). People with a strong utilitarian perspective may communicate that where they live is important to them because it provides them with food and livelihood. Responses coded as utilitarian might include that water in the local area is clean and this is important because it is correlated with good human health.
**Naturalistic.** A naturalistic response reflects humans’ desire to be and/or comfort being immersed in nature (Kellert, 1996). In the context of Dong Van, the responses should reflect a desire for direct experiences with wildlife or to explore nature.

**Scientific.** A scientific response reflects a desire to develop awareness and understanding of the natural world through various means (Kellert, 1996). In this context, respondents might indicate that where they live is important because it provides opportunities to understand the natural world and learn. The scientific value also includes a rational understanding of the interconnectedness of nature.

**Aesthetic.** An aesthetic response reflects pleasure evoked from experiencing the physical beauty of the natural world (Kellert, 1996). Responses reflecting the beauty of Dong Van’s vistas, ecosystems, or particular native species will be coded as aesthetic.

**Humanistic.** Humanistic answers are representative of strong emotional appreciation, attachment, and/or love for various aspects of nature, including vistas, entire ecosystems, or individual species (Kellert, 1996). In the context of Dong Van, residents might respond that the most important part about where they live is their strong attachment to it, to its wildlife, or to their lives there. Additionally, responses reflecting attachment to or sense of place, or historical ancestral ties to place will be considered humanistic.

**Symbolic.** Symbolic responses reflect the view of nature as a source of imagery for language, thought, and artistic expression (Kellert, 1996). Responses including stories about direct experiences such as with tigers and other wildlife that symbolize power, strength, and spirituality, as well as myths and legends about the Dong Van environment will reflect symbolic values.
Moralistic. A moralistic response denotes an ethically based concern for the importance of the earth’s ecosystem and/or a desire to protect and/or conserve the natural world (Kellert, 1996). Respondents might indicate that they are concerned for the future of and/or that they wish to preserve aspects of Dong Van. The geopark might be important to respondents because it will conserve the area’s natural environment for future generations.

Dominionistic. Dominionistic responses reflect the desire to ‘overcome’ and challenge nature (Kellert, 1996). Such responses might include feelings of pride for dominating nature in various ways, appreciation of the land for how strong and resilient it has made them, or for its catalyzing their attainment of some goal.

Negativistic. Negativistic responses are those that reflect “fear, aversion, and dislike” of nature (Kellert, 1996, 25). Such responses might include that residents value where they live because there isn’t much wildlife or natural landscape left, that they feel safe in it and somewhat removed from wild nature. Negativistic answers might include those that do not hold the environment to be important or generally do not value where they live.

Though we used Ardoin’s (2006) dimensions of SOP and Kellert’s (1996) environmental values typology as a-priori frameworks, responses that did not fit these coding schemes were not ignored. During coding, following Miles and Huberman’s (2013) recommendations we actively looked for responses that didn’t fall into the categories generated from Ardoin’s (2006) dimensions or Kellert’s (1996) typology. We additionally were not constrained to coding responses into only one category.

After we developed these operational definitions, an iterative process was used to refine the coding framework. First, a randomly selected subsample of the data was
independently analyzed and coded by two researchers. Next, this independent coding of the subsample was compared to see if researchers were in agreement. This was particularly important because responses could be coded into multiple categories. Researchers then discussed any coding discrepancies and refined the coding definitions. Both researchers then re-coded the subsample using refined definitions. A final consensus about the coding of the subsample was reached, and the entire dataset was then coded by the primary investigator using the agreed upon framework as a guide. This process adapted recommendations by Creswell (2007) to validate the analysis by having independent researchers perform analyses of data.

We also compared the environmental reliance of urban and rural respondents to explore differences between residents living in urban and rural areas, and how urban / rural status may relate to environmental values. To compare mean scores of these groups, we conducted a one-way ANOVA.
CHAPTER THREE

RESULTS

Demographic results

Responses from recordings in one hundred seventy one households were collected, representing four districts, 18 villages, and 12 ethnicities. Of the 171 respondents, 57.9% were male and 42.1% were female. The respondents’ ages range from 15 to 81 and the mean age was 39. Of the households surveyed, 29.8% were in urban areas and 70.2% were rural while 38.6% were in a village with cultural designation and 61.4% were not, both of which approximate the ratio used in the sample. On average, respondents live in a household with 3-4 other adults 18 and over and 1-2 children under 18. The majority of respondents make a living by farming (77.2%) and raising livestock (64.9%), while a few teach (7%), own a business (5.3%), work in tourism (2.3%), work for the government (11.1%), are a mechanic (4.7%), or do something else (22.8%). No respondents reported that they did not work (Table 3.1, Table 3.2).

Table 3.1. Summary of demographic data

<table>
<thead>
<tr>
<th>Demographic variable</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>57.9% Male, 42.1% Female</td>
</tr>
<tr>
<td>Age</td>
<td>Mean Age is 39</td>
</tr>
<tr>
<td>Education</td>
<td>Average years in school is 6.6</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>12 ethnicities represented</td>
</tr>
<tr>
<td>Urban/rural</td>
<td>29.8 live in urban areas, 70.2 in rural</td>
</tr>
<tr>
<td>Cultural designation</td>
<td>38.6 live in villages with cultural designation, 61.4 do not</td>
</tr>
<tr>
<td>How many adults (over 18) also live in respondent’s home</td>
<td>On average, respondents live with 3.36 adults</td>
</tr>
<tr>
<td>How many children (under 18) also live in respondent’s home</td>
<td>On average, respondents live with 1.64 children</td>
</tr>
</tbody>
</table>
Many respondents (44.4%) reported that they are completely reliant on the environment for food and 25.4% reported that they are not at all. Similarly, 31.6% reported they were completely reliant on the natural environment for the income whereas 22.8% said they were not at all (Table 3.3).

Table 3.3. Reliance mean scores

<table>
<thead>
<tr>
<th>Reliance on the environment for food</th>
<th>Frequency: n=171 (%)</th>
<th>Reliance on the environment for income</th>
<th>Frequency: n=171 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely</td>
<td>75 (43.9)</td>
<td>Completely</td>
<td>54 (31.6)</td>
</tr>
<tr>
<td>A lot</td>
<td>25 (14.6)</td>
<td>A lot</td>
<td>35 (20.5)</td>
</tr>
<tr>
<td>Somewhat</td>
<td>17 (9.9)</td>
<td>Somewhat</td>
<td>24 (14.0)</td>
</tr>
<tr>
<td>Little</td>
<td>9 (5.3)</td>
<td>Little</td>
<td>19 (11.1)</td>
</tr>
<tr>
<td>Not at all</td>
<td>43 (25.1)</td>
<td>Not at all</td>
<td>39 (22.8)</td>
</tr>
</tbody>
</table>

Results of qualitative analysis

171 (100%) of residents responded to the open-ended question, ‘What is most important to you about where you live?’ We used 4 categories adapted from Ardoin (2006) to code the data and we developed sub-dimensions to refine our coding (Table 3.4).
Approximately 29.2% of responses referred to the physical environment or elements of it in general as the most important aspect of where they live. Many of these referenced the built or man-made environment. For example:

- "Our home is certainly the most important. We all miss it when we’re far away."

Others communicated the importance of the natural environment. For example:

- "In the highland, natural landscape and the water resources means peoples’ life."
- "The most important thing is to replant the forest, very important. The forest here existed in the past, everywhere is natural forest. But because of the human’s impact, cutting down, destroying everything, now how can there be mountains and hills surrounding this village of Meo Vac like before. When I was small, there were even streams, and wild bananas. Meo Vac had streams, not like now. People here produce rice, even in August or July, they are still producing rice. People around here or up there,
all grow rice. It’s just now people have destroyed the forest, the streams ran out of water. But before there was a stream running there and up there, all had water.”

**Sociocultural.** Some responses (28.7%) referred to sociocultural aspects of where respondents live as being most important. Residents referred specifically to the importance of community attachment, family, healthcare, and education. We also identified a sub-category relating to the importance of environmental social norms. Responses that reflected the particular importance of community attachment included:

- “I think the most important thing is life, my current life. Me and my neighbors. Community connection. If I don’t have my neighbors up here, honestly my neighbors can help me with my emotional life that’s also very important, and that’s also the encouragement for me to improve, making me more confident. Honestly it’s very hard to have business if I was annoyed by someone all day. I feel life up here is less rush than life down there. It’s really easy to live here, very comfortable.”

Some expressed the that family is specifically the most important aspect of where they live, for example:

- “My wife, my children, my parents and my hometown, that’s all. Everywhere you go, they won't leave you. No matter how far you are, you have to get back when you get old. Even General Vo Nguyen Giap wants to be buried in his hometown,”

- “The health of my family. Family is the most important.”

Others touted the importance of healthcare and education as being the most important part of where they live, including:

- “To me, the most important thing is the culture and education.”

- “About the healthcare, first of all, doctors are hesitant to get to the highland, so when the kids get sick, it’s very troublesome to bring them to the health facility. The second
thing is the living quality people here. The social economic here is not so high. That has great impacts. They also don’t have chance to communicate a lot, that influences the kids making their daily communication skill worse.”

Some respondents indicated the need to improve peoples’ awareness about environmental problems or a shared responsibility to protect the natural environment. “The most important thing is improving the people’s awareness. If the awareness increases, every problem can be solved. If people don’t understand, it’s hard to do anything. It’s hard for government officers here because people’s awareness are not as good as that of people in the low land.”

Political-economic. The majority of respondents (56%) mentioned that political-economic considerations, including job opportunities were the most important aspects of where they live. Most of these reflected economic aspects, and many responses were reflective of the nature of the subsistence or near-subsistence economy of the region. Some expressed the importance of a robust economy and effective farming markets, while other spoke of the government’s role in peoples’ lives:

- “The most important thing, the first one is living here we need to face with many problems, for example, the lack of farming land, everyday, in general, we can’t make a lot of things, even if we make some, we can’t sell them, and the second thing is about the daily spending, in general, we spend what we make.”

- “If the economic situation is better, the government, life of the people here is mostly from the government, because of demand or because of the government, like if they tell people what to do, people here follow really well, like do whatever the government tell to do,”
“Don’t be too satisfy, there are so many more that you should ask. We are the people of this Plateau but we have lots of troubles. In fact, our life couldn’t get better. Even we have a great name like Geopark international, our roads were downgraded but the government doesn’t care. Besides, because of this name, we don’t have the rights to exploit it. What should we do now? For example, this road is extremely dangerous that people could fly out of the track, by car not by plane.”

Psychological. A few responses (9.4%) reflected an internal state or sentiment that is most important about where they live. While these internal states are not physical aspects of a place, and are likely influenced by or a derivative of the other three categories, per Ardoin (2006), these are reflective of an important relational and psychological aspect of place. Responses coded as psychological included:
- “Just living happily.”

Other. Some responses (11%) didn’t directly answer the question or obviously fit into the coding scheme. For example, many respondents said, “everything is important,” but were no more specific than that.

Environmental values

After asking respondents what is most important about where they live generally to examine their broad value orientations relating to sense of place, we next focused questioning on the natural environment to elicit environmental values. 171 (100%) of residents responded to the open-ended question, ‘From an environmental standpoint, what is most important to you about where you live?’ and follow-up question, ‘Why?’ Using Kellert’s adapted typology, we coded responses into all categories that applied. Responses corresponded to 6 Kellert (1996) environmental values. No responses
reflected a symbolic, naturalistic, or dominionistic value (Table 3.5). Results from the qualitative analysis are reported using a variety of direct quotes from respondents.

### Table 3.5. Environmental values: frequency and percent of individuals with responses

<table>
<thead>
<tr>
<th>Final content analysis (n=171/171)</th>
<th>(100% completed open ended questions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full content codes</td>
<td>Frequency</td>
</tr>
<tr>
<td>Humanistic</td>
<td>5</td>
</tr>
<tr>
<td>Moralistic</td>
<td>28</td>
</tr>
<tr>
<td>Communal/social norms</td>
<td>15</td>
</tr>
<tr>
<td>Future generation/others</td>
<td>4</td>
</tr>
<tr>
<td>Negativistic</td>
<td>1</td>
</tr>
<tr>
<td>Scientific</td>
<td>20</td>
</tr>
<tr>
<td>Utilitarian</td>
<td>142</td>
</tr>
<tr>
<td>Basic needs</td>
<td>102</td>
</tr>
<tr>
<td>Income</td>
<td>9</td>
</tr>
<tr>
<td>Tourism</td>
<td>3</td>
</tr>
<tr>
<td>Enhancement / quality of life</td>
<td>50</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>1</td>
</tr>
<tr>
<td>N/A / Other</td>
<td>22</td>
</tr>
</tbody>
</table>

*Adds up to over 100% because percentage reflects the number of respondents that communicated the theme. One response may have reflected multiple values. Percentage of sub-codes were calculated based on number of responses that reflected general theme.

**Utilitarian.** The majority of responses (83%) indicated a strong utilitarian value. However, not all responses coded as utilitarian were the same. For a more nuanced understanding of these responses and the values they reflect, we categorized these responses into 4 sub-categories that reflected the importance of the environment for basic needs, for income, for tourism, and for the enhancement of quality of life.

Most responses coded as utilitarian expressed the importance of the natural environment for meeting basic needs for survival, such as providing food and water and supporting good health. Responses that reflected this aspect of the utilitarian value include:

- “Without water and forest, we have no firewood to cook and survive,”
- “If the water is not clean there will be a lot of diseases and that affects my health and my kids’ health.”

Some responses coded as utilitarian expressed the importance of the natural environment for their income or job. For example:

- “It’s good if have money, land, and forest to develop. We can eat with money, land is for cultivating the corn, without land what can we use for farming, no one buys rocks.”

A few responses coded as utilitarian cited the natural environment being most important because of the Geopark’s promise of tourism. Examples include:

- “Because with a clean environment, the tourists will be more satisfied.”

While the other three sub-categories are reflective of a utilitarian value that is more connected to basic human needs, 35.5% of responses coded as utilitarian expressed the environment’s importance for enhancing their quality of life or as providing a luxury. For example:

- “About the environment, if you make it green, it’s cooler and cleaner.”
- “If we have a lot of trees, the air will be cooler.”

Scientific. All responses coded scientific (11.7%) reflected an ecologistic understanding of the interconnectedness of environmental quality and ecosystem services. None reflected a desire for knowledge or other aspects of the scientific value. All responses coded ecologistic also reflected and were coded as utilitarian. Examples include:

- “[It’s most important] to have enough water because we couldn’t create or produce water or any natural elements.”
- “It’s water as always. This place is becoming dry because people cut down all the trees around here.”
- “Because if we don't have any awareness or if we cut down the trees, there would be no more resources or water for us.”

**Aesthetic.** Responses coded aesthetic (.58%) reflected pleasure evoked from experiencing the physical beauty of the natural world (Kellert, 1996). For example, one respondent said:

- “[Clean environment because] it could make our houses more beautiful.”

**Humanistic.** All responses coded as humanistic (2.9%) reflected the importance of the natural environment for enhancing sense of place and acknowledgement of the importance of a place as being one’s “homeland.” Examples include:

- “[If I go somewhere] I will miss my relatives, my brothers of generations,”
- “This place is our motherland, how could we move to anywhere else?”

**Moralistic.** Responses coded as moralistic (16.4%) reflected environmental consciousness; a concern for and/or desire to protect or conserve nature. We identified two related subcategories: communal/social norms and future generation/others. Responses in the communal/social norm sub-category expressed the importance of environmental awareness, collective responsibility, or environmental social norms, for example:

- “Nowadays, we have to stand together, all people stand together to conserve the environment. For example in this village, it would be better if we had a garbage collector team, and we should have waste treatment systems. That would be better.”
- “In here people don’t know how to protect the environment so that just dispose trash anywhere, many people and households are affected by that problem.”
- “About the environment, I think: first of all it needs to be clean, and second thing is that we need to have responsibility to protect and plant more trees, it is not good if you are just ignorant and don’t care about it, we have to act in order to keep it.”

Responses included in the future generation / others (intergenerational) sub-category reflected an understanding of the consequences of human impacts on the environment and expressed the importance of action to mitigate these consequences, especially out of concern for future generations. For example, one respondent said:

- “[The forest is the most important part of the environment]. It created the landscape, ecosystem for human being. First of all is the water. If we don’t protect it, after the next ten or twenty years, we will no longer have it. I am sure we will lose it if that upstream is also destroyed. Don’t know where to get water. The river gets water from somewhere else but here there is no water. We need water everywhere we live. Can’t live without water.”

Negativistic. Responses coded as negativistic (0.58%) reflected “fear, aversion, and dislike” of nature (Kellert, 1996, 25). The one response coded negativistic was also coded as utilitarian because it reflected fear of nature for utilitarian purposes. For example, one respondent said:

- “The environment? The most important is I am afraid of diseases. I’m not afraid of lacking water…I am just afraid there are too many streams, big streams…the big streams will start flooding the fields and the crops will die.”

Other. (12.9%) of responses didn’t obviously fit into the coding scheme, were unrelated, or didn’t make sense. Responses that made sense but didn’t obviously reflect a value (for instance, if someone said that water is the most important to them, but didn’t say why) were also categorized as other, because codes are meant to reflect underlying
values, the ‘why,’ not the ‘what’. Notably, 91 (53.2%) responses to the second question mentioned that water was the most important aspect of the natural environment where respondents live.

**Reliance and environmental values**

To compare urban and rural respondents’ reported reliance on the natural environment we conducted a one-way ANOVA to compare the means of different groups (Table 3.6). In this case, we specifically tested if urban and rural residents are on average differently reliant on the natural environment.

The mean score for urban respondents’ reliance on the natural environment for income was 2.19 while the mean score for rural respondents’ reliance on the natural environment for income was 4. The mean score for urban respondents’ reliance on the natural environment for food was 1.93 while the mean score for rural respondents’ reliance on the natural environment for food was 3.98. Cohen’s $d$ is an effect size measure that provides an assessment of the meaningfulness of the significant difference between groups (Tebachnick & Fidell, 2012). In both cases, the Cohen’s $d$ value was above 0.8, which is considered a “large” difference. In general, these results suggest that rural respondents were more reliant on the natural environment than urban populations.
We then compared urban and rural residents’ environmental values to explore how reliance on the environment might relate to environmental values (Table 3.7). The majority (83%) of both urban and rural responses reflected a utilitarian value. However, the sub-dimensions of the utilitarian value provided a more nuanced look at the differences in environmental values of urban and rural respondents. More rural responses reflected a basic need dimension of the utilitarian value than urban responses. In this same vein, more urban responses reflected the enhancement/quality of life utilitarian sub-dimension than rural responses. This result suggests that while both urban and rural residents hold high utilitarian values, breaking down the utilitarian value reveals that more urban residents value the environment more for enhancement/quality of life purposes while more rural residents value the environment more for meeting their basic needs.

Table 3.6. One-way ANOVA comparison of reported reliance on the natural environment for food and income by Urban/Rural

<table>
<thead>
<tr>
<th></th>
<th>Rural M (SD)</th>
<th>Urban M (SD)</th>
<th>t</th>
<th>(df)</th>
<th>p</th>
<th>Cohen’s D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliance for food</td>
<td>3.98 (1.57)</td>
<td>1.93 (1.31)</td>
<td>-8.69</td>
<td>167</td>
<td>.000</td>
<td>0.98</td>
</tr>
<tr>
<td>Reliance for income</td>
<td>4.0 (1.34)</td>
<td>2.19 (1.32)</td>
<td>-8.17</td>
<td>169</td>
<td>.000</td>
<td>1.02</td>
</tr>
</tbody>
</table>

1 = Not at all, 2 = Little; 3 = Somewhat, 4 = A lot, 5 = Completely

Table 3.7. Environmental values by Urban/Rural

<table>
<thead>
<tr>
<th>Environmental value</th>
<th>Rural (%)</th>
<th>Urban (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilitarian</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>Basic needs</td>
<td>73</td>
<td>65</td>
</tr>
<tr>
<td>Enhancement/quality of life</td>
<td>32</td>
<td>41.8</td>
</tr>
<tr>
<td>Moralistic</td>
<td>10.8</td>
<td>29.4</td>
</tr>
</tbody>
</table>
Also of note when comparing urban/rural residents’ environmental values, more urban responses reflected a moralistic value than rural responses that did. In general, this result relatedly suggests that urban respondents, who were on average less reliant on the environment, were also more likely to be concerned about protecting / conserving nature.
CHAPTER FOUR
DISCUSSION

This study primarily sought to examine the held environmental values reflected in residents of Dong Van Karst Plateau Global Geoparks' responses to a series of open-ended questions regarding what is most important to them about where they live. First, residents were asked what is most important to them about where they live generally. Next, residents were asked what is most important to them about the natural environment where they live, which was followed-up with “why?” to further elicit held environmental values. This line of questioning was used to connect the study’s in-depth exploration of environmental values specifically to the DVKPG context.

Analysis of responses to the first question using Ardoin’s (2006) four broad SOP dimensions suggested that most respondents valued where they live primarily for economic reasons, followed by the physical environment and sociocultural aspects. Political-economic responses focused on how the economic situation where residents live was important or could be better, like having additional land for farming. To put this in context of the study population, the vast majority of residents reported that they make a living by farming (77.2%) and raising livestock (64.9%), and many said that they spend or use what they make. In this way, many political-economic responses were reflective of the subsistence or near-subsistence nature of the region’s economy. Responses that focused on both the natural and built environment were also often explicitly anthropocentric. Residents reported to value both the built and natural environment for the services they provide for humans. The importance of family/community relationships was also emphasized. Within these community relationships responses, results
highlighted the importance of social networks and trust, components of social resilience which can be viewed as forms of social capital (Adger, 2003; Holladay & Powell, 2013). These components of social resilience have been found to be an important component of community resilience, allowing communities to more effectively deal with outside stressors such as food and water insecurity in DVKPG (Holladay & Powell, 2013; Adger, 2003; Pelling & High, 2005). Often, what people valued most where they live was what was absent or lacking and something that was needed to survive such as water. In general, these results highlight the primarily anthropocentric value orientation of residents. These general value orientations provided context for understanding the environmental values reflected in responses to the second question specifically asking residents about what was most important about the natural environment where they live.

Results of the more in-depth exploration of held environmental values using categories adapted from Kellert’s (1996) typology also suggested that a majority of residents held utilitarian values (83%), supporting widely held assumptions that the rural poor hold high utilitarian values. Kellert’s typology proved useful for general analysis, and while utilitarian values dominated the majority of responses, not all responses initially coded as utilitarian using Kellert’s typology were the same. Responses varied from valuing the natural environment for meeting basic needs to enhancing quality of life to valuing the park (and natural environment) as an attraction for tourism. Based on the range of utilitarian responses, we developed four subcodes to capture some nuance lost in the broader, general utilitarian category. These sub-categories included meeting basic needs, income, tourism, and enhancement of quality of life. Though the basic needs category was the most frequent, a quarter of utilitarian responses also reflected that residents valued the environment because it goes beyond meeting their basic needs and
actually enhances their quality of life.

The next most frequently mentioned of Kellert’s (1996) values was moralistic (16.4%), reflecting the importance of the natural environment for future generations and the need for establishment of communal social norms regarding stewardship of natural resources. A scientific value (11.7%) in this case reflected respondents’ ecologicist understanding of the importance of environmental quality for ensuring the delivery of ecosystem services. In this way, all responses coded as scientific were also coded as utilitarian.

When examining reliance on the natural environment for food and money, we found that rural residents were more highly reliant on the natural environment than urban residents. We also compared urban and rural residents’ held environmental values and found that though the majority of both rural and urban responses reflected a predominantly utilitarian value, slightly more rural respondents valued nature because it met their basic needs, while slightly more urban residents valued nature because it enhanced their quality of life. Additionally, more urban respondents reflected a moralistic value than rural residents. In general, this result suggests that urban respondents, who were on average less reliant on the environment, were also more likely to be concerned about protecting/conserving nature.

These differences between urban and rural residents seem to support Maslow’s thesis regarding the (1943; 1954) hierarchy of needs: that basic needs must be satisfied before people are able to meet other less instrumental needs. Results from our study suggest that the rural residents of DVKPG appear to have a high degree of food and financial insecurity, therefore falling at the bottom of Maslow’s hierarchy. Urban residents appeared less reliant on the natural environment for basic needs and their
responses reflected that the natural environment not only met basic needs but also provided ecosystem services which enhanced their quality of life. Urban residents were also more likely to express a moralistic concern for nature. In this way, these results might lend support for conceptualizing Kellert’s values as a hierarchy similar to Maslow’s needs. Lack of values other than utilitarian might reflect the perspective that these values are stunted or undeveloped or at least are thought of as a luxury that can only manifest when base needs are met. However, this might also reflect how values were elicited or defined. The argument that elevated concern for the environment is the result of a “post-materialist culture shift,” relating to Maslow’s hierarchy has been made (Inglehart, 1995), though contrasting results have been found (Brechin, 1999). This notion has thus sparked debate, and has been criticized by some as being superficially appealing but too simplistic: a naive and possibly elitist characterization of human functioning (Kellert, 1996). While trends from this study seem to support such a conception of values possibly on a hierarchy, we did speak with both rural and urban residents that valued the environment for meeting basic needs as well as for enhancing their quality of life, and moralistic values were reflected in responses of both urban and rural residents.

The nuance of our results might lend support for modeling Kellert’s (1996) environmental values on a gradient, rather than a hierarchy. Kellert (1996) argues that all of his values are always present in individuals, just to varying degrees. Viewing values on a gradient allows for this conception of all values as being present, but recognizes that certain variables such as socioeconomic status and reliance on the natural environment (or relationship with the environment in general) might influence the relative prominence of certain values in individuals. This conception would not preclude
anyone from being able to appreciate the aesthetic value or be concerned with the protection of nature because of a variable like their reliance on the environment, but might help explain the high prominence of utilitarian values found in this population: it’s not that other values don’t exist, but a matter of relative strength based on priority. In general, the debate surrounding these trends ultimately highlights the importance of considering nuance and sociocultural context to better understand the ways people relate to and derive benefits from the natural world, and the need for further research exploring environmental values especially in the developing world context.

In addition to theoretical benefits, this exploration of environmental values in a developing-world context also provides a better understanding of the people living within Dong Van Karst Plateau Global Geopark to inform future planning and outreach efforts. Residents of the geopark were generally found to be very poor, directly reliant on the natural environment for their health and well being, and hold strong utilitarian values. Residents’ close relationship with nature and their anthropocentric priorities were also reflected in their responses coded as scientific, which in all cases reflected an ecologistic understanding of the functioning of nature. Residents understood how important water was to the forest because they were directly reliant on it. Any planning and infrastructure development efforts should thus address improving food and water security by enhancing ecosystem and social services. Water was found to be a particularly large concern. Ninety-one (53.2%) respondents mentioned that water, or a lack of water, was the most important aspect of the natural environment where they live. Other studies have found that one of the most pressing environmental issues for DVKPG to address is the lack of accessible surface water, particularly in the districts of Dong Van and Meo Vac (Dusar et al., 2011). Not only is this issue important to address
because water security is generally needed to increase the residents of DVKPG’s quality of life, but also because it is necessary to enable sustainable tourism development in the park. Without reliable access to water, there is little hope for a viable sustainable tourism industry and regional economic development.

In general, results suggest that DVKPG management should take residents’ generally anthropocentric value orientations as well as environmental values into consideration. This is important not only for informing future planning and outreach efforts targeting this population, but also particularly because doing so is an explicit principle of geopark management.

Though this research provided a nuanced look at the residents of DVKPG and their values, it faced limitations common to international data collection. Surveys were recorded and then translated by research assistants, and some specific meanings may have been misconstrued or lost in the translation process. Additionally, sampling of villages was somewhat limited by the government selection process. In addition, governmental representatives occasionally escorted research assistants in the field and it is possible that some answers were influenced by this and social acceptability. In addition, responses suggest that for some people, our line of questioning reflected concepts residents had not considered resulting in general answers such as “everything”. These challenges represent both the difficulty of eliciting environmental values and of specifically applying environmental values concepts developed in the United States to a different context. Lastly, because this research relied on residents’ responses to a series of open-ended questions, results identify the presence of particular values, rather than the absence of others. Responses not reflecting a
particular value does not mean that value was absent, which may have led to some values being under identified in the study population.
CHAPTER FIVE
CONCLUSION

The ultimate goal of this research was to explore environmental values in the developing world context. Results generally suggested that our qualitative exploration provided insights that might have been lost in a more quantitative exploration such as by identifying that the utilitarian value had several subdimensions. Ultimately understanding the context in which environmental values exist was important for both theoretical and geopark management purposes.

Results highlighted that residents of DVKPG can greatly benefit from living within the park’s boundaries if future planning addresses food and water security issues and focuses on creating alternative or improving livelihoods for residents though sustainable tourism development. Though, it is also important that any infrastructure and development plans in DVKPGP do not erode the resilience of ecosystem functioning of this locale as the majority of rural residents were completely reliant on the natural environment. While planning undertaken by urban interests might be intended to improve the livelihoods of the rural poor, if planning does not take current ecosystem services into account it might in fact erode them and in turn marginalize these populations instead of helping them. This could be the result of a misunderstanding or a lack of effort to understand how rural people relate to and derive benefits from the natural world. It is thus particularly important that residents’ needs be considered so that they can effectively and accurately be met by their standards, and not someone else's.

Future research is needed to further explore the nuances of held environmental values as they relate to socioeconomic status and reliance on the natural environment,
especially in the developing world context. Though the results of this investigation are highly specific to the DVKPG context, the methods and results can be used to inform future research efforts to explore environmental values in the developing world context. It can also serve as a model for other geoparks with large populations about which little is currently known.
REFERENCES


