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Communicating the Values of Ecological Integrity through Education in National Parks: a case study of the Icefields Parkway

In light of the Parks Canada Agency's (PCA) current integrated mandate of managing for ecological integrity, ensuring quality visitor experiences, and providing educational opportunities (PCA 2007a), it has become increasingly important to assess the values guiding each of these management efforts and the ways in which they interact with one another. Towards this effort, this paper addresses the connection between educational experiences and the concept of ecological integrity within the Mountain National Parks based on the knowledge that education is a crucial component of ecological management. Clarifying the ways in which ecological integrity and education intersect, or fail to do so, may prove instrumental in Parks Canada's efforts to achieve their mandated goals.

Results were obtained using a case study approach focusing mainly on the Icefields Parkway, located in Jasper and Banff National Parks. The Icefields Parkway is a popular stretch of highway that offers views of some of the most dramatic mountain and glacial landscapes in Canada and attracts more than 1.4 million visitors per year (PCA 2007b, 23). A case study of this area is particularly timely since the area has become the subject of increased attention in anticipation of upgrade development. In this study, individuals charged with the responsibility of communicating the values of ecological integrity to the public were asked how they personally understand and interpret ecological integrity to park visitors. Study results speak to the relationship between biophysical management objectives and the social values that determine how people relate to and value their natural environments, and the relative contribution that understanding this relationship can make towards the delivery of effective environmental education.

The objectives of for this paper are two-fold. First, I hope to identify how educational experts whose work takes them to the Icefields Parkway conceptualize ecological integrity in their work as communicators. Second, this paper explores the potential implications of using educators' concept of ecological integrity in education and communication within along the Icefields Parkway and National Parks as a whole.

Preliminary results indicate that ecological integrity educators along the Icefields Parkway conceptualize ecological integrity not only according to its stricter biophysical definition, but also as a deeply held societal value. For the purposes of this paper, reference to biophysical definitions of ecological integrity include those which are measurable or more easily associated with quantifiable unites. More value-based definitions of ecological integrity refer to those which are highly personal in nature and refer to ecological integrity as if it were a virtue or social standard used to help define human relationships with their natural environments. Discussions between educators

revealed ways in which they aim to, or would ideally strive to, implement a value-based concept of ecological integrity in education and communication. Insights from these interviews and focus groups also suggest wider implications for integrating ecological integrity and educational objectives.

In an effort to honour the sentiments of study participants, quotations have been used as much as possible to illustrate key points of discussion. Note that pseudonyms have been assigned to protect participant anonymity. Throughout these quotations, evidence of the four emerging values found to be integral to the concept of ecological integrity (as indicated above) as may be seen. Following a brief outline of research methods, participant demographics, and relevant study findings, the utility and potential consequences of interpreting ecological integrity as a social value (rather than a purely scientific and seemingly value-neutral concept) will be discussed.

Definitions:

Ecological Integrity according to the Canadian National Parks Act:

“A condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of changes and supporting processes” (PCA 2007a).

Interpretation as defined by the Panel on the Ecological Integrity of Canada’s National Parks states:

“Interpretation is a form of education and a means of helping visitors to enjoy National Parks, but the purpose of interpretation is not just to provide factual information about ecological integrity and national parks. Interpretation helps makes people feel aware of the value and purposes of national parks, and what uses are appropriate in national parks, so that ecological integrity remains unimpaired” (PCA 2000, 10-2).

Environmental Education, at its root is “aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and it’s associated problems, aware of how to help solves these problems, and motivated to work towards their solution (Stapp et al. 1969, 31).

Methodology:

This study generated results in consultation with individuals who have an active role communicating Park values, and “ecological integrity” in particular, to the public. It sought input from professionals in the field with relatively large amounts of experience working along the Icefields Parkway and the Mountain National Parks more generally. Note that this study did not explore visitor perceptions of ecological integrity. Unlike the majority of more recent studies pertaining to visitor experience and education, this study did not ask visitors what they would *like* to learn, it asked individuals with many years of experience working with park visitors, what they thought needed to be *taught*.

This study generated its results through the use of participatory site visits (Dewalt & Dewalt 2002, Burroway 1991), key-informant semi-structured interviews (Bryman & Teevan 2005) and focus groups (Kreuger et al. 2000). In an attempt to ground this study in the realities of the place, participatory site visits were used to provide the researcher with a personal appreciation and familiarity for the educational activities and visitor interactions taking place along the Icefields Parkway.

A total of 16 key-informant interviews were audio-recorded and transcribed with an additional two interviews were conducted without audio-recording. In all situations, handwritten notes were kept, and the resulting notes and/or transcriptions were coded. In choosing key informants, a balance of representation was sought from the private and public realms. Interviewees were selected according to the following criteria: a) extensive experience developing, delivering and/or managing educational opportunities for visitors, b) extensive experience and knowledge of the Icefields Parkway region, and c) knowledge and experience that extended beyond the Icefields Parkway to the Mountain Park region as a whole.

Finally, a series of three focus groups two to three hours in length were designed and facilitated to delve deeper into study content than was made possible with the interviewing method (Kreuger et al. 2000, Bryman & Teevan 2005). The goal was to provide a diversity of participants the opportunity to interact with one another, reflect on each others' comments, and in some cases, resolve differences in opinion and come to commonly held conclusions. Participants chosen for focus groups were purposefully diverse. Please see Appendix I for a sample of focus group demographics. A sample of the type of questions asked is provided in Appendix II. All discussions were audio-recorded, fully transcribed and coded for analysis.

Findings:

What does ecological integrity mean to you?

Despite the scientific background of many participants who contributed to this study, significantly fewer individuals defined the concept of ecological integrity in biophysical terms than was expected. Evidenced by this were comments made in interviews such as "ecological integrity is just a Parks word trying to get us to believe certain things," or "if we want ecological integrity to carry any real meaning, we have to stand up and say we value this, otherwise it will just go out of fashion really fast." In one focus group, Rob who is an accredited mountain guide involved in various environmental education initiatives in partnership with Parks Canada and other independent organizations, builds on this point below by stressing the importance of recognizing that ecological integrity, no matter how it is defined, exists *for* human purposes. He says this well here:

...it's really important not to overlook that ecological integrity is a concept that people are inventing to some degree, and also, it's for people. It's not necessarily just the environment. It describes to us how we should treat the environment, and how we should manage it. ... but we're the ones coming up with this concept "ecological integrity," it's not like it's just there.

When asked to describe ecological integrity, most participants had a very hard time keeping their knowledge of biological processes and standard definitions of ecological integrity separate from the way in which people choose to live their lives. Leanne - a communications specialist with Parks Canada - demonstrates this well here:

I just think of ecological integrity as a continuum of land use that allows for sustaining biodiversity and evolution, all those parts and processes, so that things just keep ticking along and you have the greatest diversity possible. so to me this means that it's less about people owning the land, it's just about what we do on the land ... if we could come back to thinking like that, this would be ecological integrity, because the land shapes cultures and societies. There's no real separation there. I guess in an ideal world we'd value those connections more and then we'd have ecological integrity. And hopefully we'd have healthier societies and communities based on that. So, ecological integrity comes back to living more holistically on the land.

Like many others, Jenny's interpretation of ecological integrity is inseparable from the way in which people (their cultures and societies) demonstrate the relative value they have placed on natural environments. In many cases, participants took this a step further explaining that a clear understanding and appreciation for ecological integrity in the Mountain National Parks would also include how humans *ought* relate to, and care for the environment.

Making sense of ecological integrity: personal experience

With regards to education more specifically, the importance of communicating ecological integrity messages in a way that appealed to social context only increased. Hugh, a biologist, public speaker, environmental educator and park warden, illustrates well the utility in overtly addressing the human side of ecological integrity in personal and subjective terms. Interestingly, however, emotional understandings of ecological integrity were not limited to just the realm of public education. In the following example, Hugh recounts the time that he, himself, finally came to understand what ecological integrity was all about and relates this to his current work aiming to increase public awareness and appreciation of these ideals.

...in my work I know that histograms and graphs are a whole lot less compelling than a good old story. ... humans seem to relate to human stories the best. ...I learned this when I was in the Western Arctic, ... there was this mandatory Ecological Integrity training that employees had to go through. So, we got together ... everyone from seasonal Park Wardens to the Park superintendents and it was really cross-cultural as well because half of the staff there are Inuvialuit and a few Gwichen ... it was really interesting to watch this thing unfold with myself and the others struggling to remember this flippin' definition. You know, it was like species and populations, and natural range of abundance, and diversity, and you know – like I can't remember it now!

And then, this Inuvialuit guy ... he says, "You know what ecological integrity means to me?" ... and he said "It's the fact that my father, my grandfather, my great grandfather, and my great, great, grandfather, and my great, great, great grandfather all lived here and we still have animals to hunt and water to drink and berries to harvest."

And that was it. That was it right there. That was the human take on ecological integrity. And it was just so simply phrased, and so direct to human experience. I thought: wow. That's so great – he gets it. He gets it better than the rest of us! ...

So, I can understand how we agonize over these definitions and we try to shove a concept that I do think is great, and very principled, and it is valuable – but we shove it into the constraints of scientific language ... and then if you have a scientific concept, you have scientific approach – which is meticulous, rational, no room for misinterpretation, or personal experience. That is the type of stuff that just doesn't make the heart and the spirit sing. ... I think it is good for us to have that [scientific definition of ecological integrity], especially to aid those people who are already on board. But I don't think it is going to do much to get people who aren't already on board to move over even a little bit. Those kinds of things require emotion and exploration and stories that relate directly to people's lives. Ecological integrity is all those things too.

Definitions of ecological integrity such as this one that are based so deeply in personal experience, and an allegiance to that experience, may identify opportunities for garnering a deep appreciation and understanding of ecological integrity in the broader public sphere. The following section highlights how this differs from the current formulation of ecological integrity within the Parks Canada Agency. Potential implications and barriers to incorporating value-based principles into education for ecological integrity within the Mountain Parks will also be addressed.

Discussion:

Defining ecological integrity

The literature shows that defining ecological integrity is far from being a straightforward and uncontested effort (Turner & Beazley 2002). Numerous definitions exist and the dialogue between ecosystem specialists and other authors aiming to improve upon the utility of the concept continue (Kay 1993, Fisher 1998, Niemi & McDonald 2004). In this light, it is not surprising that there is some question over what the primary principles of ecological integrity are. That said, PCA has succeeded in settling on one common definition of the concept (as indicated in the definitions section of this paper), and continue to support the promotion and protection of ecological integrity as the agency's management priority. Interestingly, a comparison between the responses received from individuals with long-standing work histories in interpretation and education in the Mountain National Parks bears a striking difference from this accepted definition.

Whereas the PCA definition of ecological integrity is born out of biophysical thinking and an identified need to monitor protected ecosystems (PCA 2005, Woodley and Forbes 1995), the majority of participants in this study expressed an understanding and appreciation for ecological integrity on the basis of the acknowledged social values and personal experiences. Interestingly, those participants who expressed the least enthusiasm for the concept were also the individuals who viewed ecological integrity as “just a Parks term”¹ or a concept that is used “just to separate people out of the picture.”²

¹ This comment from a lodging manager along the Icefields Parkway

In instances where managing for ecological integrity was not supported as a top priority, the concept itself was associated with bureaucratic activity or ecosystem science meant to “further the goals of environmentalists.”³ However, the majority of participants who expressed support and appreciation for ecological integrity spoke from places of personal experience and attachment to the natural world. In these instances, experts in the field of education, interpretation and communications may have expressed something significant: by addressing a need to be more explicit about ecological integrity as a social value in and of itself, appreciation and understanding for associated concepts are likely to increase. There are at least three possible reasons for this result.

From information to broad-based concepts

First, by not being explicit about the values inherent in the concept of ecological integrity, messages meant to foster an understanding and appreciation for related issues run the risk of falling flat. One such example of this may be found in common messages such as “don’t pick the flowers” or “don’t feed the animals.” On a number of occasions, participants explained that messages like these fail to communicate to visitors the real issue at the heart of the message: what the National Parks are trying to support, and *why*. According to Dawn, a Parks Canada communications employee and active volunteer with various local community-based conservation groups, “a lot of times, messages [like these] are lost when park visitors step outside the boundaries of the park and are seen picking a Wood Lily, or some other vulnerable species⁴ ... Even worse is when they fail to see how any of the things they have heard while they were here apply to their own lives once they’re back home.”

Unfortunately, when messages such as these fail to get at the heart of the issue, instead of communicating the values of ecological integrity to park visitors, these messages come across merely as restrictions placed on certain activities within a designated boundary. Study results emphasize the need to communicate values to Park visitors that extend beyond the boundaries of the park. Not only would this approach make education within parks relevant to visitors’ everyday lives, but it would help visitors to realize that the parks themselves hold relevance beyond their political boundaries that extend to a broader regional and even a world level scale.

Value-changes as teaching tools for ecological integrity

Second, societal values are actually great teaching tools when wanting to engage visitors in discussions around ecological integrity. For Vince, a professional guide and interpreter working in consultation with most of the private guides and interpreters in the Mountain National Parks, “value changes” are what he finds work best when he wants to

² This comment from an environmental educator reporting on some of the opposition he has heard in the Town of Banff when the term “ecological integrity” came up in stakeholder consultation meetings he has attended.

³ This comment also from lodging manager along the Icefields Parkway

⁴ Along the same lines as this example, other participants pointed out that not only do visitors pick flowers when they leave the park, but they leave without the very basic knowledge as to why picking a wild flower such as the Wood Lily, is valued differently than picking an Oxeye Daisy (an invasive species causing significant management challenges for the Mountain National Parks).

talk about ecological integrity with park visitors. He explains what he means by this below:

Usually when the concept of ecological integrity comes up when I'm guiding, it comes up in the context of value-changes. So, for example, during a hike I did the other day ... this younger fellow in the hike came up to me ... and he says: "What's the deal with your new road? ... all this development, all this construction. ... How does this fit?"

So, for me, I actually see this is a great jumping-off point for me to say: Well, if you look at the start of the Park, the commercial values were what ran the park then. Values at that time were very different ... the wardens were actually paid to get rid of nasty predators so that game animals would be higher in numbers for hunters to come in and shoot. Those were very different times and very different values than we have now. Back then we didn't talk about ecological integrity much. So, ecological integrity is very much a value put on a place, and it's the value that, ideally, we're supposed to be supporting now. When I talk about ecological integrity that way, it makes people think and they actually get it. It's not just a bunch of facts that they easily forget.

Education or entertainment?

The third implication this has for communicating the values of ecological integrity in protected areas has to do with the importance of what Hugh referred to in the previous section as the "heart and spirit" ecological integrity. Simply put, if ecological integrity has associated values, it also has the potential for associated emotions and feelings. While this approach is not new to interpretation or educational theory (Ranson and Martin 1996, Orr 1994, Pooley and O'Connor 2000), numerous participants expressed frustration over having to limit visitor's exposure to less optimistic stories pertaining to the state of ecological integrity in parks in an effort to curb unpleasant emotional responses. Dawn illustrates this well below:

We are supposed to provide these really quick, simple messages. They can't be too political and sometimes I feel like this prevents us from just telling the truth. Like, we should be able to say things that cause people to really think, and feel, and question. You know, it's like we can say: scientists have found that the glaciers are retreating at an ever-increasing rate. But we don't really say to the public that we are probably causing part of this, or what effect this will have on the watershed, or anything like that make people feel sad or uncomfortable. ... We don't go that far because it's viewed as being too political, and people are here to enjoy themselves, not to told anything but happy and amazing things. But in my experience ... people want to know this stuff.

Similarly, Ingrid, a private guide and interpreter offered this story:

If we want people to slow down [while driving] along the Icefields Parkway, if we want people to really understand how their choice to speed effects the ecological integrity of this area – lets actually do something that demonstrates what we're talking about here. In Kootenay one year they put up markers in every spot an animal was killed along the road. And you know what? People actually slowed down! It was working! But then someone decided that this was too forward, that they might upset the visitor ... and they

called it quits. So, it just makes me ask: What are we here for: education or entertainment?

According to the educators who contributed to this study, in order for information relevant to ecological integrity education to be effective, it was necessary to communicate those messages with the moral implications and associated virtues intact. Educators expressed that communicating ecological integrity required more than biological information. It was also required that this information be put into a social context so that the information, message or experience would resonate personally. Interestingly, while all participants highlighted this as being something they aimed to facilitate, many educators expressed frustration with tourism-based activities aimed at “entertaining” rather than providing “engaging educational experiences” to park visitors.

Conclusion:

It seems that many of the educators who work along the Icefields Parkway have a solid grasp of what ecological integrity means, and how this concept differs from previous guiding environmental management concepts such as the idea of preservation. An analysis of the biological concepts under the umbrella concept of ecological integrity coincide with a movement away from societal values that previously favoured the romantic view of parks as islands in a serene and harmonious world, towards values that recognize parks as a part of an interconnected biosphere under significant anthropogenic influence. There is frustration, however, over the degree to which educators feel that they are able to truly communicate values consistent with the concept of ecological integrity in a way that transcends park boundaries. In line with participants’ personal definitions of ecological integrity that focused on how humans value their natural environments, educational messages for ecological integrity should also be explicit in acknowledging the role of humans play in the broader ecosystem.

A broader discourse addressing the challenges and opportunities of incorporating both biophysical and value-based principles into Parks Canada’s guiding framework of managing for ecological integrity is warranted and would provide valuable feedback to those involved in education within our National Parks. Identification of just what the values associated with ecological integrity are, is an important but complex process. Based on the comments and opinions of key stakeholders identified in this case-study, the second part of this research aims to uncover what the primary values ecological integrity are. This work will become available in full after the researcher’s thesis defense date in August 2008.

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Appendix I:

Sample Focus Group demographics:

Social Category	Example
<i>local community members involved in environmental education</i>	naturalists, individuals involved with 'Friends of' organizations or other conservation groups
<i>Parks Canada employees</i>	ecologist, district warden, interpretation staff, communications specialist
<i>private tour operators</i>	hiking tour guide, tour bus guide
<i>environmental educators</i>	private interpreter, nature-guide author
<i>business representatives</i>	tour operations manager, lodging manager

Appendix II:

Sample Interview & Focus Group Questions:

Key- Informant Interviews	<p>Participants were asked to explain their personal involvement in environmental education in the Mountain National Parks, and again for the Icefields Parkway.</p> <p>Participants were asked if they felt that communicating the values of ecological integrity was a part of their job, and to explain how.</p> <p>Participants were asked what they thought the most important aspects of ecological integrity were with regards to public education.</p> <p>Etc.</p>
Focus Groups	<p>What does the term <i>ecological integrity</i> mean to you?</p> <p>Do you try to communicate the concept of ecological integrity to park visitors?</p> <p>What terms do you use to describe ecological integrity to park visitors?</p> <ul style="list-style-type: none"> ○ What is it you like about these particular terms? <p>As an educator, do you find Parks Canada's definition of ecological integrity to be useful?</p> <p>What sort of things do you bring up in regular conversation with park visitors when you are talking about ecological integrity?</p> <p>What things besides dialogue or written words do you think helps visitors understand and appreciate the concept of ecological integrity?</p> <p>In your work, are there any barriers to communicating the values of ecological integrity to park visitors?</p> <p>In your opinion, what are some of the best stories that communicate the principles of ecological integrity for the Icefields Parkway?</p> <p>etc</p>

