Personal and group forest values and perceptions of groups' forest values in northwestern Ontario

by Susan Lee¹ and Shashi Kant^{1,2}

ABSTRACT

With the recent involvement of a greater diversity of groups working in forest management planning, the identification and understanding of people's forest values and their perceptions of one another's values may be a promising approach to sustainable forest management. This study identifies and analyzes the forest values and perceptions of the members of four groups, Aboriginal People, Environmental Non-Government Organizations (ENGOS), the forest industry, and the Ontario Ministry of Natural Resources (OMNR), in northwestern Ontario. Conceptual Content Cognitive Mapping (3CM) was used to identify people's forest values and perceptions and dominant forest value themes were created using hierarchical clustering. Inter-group and intra-group similarities and differences among the rankings of participants' forest values and their perceptions were determined through various non-parametric statistical tests. Participants' perceptions about each group were generally similar, which included the two most prominent themes to be similar across all participants' perceptions of each group. Although the perceptions for a particular group were similar across the participant groups, they differed substantially with that participant group's personal ranking of the forest value themes.

Key words: forest values, perceptions, stakeholders, cognitive mapping, sustainable forest management, collaborative decision-making

RÉSUMÉ

Suite à l'implication récente d'une plus grande diversité de groupes en matière de planification de l'aménagement forestier, l'identification et la compréhension des valeurs forestières de ces personnes ainsi que de leur perception des valeurs des autres pourraient constituer une approche prometteuse en aménagement forestier durable. Cette étude identifie et analyse les valeurs forestières et les perceptions des membres de quatre groupes, soit les Nations autochtones, les organisations environnementales non gouvernementales, l'industrie forestière et le ministère des Richesses naturelles de l'Ontario dans le nord-ouest de la province. La cartographie conceptuelle du contenu cognitif a été utilisée pour identifier les valeurs forestières et les perceptions des personnes et les thèmes dominants parmi les valeurs forestières ont été identifiés au moyen de regroupement par grappes. Les similitudes et les différences inter et intra-groupes parmi les classements des valeurs forestières et des perceptions des participants ont été déterminées selon différents tests statistiques non paramétriques. Les perceptions des participants vis-à-vis chaque groupe étaient généralement semblables et comprenaient les deux plus importants thèmes semblables de toutes les perceptions des participants de chaque groupe. Même si les perceptions d'un groupe donné étaient semblables pour tous les groupes participants, elles étaient substantiellement différentes au niveau du classement personnel du groupe des valeurs forestières thématiques.

Mots clés : valeurs forestières, perceptions, intervenants, cartographie cognitive, aménagement forestier durable, prise de décision en collaboration

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Introduction

Sustainable forest management (SFM) in Canada has instigated a progression in forest management to involve different groups of people and their forest values. The incorporation of multiple forest values in forest management, to the satisfaction of all groups, requires a collaborative approach to forest management decision-making (Beckley 1998, Vogt 1999). In northwestern Ontario, SFM involves a minimum of four major groups³, the forest industry, environmental non-governmental organizations (ENGOS), Aboriginal People, and the Ontario Ministry of Natural Resources (OMNR), and identification and analysis of forest values of these four groups is an essential step of SFM in this area (Shepard 1990, Baird 1991, Fiedler 1992, Bengston 1994, Brown and Reed 2000). Although an understanding of forest values is essential, it is not sufficient for reaching consensus among such diverse groups. As well, it does not assist with developing conflict resolution mechanisms or building cohesive relationships among several groups for which conflict is common. In many cases the root cause of conflict between different groups is not the diversity of their forest values but the groups' perceptions about the values of others. Generally, different groups are often locked in their own specific viewpoints of others, while guarding their vested interest concerning how forests should be managed. These viewpoints are based on a combination of perceptions built around historical and present values and responsibilities of the groups, past and present forest management experiences in the area, and past and present interactions with one another (Lang and Diaw 2000).

In this paper, we develop an understanding of forest values and perceptions of the four groups, mentioned above, in northwestern Ontario. The following five questions are addressed in the paper: What are the personal forest values of the members from each of the four groups? What are the similarities and differences of these personal values across the groups? What are the member's perceptions of their own group's values and the other groups' values? Are people's perceptions of their own group's forest values similar to their personal forest values? Finally, are people's perceptions of other groups' forest values similar with the members' personal values of that group?

Literature Review

Values are a fundamental position across social sciences such as psychology, economics, anthropology, sociology and psychiatry. More than any other concept, it is a mediating variable that shows capability of being able to unify the diverse interests of all social sciences (Rokeach 1973). This concept can be applied to decision-making in forest management planning where people's differing interests can be unified into the planning process through their forest values. Forest values are assumed to underlie the preferences of forest use and non-use, and as a result, they play a vital role in identifying SFM objectives, setting the context for decision-making and guiding forest managers' choices (Steel *et al.* 1993, Bengston 1994, Brown and Reed 2000, McFarlane and Boxall 2000). Utilizing

the key groups' values to determine the objectives for SFM ensures that the needs of each group are addressed and accounted for, and consequently the effectiveness and acceptability of the decisions should be greater (Vining and Ebreo 1991, Hunt and Haider 2001).

Social scientists have developed numerous classification systems of forest values: the two common classification systems are (i) assigned values and held values and (ii) instrumental values and non-instrumental values. The assigned value provides a measure of the relative importance of forest objects while the held value provides a measure of the relatively enduring conception of the good (or bad) related to forests. The instrumental value of forest arises from its utility as a means to specific ends while the non-instrumental value focuses on the worth of something as an end in itself, rather than a means to some end. Some scholars have also suggested a grouping of forest values into biocentric values and anthropocentric values.

In recent years, various scholars have examined forest values of different groups in North America. Steel *et al.* (1994) found that the USA population is more bio-centric in orientation than anthropocentric. Xu and Bengston (1997), when examining the trends (1982–93) in forest values of forestry professionals, environmentalists, and general public in the USA, found: (i) the economic value declined continuously for forestry professionals and environmentalists — the decline for general public started in the late 1980s — and the decline for forestry professionals was profound; (ii) the trends in life support values for forestry professionals and environmentalists were upward and fairly dramatic while the upward trend for the general public started in early 1990s; and (iii) there were upward trends in moral/spiritual values for forestry professionals and environmentalists but not for the general public. Mannig *et al.* (1999) found that Vermont (USA) residents rated aesthetic and ecological values as most important and economic values as least important. In a survey of thirteen southern states of the USA, Tarrant *et al.* (2002) found: (i) in aggregate the commodity value (wood production) was rated the least important, ecological service (air quality) as the most important, and scenic beauty and cultural and natural landscape (both instrumental values) were rated at second and third place, respectively for public forests; (ii) the ranks of wood production, air quality, scenic beauty, and cultural and natural landscape for private forests were third, first, second, and fourth, respectively; (iii) the younger generation (age 16 to 24 years) valued scenic beauty significantly higher than the oldest generation (50 + years) for public and private forests; (iii) women valued public forests for scenic beauty significantly more than men and men valued private forests for wood production significantly more than women; and (iv) rural residents rated scenic beauty as a more important object of public forests than did near-urban residents.

McFarlane and Boxall (2000), in a survey of the public, environmentalists, registered professional foresters (RPFs), and forest-industry public advisory groups (PAGs) in Alberta, Canada, found: (i) the public and environmentalists scored higher importance for bio-centric values (existence values, inherent worth, and spiritual values) than that of the RPF and PAG groups; (ii) the RPF and AG groups scored higher importance for anthropocentric values than that of the public and environmentalists; and (iii) in the total sample,

³Other forest stakeholder groups such as hunters and anglers, or the mining and tourism industries, were not included in this study in order to keep the scope of the study manageable.

25.7% respondents belonged to the human-centered group, 31.8% to the biocentric group, and 42.4% to a moderate group. Hunt and McFarlane (2002) found that the general public of southern as well as northern Ontario ranked biocentric values higher than the anthropocentric values.

In the existing forest values studies, two aspects have not received enough attention. First, the possibility of the differences between an individual's personal forest values and his/her perceptions about the values of the group to which (s)he belongs has been neglected. However, if an individual's personal forest values are different than the respective group's values, and that individual's personal values are similar across two or more groups, then this would be valuable to promote understanding and enhance communication among the groups. Second, forest values have been elicited through responses to structured questionnaires and surveys developed by experts and academics within the field (Steel *et al.* 1993, McFarlane and Boxall 2000) and the emphasis has been on assigning monetary values to non-marketed forest goods and services (Kant and Lee 2004). A participant responding to such surveys is required to deal with a constrained set of questions, and there is no opportunity to express one's own system of forest values, and thus an individual's or group's values may not be fully captured. Similarly, individuals are not accustomed and may even object to converting all forest values such as spiritual and ecological values into monetary terms.

In this paper, we address both the limitations. First, we examine not only individuals' forest values but also the perceptions of individuals regarding forest values of their groups as well as forest values of other groups. Second, we use Conceptual Content Cognitive Mapping (3CM), a methodology that has been used to elicit people's perspectives regarding an issue or their cognitive maps of complex issues (Austin 1994) and has been proved to be an appropriate tool for diverse cultures (Milgram 1976) for forest values elicitation⁴.

Study Area and the Selection of Participants

The study area was northwestern Ontario, specifically in Treaty 3 (Grand Council Treaty 3), Treaty 9 (Nishnawbe-Aski Nation) and Robinson Superior Treaty (Anishnabek Nation). The participant groups included Aboriginal people from the three treaty areas, forest industries located throughout northwestern Ontario, ENGOs, and OMNR employees from various districts within each treaty area. In February 2001, the workshop, *Research Issues, Strategies, Partnerships for Sustainable Forest Management in Northwestern Ontario and Beyond*, was held to bring together the different groups involved in this project. Several participants from the workshop participated in this study. Additional participants were identified through a modified snowball approach with recommendations solicited from initial contacts within each group. In order to have a full spectrum of forest values from

each group, participants were drawn from various levels of hierarchy within each group. A total of 120 people participated in this study and the response rate was 90%. Participants included 33 Aboriginal people, 31 forest industry employees, 36 OMNR employees and 20 ENGO members.

Methods

Data collection using Conceptual Content Cognitive Mapping (3CM)

Data collection took place during the interviews with selected participants who had the option of participating individually or within a group with a maximum of five people. The interview began with an introduction of the project, the interviewer and the instructions for the 3CM exercise, and participants were also given this information in a written format. 3CM⁵ was then conducted and the duration of the exercise ranged from 20 minutes to 2 hours with an average of approximately 50 minutes. 3CM involved the following eight steps:

- 1) A relaxed and supportive environment was provided and participants were ensured that everything was kept confidential.
- 2) Introduction to the issue: A visualization exercise was used to stimulate participants to begin thinking about their forest values.
"If you like you may close your eyes. I want you to take a moment and imagine yourself in a forest. What are you doing there, what do you see? This is for you to take a moment and visualize why forests are important to you." Give the participant a moment to think.
"At this time, I want you to think specifically what it is that make up your personal forest values, that is, why are forests important to you? As you think of these reasons, write each one down on a separate index card and place it in front of you."
- 3) Identification of forest values: Participants wrote their values on the index cards and when completed, they were told that if they thought of any more they were free to add them as the interview continued.
- 4) Organization of values: When participants were satisfied with their values they were asked to group or arrange their cards in a way that would be useful for explaining the significance of their values. Some participants categorized them into similar themes while others kept them as one large cluster.
- 5) Explanation and labelling of clusters: Once the cards were organized, participants were asked to explain their arrangement by placing a title for each cluster describing why they grouped those particular values together.
- 6) Ranking of values: After the cards were arranged and labelled, participants were asked to rank the groups in the

⁴Surveys or questionnaires allow for participants to express their preferences to predetermined forest values; however, with 3CM, participants express their forest values creating a possibility for identifying a new forest value. 3CM also allows for both qualitative and quantitative analysis of forest value themes but this methodology has not been commonly used within forestry literature.

⁵During the workshop in Thunder Bay, a trial run of 3CM was organized for 15 people from the four groups. When we started this exercise, we assumed there would be no difference between an individual's personal forest values and his/her group's values. A participant however, suggested to us that his personal values may not capture his group's values. Consequently, the 3CM exercise was modified to differentiate this and the decision was made to keep the group size to a maximum of five people.

Table 1. Forest values universe — themes and sub-themes

Dominant Themes	Sub-themes
Economic Impact	Economic Spin Offs; Personal to Work; Career Satisfaction; Societal Employment; Business Opportunity
Societal Benefits from Forest Management	Societal Benefits; Resource; Construction; Non-timber forest products; Renewable
Spirituality and Senses ^a	Senses and Connection; Quietness; Solitude; My Connection; Relax
Environment	Wildlife and Environment; Global Health; Natural Cycles; Faunal and Flora Benefits; Forest Composition and Aesthetics
Personal Values	Individual Values; Fun; A Good Way of Life; Enjoyment; Hobbies
Recreation	Hiking; Outdoors; Consumptive Recreation; Camping; Fishing
Tourism	Tourism; Consumptive Tourism; Non-Consumptive Tourism; Eco-Tourism; Remote Tourism
Uses	Non-industrialized Use; Protection for Home; Travel; Necessities; Medicines
Education and History	Education; Science; Learning and Culture; Canadian Heritage Canadian History
Aboriginal Values	Heritage; Who We Are; Traditional Way of Life; Livelihood; Spirit

^aIt should be noted that spiritual values indicated by Aboriginal participants were included under the Aboriginal Values theme. While, other participants who indicated values related to Spirituality and Senses were placed under this theme. Forest industry participants primarily included values within the sub-themes Solitude, Quietness and Relax, while ENGO participants tended to include these as well as those found within the sub-theme Senses and Connection, such as “sound of leaves rustling in the wind,” or “smell of the forest after a rainfall.”

order of importance, followed by ranking the individual cards within the groups also in the order of importance.

- 7) Perceptions of others’ forest values: Participants were then asked to repeat the exercise (steps 3 to 6) giving their perceptions about forest values of the four groups — OMNR, ENGO, Aboriginal people, and forest industry.
- 8) Summary: Upon completion, participants were again reminded of the project’s objectives and purpose to reiterate why the participant was partaking in the exercise.

Data analysis using non-parametric statistical tools

Non-parametric statistical tools were used to analyze 3CM data for comparative analyses of forest values and perceptions across the different participant groups. A similarity matrix was created by combining participants’ personal values from the four groups. This was then subjected to three stages of hierarchical clustering to produce the Forest Values Universe, which consisted of ten dominant value themes. Five sub-themes were created for each of the ten value themes, and the sub-themes were composed of people’s forest values that they indicated during the 3CM exercise.

During the 3CM exercise, participants ranked their forest values in the order of importance indicating a preference of one forest value over another. These ranks are considered to be the ordinal preferences of an individual as opposed to cardinal preferences. With ordinal data, non-parametric statistical tests such as the Sign Test⁶ were used to analyse for intra- and inter-group similarities and differences among the participants’ forest values and their perceptions.

Results and Discussion

The average number of forest values per participant was 8, while the group-wise average numbers of forest values per

participant were: Aboriginal people — 7, forest industry — 7, ENGOs — 12, and OMNR — 9.

Forest values universe from the people of NW Ontario

Identification of the forest value themes is the first step in increasing the understanding of forest values among different groups (Kearney *et al.* 1998). Collectively, these value themes assist in defining a conceptual space of SFM through indicating the presence of a wide range of values to be incorporated as SFM objectives. Increasing the groups’ understanding of the scope of the Forest Values Universe, and where the group and other groups fall within that space may assist to broaden participants’ perspectives regarding SFM (Austin 1994) and, therefore, improve relationships and the likelihood of attaining common ground. The ten forest value themes along with their sub-themes are provided in Table 1. Following is a description for those themes that are not self-explanatory.

Within the theme, Economic Impact, the sub-themes *Personal to Work* and *Career Satisfaction* consist of the challenges and fulfillment valued by professional foresters, such as “providing a sense of purpose” or the “enjoyment of regenerating a forest.” Profit and employment are the conventional economic values typically specified by foresters; however, 3CM has externalized other employment-related values from them, such as a “sense of worth,” and the “pleasure of theorizing harvesting plans.”

The title of the theme, Personal Values, should not be confused with the initial step in the 3CM exercise, as it asks the participant “what are your personal forest values?” The Personal Values theme is a unique theme as it is rare for other forest value typologies to include this category. Within Personal Values the sub-theme, *Individual Values* consists of forest values such as “providing guidance,” “hope for the future,” “childhood memories,” “attachment,” and “grew up here.”

The value theme, Uses, consists of the more traditional uses of forests. The sub-theme *Non-Industrial Use* includes values such as “firewood” and “personal resources,” while *Protection for Home* includes “shelter,” “windbreak,” “shade”

⁶Other non-parametrical tests were conducted, such as the Friedman Test for Randomized Block Design and the Kruskal Wallis Test. Results from these tests can be found in Lee (2003).

Table 2. Ranking of forest value themes by four participant groups

Participant Group	Econ.	Env.	Spirit.	Soc.	Pers.	Uses	Educ.	Abor.	Tour.	Rec.
Forest Industry	1	2	1	2	3	4	5	5	4	1
Aboriginal	2	1	2	4	4	3	4	1	4	2
OMNR	3	1	1	3	3	5	4	6	5	2
ENGO	4	1	1	4	2	4	3	5	4	2

Table 3. Perceived rankings of the forest value themes for the forest industry

Participant Group	Econ.	Env.	Spirit.	Soc.	Pers.	Uses	Educ.	Abor.	Tour.	Rec.
Industry Participants' Personal Values	1	2	1	2	3	4	5	5	4	1
Industry Participants' Perceptions	1	2	3	1	3	3	3	3	3	3
Aboriginal Participants' Perceptions	1	3	3	2	3	3	3	3	3	3
OMNR Participants' Perceptions	1	3	5	2	5	5	5	5	5	4
ENGO Participants' Perceptions	1	3	3	2	3	3	3	3	3	3

Table 4. Perceived rankings of the forest value themes for Aboriginal people

Participant Group	Econ.	Env.	Spirit.	Soc.	Pers.	Uses	Educ.	Abor.	Tour.	Rec.
Aboriginal Participants' Personal Values	2	1	2	4	4	3	4	1	4	2
Aboriginal Participants' Perceptions	2	4	4	3	4	4	4	1	4	4
Industry Participants' Perceptions	2	3	5	5	4	5	5	1	5	3
OMNR Participants' Perceptions	2	3	4	5	5	5	5	1	5	3
ENGO Participants' Perceptions	2	2	3	4	4	4	4	1	4	4

Table 5. Perceived rankings of the forest value themes for OMNR

Participant Group	Econ.	Env.	Spirit.	Soc.	Pers.	Uses	Educ.	Abor.	Tour.	Rec.
OMNR Participants' Personal Values	3	1	1	3	3	5	4	6	5	2
OMNR Participants' Perceptions	1	2	5	1	3	6	4	6	3	2
Industry Participants' Perceptions	1	2	4	1	4	5	5	5	3	5
Aboriginal Participants' Perceptions	1	2	3	1	3	3	3	3	3	3
ENGO Participants' Perceptions	1	2	3	1	3	3	3	3	3	3

Table 6. Perceived rankings of the forest value themes for ENGOs

Participant Group	Econ.	Env.	Spirit.	Soc.	Pers.	Uses	Educ.	Abor.	Tour.	Rec.
ENGO Participants' Personal Values	4	1	1	4	2	4	3	5	4	2
ENGO Participants' Perceptions	4	1	2	1	4	4	4	5	4	3
Industry Participants' Perceptions	3	1	2	2	4	5	5	5	5	4
Aboriginal Participants' Perceptions	2	1	2	2	3	3	3	3	3	3
OMNR Participants' Perceptions	3	1	4	2	5	7	6	7	7	4

and “thermal protection.” The sub-theme *Travel* is comprised of “canoe routes” and “travel corridors,” while *Necessities* includes the value “food.”

The examples and discussion of some of these non-traditional forest values that have not appeared in past surveys or structured interviews have provided sufficient evidence to support the use of 3CM for forest values elicitation.

Comparison of participants' personal forest values

Table 2 presents the results of the Sign test, which was used to determine an order of importance (or rank) of the ten forest value themes for each participant group. All Sign tests were conducted at a 5% significance level with a Z score of 1.96. The results indicated that each participant group had similar rankings for more than one value theme, that is, at a 5% significance level some themes were not significantly different with one another but were significantly different from the remaining themes. On the basis of these results, three general observations were drawn.

Although each group has a distinct order of preference for the value themes, there were common features across the groups. All groups ranked the themes Environment, Spirituality, and Recreation as being the two most prominent value themes. The forest industry and Aboriginal groups, however, also ranked within their top two themes Economic Impact and Aboriginal Values, respectively. Similarities are also present in the value themes that were ranked last; for instance Tourism and Education were ranked either fourth or fifth by all the groups. As well, all groups excluding Aboriginal ranked Aboriginal Values last, indicating at the time of this research members of different groups were claiming this value theme to be important to their respective groups; however, Aboriginal Values were not important to the members in their personal forest values system. This reveals the much-needed work and effort to further understand and include Aboriginal People and their values in forest management.

Second, the results provided sufficient evidence that participants' personal rankings of the value themes are not characteristic of their group; that is, the members' forest value systems are different from the common understanding of the value system of their respective group. For instance, industry participants ranked Recreation, Economic Impact and Spirituality first, and Environment and Societal Benefits as second, which diverge from the ranking of themes that one would commonly expect from members of the forest industry. As well, Aboriginal participants ranked Environment with

greater importance than Economic Impact, also diverging from their stereotype of choosing economic development over environment. Although ENGO participants have claimed that Aboriginal people and their values are important to them, this theme was ranked last by ENGO members.

Third, the total number of ranks or combinations identified for the ten value themes, by each participant group, varied. They are as follows: OMNR — six, industry and ENGO — five, and Aboriginal — four combinations⁷. This suggested that OMNR, ENGO and industry participants distinguished a greater diversity of forest values or perceived forests as dis-integrated units, while Aboriginal participants perceived forests more as an integrated complex unit. It should be noted that although some value themes were ranked similarly across the groups, the forest values identified by each participant group may vary for that theme. For example, values for Spirituality were similar between OMNR and ENGO participants but differed for industry participants. In particular, OMNR and ENGO participants included values such as “connection to nature” and “serenity,” while industry participants included “solitude” and “relax.” This indicates varying conceptions of the value theme by the different groups. It is important to note that it is possible for these data to be interpreted in several ways.

Comparison of participants' perceptions regarding the forest values of their own organization and other organizations

A participant's perceptions of her own organization's forest values are those values that she perceives her organization to deem important, which may differ from the values particular to her as an individual. Participants' perceptions about other organizations' forest values consist of the values held by the organizations, and not by its members.

The Sign test was used once more to determine an order of importance of the value themes from people's perceptions. The results are summarized in Tables 3 to 6. In order to observe a full comparison of the differences and similarities across the perceptions and personal values, each table summarizes all perceptions given by each participant group, as well as that group's personal ranking of the themes.

⁷The value themes that were not significantly different from one another created a combination. For example, Aboriginal participants ranked Environment and Aboriginal Values first, producing one combination.

Differences are seen particularly between forest industry participants' personal ranking of the value themes and their perception of industry's ranking of the value themes (Table 3). Economic and Societal Benefits were ranked first in their perceptions, differing somewhat from industry participants' personal rankings, in which Economic, Recreation and Spirituality were ranked first with Environment and Societal Benefits second. The remaining participant groups also perceived Economic Impact to be industry's leading value theme followed by Societal Benefits, again contrasting with industry participants' personal rankings. An additional observation is how Aboriginal and ENGO participants perceived the forest industry to not distinguish value themes beyond Economic Impact and Societal Benefits, suggesting these groups perceive the industry to not value the forests beyond these two value themes. Furthermore, industry participants themselves did not distinguish much beyond Economic Impact and Societal Benefits. The theme Environment was ranked second; however, the remaining themes were not significantly different. All groups perceived industry to rank the themes Economic and Societal Benefits as most important. It is evident, however, that industry participants themselves rank the value themes differently.

As shown in Table 4, all participant groups perceived Aboriginal People's most significant forest value theme to be Aboriginal Values, similar to their personal ranking with the exception that Environment was also included. Economic Impact was also ranked second by all groups, somewhat differing with Aboriginal people's personal rankings, where Economic was ranked second with Spirituality⁸ and Recreation. It appears that everyone including Aboriginal people themselves perceive them to be more economically oriented than environmentally concerned, as the perceptions consistently ranked Economic second.

All participant groups' perceptions of OMNR's ranking of the value themes had Economic Impact and Societal Benefits first followed by Environment (Table 5). This contrasts with OMNR participants' personal rankings, which had Spirituality and Environment first, Recreation second and Economic Impact third. Participants' perceptions were comparable across the groups but deviated considerably from OMNR participants' personal ranking of the value themes. A rationale for this is people are basing their perceptions on the government body, and it is shown that the values of the organizations vary substantially from the employees', similar to the forest industry participants. This contradicts the conventional wisdom as to why people choose to work for certain organizations. For instance, one would assume an individual joins an organization based on its values being similar to her own values. It was noted by an ENGO participant, however, that "Several of the government employees start out working for the government believing that they can make a difference with policies towards the environment; however, they become

caught up by the legislations and regulations." This would seem to be true for many people since OMNR participants' personal rankings of their values indicates that Environment is their primary forest value theme, but it is the institution of government that drives economics as their first priority.

Table 6 summarizes the perceived rankings for ENGOs. As would be expected Environment was ranked first within the perceptions of all participant groups and is the same for ENGO participants' personal ranking of the value themes, with Spirituality ranked similarly. The theme Societal Benefits was perceived to be first or second by all participant groups. However, in ENGO members' personal rankings this was ranked fourth with Uses, Tourism, Aboriginal Values, and Economic Impact. ENGO participants perceive their organization to be more socially than economically oriented, as they ranked Economic fourth and Societal Benefits first, while others ranked Economic Impact second or third, suggesting that ENGO participants perceive their organization to not value the economic benefits as significantly as others perceived. Further, it is interesting that industry participants perceive Economic Impact as ENGOs' third value. When talking with them during the 3CM exercise, several of them expressed the view that ENGOs are a political group from down south who are far removed from the situation and the needs of people from the north. In addition, industry participants believed ENGOs to be indifferent to the economic benefits from forestry and they were not fond of an organization based in Toronto affecting and influencing forest management decisions in northwestern Ontario.

Participants' perceptions about each participant group were generally similar. Particularly, the two most prominent themes were the same across the perceptions for each group. Although perceptions for a particular group were similar across the participant groups, they differed substantially with that participant group's personal ranking of the value themes. From these results, it is also shown that ENGOs need to have a greater presence in the north in order to be better understood by others, as the perceptions of them varied more than the perceptions of the other groups. Furthermore, it seemed that some participants were unclear about what ENGOs' forest values are and what their objectives would be regarding SFM.

Discussion and Implications for Sustainable Forest Management

Over the years forest management has slowly evolved to incorporate a wider range of forest values. Foresters are no longer working in a single resource context that focuses primarily on implementing forest policies designed to maintain a supply of timber. Now, they are required to acknowledge and incorporate a greater diversity of people and forest values. SFM requires bringing these groups together. However, the process of doing so is complex, and an understanding of each group's forest values and its perceptions regarding others' values are a valuable tool in identifying and negotiating SFM goals.

Identification of the value themes found in the Forest Values Universe is the first step in increasing each group's understanding of one another's perspectives regarding SFM (Kearney *et al.* 1998). Not only does this Forest Values Universe increase understanding among the groups, it also offers value themes personal to the participants. Since the Forest Values Universe was developed through participants' values, it has externalized the themes important to the people

⁸It should be noted that the theme Spirituality does not include Aboriginal-related spiritual values such as "connection to the land," "place of praying," and "traditional ceremonies." These were included in the theme Aboriginal Values. If, however, Aboriginal People indicated valuing items like "solitude," "relax," or "place to get away" that were similar to those mentioned by the other participants, then a rank was given under the Spirituality theme.

of northwestern Ontario, particularly those involved in forest management. Specific values such as "timber cruising," "family events," and "windbreak for the home" are values that stem from people who live and work within the forest, and commonly are not found in past literature. When developing an SFM framework, a forest values universe particular to a geographical area is important, as it identifies the objectives important to the groups affected and simultaneously clarifies preconceived notions of one another's values. Furthermore, the 3CM approach considers the socio-cultural components of the management environment (e.g., people's traditions and values), and it is critical for the manager to interpret this information based on the socio-cultural framework particular to that region (Decker *et al.* 1996).

Comparable rankings were found across the participant groups' personal ranking of the value themes. The three dominant value themes that were consistent across the groups were Recreation, Environment, and Spirituality, while Aboriginal Values and Economic Impact were included by Aboriginal and industry participants, respectively. These commonalities are valuable information, which is useful throughout the planning process because this knowledge can assist in obtaining forest management objectives acceptable to all groups. New grounds can be established based on an appreciation of comparable importance placed on similar forest values.

From the results, it is observed that personal values for some participants consisted of the customary values one assumes for them because of their affiliation to that group; however, they are ranked different than one's assumptions. For example, the Sign test showed that industry participants ranked Spirituality and Recreation no different than Economic Impact, and Environment was ranked similarly with Societal Benefits. It is evident that the values held by the members of the forest industry have evolved, and industry participants and other individuals who are unaware of this progression need to be informed to prevent misunderstanding, and to highlight similar goals. It was also revealed by Aboriginal participants that Environment was as important as Aboriginal Values. Furthermore, the Sign test revealed commonalities between OMNR and ENGO participants' personal ranking of the value themes, which neither group may be aware of. It would be beneficial for them to be so as it would assist in relationship-building through an understanding of comparable priorities and concerns. From this research, similarities among personal values were revealed, which can be used to promote understanding and enhance dialogue among the diverse people involved in forest management.

Differences were found between the perceptions of a particular group and the personal values of that group. Within their personal values, Aboriginal participants ranked Environment first with Aboriginal Values, contrary to people's perceptions. All groups, including Aboriginals themselves, ranked Aboriginal Values first, followed by Economic Impact, indicating an importance placed on economic development for their communities. This claim is not inaccurate; Aboriginal people do want economic development. But having "clean air and water," that is, preserving their environment, is not only more important than economic development but is just as important as Aboriginal Values. All perceptions regarding the ranking of OMNR's forest value

themes consisted of Economic Impact and Societal Benefits being ranked first, contrary to OMNR participants' personal rankings, which consisted of Spirituality and Environment being ranked first. Comparable results were found with the other groups as well. The impression is given that participants base their perceptions on the stereotypes of that group, or possibly from experiences with working or interacting with one another. More importantly, participants provided their perceptions based on the organization and not the people who work there, and it is often assumed that one's personal values are similar to the organization for which one works. Such inconsistencies between personal values and perceptions may be a product of an administrative theory based on a rational bureaucratic model developed by Weber (1947). In this model, professionals such as OMNR and industry participants are described as being involved in organizations based on rationality, where values are not related to work. This does not propose that professionals disregard their personal values, but they are separate from work. Foresters and other professionals would unlikely find this result to be groundbreaking; however, others such as ENGO participants may not be aware that industry and OMNR people may hold similar values but detach themselves from their personal values. Some people, ENGO participants in particular, would find this separation challenging. One ENGO participant asked why she needed to include her perception of her organization's forest values because theirs would be similar to her own. After explaining to her the differences found between personal values and perceptions of one's own group, she said, "It must be so unsatisfying and unfulfilling to work where you can't have your personal values be a part of your work." As a result, participants misperceive individuals possessing values different from their organization creating obstacles when distinguishing SFM objectives. On the surface, objectives may be conflicting. If however, people could move beyond their organizational values to personal values, there may be a greater likelihood of consensus and an improvement in communication.

This study suggests perceptions are conceptualized from stereotypes and this was seen in the perceptions given by other participants as well as by members within that group. For instance, all groups portrayed forest industry participants as an economically oriented group. Although economic factors are clearly salient to them, our results confirm that additional values such as Recreation and Spirituality are also of importance. Thus, whether these common stereotypes are perceived by others or members within the group, they do not accurately reflect people's personal values. Such misleading stereotypes can create impediments to the development of trust, relationship-building and effective communication (Kearney *et al.* 1998).

It is also evident that people misperceive ENGOs, as they are the only group to have so many values ranked significantly different⁹. This suggests the need for ENGOs to communicate their forest values and objectives more in the north, because these misperceptions are creating a distorted representation of them. In addition to communicating their objectives, ENGOs need to prove their commitment to the people of the north through a permanent presence in the north, demon-

⁹Other statistical tests, such as the Wilcoxon and Kruskal Wallis tests, also supported these results Lee (2003).

strating their dedication to not only the environment but also to the communities. Several participants expressed resentment towards an organization based in Toronto influencing decisions without understanding the needs of northern communities. Some participants' perceptions of ENGOs would include values such as "wanting attention," "needing a cause or focus in life," or "for donations." If ENGOs were to make their forest values and objectives clear as well as show their commitment to northern communities, there may not be such bitterness felt towards them. To date, one ENGO from Toronto has opened an office in Thunder Bay.

Knowledge of an overlap in values will not ensure agreement among the groups or eliminate conflict. Conflict is deemed as an important component of the social process of decision-making and managing the forest ecosystem (Brandt *et al.* 1991). Possessing an improved understanding of forest values and perceptions may assist in highlighting the true nature of forest management conflicts, while also helping foresters and others to distinguish between fundamental value differences (Bengston 1994, Kearney *et al.* 1998), for which the prospects of resolution are much brighter. By directly confronting value differences, disputing groups will be able to gain insight and perspective, contributing to less conflict and mutually beneficial relationships.

Acknowledgements

We are thankful to David Bengston for his valuable suggestions on the previous version of this paper. We would also like to express our sincere thanks to all the participants in the values elicitation exercises. Financial and other logistic support from the project partners — Sustainable Forest Management Network, CFS/NSERC/ SSHRC partnership program, National Aboriginal Forestry Association, Aboriginal Treaty Council # 3, Nishnawbe Aski Nation, Bowater, KBM, Weyerhaeuser Canada and Ontario Ministry of Natural Resources — is highly appreciated.

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