Journal of Environmental Psychology 40 (2014) 198–205

Contents lists available at ScienceDirect

Journal of Environmental Psychology

journal homepage: www.elsevier.com/locate/jep

Nature to place: Rethinking the environmental connectedness perspective

Thomas H. Beery [a, *], Daniel Wolf-Watz [b]

[a] Kristianstad University, Man and Biosphere Health, Kristianstad, Sweden
[b] Mid Sweden University, Östersund, Sweden

ARTICLE INFO

Article history:
Available online 4 July 2014

Keywords:
Human–environment relationship
Dualism
Environmental behavior
Outdoor recreation
Place attachment

ABSTRACT

The environmental connectedness perspective posits that direct encounter with generalized, or non-specific "nature," leads to environmental connectedness and subsequent pro-environmental behavior. This article examines this perspective and proposes a place-based application of the nature encounter-environmental behavior relation. An empirical study using data from a national survey on outdoor recreation and nature-based tourism is presented. Results show a minimal relationship between measures of environmental connectedness and self-reports of environmental behavior. The following examination of the environmental connectedness perspective reveals that environmental connectedness is rooted in a material/objective perspective, neglecting the human domain of perceptions, values, and representations. The environment as "nature" is portrayed as a geographically undefined agent with the inherent power to change human attitudes and behavior. Based on this, the article concludes with a proposed replacement of the elusive concept of nature for the relational concept of *place*.

1. Introduction

The past 150 years have brought dramatic changes to the world's biosphere, and most of these changes are seemingly anthropogenic (McNeill, 2000). Global warming, contamination of air and water, forest habitat devastation, and reduced biodiversity are all examples of human induced environmental changes. Based on these concerns, one of the most pressing and persisting societal debates of contemporary time regards the causes of, and the proper solutions to environmental degradation. At the core of the debate is societal change in favor of an ecologically sustainable future, including increasing levels of individual environmental concern, i.e. people's awareness of environmental problems and their dedication to take action to counteract these problems.

A recurrent environmental theme in over the past 50 years refers to the importance of individual "nature encounters" and "nature experiences" as pathways to pro-environmental behavior. Examples of this can be found in a variety of academic fields, such as environmental history (e.g. Nash, 1967), psychology (e.g. Roszak, 1992), deep ecology (e.g. Naess, 1993), education (e.g. Hungerford & Volk, 1990), outdoor learning (e.g. Sandell & Öhman, 2013), and human geography (e.g. Tuan, 1974). This theme is also present in the writings of environmental luminaries such as Henry David Thoreau (e.g. 1854), John Muir (e.g. 1894) and Aldo Leopold (e.g. 1949). Ultimately, despite differences, these efforts all attempt to describe an essential human relationship with the biophysical world related to attitudes and/or an action outcome (a behavior or behavioral intention).

The idea of nature's potential for individual transformation towards higher levels of environmental concern and pro-environmental behavior has recently found a scholarly application in ideas that will here be broadly grouped as the *environmental connectedness perspective*. These ideas of environmental connectedness describe an affective, cognitive, and/or physical human relationship with nature by using terms such as affinity, biophilia, commitment, ecological self, identity, inclusion, relatedness, and sensitivity (Bragg, 1996; Chawla, 1999; Clayton, 2003; Davis, Green, & Reed, 2009; Kals, Schumacher, & Montada, 1999; Mayer & Frantz, 2004; Nisbet, Zelinski, & Murphy, 2009; Palmer, 1993; Schultz, 2001, 2002; Stedman, 2002; Sward & Marcinkowski, 2001; Wilson, 1984). Within this broad grouping the emphasis is on the experience of and direct encounter with generalized, or non-specific, "nature" and the possible emotional and/or cognitive relationship between the individual and nature that develops from these experiences. Essentially, it is hypothesized that spending time in nature will, given repeated experience, help an individual feel

* Corresponding author.
E-mail addresses: thomas.beery@hkr.se, thbeery@gmail.com (T.H. Beery).

http://dx.doi.org/10.1016/j.jenvp.2014.06.006
0272-4944/

connected to nature, more inclined to care about nature, and, ultimately, to protect it. Chawla and Derr (2012) encapsulate all elements of this progression when defining sensitivity as

> "a predisposition to take an interest in learning about the environment, feeling concern for it, and acting to conserve it, on the basis of formative experiences [in nature]" (p. 19).

Given this proposed pathway from nature experience to pro-environmental behavior, the perspective of environmental connectedness has emerged with growing prevalence. With respect to increasingly assertive calls for more sustainable futures it is therefore of great interest to examine the basis for, and strength of, environmental connectedness. What are the theoretical principles of the perspective? And, what is the validity of the claim that nature experience ultimately results in environmental behavior? This article addresses these questions by adding perspectives derived from human geographical thought. The relationship between humans and their surrounding environment is regarded as a central theme of the geographical discipline, and theoretical efforts are plenty. Accordingly, the article is based on a customary empirical study *and* a review of geographical ideas on human–environmental relationship, all in order to (i) examine the environmental connectedness perspective as construct and (ii) propose potentially more suitable applications of the nature encounter-environmental behavior relation. The modest relationship presented in this study is similar with much of the previous research in this area. It will therefore be argued that environmental connectedness has little to gain by using the notion of non-specific "nature." We are more inclined to think that any nature encounter should be regarded as experiences situated in particular *places*.

In Sweden, like in most Western countries, many so-called nature related experiences occur in the context of outdoor recreation. Moreover, the importance of nature encounter for increasing levels of environmental concern appears frequently in various promotions for outdoor recreation and outdoor education (Sandell, Öhman, & Östman, 2005; Sandell & Sörlin, 2008). Indeed the tradition of Scandinavian outdoor recreation, "friluftsliv", has been described as a particular way of meeting nature, including a sense of connection with nature (Beery, 2013b; Faarlund, 2007; Faarlund, Dahle, & Jensen, 2007; Sandell & Öhman, 2010). Fittingly, the empirical study presented in this article is based on analysis of survey data regarding public outdoor recreation in Sweden. Data collected in the Swedish national research program Outdoor Recreation in Change (Fredman, Karlsson, Romild, & Sandell, 2008) include questions of recreation participation, access to nature, environmental connectedness, environmental behavior, and extensive demographics within the context of the nature-based outdoor recreation experience.

1.1. The environmental connectedness perspective

As mentioned above, the ideas that fit within the perspective of environmental connectedness are those that emphasize the experience of, and direct encounter with generalized, or non-specific "nature," and the possible emotional and/or cognitive relationship between the individual and nature that develops from these experiences. This broad group of connectedness related ideas ranges from how one thinks about oneself (e.g. identity) to how one conceptualizes one's relationship with the more than human world (e.g. affiliation or connection). And while one can argue that there are key differences between these ideas, they share the same hypothesis that spending time in nature will, given repeated experience, help an individual feel part of/connected to/affiliated with nature. This process will eventually lead to this individual being more inclined to care about nature, and ultimately, to protect it. Goralnik and Nelson (2011), drawing on the work of Aldo Leopold, summarize it as follows:

1. "Our experiences with the environment as our biotic community will prompt an emotional attachment to, and sense of value for, that community.
2. We act to preserve those things we are emotionally attached to and in which we posit value.
3. Thus, we act on behalf of the environment if our experiences with it portray it as a community to which we belong." (p. 189)

A body of empirical studies explores this possible link. Research supporting the existence of a relationship between connectedness to nature and environmental action or behavior includes, for example: Gosling and Williams (2010), Kals et al. (1999), Mayer and Frantz (2004), Müller, Kals, and Pansa (2009), Nisbet and Zelenski (2011), Schultz (2001). Among these, Mayer and Frantz (2004) present the results of 5 different connectedness to nature (CNS) studies and conclude that, there is a moderately strong positive relationship between the CNS and eco-friendly actions. A recent example of related research (sustainability studies) finds that contact with nature could foster individual happiness and environmentally responsible behavior (Nisbet & Zelenski, 2011). Specifically, this research concludes that walking outdoors facilitates a sense of nature relatedness and notes that people who feel more nature related are happier and more likely to engage in sustainable behaviors. Nisbet and Zelenski refer to this experience of behavior progression as "a happy path to sustainability" and encourage increased contact with nature as one way to guide people toward more environmentally sustainable behavior. Kals et al. (1999) considered whether nature protective willingness and behavior decisions show a relationship with the connectedness construct of affinity toward nature, interest in nature, and indignation about insufficient nature protection. The results showed that all three items qualify as behavioral predictors, explaining up to 47% of the variance of the criteria (Kals et al., 1999, p. 191). Similarly hopeful findings from Müller et al. (2009) supported their hypothesis that emotional attachment to nature explains an important amount of variance in willingness for pro-environmental commitment.

Despite these encouraging results, caution is urged. For example Nisbet and Zelenski (2011) note that even though the links seem possible yet they need verification. This caution is similar to the conclusion presented by Mayer and Frantz (2004), in conjunction with their positive and significant results, "future research needs to elaborate on whether simply feeling a sense of connectedness to nature in itself leads to eco-friendly acts, or whether feeling connected to nature establishes the necessary condition that makes a request for eco-friendly acts more effective" (p. 514). And while Kals et al. (1999) and Müller et al. (2009) find relationships between affinity toward nature and nature-protective behavior/pro-environmental commitment, 'commitment' indicates that they measured willingness to engage in long term intentions to protect nature and the environment. While these results are both useful and hopeful, we urge caution noting that intentional control of behavior may be limited based on results from Webb & Sheeran's (2006) meta-analysis of behavioral intentions and behavior change. Similar to the conclusion of Mayer and Frantz.

Müller et al. (2009) encourage more study into their hopeful results. They promote developmental, longitudinal studies to investigate potential causal relationships to further explore the conditions under which affinity toward nature develops, and motivates behavior. Moreover, this question of behavior motivated on behalf of environmental connectedness or attitudes/values orientation has been explored in related fields of study, such as

sustainable education and environmental sociology, often indicating an existence of a value to behavior gap (Head et al., 2013; Heberlein, 2012).

In the context of outdoor recreation, research has shown that a sense of connectedness occurs as an outcome of nature experience (Beery, 2013b). Despite pervasive and long lasting argumentation for the emergence of pro-environmental behavior as a key result of this environmental connectedness, empirical results, such as those noted above, call for further research on this question. As a response to this call for continued research, we explored data from a Swedish national survey that complies with the environmental connectedness perspective and the nature experience to environmental behavior progression.

2. A study of connectedness and environmental behavior

2.1. Participants

The study used secondary data from a national survey on outdoor recreation and nature based tourism conducted by the research program "Outdoor Recreation in Change" (Romild, 2007). The full survey consisted of 19 pages and a total of 55 questions. National survey internal reliability was initially tested during the development of the instrument. A postal survey was distributed to a national sample of 4700 Swedish citizens (aged between 18 and 75 years old) from a randomized sampling of the Swedish national personal address register (SPAR), where all registered citizens of Sweden are listed. Surveys were distributed during the time period October 2007 to January 2008 with a final response rate, after three reminders (two including a new questionnaire), of 40% ($n = 1792$). A follow-up telephone survey directed to 433 non-respondents indicated that the likelihood of answering the questionnaire was not correlated with the interest for outdoor recreation (Fredman et al., 2008). The purpose of the survey was to give a broad picture of outdoor recreation participation in Sweden. As such, it included a broad set of 43 recreation activities. The questionnaire covered topics such as nature based outdoor recreation participation, participation constraints, specific activity participation, access to nature, emotional response to nature, willingness to pay, environmental behavior, etc. Hence, data from this survey provided detailed information on outdoor recreation participation for our inquiry on both environmental connectedness and behavior. While the survey was conducted in Swedish, survey items used for this study have been translated to English as they are presented below. The original questionnaire is available from the authors upon request.

2.2. Measuring environmental connectedness

A criterion variable of environmental connectedness (EC) was created based upon a composite of one question (three items) from the Swedish Outdoor Recreation in Change national survey described above. Survey participants were asked to respond to the three connectedness items from the national survey using a Likert-type scale; the items formed the criterion variable for the study of the relationship between environmental connectedness and participation in nature-based outdoor recreation (Beery, 2013a). These items were chosen for their theoretical appropriateness based on the literature of environmental connectedness. The items, as translated from the Outdoor Recreation in Change national survey question 7, were:

To be in nature usually makes me feel or experience:

… a heightened sense about the interplay of nature, that everything is connected.

… a feeling that the city is dependent on the surrounding nature.

… a feeling that all people, including myself, are united and a part of nature.

Responses were recorded on a six point Likert-type scale with the response options "completely disagree," "disagree," "neither agree nor disagree," "agree," "completely agree," and "do not know." These items represent important elements of environmental connectedness. The first and third items have their roots in both the philosophical and ecological foundation of environmental connectedness (Abram, 1996; Freyfogle, 2003; Kellert, 2010; Leopold, 1949; Mayer & Frantz, 2004; Roszak, 1992; Schultz, 2002). The second item is based on the idea that *the city* often represents a negative impact of modernity, i.e. urbanization being a part of the separation, or disconnect, from nature experienced throughout the 20th century Western world (Hertsgaard, 1999). It has been noted that the Nordic societal trend toward urbanization is intertwined with the tradition of outdoor recreation (Horgen, 2009; Sandell & Sörlin, 2008). Thus, it can be posited that perception of the city as a barrier to environmental connectedness is worthy of consideration. This perception is widespread, for example, it can be inferred from the following survey item from the closely related Nature Relatedness Scale: *Even in the middle of the city, I notice nature around me* (Nisbet, Zelenski, & Murphy, 2009). The use of *even* implies overcoming an obstacle or barrier.

Extensive reliability and construct validity testing was completed in a preliminary effort to ensure the usefulness of the environmental connectedness construct (Beery, 2013a). To test for reliability, a Cronbach's alpha was used given its ability to provide an estimate of the consistency of a set of items when administered to a set of respondents for a particular purpose (Vaske, 2008). Because alpha is not necessarily a measure of unidimensionality, a principle components analysis was used to further consider the internal consistency of the three items. The results of the reliability testing, a Cronbach's alpha of .83, showed consistent response and indicated high intercorrelation (Vaske, 2008). These results support the idea that the three items from the Outdoor Recreation in Change national survey all measure the same latent construct, or factor. Additional factor analysis successfully supported the hypothesis that the three-item composite represents one latent factor.

Construct validity testing was then used to insure that the three items represented a valid measure of environmental connectedness. The instrument for the construct validity testing featured the CNS. As previously noted, the CNS is a measure of one's affective, experiential connection to nature (Mayer & Frantz, 2004). It is both the concise definition and the demonstrated empirical support of Mayer and Frantz's use of the environmental connectedness construct that made the CNS an appropriate measurement tool for the environmental connectedness construct validation. Given the variety of connectedness related terms in the literature and a variety of scales used to test these terms, two additional scales from the previous review of environmental connectedness terminology were included in the construct validity testing to more fully explore connectedness: Nature Relatedness or NR (Nisbet et al., 2009) and Inclusion of Nature in the Self scale or INS (Schultz, 2002). To test for construct validity, correlation coefficients were computed among the four environmental connectedness scales and the proposed three-item scale from the Outdoor Recreation in Change survey (environmental connectedness) using the Bonferroni approach to control for Type I error across the correlations. The results of the analysis indicated a substantial relationship and support for construct validity: for a more detailed review and analysis of the construct reliability and validity testing see (Beery, 2013a).

2.3. Measuring environmental behavior

The measure of environmental behavior consisted of six questions from the same national survey described above (Section 2.1) and concerned transportation, management of household waste, organic food, and purchase of green eco-labeled products. Participants were asked to respond to a list of behavioral items following the question: "What of the following do you do for *environmental reasons*" (emphasis in original):

(i) *I choose to walk, ride the bicycle or use public transportation instead of going by car*
(ii) *I collect and separate household waste*
(iii) *I eat organically produced food*
(iv) *I purchase green eco label products*
(v) *I reduce my speed when driving*
(vi) *I choose the train over air travel*

In this case responses were recorded on a four point Likert-type scale with the response options "very seldom" (0), "rather seldom" (1), "rather often" (2), and "very often" (3). The questions from the Outdoor Recreation in Change national survey were adapted from item #48 on the 2008 SOM (Samhälle, Opinion, Medier) Institute's Swedish national survey. The SOM institute chose these items based on the principle of including a wide range of possible environmental behaviors for respondents to consider (Martinsson, 2013, personal communication). Additional face validity is provided via a comparison of the items with survey items from numerous other measures of environmental behavior, including the General Environmental Behavior scale from Kaiser (1998), the Self-Reported Pro-Environmental Behavior Scale from Schultz and Zelezny (1999), and the Environmental Behavior Scale from Dutcher, Finley, Luloff, and Johnson (2007). Based on the review of face validity, these items appear to be appropriate measures of environmental behavior.

A Cronbach's alpha was employed to test for internal consistency, or reliability. The result, an alpha of .68 was in the questionable to acceptable range (Kline, 1999). All of the intercorrelations fell into the minimal to typical range (from $r = .17$ to $r = .39$) with the exception of the higher correlation between "I eat organically produced food" and "I purchase green eco label products;" this relationship was substantial at $r = .77$ (Vaske, 2008).

2.4. Procedure and analysis

Secondary analysis of survey data allowed for the use of the environmental connectedness scale and environmental behavior items, which created an opportunity to consider the relationship between environmental connectedness and specific environmental behaviors. Correlation coefficients were computed among the environmental connectedness scale and the 6 environmental behavior items. Results of the correlations have been analyzed using bivariate analysis (Pearson's *r*).

2.5. Results

Correlation coefficients were computed among the 6 environmental behavior survey items and the environmental connectedness scale. Using the Bonferroni approach to control for Type I error across the 6 correlations, a *p* value of less than .008 (.05/6 = .008) was required for significance. The results of the correlational analyses presented in Table 1 show that 6 out of the 6 correlations were statistically significant and were greater than or equal to .09 (.09–.20). Vaske (2008) stated that the magnitude of the Pearson correlation might be examined in terms of effect size where .01 is considered to be a minimal relationship, .30 is considered to be a typical relationship, and .50 is considered to be a substantial relationship. Thus, the results here of $r = .09$–.20 show minimal to modest relationship effect sizes. Note, given concerns about missing data, correlations were analyzed with both listwise and pairwise deletions. The results are almost identical; listwise deletions yielded an *N* of 822 and correlations are included in parentheses. Pairwise deletions are presented in Table 1 based upon the consideration of possible reasons for non-response as presented later in this article.

Table 1
Correlation among the six environmental behavior survey items and environmental connectedness scale.

	Environmental connectedness	*N* pairwise deletion
I choose to walk, bicycle and mass transit instead of the car	.09* (.09*)	1447
I sort household waste	.11* (.11*)	1506
I eat organically grown food	.16* (.15*)	1485
I purchase environmentally friendly products	.17* (.16*)	1485
I drive at slower speeds while driving a car	.20* (.23*)	1275
I choose to take the train over air travel	.13* (.13*)	1043

*$p < .008$.

3. Discussion

The findings above present a very modest relationship between the measures of environmental connectedness and environmental behavior. It should be noted that a number of serious limitations challenge the results of this study. For example, despite the strong face validity, the individual environmental behavior items do not show strong reliability. Further, modest intercorrelations imply a lack of convergent validity. The potential weakness of this measure must be presented as a limitation.

Despite this, results indicate that connectedness does not automatically imply a commitment to engage in the noted specific behaviors. These results, similar to a number of previous findings, call for a critical examination of the environmental connectedness perspective. Though this perspective is developed within conservation and environmental psychology, it is suggested here that such examination may advantageously start from a viewpoint of geographical thought. The relationship between humans and their surrounding environment is regarded as a central theme of human geography and the disciplinary efforts are plenty. Thus geographical understanding on this matter may be useful to elucidate the current limitations of the environmental connectedness perspective. Out of this, it will be argued that environmental connectedness could benefit from including a place-perspective to better approach the nature encounter-environmental behavior relation.

3.1. Bringing geographical thought into the discussion

As a framework for this place-perspective Fig. 1 presents key dichotomies in geographical conceptualizations of the human–environment relationship. Most disciplinary efforts on this matter reflect an evident Cartesian divide, where "nature" and "culture" are placed in opposition to one another, and where one of them dominates the other (Castree, 2005; Rose, 1993; Whatmore, 2002). Thus, "proactive cultures" refers to human way of life (Raymond, 1976), including societal levels and sometimes

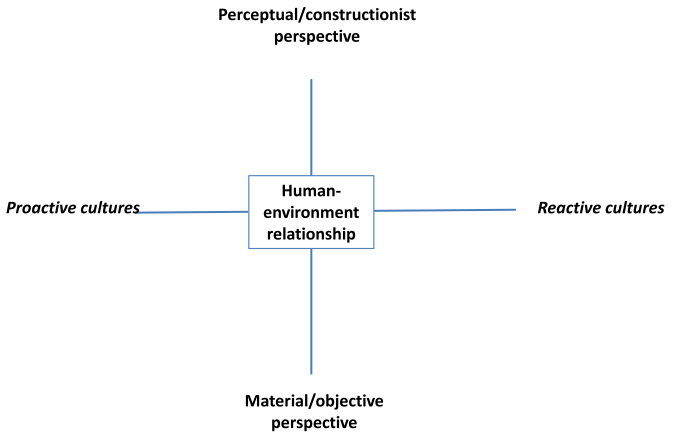

Fig. 1. Key dichotomies in geographical conceptualizations of the human–environment relationship.

individual aspects such as "human nature," (values, attitudes, and behavior), as causal influence on the environment. Following this, "reactive cultures" indicate the reverse causal connection.

Moreover, approaches within the human-environment theme are also generally based on either an idealist/social constructionist ontology or a materialist/realist ontology, which in Fig. 1 are referred to as the *perceptual/constructionist perspective* and the *material/objective perspective*. The former stresses the human context, i.e. people's perceptions, representations and interpretations of the surrounding environments, while the latter finds its foundation in an understanding of the world as a tangible externality, irreducible to societal representations and manipulations, i.e. the "objective world out there."

The approaches of the early years of geography were based on materialist/realist ontology where the environment and manifestations of human way of life were mostly considered in terms of its physical expressions (Gren & Hallin, 2003). Moreover, people and societies were frequently seen as necessary outcomes of environmental conditions and processes (Peet, 2008). As an outcome the environment was awarded the status of independent variable, with the power to determine human life, including aspects of "human nature" (e.g. Semple, 1911). In the following era of regional geography the idea of the environment being decisive for people and culture was mitigated. Possibilism, and its frontman Vidal de la Blache, brought forward a dialectical relation between nature and culture, where the former is seen to set the framework within which man is active and creative (Vidal de la Blache, 1926). This shift towards human predominance was further strengthened within the approach of cultural geography. Carl Sauer (1925, p. 46) wrote: "Culture is the agent, the natural area is the medium, the cultural landscape the result". Still, like environmental determinism, early cultural geography was firmly material, focusing on physical form and visible transformation of land, due to natural forces and human culture in appearance of population, settlements, physical forms of production etc.

This material view on human way of life was later proven too one-dimensional, neglecting the immaterial aspects of culture. Instead, during the 1980s and 1990s, the "cultural turn" of the discipline paved the way for a "new cultural geography" that emphasizes the representations, beliefs, ideologies, and discourses of people. By focusing on people's representations, perceptions, and the meaning ascribed to various environments, the question of *what* we see was replaced by the question *how* we perceive the world through our culturally colored lenses (Wylie, 2007). Ontologically, the environment was no longer regarded as objective reality that could accurately be described, but rather a conceptual construction (e.g. Cosgrove, 1984) and a product of socially related perceptions (e.g. Smith, 1991), including values and norms that differ between various social contexts.

3.2. Examining the environmental connectedness perspective

As this brief historical review demonstrates, dualism runs through mainstream geographical thinking within the human–environment relationship theme. At first glance the starting point for environmental connectedness is somewhat more holistic: human beings are, originally, part of, or the same as, nature (e.g. Dutcher et al., 2007), but found departed by modern lifestyles (e.g. Schultz, 2002). Thus environmental connectedness is measured by the extent to which individuals, again, include nature as part of their identity. The potential success of this reunion does not change the fact that environmental connectedness subscribes to the deep rooted Western idea of man and nature as a two-part relationship. Rather, as put by Proctor (2009): "Even to say that we are connected to nature/the environment itself presumes a disconnect" (p. 295). In fact, seeing humans as nothing but a part of a biophysical whole could possibly challenge the imperative foundation of the environmental connectedness perspective: the environmental degradation caused by human action.

Within the environmental connectedness literature, human influence on the environment is not only evident in the recognition of anthropogenic environmental problems, but also in the predicted commitment among people to protect the natural environment as a result of recurrent nature encounters (e.g. Nisbet et al., 2009). As such, the perspective indirectly recognizes both the human domain and the environment as dependent variables, by combining a "Sauerian" notion of cultural impact with an idea of nature being determinant of human way of life. Still, this describes no explicit interaction, but rather an idea of two separate forms of influence, environmental degradation and reconnection processes, where the former is to be treated and mitigated by the means of the latter.

The underlying premise for the environmental connectedness perspective is that connection or disconnection to nature, based upon experience, will make people care, or care less, about it (e.g. Schultz, 2002). Thus people are objects whose behavior is determined either by the presence, or lack, of encounter with the environment. Considering this objectification of individuals, the environmental connectedness perspective appears to be material/objective. The environment exists beyond human imagination and social construction. It is the objective natural world out there, not burdened by any social contamination in terms of perceptions, values, and representations.

The environment also remains unspecified when it comes to location and characteristics. And just as the environment appears blank, so do people. Within environmental connectedness there is no recognition of subjective perceptions, understandings, and ideas of the environment that could cause interference with any "nature encounter." If connectedness is to occur or not is a question neither of attitudes nor representations, but rather of time spent in the natural environment (e.g. Kals et al., 1999). This downgrades the assumption that individuals and groups may differ in their view and valuation of nature, or particular parts of nature.

Another aspect worth noting is that despite the apparent neglect of any social or cultural context, the perspective of environmental connectedness is itself, evidently, a carrier of various familiar assumptions with reference to nature and the human–environment relationship. The underlying idea of modern life as an obstacle of restoration with nature as man's origin may for example be traced back to Romanticism and Jean Jacque Rousseau's

critique of civilization. Moreover, the encounter with nature, preferable pristine and virgin, as a way of overcoming this separation is central to the modern environmentalism (Cronon, 1995; Worster, 1994). This idea of nature encounter is essential, not the least thanks to the writings, and actions, of luminaries of the environmental movement. Therefore, obviously enough, while the environmental connectedness perspective neglects the social dimension it inevitably remains based on several constructions.

3.3. The need to "place" environmental connectedness

The examination of the environmental connectedness perspective reveals a firm position regarding ontology and directions of causation. Being essentially materialistic, it neglects the human domain of perceptions, values, and representations and downplays the subjectivity of human experiences. This contrasts with the work by Glacken (1967) and later, Macnaghten and Urry (1998), who show how different societies produce different perspectives on the natural world. Presumably, these different perceptions would alter the experience of nature encounter. For example, connectedness appears to be a more likely emotional outcome of nature encounter if an individual share a romantic view of nature, as a paradise set up by a benevolent creator (Worster, 1994), than if she or he view nature as bad or perilous. Moreover, while neglecting social construction, environmental connectedness is itself a construct based on ideas that recreate and reaffirm several common representations and beliefs. One of these beliefs regards the nature and culture divide and their inherent patterns of dominance/dependency, which is all in line with the assignment of boundaries characterizing the modern project of the Western world (Foucault, 1966; Latour, 1993).

While dualism pervades most mainstream geographical thought, there are a number of approaches that do question this assignment of boundaries, and the very reality of dualistic categories. Within regional geography the concept of cultural landscape bridges the division between nature and culture, leaving the question of purity of the two separate physical devices behind. In turn, humanistic geography, dating back to the 1970s, attempts to cut across the gap between the physical and the mental, by emphasizing the subjective experience, and the meaning individuals ascribe to the world (e.g. Buttimer & Seamon, 1980; Relph, 1976; Tuan, 1974). More recent geographical approaches move on by claiming that any explanation of the world should be based on imaginations of the impure, the mixed up, and the hybridized (e.g. Murdoch, 1997; Whatmore, 1999, 2002). Refreshingly, this "more-than-human geography" takes issue with any dualistic divisions and, importantly, their presupposed linear causations (Castree, 2005). While the forms of social constructivism apparent in new cultural geography tend to leave physical realms aside (e.g. Olwig, 1996; Sack, 1997; Thrift, 2008), the "more-than-human" approaches brings materiality and realism back into light.

In line with these synthesizing ideas this article suggests that a way forward with regard to the environmental connectedness perspective is to follow the example of Sack (1997) and replace the elusive concept of nature with the relational concept of *place*, i.e. a context specific experience with the more than human world. Despite being a contested concept (Cresswell, 2004) most understandings of place include three components: geographic location, material form, and an investment with cultural and subjective meaning, i.e. a sense of place (Cresswell, 2013). People's assignations of meaning to physical segments of the earth's surface make places appear, and as such, the concept of place captures social construction while it at the same time recognizes the material basis for it. By doing this it efficiently moves on from the material/realist-idealist/constructionist distinction. Instead of seeing nature as a geographically undefined but static material good, places situate nature by including the variety of human perceptions, emotions, and meanings that are not necessarily agreed upon by everyone, but rather under constant negotiation (Keith & Pile, 1993; Massey, 1994). Subjective and intersubjective aspects may most likely be of great importance for the outcome of any nature encounter.

The place concept escapes claims for mutual purity that follows the dualistic division between nature and culture, and as a result the question of what nature really is becomes less relevant. Moreover, place offers a relational understanding where people and their environments are products of their various connections rather than of some essential self (Massey, 1993, 2006). This contrast to dualist thinking which inherently establish a relationship between two things whereby one is more dominant than the other (Haraway, 1991). People construct their places, at both the level of representation and materiality, and at the same time places do have an impact on human way of life. As such places function as a facilitators and mediators of certain social relations that condition human way of life including identity formation and behavior (Agnew, 1987; Sack, 1997). With the perspective of Latour (2005), it could be argued that people and the biophysical content of places are interlinked co-actors in various relational networks. Therefore, human way of life is the cause *and* effect of various places, i.e. the physical and meaningful locations in where lives are led. This view includes the perspective of connectedness (or attachment), but also considers settings as potential contributors to processes of identity formation, socialization, and creations of common sense as well as standards of behavior.

A place-based approach allows us to acknowledge what is left out in a dualistic culture/nature divide. Beside the various perceptions, connections, and differences existing with regard to blocks of stuff called nature or culture, this includes the complexity of environmental behaviors. General measures of possible environmental concern, as presented in the study of this article, are common within the environmental connectedness research. However, just as culture/nature dualism falls into over simplicity and reductionism, general measures of behavior also miss out the importance of a wider context. For example, a mobility question exploring train or air travel choices should only be asked of individuals who have the economic and physical means of making such a decision. For some people, more appropriate mobility questions might involve alternatives of bike vs. car, or even home site choice based on proximity to daily needs and mechanisms of travel. The differing N values in the results (see Table 1) lend possible support to the idea that all of the questions may not have been relevant, or context specific enough, to compel a response.

Given the emphasis on place in this study, it is important to note that there does exist a line of connectedness to nature related research which has included place as a key component, for example Brown and Raymond (2007), Ewert, Place, and Sibthorp (2005), Jorgensen and Stedman (2001), Stedman (2002). Terms such place-bonding and place attachment, used in these studies, broadly refers to the emotional bond that may develop between an individual and particular settings. Importantly though, this bonding process embraces both physical and social-cultural dimensions. Beside this research, it is also worth noting other efforts into place and environmental behavior that have shown significant results regarding possible relationships between place meaning, place attachment, and pro-environmental behavior (see for example Brehm, Eisenhauer, & Krannich, 2006; Brehm, Eisenhauer, & Stedman, 2013; Halpenny, 2010; Payton, Fulton, & Anderson, 2005; Stedman, 2006; Vaske & Kobrin, 2001). This research, along with the reasoning presented in this article, highlights the importance of rethinking the general assumptions of the environmental connectedness perspective, in favor of the concept of place.

4. Conclusion

The importance of individual "nature encounter" and "nature experiences" is often cited in calls for increasing levels of individual environmental concern as a remedy to environmental degradation. Lately, this idea has found scholarly application in the perspective of environmental connectedness and related studies looking for possible pro-environmental behavior as outcomes of "nature encounter." The study presented in this article uses nature based outdoor recreation as the general context to explore behavior outcomes from nature experience. However, the study fails to present a strong relationship between the measures of environmental connectedness and environmental behavior. Results indicate that connectedness does not automatically imply a commitment to engage in the specific behaviors noted. This lack of solidity is consistent with results presented in earlier research.

Urged by this, our article moves on to examine the environmental connectedness perspective on a basis of perspectives derived from the wider human geographical discussion regarding the human–environmental relationship. The examination reveals that the construct of environmental connectedness is rooted in a material/objective perspective, neglecting the human domain of perceptions, values, and representations. The environment is portrayed as a geographically undefined agent, "nature", with the inherent power to change human attitudes and behavior. Thus, the environmental connectedness perspective bears resemblance to environmental determinism, a set of ideas that is widely contested within contemporary human geography.

This article argues that the environmental connectedness perspective may suffer from dualistic thinking and a reliance on simple causality. While this is also the case for most mainstream geographical thought on the human–environment relationship, there are various disciplinary approaches that attempt to move on from the unilateral relationship of dominance apparent in all dualist thinking. In accordance with these, we suggest that the nebulous category of nature should be replaced with the relational concept of place. In fact, it can be stated with certainty that "nature encounter" always takes place somewhere, remembering that the previously noted environmental luminaries Henry David Thoreau, John Muir, and Aldo Leopold grounded their thoughts and writings in the experience of particular places: i.e. long term experiences in and attachment to Walden, Yosemite, and the farm in Wisconsin's Sand County.

Humanistic geographer Yi-Fu Tuan refers in his book, *Topophilia: a study of environmental perception* (1974), to the significance of the affective place-based bond between people and the environment. Yet, to assume pro-environmental behavioral change as a necessary outcome of spending time at particular places is to once again relapse into simplicity and reductionism. Understanding reasons for human behavior change calls for a much greater consideration of covariance and complexity. This complexity goes beyond plain progression models and their inherent pursuit for universality and necessity, and refers to environmental concern as a phenomenon occurring within the relations between individuals and their various interacting contexts. One of these contexts, and the context of the data from this research, may be that of outdoor recreation. Though "nature encounter" is likely to fail as a general prescription for pro-environmental change, regardless the suitability of any particular location, there are still reasons to believe that recreational settings, *places*, may facilitate and frame interpersonal relationships, social formation, and behavior.

For further research we concur with the recommendation of Müller et al. (2009) and promote their suggestion for more elaborate developmental studies. We encourage a broadened methodological approach as well, especially various qualitative methods. Deliberate investigation of lived experience, i.e. stories of place affiliation, may be able to provide better understanding into the conditions and context necessary for motivation of pro-environmental behavior. Qualitative inquiry may also offer insight into how place can be more specifically operationalized for application within future quantitative efforts.

Ultimately, we recommend conceptualizing not one pathway from "nature" experience to environmental behavior, but many paths of interplay between places of human affiliation and pro-environmental behavior.

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