Discourse, Context, and Consequence:
An Analysis of the Discourses of Biodiversity and nature in Three Popular Magazines

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Abstract Biodiversity and nature are portrayed differently in many discourses, and thus can have many potential effects on people's views of them. Different material will have different discourses of biodiversity and nature based on what the desires of the people or person promoting that view are. I studied the discourses of biodiversity and nature in three popular magazines; *National Geographic*, *Field and Stream*, and *Travel and Leisure*. The discourses found in these magazines were coded using the biodiversity discourses defined and analyzed by Stephen Kellert. The types of discourses found differed from magazine to magazine, and all of the discourse distributions differed substantially from Kellert's distribution of the US public's ideas of biodiversity and nature. The magazine discourse distributions also differed between magazines. No two discourse distributions, Kellert's or the magazines', were statistically similar. Statistically significant results of this were calculated using chi-square analysis testing. I wanted at first to do this research to gain insights on why the magazines use the discourses they do to represent biodiversity and nature, and what consequences those discourses have. However, I could not do that without first examining what discourses the magazines use, and how often. So the results of my research are a stepping stone to that future goal of discovering what it is that media does to influence the public on biodiversity and nature, why they do it, and the consequences those actions have.

Introduction

My research drew on the work of Stephen Kellert who identified and analyzed nine discourses of biodiversity that are prevalent in US society (Kellert 1996). Stephen Kellert is a professor of Social Ecology in the school of Forestry and Environmental Studies at Yale University. He spent 20 years researching the discourses the United States public holds of biodiversity and nature. For my project, first I examined if Kellert's findings on the respective frequencies of the discourses in the US population were also found in three different kinds of popular print media: a nature magazine - *National Geographic*, a hunting magazine - *Field and Stream*, and a travel magazine - *Travel and Leisure*. I hypothesized that the distribution of the discourses in the magazines would differ from the frequencies that Kellert found, reflecting the content of each magazine. Specifically, I expected to find that based on content, the following discourses would have the highest frequency: for *National Geographic*, moralistic; for *Field and Stream*, dominionistic; and for *Travel and Leisure*, aesthetic. The reason for this difference could be that the magazines have a particular bias based on what they are trying to sell (the content of their magazines) to their particular readers. That is why I expected the magazines' discourses of biodiversity and nature to differ from those of the US public as found by Kellert. Since Kellert sometimes seems to conflate nature and biodiversity, I coded for both in my research, and compared the results of the frequencies of the discourses. Kellert includes ideas of nature in his discourses of biodiversity, and that is how his data are constructed, therefore, I constructed my data that way as well.

My motivation for this research was to understand why magazines are portraying biodiversity and nature in specific ways - specifically, I wanted to understand the repercussions of using certain discourses of biodiversity and nature. In order to do this, I examined what exactly *National Geographic*, *Field and Stream*, and *Travel and Leisure* are doing in terms of representing biodiversity and nature. In other words, I studied what discourses the magazines use, and how often they use them, so I could understand what they say about biodiversity and nature. I also try to explore some potential consequences of these discourses.

Before I go any further, it is important to define some of the terms I mentioned above that are significant to my research. The definition of discourse, and how I defined both biodiversity and nature for the purposes of this project will be discussed next. I specify how *I* defined biodiversity and nature because they are controversial issues and difficult to define. Any

definition I put for either could be contested, but these are the definitions I adopted for these terms for this research.

Discourse can be described as written or spoken conversation, and the thinking that underlies it (Johnson 1995). It is a statement, or group of statements which provides a language for talking about - a way of representing - a particular kind of knowledge about a topic (Hall *et al.* 1996). It is important to note that these "statements" do not always have to be spoken or written, discourses can also manifest in images, actions, practices, cultural norms, and many other things. Johnson (1995) says that it is through discourse that people construct what they experience as reality, and people act on these constructions, and in this way, discourses have material effects because the ways people talk and think about the world shapes how they behave in it.

Discourse is about the production of knowledge through language. When statements about a particular topic are made within a particular discourse, the discourse makes it possible to construct the topic in a certain way, and it also limits the other ways in which the topic can be constructed (Hall *et al.* 1996). Furthermore, discourses are culturally and historically contingent, therefore, what may seem true to one group of people may be false to another group (Foucault, 1984).

An example of discourse to illustrate these points comes from the work of Fairhead and Leach (1995). They studied the region of Kissidougou in Guinea, West Africa and how discourses dictated how westerners viewed the area and the indigenous people. The indigenous tribes used a 'slash and burn' system of agriculture - actually named swidden - which led many westerners who came to the area to believe that the indigenous tribes were degrading the environment and impeding forest growth. The reason westerners thought this is that there are prominent discourses in western culture that are taught in schools and other institutions, that 'people are bad for the environment' (Kaplan 1994), and that 'slash and burn agriculture degrades the environment'. Fairhead and Leach started their research believing the discourses described above that they had been taught, but they found that the system of swidden agriculture the indigenous peoples were using was actually good for the soil, and furthermore, the people were promoting forest growth elsewhere. So the discourses of 'people being bad for the environment' and that 'swidden agriculture degrades the soil' were found to be false in this case, however, there were consequences to these discourses. One example of a consequence is that the people who came to Kissidougou believed the indigenous people were degrading the

environment, so they were looked down upon for that. These thoughts lead international environmental groups to encourage the African government to set up reforestation because they believed the forests were being degraded when in fact they were being cared for, and forest growth was already being encouraged by the tribes of Kissidougou.

The definition of biodiversity I will adopt is taken from Cunningham *et al.* (2003), which states that from the biological viewpoint, there are three parts to biodiversity. 1) Genetic diversity, which is a measure of the variety of different versions of the same genes within individual species. 2) Species diversity, which describes the number of different kinds of organisms within individual communities or ecosystems. 3) Ecological diversity, which assesses the richness and complexity of a biological community, including the number of niches, trophic levels, and ecological processes that capture energy, sustain food webs, and recycle materials within this system. I will count anything that speaks to these issues, or anything relating to a single species as a whole (taken from number 2), as biodiversity in my research.

Coming up with any definition for nature is a very difficult task, as I mentioned above. It is a very controversial issue, and is socially constructed, therefore any definition will be contested.

> Nature is a societal category. That is to say, whatever is held to be natural at any given stage of social development, however this nature is related to man and whatever form his involvement with it takes, i.e. nature's form, its content, its range and its objectivity are all socially conditioned. (Lucaks 1923)

With it being said that nature is highly contested, and that it is very hard to define without it being controversial, for the purpose of this research, I will define nature as plants, animals, geographical formations, and other products of the earth that are not dependent on human labor for their existence. This can immediately be attacked because I would include a national forest as nature, but it relies on humans to stay a forest. So I will include things that are not man-made, or would appear not to be man-made, or where human labor is not readily apparent or identifiable. Furthermore, some oceans, forests, grasslands, and other ecosystems/biomes rely on humans and human labor to be kept undeveloped, but I will still count these things, and others like it, as nature.

Now that I have laid out clear definitions of the important, and difficult to define terms, I can move on to some background information, and why this research is important.

There has been extensive work done on examining and analyzing discourse (Johnson 1995; Hall et. al 1996; Benton and Short 1999, 2000). Studying discourses is so important that there is

a whole discipline in sociology devoted to it and the methods of doing such work (Titscher 2000; Wodak and Meyer 2001). There has been a lot of work done on studying discourses of nature, and the environment and the material affects those discourses have (Rogers 1994; Williams 1997; Benton and Short 1999, 2000; Harre *et al.* 1999). However, material involving discourses of biodiversity and their consequences has not been examined in this way nearly as much (Collins and Kephart 1995; Davis 1995; Price 1995; Takacs 1996; Escobar 1999). Most work on biodiversity does not examine and discuss the discourses of biodiversity, but instead focuses on what biodiversity is, why it should be conserved, and what benefits biodiversity has to offer humans (Ehrlich and Ehrlich 1981; Robinson 1993; Dietz and Stern 1998; Cincotta and Engelman 2000; Takeshita 2001; Wilson 2002; Majeres 2002; Sarkar 2002).

Studying discourses of biodiversity and nature and the potential affects those discourses may have is important because discourses can determine actions and have material consequences, as was discussed in the above definition. For example, a turkey hunter's discourse of biodiversity might be moralistic, which may lead her/him to want to conserve land and the biodiversity on it in order to have turkeys to hunt. The consequences of this discourse could be that the hunter would support conservation of hunting grounds, or avian ecosystems in general, or donate money to conservation foundations (for hunting or not). There is a range of possible actions that this hypothetical hunter may perform, and they are all determined by the discourses he/she adopts. Another person may hold a more utilitarian discourse of biodiversity and say human needs and so-called progress are more important than biodiversity and/or nature. The consequences of this discourse could be that this person supports drilling for oil in biodiversity rich places like the Oriente in the name of human development (Kane 1996), or they might be apathetic about pollution and not care about the effects it has on the environment and biodiversity, and instead focus on how it is necessary for human development. This is why studying discourses of biodiversity and nature is important - they shape how people think about, relate to, and behave towards them.

Methods

Data Collection: I used Stephen Kellert's (1996) discourses shown in Table 1 (below) to distinguish and designate certain discourses of biodiversity and nature in six issues of three magazines: April through September 2003 of *National Geographic*, *Field and Stream*, and

Travel and Leisure. I coded for the eight discourses in Table 1. Furthermore, Kellert (1996) only includes frequencies for humanistic, moralistic, negativistic, utilitarian, ecologistic-scientific, naturalistic, and dominionistic in his analysis. He leaves out the aesthetic and symbolic discourses and justifies it by saying they are difficult to measure (Kellert 1996). Due to this, I can only compare my data with Kellert's for the six discourses that our data have in common: moralistic, negativistic, utilitarian, ecologistic-scientific, naturalistic, and dominionistic.

Table 1 shows some ways the discourses I coded for can be expressed, and the one line simplified definition of these discourses taken from Kellert (1996). I modified and added to some of the expressions and definitions to make them clearer, but much of the information is taken from Kellert (1996).

Discourse	**Expression***	**Definition from Kellert (1996)**
Utilitarian	physical sustenance/ security	practical and material exploitation
Naturalistic	curiosity, discovery, recreation	direct experience and exploration
Ecologistic-Scientific	knowledge, observation understanding	systematic study of structure, function, and relationships
Aesthetic	inspiration, harmony, beauty, visual	physical appeal and beauty of nature
Symbolic	communication, mental development	use for language and thought
Moralistic	stewardship, meaning, kinship, altruism	spiritual reverence and ethical concern for nature
Dominionistic	physical prowess, ability to control/subdue	mastery, physical control, dominance
Negativistic	security, safety, protection	fear, aversion, alienation from

Table 1: Expressions and Definitions of Discourses. *many taken from Kellert(1996)

It may also be useful to show a couple more detailed examples of these discourses. "The utilitarian value emphasizes the many ways humans derive material benefit from the diversity of life…. Exploiting nature to satisfy various human needs and desires" (Kellert 1996, 10). Adopting a utilitarian discourse could result in the practical and material exploitation of biodiversity and nature 'for the benefit of humankind.' The moralistic discourse views the natural world as a living and vital being. It suggests that there is a basic kinship binding all life together, and it calls for the ethical treatment of animals and nature (Kellert 1996, 22-24). Adopting a moralistic discourse could result in feelings of stewardship towards nature and a deep respect for biodiversity and the natural world.

Below, table 2 illustrates how many copies of each magazine I looked at, the number of pages of coded material per magazine in the different sets of magazines, and also how many different codes I found in each set of magazines.

Magazine	**Number of Issues**	**Pages of coded material per magazine***	**Number of codes found**
National Geographic	6	~118	424
Field and Stream	6	~57	149
Travel and Leisure	6	~71	161

Table 2: Magazine coding information. * averages

I collected my evidence by coding *National Geographic*, *Field and Stream*, and *Travel and Leisure* for the different biodiversity discourses detailed by Kellert. This coding process involved reading through the articles and designating what discourses were used. This allowed me to see how often a particular discourse of biodiversity or nature was used in a particular article/magazine. Table 3 is what I had with me while coding. I would read through an article and when I found an applicable discourse I would mark it in the margin of the magazine, and also put a tally into the proper section of the table.

Magazine: (_____)	**Question: What discourse is being expressed, and is it nature or biodiversity**		**Total**
Discourse	**Biodiversity (BD)**	**Nature (N)**	**BD + N**
Utilitarian			
Naturalistic			
Eco.-Sci.			
Aesthetic			
Symbolic			
Moralistic			
Dominionistic			
Negativistic			

Table 3: Table I used while coding magazines

The reason I split up biodiversity and nature like this draws from how Kellert includes nature in his discourses of biodiversity. His data are constructed with the two terms being synonymous. In order to compare my data to his, I must also construct my data in that way. I coded for discourses of biodiversity and nature individually, but I compared them together to Kellert.

I operationalized all of the discourses defined by Kellert so I could easily code for them (Appendix I). Kellert explains them all in detail, and I have come up with a list of words, phrases, and contexts for each discourse to make it easier for me to distinguish between them, and code for them. The exact list of operationalized discourses that I used while coding is attached as Appendix I.

I assigned discourses by paragraph. So if one paragraph was discussing something relating to a particular discourse, say utilitarian, but used that discourse in many sentences within that paragraph, I only coded for it once. If a paragraph used two different discourses, I coded for both of those discourses. By doing this, I only coded once for each particular discourse per paragraph when needed. For example, this paragraph from *National Geographic* had three different codes in it.

> A precarious perch reflects the uncertain future of the endangered red, or lesser, panda, whose numbers have declined due to habitat loss and hunting for its handsome pelt. Still, the population and range of the red panda exceed those of the larger giant panda, which is even more endangered. A shy and solitary animal, the red panda spends its days sleeping in trees, descending at dusk to eat…. (*National Geographic*, April p. 106)

All of the codes in this paragraph were coded as biodiversity because it is talking about the fate of particular species. The word "endangered," which appears twice in this is coded as ecologistic-scientific only once. The phrase "hunting for its handsome pelt" was coded as utilitarian, and the phrase "shy and solitary animal," was coded as symbolic because it is anthropomorphism.

I will now describe some examples of the discourses that I found in the magazines. I found this example of the dominionistic discourse in *Field and Stream* in an article about taxidermy.

> mounted trophies represent nothing less than 'unapologetic reminders that the hunter is the master'…. 'The only reason there is any open space left on my own walls is primarily due to finances, logistics, and errant marksmanship.' (Field and Stream, June p. 44)

The underlined portion is directly dominionistic, while the second portion has a tone of the discourse as well. An example of the aesthetic discourse comes from *Travel and Leisure* where the author describes her view from her hotel window.

> I wake up every morning to what seems to be the birth of the world, swirling soft pinks and cerulean blues. The air, from the silvery morning sky to the pale gold afternoon light, has the swelling, streaming quality that comes from being above the sea, and it makes every speck of color blaze. (Travel and Leisure, April p. 224)

There are many descriptive words in this excerpt that portray beauty and aesthetics. An example of the moralistic discourse comes from a *National Geographic* article on the river Po in Italy. This is part of a woman's description of the river.

> Here we don't have immense rivers like you do in America. For us this is the big river, so majestic. You feel you have to respect it. You feel that you can't dominate it. I have love for it, love and respect, and I feel its greatness…. [The] water gives me a sense of grace, unlimited space, of peace. (National Geographic, May p. 104)

This is not the best example of the moralistic discourse I could have used, however, I feel it is a good example for other reasons. This excerpt shows how difficult it is to code for some of these discourses. It is not always as easy as, "Now, with the bans against hunting and logging in place, the mountain is largely protected" (National Geographic April p. 111). The tones of the moralistic discourse are less obvious in the above example, and the underlined portions together lead me to believe I should code it as moralistic.

Statistics: I will use chi-square tests to compare my data to Kellert's. In order to do this, I have to standardize Kellert's frequencies (Kellert 1996, 41,138) so they can be made into percentages. I will do this by dividing each frequency by the sum of the frequencies, therefore they will add up to one. Then, I will multiply these by 3000, because I know it is a low (but still a sufficiently large sample for statistical analysis) estimate of how many people Kellert interviewed (Kellert 1996, 40). That produced a distribution I compared with mine to get statistically significant results. After Kellert's distribution was standardized and could be compared with my distributions, I performed three chi-square tests for Kellert's distribution versus each of my magazine distributions. Then I performed chi-square tests between magazines to check for similarity/difference.

Results

After coding all of the magazines, I came up with a discourse distribution for each magazine. And after standardizing Kellert's data, I calculated a discourse distribution for that as well. The four distributions - the magazines and Kellert - are shown as percentages in figure 1.

It is clear in Figure 1 (below) that Kellert's distribution is different from all of the others. Kellert's percentages stay about the same except for naturalistic and dominionistic, and only negativistic is higher than the three magazine frequencies in that category. *National Geographic* has the highest ecologistic-scientific. *Field and Stream* has the highest dominionistic among the other distributions, but has a higher percentage of both ecologistic-scientific and moralistic

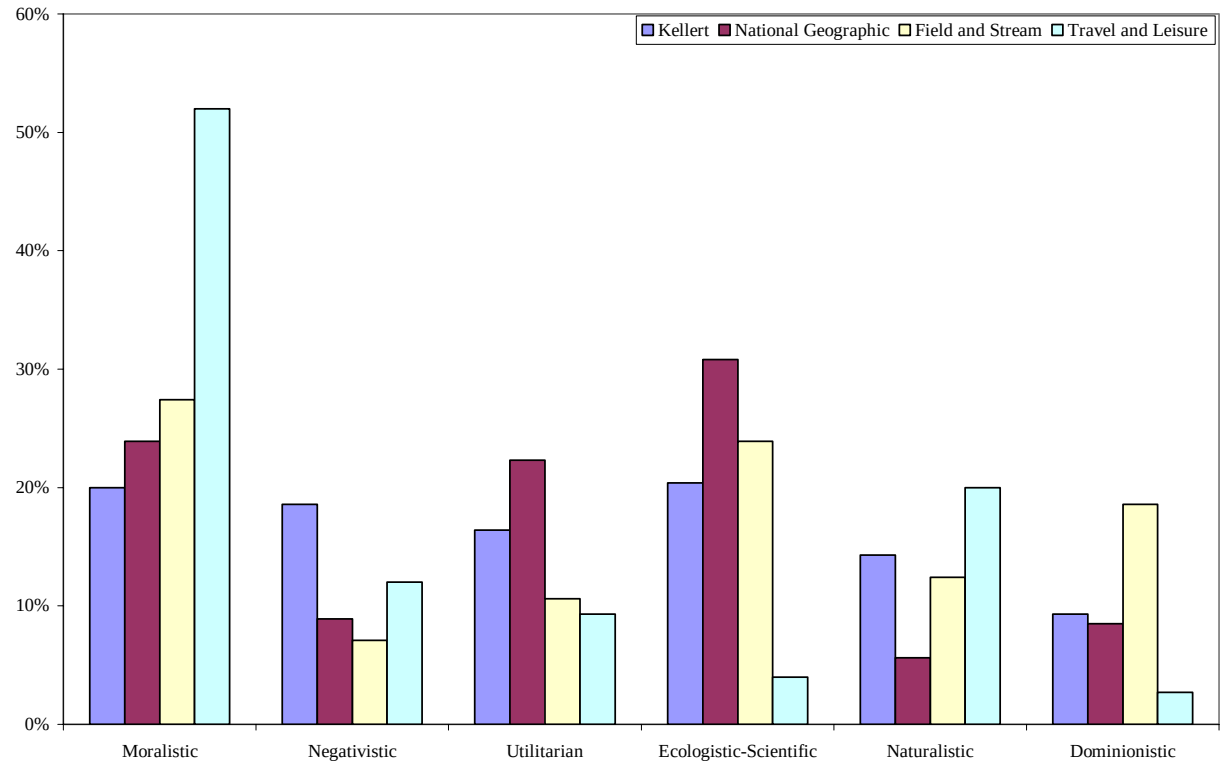

Figure 1: Percentages of Compared Discourses

discourses within the magazine. *Travel and Leisure* has by far the highest moralistic discourse, and has low frequencies for all the other discourses with the exception of naturalistic.

I also compared the three magazines with each other across all of the discourses. Figure 2, below, shows the resulting percentages of discourses among the magazines.

The first thing that stands out in Figure 2 is the incredibly high percentage of the aesthetic discourse in *Travel and Leisure* compared to the other two magazines. Besides that and the moralistic discourse, every other discourse is very low in *Travel and Leisure*. *National Geographic* is high in ecologistic-scientific, symbolic, moralistic, and utilitarian. *National Geographic* is the highest in all of those groups with the exception of moralistic, in which it has the lowest percentage out of the three magazines. And *Field and Stream* is high in moralistic, ecologistic-scientific, and highest in the dominionistic category compared to the other magazines.

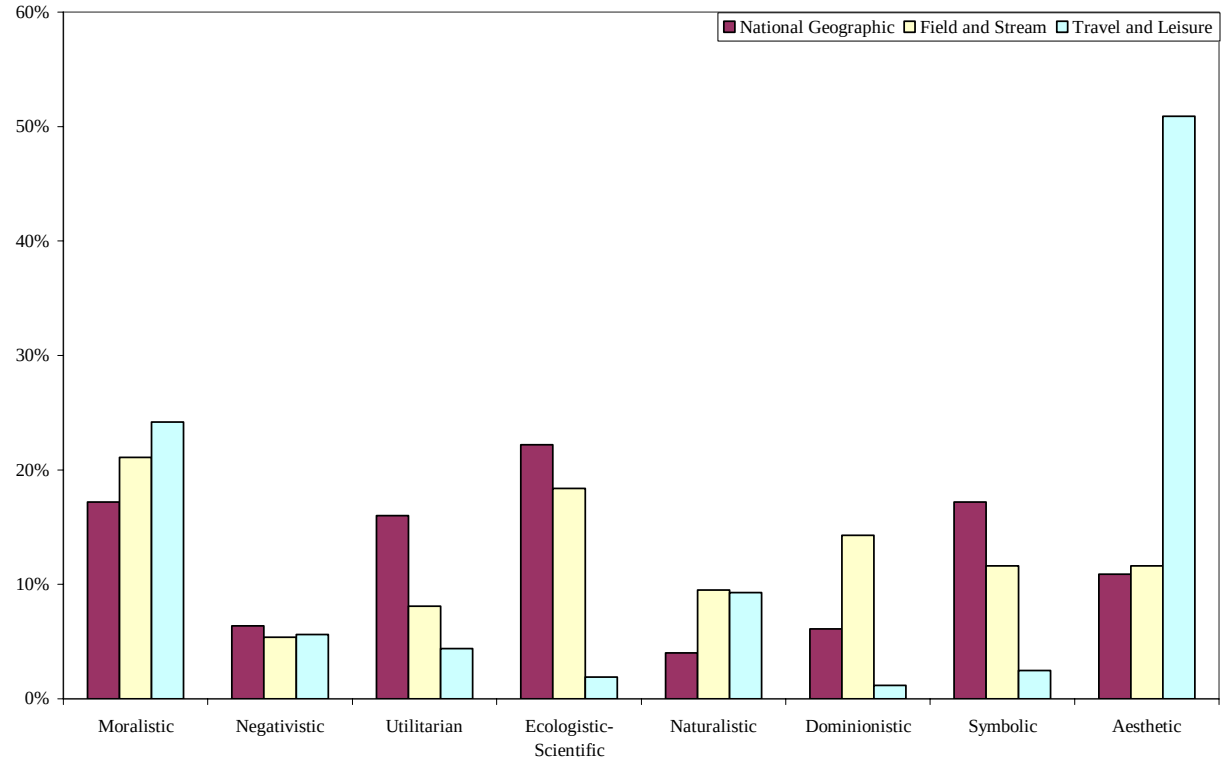

Figure 2: Magazine Discourse Percentages

In order to check for overall distribution differences, I performed chi-square tests for each magazine discourse distribution versus Kellert's and also between the magazines. In all cases when compared to Kellert's distribution, the magazine distributions were statistically different. For the chi-square tests between the magazines, in all cases they were also statistically different. Table 4 shows the tests that were done and the resulting p-values.

Test	**p-value**
Kellert vs. *National Geographic*	1.77E-9
Kellert vs. *Field and Stream*	2.71E-4
Kellert vs. *Travel and Leisure*	9.07E-11
National Geographic vs. *Field and Stream*	9.90E-4
National Geographic vs. *Travel and Leisure*	6.46E-11
Field and Stream vs. *Travel and Leisure*	1.03E-5

Table 4: Chi-square test p-values

Discussion

The first part of my study was to test if Kellert's distribution of biodiversity and nature discourses would be found in the three magazines. I was correct in my assumption that all of the

magazine discourse distributions would differ from Kellert's. This can be seen by the very low p-values for the chi-square tests done comparing the distributions (Table 4).

These low p-values mean that for every case - Kellert versus *National Geographic*, *Field and Stream*, and *Travel and Leisure* - it was statistically significant that the frequencies of the different discourses in the magazines did not reflect the frequency of the discourses found in the public. This difference is at least in part due to biases in magazine content based on what the particular magazine is trying to sell, and this is the area I would like to explore more.

I believed that the biases would manifest as *National Geographic* being highest in the moralistic discourse, *Field and Stream* being highest in dominionistic, and *Travel and Leisure* being highest in aesthetic. This turned out to only be correct for *Travel and Leisure*, which had 50.9% aesthetic. *National Geographic* had ecologistic-scientific as the highest, with 22.2%, and moralistic, symbolic, and utilitarian all were close with 17.2%, 17.2%, and 16% respectively. *Field and Stream* had the highest frequency of moralistic with 21.1%. However, the dominionistic discourse had 14.3% which was significantly higher than *National Geographic* and *Travel and Leisure* which had 6.1% and 1.2% respectively.

I expected *National Geographic* would be highest in the moralistic discourse because I understood it to be more of a "nature" magazine that would focus on issues of stewardship and ethical concern for biodiversity and nature. However, it was not surprising that *National Geographic* was high in ecologistic-scientific. People trust *National Geographic* to bring them scientific information on other people, places, and things, and many times it is people's only source of this information (Lutz and Collins 1993). According to Lutz and Collins (1993), *National Geographic* is where many people in the US get their 'scientific' (because *National Geographic* is not a peer reviewed journal, it can pass anything off as science) facts, and that could be why I found *National Geographic* to be high in ecologistic-scientific discourse - they were appealing to their consumers who want 'scientific' information.

I expected *Field and Stream* to have primarily the dominionistic discourse because that is what I associated with hunting, however, there are different types of and reasons for hunting. Hunting can also foster a deep respect for and ethical treatment and understanding of biodiversity and nature which is why *Field and Stream* was high in the moralistic and ecologistic-scientific discourses (Leopold 1949). If *Field and Stream* can be taken as a proxy for what many hunters think, then these ideas of respect for and ethical treatment and understanding of biodiversity and

nature are more important than the feeling of dominion they get from hunting or fishing - 21.1% and 18.4% for moralistic and ecologistic-scientific versus 14.3% for dominionistic.

I expected *Travel and Leisure* to have a majority of the aesthetic discourse because the magazine concentrates primarily on tourism. So I expected that whenever something involving nature or biodiversity was talked about it would be in an aesthetic way to encourage tourists to come to that area and see the sights. One thing that was strange to me was the high percentage of moralistic discourse that I found in *Travel and Leisure* at 24.2%. I did not expect to find this high of a moralistic discourse, but it may be due to *Travel and Leisure* believing that many people that will travel to see biodiversity and nature are apt to either do so for aesthetic purposes, or ethical/moral and stewardship purposes. Many of the articles in *Travel and Leisure* dealing with these issues of biodiversity and nature were eco-tourism articles that would many times focus on both the aesthetic issues, and moral issues of the featured place.

As I mentioned before, my motivation for this research was to understand why magazines portray biodiversity and nature the ways they do, and to understand the repercussions of those representations. My research was a stepping stone to that goal. The next step will be to study how media and these discourses of biodiversity and nature affect people's decisions, ideologies, and actions.

From my findings, I can not extrapolate to people's behaviors and ideas. However, based on what the discourses portray and how they are operationalized, I can speculate on the potential consequences of adopting them. Although again, my data do not support these statements, more research needs to be done in order to find these relationships between discourse and consequences.

The consequences of the high ecologistic-scientific discourse in *National Geographic* could be that people have a heightened desire to systematically study the structure, function, and relationships of biodiversity and nature due to an increased need to understand and gain knowledge about them. This could manifest as influencing some one to want to study ecology, biology, botany, or many other related fields on their own, or in school. This could also result in what type of organization some one would donate money to - perhaps they would desire to donate their money to an organization sensitive to these issues.

The consequences of the moralistic and ecologistic-scientific discourses found in *Field and Stream* could be that they influence people to conserve biodiversity and nature. It is a fact that

hunters were a large factor in creating and promoting the idea of conservation (Kellert 1996, Leopold 1949). These discourses could influence people to join and donate to conservation organizations, and indeed articles in *Field and Stream* call for hunters to do just that - join a conservation group. The consequence of the dominionistic discourse could result in a greater desire to physically master and control biodiversity and nature. This may foster negative attitudes towards biodiversity and nature, such as they are there for the benefit of mankind, and to test one's strength and skill against. This also fosters hunting for the 'sport' of it, and trophy hunting, instead of hunting for meat, or for the love of nature and naturalistic experience it allows.

The consequences of the aesthetic discourse in *Travel and Leisure* could be that people overlook everything else that biodiversity and nature has to offer in favor of the beauty of them. This is not always a bad thing, as long as people realize that there is much more to them than the way they look. The aesthetic discourse could inspire people to be artistic and creative. The moralistic discourse has similar consequences as that of *Field and Stream*.

My data could be biased by the magazines I chose to represent the categories of "nature magazine," "hunting magazine," and "travel magazine." Perhaps a different hunting magazine would have a different distribution of discourses, and the same goes for the other types of magazines. However, I picked - as I understood it - the most popular magazines from each of those categories. Another potential problem is that I had different totals of the discourses, for example in *National Geographic* I cited 424 different instances when all of the discourses were used, but for *Field and Stream* and *Travel and Leisure* I found 147 and 161 respectively. This is due to these magazines having less material on biodiversity and nature, but it still makes my data a little suspect. However, I avoided this problem by using percentages for much of my analysis, and this did not affect the chi-square results because they are based on expected values.

The next step for future research will be to study how media and these discourses affect people's choices. This is crucial to study in order to understand the motives of the magazines and the consequences of those motives being acted out. Another important aspect to study is if the discourses reflect the editors' agendas because the readers are influenced by the editors' choices of how to represent biodiversity and nature. This is important to study because in the words of Lutz and Collins (1993, 89) (who studied *National Geographic*), "[*National*

Geographic] over the course of a century, helped to set an important cornerstone of its readers' definitions of the world".

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Works Cited

Benton, Lisa M. Short, John R. 1999. Environmental Discourse and Practice. Blackwell, Oxford, UK; New York.

Benton, Lisa M. Short, John R. 2000. Environmental Discourse and Practice: A Reader. Blackwell, Oxford; Malden, MA.

Collins, C. and Kephart, S. 1995. Science As News: The Emergence and Framing of Biodiversity. Mass Comm Review, Wntr-Spring v22 n1-2 p21(25).

Cincotta, R. Engelman, R. 2000. Biodiversity and Population Growth. Issues in Science and Technology, v16 i3 p80.

Cunningham, W.; Cuningham, M.; and Saigo, B. 2003. Environmental Science: A Global Concern. McGraw-Hill, New York.

Dietz, T. and Stern, P. 1998. Science, Values, and Biodiversity. (biodiversity policies) BioScience, v48 n6 p441(4).

Davis, Susan. 1995. Touch the Magic. *In* Uncommon Ground. Cronon, William, ed. W.W. Norton: New York.

Ehrlich, P. and Ehrlich, A. 1981. Extinction: The Causes and Consequences of the Disappearance of Species. Random House, New York.

Escobar, A. 1999. After Nature. Current Anthropology v40 i1.

Fairhead, J. and Leach, M. 1995. False Forest History, Complicit Social Analysis: Rethinking Some West African Environmental Narratives. World Development, 23(6): 1023-1035.

Foucault, M. 1984. The Foucault Reader. Pantheon Books.

Field and Stream. 2003, April.
- May.
- June.
- July.
- August.
- September.

Hall, S.; Held, D.; Hubert, D.; Thompson, K. 1996. Modernity An Introduction to Modern Societies. Blackwell; Cambridge, MA

Harre, R. Brockmeier, J. Muhlhausler, P. 1999. Greenspeak : A Study of Environmental Discourse. Sage, Thousand Oaks

Johnson, A. 1995. The Blackwell Dictionary of Sociology. Blackwell; Cambridge, MA.

Kane, J. 1996. Savages. Vintage Books, New York.

Kaplan, R. 1994. The Coming Anarchy. Atlantic Monthly 273(4).

Kellert, Stephen. 1996. The Value of Life: Biological Diversity and Human Society. Island Press, Washington and Covelo.

Leopold, A. 1949. A Sand County Almanac. Oxford University Press, Oxford.

Lucaks, Georg. 1923 (1971). History and Class Consciousness. *In* A Dictionary of Marxist Thought. Bottomore, Tom. Blackwell, MA.

Lutz, C. and Collins, J. 1993. Reading National Geographic. The University of Chicago Press, Chicago.

Majeres, J. 2002. The Politics of Biodiversity - Creature Conservation. World and I, Dec v17 i12 p54.

National Geographic. 2002, April.
- May.
- June.
- July.
- August.
- September.

Price, J. 1995. Looking for Nature at the Mall: A Field Guide to the Nature Company. *In* Uncommon Ground. Cronon, William, ed. W.W. Norton, New York.

Robinson M. 1993. Biodiversity, Bioparks, and Saving Ecosystems. Endangered Species Update, v10 n3-4 p52(6).

Rogers, R. 1994. Nature and the Crisis of Modernity: A Critique of Contemporary Discourse on Managing the Earth. Black Rose Books, Montreal, New York.

Sarkar, S. 2002. Defining "Biodiversity" Assessing Biodiversity. The Monist, v85 i1 p131(25).

Takacs, D. 1996. The Idea of Biodiversity: Philosophies of Paradise. Johns Hopkins University Press, Baltimore.

Takeshita, C. 2001 Bioprospecting and its Discontents: Indigenous Resistances as Legitimate Politics. Alternatives: Global, Local, Political v26 i3.

Titscher, S. 2000. Translated by Jenner, B. Methods of Text and Discourse Analysis. Sage, London; Thousand Oaks.

Travel and Leisure. 2003, April.
- May.
- June.
- July.
- August.
- September.

Williams, R. 1999. Ideas of nature. *In* Problems in Materialism and Culture. Williams, R. ed. Verso, London.

Wilson, E. 2002. The Diversity of Life. W. W. Norton & Company, New York.

Wodak R. and Meyer, M. Eds. 2001. Methods of Critical Discourse Analysis. Sage, London.

Appendix I: Operationalized Discourses Used for Coding

Utilitarian:

- "The utilitarian value emphasizes the many ways humans derive material benefit from the diversity of life"
- "Exploiting nature to satisfy various human needs and desires"
- plants and animals provide food, medicine, clothing, tools, etc.
    - Non-industrial societies recognize these dependencies humans have on animals → tribal, hunter-gatherers, pastoralists, etc.
    - Most developing nations derive most of their output from extracting and exploiting wild living resources [biodiversity]
    - Industrialized countries exploit fish stocks (Japan)
- Exploitation of genetic, biochemical, and physical properties\
    - Significance of obscure and unknown species
- Medicines from plants and animals
    - ~25-40% of pharmaceuticals came from wild plants and animals
    - The folly of exterminating species just to satisfy short-term goals → might be potential medicine
- The importance of personally deriving practical benefits from nature is powerfully articulated by Aldo Leopold in Sand County Almanac – footnote 2

Keys:

- food
- medicine, drugs, pharmaceuticals, biodiversity, nature
- clothing
- tools
- hunting, fishing – for utilitarian needs
- germplasm, gmo, genetic sequences
- **economic benefit / human benefit**

Naturalistic:

- "The naturalistic value emphasizes the many satisfactions people obtain from the direct experience of nature and wildlife. This value reflects the pleasure we get from exploring and discovering nature's complexity and variety."
    - Expressed through →
        - Birding, fishing, hunting, whale watching, wildlife tourism, visiting zoos, wandering in woods, prairies, beaches, wetlands, etc.
        - "Unspoiled nature", directly observing wildlife, etc.
- Stress mitigation from experiencing biodiversity
    - Seilstad 1989 → footnote 5
- Experiencing natural diversity (biodiversity) can "instill a sense of living", sharpened vitality, intellectual stimulation, enhanced creativity, etc.

Keys:

- unspoiled nature → pristine / eden / paradise
- enjoying nature for discovery
- hikes, nature walks, eco-tours, etc.
- backpacking, camping, etc.

Ecologistic-Scienticfic:

- Reflects an emphasis on biophysical patterns, structures, and functions of nature
- "Assumption that through systematic exploration of the biophysical elements of nature, living diversity (biodiversity) can be comprehended and sometimes controlled"
- May reflect an intellectual satisfaction apart from any immediate practical utility
- Ecologistic:
    - "A more integrative approach to the natural world emphasizing interdependence among species and natural habits"
    - Tends to stress elements of biodiversity and nature usually not evident to the average person
        - Many ecological processes rely on obscure invertebrate and microbial organisms → insects, etc.
            - "Most people are only dimly aware of these processes… and tend to direct their attention instead to large invertebrates and other prominent features of the natural environment."
    - Understanding nature's functions and structures instills a cautious respect for maintaining natural systems and a reluctance to overexploit species and habitats
- Scientific:
    - "Tends to stress structures and processes below the level of whole organisms and ecosystems such as morphology, physiology, and cellular and molecular biology"
    - Places greater stress on the physical and mechanical functioning of biodiversity
        - Emphasizes constituent elements of nature rather than entire organisms or relationships
    - Often divorced from physical contact with nature

Keys:

- "ecology course equivalent"
- habitat
- science, the doing of science
- natural systems
- endangered species (depends on context)
- gain a greater understanding of
- researching / testing / fieldwork
- to some degree discovery (careful here, close to naturalistic)

* Eco.-Sci. and Utilitarian are closely linked because many times (in N.G.) people want to study things because they think it will benefit mankind (e.g. meerkats sept. NG)

Aesthetic:

- "[Nature/BD] evokes a strong, primarily emotional, register in most people, provoking feelings of intense pleasure, even awe, at the physical splendor of the natural world"
- Flowering rose, conical mountain, waterfowl in flight → few people dispute the beauty of these things
- Naked mole rat, cold damp cave, fetid swamp → few people dispute the aesthetic repugnance of these things
- Key elements of aesthetic response:
    - Vista, prospect, color, light, contrast, texture, movement, etc.
        - Associated with feelings of harmony, order, and the ideal

- Humans prefer natural rather than artificial
    - Ulrich 1983 → footnote 10
- Most aesthetic responses focus on large organisms
    - Contrast to Ecological-Scientific emphasis on small and often obscure creatures
    - Charasmatic species
        - Bears, deer, wolves, antelope, lions, cranes, swans, etc.
            - More in Kellert's essay → footnote 12
- "The aesthetically salient animal or plant may constitute a central organizing element for the landscape – a focal point of meaning without which the terrain becomes undifferentiated, static, inanimate."
- "It may reflect an intuitive recognition of an ideal modeled in nature: the magnificent stag, the mountain monarch, the brilliant butterfly, all suggest a striving after integrity, harmony, and balance in nature."

Keys:

- aesthetic appeal
- charismatic species
- vista, prospect, color, light, contrast, texture, movement, etc.
- integrity, harmony, and balance in nature

<u>Symbolic:</u>

- "The symbolic value reflects the human tendency to use nature for communication and thought. People have employed nature's rich tapestry of forms for expressing ideas and emotions for perhaps as long as humans have spoken."
    - Like Williams
- "This use of nature represents the symbolic transforming of nature within ourselves, rather than our entering and engaging the natural world on its own terrain."
    - Also Levi-Strauss 1970 → footnote 20
- "Nature's symbolic value is most powerfully reflected in the development of human language."
    - Biodiversity helps think about ordering, sorting, and naming
    - 90% of the characters in preschool children's language and counting books are animals and objects from nature
- "The human need for metaphoric expression finds its greatest fulfillment through reference to the animal kingdom…." – Elizabeth Lawrence → footnote 21
- "[Animals] are the code images by which language retrieves ideas from memory at will" – Paul Shepard → footnote 22
- Story, myth, fairy tale
- Anthropomorphism in children's stories – people disguised as animals

Keys:

- anthropomorphism *** lots in NG
- story, myth, fairy tale
- anthropomorphism
- ideas or emotions expressed on or in nature
- metaphor
- symbolizing emotions (e.g. "powerful sea" / "solemn rain/storm"

Dominionistic:

- "A dominionistic value can sometimes encourage an excessive urge to suppress nature, especially in our modern age of technology."
- "Nature and wildlife have always confronted humans with significant challenges, physical and mental, testing and refining people's capacities for enduring, even mastering, the chore of survival in the face of opposition."
- People derive feelings of self-reliance
- Hunters
    - "Predator appreciates its prey"

Keys:

- killing
- hunting
- tracking
- fighting
- challenge of overcoming nature
- enduring nature
- power over nature

Negativistic:

- "Nature can evoke threatening and antagonistic sentiments to a degree as great as any encountered in the human existence."
    - Aversion, fear, dislike, etc.
    - Snakes, spiders, sharks, scorpions, large predators, etc.
- "These sentiments of dread and dislike can provoke destructive actions toward the natural world."
- "Can also encourage healthy distancing and even respect for nature."
- "Negativistic attitudes, within reason, may reflect functional behavior"
- "In some cases, negativistic sentiments can create an impulse to eradicate entire species."
    - Wolf example from Berry Lopez → footnote 44
- Modern technology and negativistic attitudes towards nature = massive destruction of species

Keys:

- deadly
- poisonous
- predator
- man-eating
- dangerous
- aversion, fear, dislike, etc.
- snakes, spiders, sharks, scorpions, large predators, etc.

Moralistic:

- The complexity of nature serves "as a source of spirituality, suggesting a fundamental order and harmony in nature, even a guide to human conduct."
- A basic kinship binding all life together
- Ethical treatment of animals and nature
- View natural world as a living and vital being

- Associated with tribal people – ‘ecologically noble savage’
- Ethical responsibility to nature

Keys:

- stewardship
- restoration projects
- attachment to the land
- gaia
- “ecologically noble savage”
- ethics
- **conservation**
    - comes in 2 ways:
        1) How people are exploiting nature/biodiversity/environment
            - sometimes hard to distinguish between utilitarian and moralistic, it depends on the context (e.g. June NG pg 64)
        2) How people are conserving “