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## Shifting Forest Value Orientations in the United States, 1980–2001: A Computer Content Analysis

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### ABSTRACT

This paper examines three forest value orientations – clusters of interrelated values and basic beliefs about forests – that emerged from an analysis of the public discourse about forest planning, management, and policy in the United States. The value orientations include anthropocentric, biocentric, and moral/spiritual/aesthetic orientations toward forests. Computer coded content analysis was used to identify shifts in the relative importance of these value orientations over the period 1980 through 2001. The share of expressions of anthropocentric forest value orientations declined over this period, while the share of biocentric value expressions increased. Moral/spiritual/aesthetic value expressions remained constant over time. The observed shifts in forest value orientations have implications for identifying appropriate goals for public forest management and policy, developing socially acceptable means for accomplishing those goals, and dealing with inevitable conflict over forest management.

### KEYWORDS

Forest value orientations, anthropocentric, biocentric, moral, spiritual, aesthetic, content analysis

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## INTRODUCTION

Americans' relationships with their forests have slowly but steadily evolved since European settlement. In early American history, the vast forests were predominantly viewed as a negative resource despite the importance of wood as a building material and fuel (Clawson 1979). Forests were an obstacle to agricultural progress, the home of wild animals and hostile people, and a symbol of savagery and evil. Cleared land was of greater economic value than land with trees. By about 1830, farmers reached the open prairies where timber for construction and fuel was in short supply. At the same time, burgeoning eastern cities began to experience shortages of fuelwood. With growing scarcity, perceptions of the forest gradually shifted to that of a positive resource, a source of many useful products and an engine of growth in a rapidly industrialising economy (Williams 1989). Along with this utilitarian appreciation, new aesthetic and spiritual forest values began to develop in the nineteenth century, as expressed in the landscape paintings of the Hudson River School and the writings of Emerson and Thoreau (Nash 2001).

Growing concern over the devastation wrought by timber company 'mining' of forests in the nineteenth century led to the creation of the federal forest reserves in 1891 (Steen 1991). Sustained timber production and watershed protection were the utilitarian goals of forest policy at first, as the national forests were managed for the '... greatest good of the greatest number in the long run' (Pinchot 1998: 261). But throughout the first half of the twentieth century, the protection and management of forests for growing recreational use, aesthetic values, and even preservation of wilderness became increasingly important. Following World War II, a booming economy and housing market increased the demand for lumber, and political pressure led to significant increases in the volume of timber harvested from public forests. At the same time, participation in outdoor recreation grew dramatically and the modern environmental movement took root in the 1960s, thus setting the stage for future forest conflict (Hirt 1994).

In recent decades, the American public has increasingly valued forests for their amenity and ecological values such as open space and scenic beauty, clean air and water, wildlife habitat and biodiversity (Hays 1988). Forest policy makers have repeatedly tried to reconcile consumptive and non-consumptive forest values through such efforts as forest planning under the National Forest Management Act of 1976, the Clinton Administration's 1993 Northwest Forest Conference (Walker and Daniels 1996), and the adoption of ecosystem-based management by many forestry agencies (Cortner and Moote 1999). Despite these efforts, intense conflict has become a persistent characteristic of public forest policy and management.

Americans' relationships with forests continue to evolve today, as social and ecological contexts continue to change and human pressures on forests mount. Rapid population growth and increasingly land-consumptive development patterns threaten forests in many areas. Urban sprawl is now the most significant

## SHIFTING FOREST VALUE ORIENTATIONS

factor affecting forest ecosystems in the southern United States (Wear and Greis 2002). Human migration to forests and other areas rich in natural resource amenities surged in the 1990s, resulting in forest fragmentation, loss of forest cover, increases in exotic and disturbance-tolerant species, and other social and ecological effects (Stewart 2001). The influx of exurbanites into rural forested areas – often with different environmental attitudes and values than the original residents – has sparked conflict and complicated management efforts (Egan and Luloff 2000). The litany of causes and effects of our changing relationship with forests could go on and on. But it is clear that Americans' connections to and interactions with forests are dynamic.

Social scientists have documented the ongoing change in forest values in the United States. For example, Manning et al. (1999) surveyed Vermont residents concerning management of the Green Mountain National Forest. They found that aesthetic, ecological and recreational values were rated most important and economic (or commodity-related) value was rated least important. Economic value was defined as 'The opportunity to get timber, minerals, and other natural resources from nature' (p. 423). Steel et al. (1994) sampled national and Oregon publics to assess their forest value orientations. They developed a forest values scale that characterised respondents along an anthropocentric–biocentric continuum. Both national and Oregon publics were found to hold more biocentric than anthropocentric value orientations.

In a nationwide telephone survey, Shields et al. (2002) found that the individual forest values of the American public are strongly oriented toward environmental protection. The public's management values (indicating respondents' views on how public lands should be managed) were found to have a moderately strong conservation/preservation orientation. Management objectives that received the highest mean ratings of importance were to: (1) conserve and protect watersheds, (2) develop volunteer programs to improve land, and (3) protect ecosystems and wildlife habitat. Management objectives that received the lowest mean ratings were: (1) expand off-highway motorised access, (2) develop new paved roads, and (3) develop trails for motorised vehicles. Provision of non-consumptive or less consumptive services (e.g., wilderness, preserving natural resources) was consistently rated as more important than provision of more consumptive goods and services (e.g., extraction of commodities, motorised recreation).

Many other recent studies in the U.S. have found forest value systems in which ecological, aesthetic and recreational values are prominent, or which provide evidence of support for management practices designed to maintain ecological values (e.g., Bengston et al. 1999, Bormann 1996, Brown and Reed 2000, Cordell and Tarrant 2002, Farnham et al. 1995, Kennedy et al. 1998, Koch and Kennedy 1991, Minter and Manning 2000, Proctor 1998, Satterfield 2001, Shindler et al. 1993, Tarrant et al. 2002, Tarrant et al. 2003, Vining and Tyler 1999, Xu and Bengston 1997).

A shortcoming of these and other social science investigations into forest and other environmental values is that they typically examine values at a single

point in time. With the exception of the work of environmental historians, the methods of the social sciences – such as surveys, focus groups, and interviews – are not well suited for examining shifting values and value orientations over time. Surveys and opinion polls are sometimes repeated on an annual or less frequent basis (e.g., Kanagy et al. 1994, Dunlap 2002), but this is an expensive approach and is usually limited to a few environmental questions included in a broader survey of social issues. In this paper, we look beyond a snapshot in time by examining trends in expressions of forest value orientations using computer-coded content analysis of the public discourse about forest planning, management, and policy contained in the news media.

The news media play a dual role in public debates about controversial issues such as forest policy and management, serving both as a direct forum for public discourse (through editorials, letters to the editor, etc.) and reporting on discussion occurring in other forums such as public meetings and hearings, legislatures, the courts, demonstrations and protests. Pollster George Gallup suggested in 1939 that the media were creating a national town meeting in which issues were debated: 'The newspapers and radio conduct the debate on national issues, presenting information and argument on both sides, just as the townfolk did in person at the old town meeting' (quoted in Smith 1997: 56). Analysis of the content of the news media thus allows us to take the pulse of ongoing public debate about social issues, and to track change in the debate over time.

Empirical research by communications and public opinion researchers supports the intuition of Gallup. The news media have been found to both shape and reflect public opinion for a wide range of social issues (Burgess 1990, Fan 1988, McCombs 2005). For example, Elliott et al. (1995) found a significant impact of changes in media coverage (as measured by the number of environmental stories in *The New York Times*) on public support for environmental protection. Page et al. (1987) found that the content of network television news accounted for a high proportion of aggregate changes (from one survey to another) in U.S. citizens' policy preferences. Analysis of the content of the news media has repeatedly been shown to produce results that parallel the findings of attitude surveys for many public policy issues (see, e.g., Fan 1997, Gamson and Modigliani 1989, Salwen 1988, Shah et al. 2002). Related studies have found that the news media strongly influence agenda-setting for public policy issues (Dearing et al. 1996, McCombs 2005), i.e., there is a relationship between the relative emphasis given by the media to issues and the degree of salience these topics have for the general public. Therefore, analysis of the public debate about social issues contained in the news media is not mere 'media analysis' – it is a window into the broader social debate and a means to gauge, indirectly, public attitudes and values.

The remainder of the paper is organised as follows. The next section defines forest values and value orientations, and describes the three forest value orientations analysed in this study. A description of the data and methodology is next, illustrating the computer content analysis approach we employed. This

## SHIFTING FOREST VALUE ORIENTATIONS

is followed by a discussion of our findings. Implications for forest policy are presented in a concluding section.

## FOREST VALUES AND VALUE ORIENTATIONS

Following Rokeach's (1973) definition of held values, forest values may be defined as relatively enduring and fundamental concepts of the good related to forests and forest ecosystems. For example, aesthetic value or beauty is a fundamental and widely held conception of what is good about forests, although there is a wide range of distinct concepts of what constitutes beauty in forests (Gobster 1999). Values are used to evaluate the desirability of goals (e.g., sustainability or other goals of forest policy) and behaviours (e.g., clearcutting or other forest management actions). Values are the most deep-rooted and central elements in a person's system of attitudes and beliefs. Individual and social values change over time, but they tend to be relatively stable and resistant to change.

A value orientation is defined as 'a set of linked propositions embracing both value and existential elements' (Kluckhohn 1951: 409). For example, a political orientation is a type of value orientation, i.e., people who identify themselves as politically conservative, moderate or liberal tend to hold a common set of basic political values and beliefs. Social scientists working in the environmental arena have conceived of an environmental value orientation similarly as a cluster of interrelated values and basic attitudes and beliefs (e.g., Stern et al. 1993, Vaske et al. 2001). Fulton et al. (1996: 28) note that environmental value orientations 'provide consistency and organisation among the broad spectrum of beliefs, attitudes, and behaviours' regarding the environment and natural resources.

In their seminal work, Kluckhohn and Strodtbeck (1961) identified a variety of different types of value orientations, including three 'man-nature' (or human-nature) orientations that address the question, 'what is the relation of humans to nature?' The three human-nature value orientations were subjugation-to-nature, harmony-with-nature, and mastery-over-nature. The subjugation-to-nature orientation is a fatalistic perspective that can be summarised as the view that there is little or nothing humans can do to control nature or protect themselves from the effects of natural forces. Anthropologists found this view among some traditional peoples, but it is virtually unknown today. The harmony-with-nature orientation is based on conceptions of wholeness and unity between humans and nature, and is frequently identified as a shared value orientation among many American Indians (e.g., Jostad et al. 1996) and among environmentalists. Finally, the mastery-over-nature value orientation has traditionally been the dominant orientation of most Americans. Kluckhohn and Strodtbeck (1961: 13) summarise this as the view that 'Natural forces of all kinds are to be overcome and put to the use of human beings ... The view in general is that it is a part of man's duty to overcome obstacles; hence there is the great emphasis upon technology.'

Social scientists in recent years have often characterised environmental value orientations along a bipolar continuum from anthropocentric or utilitarian to biocentric (Vaske et al. 2001).<sup>1</sup> An anthropocentric/utilitarian value orientation purports that '... providing for human uses and benefits is the primary aim of natural resource allocation and management' (Steel et al. 1994: 139). The emphasis is on the instrumental importance of the environment for achieving human goals. A biocentric value orientation is a nature-centered perspective that '... does not deny that human desires and human values are important, but it places them in a larger, natural or ecological context' (Steel et al. 1994: 139) and emphasises the primacy of goals such as environmental protection, preservation, and ecosystem health and integrity. Leopold's land ethic has often been characterised as biocentric or ecocentric. Other social scientists have distinguished three environmental value orientations (e.g., Hooker 1992 and Stern et al. 1993 identify biocentric, social-altruistic, and egocentric orientations) or four value orientations (e.g., Borrie et al. 2002, Bright et al. 2000).

In this study we examine three distinct forest value orientations that emerged from our analysis of the public discourse about forest management (described in the following section) and how these orientations have shifted in relative importance over the period 1980 through 2001. First, we found widespread expression of an *anthropocentric* value orientation that emphasised the importance of human uses and benefits of forests, including benefits to local economies (e.g., payments in lieu of taxes), jobs in timber-dependent communities and employment in outdoor recreation and tourism, commodity-related uses and related benefits, etc. A typical example of the expression of this value orientation from our database of news stories is as follows: 'They [trees] also are a commodity – the source of paper and lumber and the heart of an industry that provides thousands upon thousands of jobs' (UPI 1992).

Second, we found many expressions of a *biocentric* forest value orientation that emphasised the importance of protecting the environment and promoting ecological goals. Expressions of this value orientation often involved general discussion of the ecological value of forest ecosystems, discussion of the importance of life-supporting ecological services provided by forests (e.g., carbon sequestration, wildlife habitat), or warnings of the environmental costs of over-exploitation of forests. An example of this forest value orientation is: 'Saving the remaining 10 percent or so of the ancient forests in the Lower 48 will mean a halt to further logging of much of the rapidly dwindling, ecologically priceless virgin assets – a long-cherished goal of the environmental movement' (Satchell 1990: 27).

Finally, we found expressions of a third forest value orientation that emphasised the non-instrumental values of forests such as moral value, spiritual and sacred values, place attachment, bequest value (i.e., the importance of passing on a rich natural heritage to future generations), historical and cultural values, and aesthetic value. Sagoff (1991) notes that we value an object morally when

## SHIFTING FOREST VALUE ORIENTATIONS

we regard it with love, affection, reverence, and respect. We label this broad-ranging forest value orientation *moral/spiritual/aesthetic* (MSA). The MSA value orientation represents a cluster of non-instrumental values that focus on the worth of forest as an end in itself, rather than a means to some end. An example, expressing bequest value, is: 'You've probably never seen a Northern spotted owl... The problem is, if the logging industry has its way, neither your children nor grandchildren will ever see one, either' (Zimmerman 1987: 13).

## METHODOLOGY AND DATA

The content analysis used in this study involved four main steps: (1) searching for and downloading news stories about forest planning, management and policy from an online commercial database, (2) 'filtering' the downloaded text to eliminate irrelevant stories and paragraphs, (3) developing computer instructions to score paragraphs in the database for expressions related to forest value orientations, and (4) assessing the validity of the computer coding. Each step is briefly described in this section.

*Downloading News Stories*

Data for this analysis consisted of a large database of news stories discussing forest planning, management and policy in the United States. All stories were retrieved from the LexisNexis™ online commercial database. The news sources included the following seven national newspapers, news magazines, and newswires: *The New York Times*, *Washington Post*, *Christian Science Monitor*, *Newsweek*, *US News & World Report*, the Associated Press, and United Press International. These news sources were selected because they were all continuously available in LexisNexis for the entire period of the study (January 1, 1980 through May 1, 2002). Major national news sources such as these have been found to accurately reflect the national debate and public opinion about the environment and other policy issues (Elliott et al. 1995, Fan and Norem 1992, Fan et al. 1989).

The following search command was used to identify and download stories: (forest! w/5 (policy or policies or manag! or plan or plann!)), where w/5 means 'within five words' and the exclamation point means that all trailing letters are permitted. This search identified 8,654 stories about forest planning, management and policy, all of which were downloaded for analysis. Only text that was within 100 words of the search terms was downloaded. This greatly reduced the amount of irrelevant text that would have been retrieved from stories that mentioned forests only in passing. The focus of our textual data on discussion of forest planning, management and policy helped ensure relevance and usefulness to decision makers.



### *Filtering Text*

Examination of the downloaded stories revealed that a small percentage of them were not about forest issues in the United States. Many of the irrelevant stories were about forests and forest management in other countries. Others were about a variety of topics unrelated to forestry but which included the search terms, usually due to place names included in phrases such as '... a manager at Forest Lawn Cemetery,' or '... a planning effort in Forestville, Maryland,' and so on. Irrelevant stories and paragraphs were filtered out of our textual database using the InfoTrend<sup>®</sup> computer software (described below). The software can discard paragraphs or stories that do not fit with user-specified criteria. For example, stories containing the phrase 'Forest Lawn Cemetery' or mentioning any one of a long list of extraneous countries (i.e., other than the U.S.) were discarded. After filtering the text, 8,379 stories remained in our database.

### *Scoring Paragraphs*

An algorithm was developed to score the text, i.e., to count the number of expressions of each of the forest value orientations.<sup>2</sup> As with the filtering of text, scoring was done with the InfoTrend software using the Filtscor computer language. The Filtscor language has two components. One is a *dictionary* composed of a list of ideas important for the concepts of interest and groups of words and phrases associated with each idea. The other component is a series of *idea transition rules* that specify how pairs of ideas in the dictionary are combined to give new meanings.

To illustrate the method, one of the dimensions of the anthropocentric forest value orientation is concern over loss of commodity-related jobs. Discussion of job loss or the threat of job loss is one of the ways in which people express the importance of commodity production and its benefits to people.<sup>3</sup> The following sentence is an example of text from our database that was scored as an expression of the anthropocentric value orientation: 'Last week, the Forest Service and the Bureau of Land Management said that if the Thomas recommendation is adopted *timber harvests* on Northwest federal lands will be cut nearly in half over the next five years, causing a net *loss* of about 13,000 *jobs* in Oregon, Washington and northern California,' (Sonner 1990, emphasis added). In this sentence, the word 'loss' was one of many words in our dictionary in a group of words and phrases that connote the idea of *decrease* (e.g., cutbacks, cuts, decline, downturn, etc.), 'jobs' was contained in a group of words and phrases that connote *employment* (e.g., earn a living, employ, forest worker, job, etc.), and 'timber harvests' was part of a group of words and phrases that connote *industry* and forest-based industry activities (e.g., clear cutting, forest industry, grazing, sawmill, etc.). Idea transition rules were written specifying that a *decrease* word in close proximity (within 15 characters) to an *employment* word – and in the same paragraph as an *industry* word – would be scored as an

## SHIFTING FOREST VALUE ORIENTATIONS

expression of concern over commodity-related jobs, which was one aspect of the anthropocentric value orientation.

Developing the dictionary and the idea transition rules to capture expressions of each of the forest value orientations was an iterative process. In the development stage of the analysis, the still-evolving computer instructions were applied to random samples of text from our entire database, the coding decisions were examined for accuracy and completeness, and the dictionaries and idea transition rules were modified as needed. The final dictionary contained 3,472 words and phrases and 20 idea transition rules.

*Checking Validity*

To assess the validity of our coding, we examined a random sample of 300 stories that were coded using our computer instructions to determine whether they were able to accurately identify expressions of forest value orientations. After final refinements, the accuracy rates were as follows: anthropocentric value orientation (78.4 percent), biocentric (86.8 percent) and moral/spiritual/aesthetic (93.0 percent). These percentages are all very close to or exceed the 80 percent accuracy rate that is often used as a general rule in content analysis.

## FINDINGS AND DISCUSSION

Figure 1 shows the total number of news stories in our database over time.

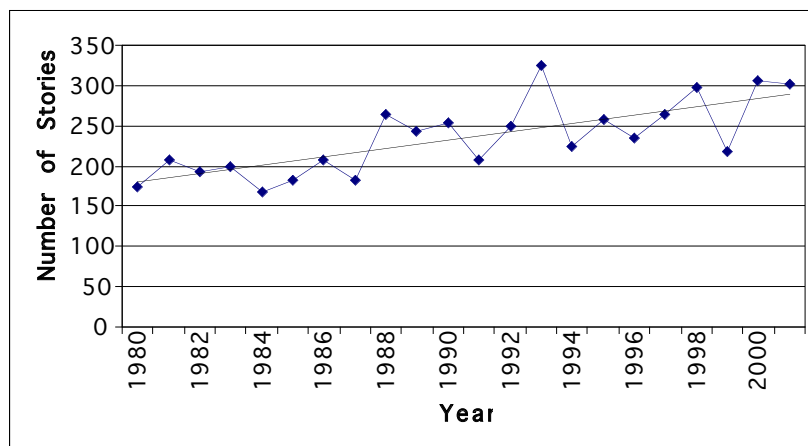


FIGURE 1. Total number of news media stories about forestry in our database, 1980 through 2001, and linear trend line.

In the set of seven major news sources we examined, the volume of discussion related to forest planning, management, and policy in the United States remained relatively constant throughout the early 1980s. The amount of news discussion increased in the late 1980s as the Northern spotted owl (*Strix occidentalis caurina*) controversy began to heat up and as the volume of timber harvested on the national forests reached an all-time high of 12.7 billion board feet (Floyd 1999). The spotted owl was officially listed as a threatened species in 1990 (USDI 1990). Following the listing, a court-ordered injunction was issued in May, 1991 which prohibited timber sales on national forests until a federal management plan was developed (Proctor 1998), and in 1992 the U.S. Fish and Wildlife Service designated 6.9 million acres as critical owl habitat (USDI 1992). In an effort to bring resolution to the growing timber conflict in the Pacific Northwest, President Clinton held a high-level forest conference in April of 1993 (Walker and Daniels 1996). The highest peak in volume of news discussion in Figure 1 coincided with the Clinton forest conference. Following the 1993 peak, the long-term upward trend in the amount of discussion has continued in recent years.

More striking than the linear trend in volume of discussion shown in Figure 1, Figure 2 shows the number of paragraphs expressing each of the three forest value orientations over time. Expressions of each type of value grew during the 1980s. This growth in the number of forest value expressions during the 1980s corresponded with a push for massive increases in commodity production on the national forests sought by John Crowell, Assistant Secretary of Agriculture in charge of the Forest Service under the Reagan Administration. The effort to

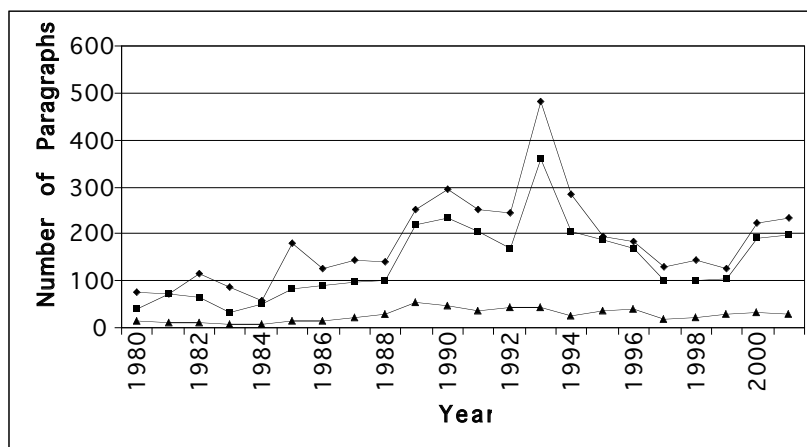


FIGURE 2. Number of paragraphs expressing each of the three forest value orientations, 1980 through 2001. (Diamond = anthropocentric, square = biocentric, triangle = MSA).

## SHIFTING FOREST VALUE ORIENTATIONS

increase commodity production stimulated the organisation of citizen opposition (Hays 1988). By the early 1990s, the number of paragraphs expressing each value orientation had increased by a factor of three to four times the level of a decade earlier. As with the volume of news discussion, the peak in expressions of anthropocentric and biocentric values was reached in 1993 with the Clinton forest conference. Walker and Daniels (1996) report that the forest conference was indeed a focal point for the expression of anthropocentric and biocentric values. Expressions of these two value orientations dropped off rapidly after 1993, but they rose again in 2000 and 2001. Expressions of the MSA value orientation did not peak in 1993, but remained fairly constant during the 1990s.

The shifting relative importance of forest value orientations can be seen in Figure 3. This figure shows the share of each value orientation as a percent of total value expressions over time. The share of anthropocentric value expressions declined significantly over time,<sup>4</sup> from an average of about 60 percent of all value expressions in the early 1980s to about 50 percent in recent years. Power (1996: 236–7) notes that ‘Commercial, extractive use of the natural landscape is declining in relative importance, while noncommercial, nonconsumptive landscape values are rising in importance... The relative importance of the goods and services that the natural world offers has simply shifted away from the commercial and extractive to the environmental.’ Part of the explanation for this long-term, ongoing shift away from a predominately anthropocentric value orientation is revealed in the following quotation of former Interior Secretary Bruce Babbitt from our database of news stories:

Multiple use skirts the central reality that in the new urbanizing West there is no longer enough space to accommodate every competing use on every section of

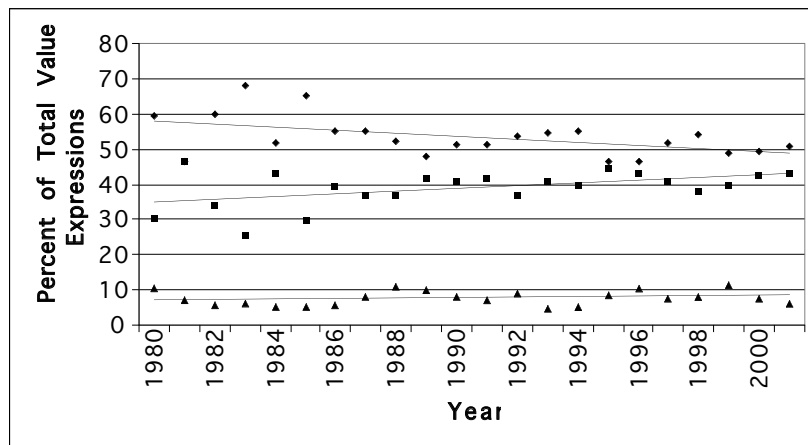


FIGURE 3. Shares of forest value orientations, 1980 through 2001. (Diamond = anthropocentric, square = biocentric, triangle = MSA).

public domain,' Babbitt told a University of Colorado symposium several years ago. 'Commodity production, whether of timber, minerals, or livestock, is increasingly infringing on the broader public values of open space, wildlife, wilderness, and recreation. Choices will have to be made... (Knickerbocker 1993: 1).

Commodity production is still an important use of public lands, but other, non-consumptive uses and related values have increased in relative importance.

As the share of anthropocentric value expressions declined, the share of biocentric value expressions increased ( $P$ -value  $< 0.05$ ). According to some observers, the shift toward a biocentric forest value orientation and non-consumptive uses reflects a postindustrial society in which higher-order needs increasingly supersede material needs (Steel and Lovrich 1997). This was confirmed in a recent survey, in which residents of the southern U.S. were found to value the environmental benefits from forests higher than commodity benefits (Tarrant et al. 2002).

Figure 3 also reveals that the share of the MSA value orientation has remained essentially constant over time,<sup>5</sup> averaging about 8 percent of all value expressions over the entire period. MSA values were expressed far less frequently than the other two forest value orientations in news media discussion of issues related to forest planning, management and policy. This may be due to the specific search terms we used and our focus on forest planning, management, and policy instead of analysing a wider sample of the discourse about forests. There is some evidence MSA values tend to be cloaked as economic or ecological values in public forums. Blatt (1987) documented this phenomenon for the case of aesthetic zoning, where ordinances were often passed to protect aesthetics but were couched in phrases such as 'maintenance of property values,' 'promotion of community stability,' or 'protection of health, safety, and general welfare'. Others have argued that many environmental preservation debates and conflicts really rest on aesthetic and moral values, but justifications for preservation are often based on more defensible and 'scientific' ecological or economic values because the scientific and legal systems are not yet able to accept these deeper social concerns (Smardon 1984). Similarly, Craig et al. (1993) found that while citizens often base their support for environmental protection on non-instrumental values, government policy makers tend to keep their deeply held environmental values to themselves and justify governmental policies on instrumental values and utilitarian arguments.

But the relatively infrequent expression of MSA values should not be interpreted to mean that they are unimportant. To the contrary, these deeper, non-instrumental values are crucial in understanding why people care so passionately about environmental issues and what motivates them to take action to protect the environment (Williams et al. 1992, Mitchell et al. 1993, Schroeder 1996). The cluster of values we have classified as the MSA value orientation goes far back in American history (Nash 2001), and are widely held in contemporary American society (Kempton et al. 1995).

## SHIFTING FOREST VALUE ORIENTATIONS

## CONCLUSIONS AND POLICY IMPLICATIONS

In this analysis of the public discourse about forests, we found evidence that Americans' relationships with their forests continue to evolve. The decline in the share of the anthropocentric value orientation in recent decades has been significant and impressive, suggesting a steady erosion of support for the view that the value of forests is primarily as a storehouse of instrumentally valued benefits. This shift has been consistent and rather striking given that values tend to be fairly stable and change slowly. Just as striking is the rise in biocentric value expressions, signalling the continuing advance of an ecologically oriented view of what is important about forests and forest ecosystems. Historian Samuel Hays observed this long-term shift in conceptions of the forest: 'The environmental forest was slowly emerging amid the backdrop of the commodity forest' (1988: 525). Expressions of non-instrumental moral/spiritual/aesthetic forest values have remained a constant drumbeat in the public discourse about forest planning, management, and policy.

Forest values and value orientations will continue to shift as society changes. Drivers of changing forest values in the future will likely include continued decline in the economic importance of primary commodity industries (Power 1996), urbanisation and blurring of the boundaries between urban and rural areas and values (Dwyer and Childs 2004), and continued strong demand for environmental amenities and quality (Hays 1988). Many other factors will also help shape our changing relationship with forests, including increased ecological knowledge (e.g., an improved understanding of the importance of ecological functions and services), technological innovation (e.g., satellite based recreational activities such as geocaching), and demographic changes (e.g., rapid population growth, growing racial and ethnic diversity).

Knowledge about forest value orientations and how they are evolving over time can help forest planners, managers, and policy makers in several ways. First, a better understanding of people's values and value orientations can help in identifying appropriate goals for public forest management and policy. The goals of public land management in a democracy ought to be consistent with the broad ways in which citizens value their public lands. Information about people's values, their relative importance, and how they are changing is essential to help policy makers establish and justify appropriate goals and define the broad, strategic guidelines for public forest management. Environmental policy is ultimately determined by social values (Norton and Steinemann 2001, Barker 1994), but short-term incongruence between the goals of public policy and the public's values is often a major source of conflict.

This is not to suggest that forestry professionals should simply adopt a consumer sovereignty perspective in setting goals for forestry on public lands, i.e., the view that the consumer is always right. Natural resource professionals need to be responsive to changing social values, but they must also inform the

public about the ecological, social and economic effects of alternative goals and management options, especially their implications for long-term sustainability (Kennedy and Thomas 1995). The interests of future generations should be considered in setting goals for public land management, in addition to the values and preferences of current members of society.

Second, in addition to pointing towards appropriate ends, a clearer view of forest values can help identify appropriate means for forest management. Knowledge of forest value orientations can help in selecting socially acceptable policy alternatives and management practices for issues ranging from fuels management to endangered species. The acceptability of many traditional forest practices such as clearcutting has changed as values have shifted (Hansis 1995). Steel et al. (1994) found that Americans with biocentric forest value orientations were much more likely to oppose traditional management practices and policies (e.g., clearcutting, emphasis on commodity production) on federal forests than those with anthropocentric orientations. In the context of national park management, Borrie et al. (2002) found a strong relationship between value orientations and level of support for various management actions. Shindler et al. (2002) note that public acceptance of forest conditions, policies, and practices is critical for every resource management decision and vital for effective resource management.

Finally, a better understanding of forest values may be helpful in dealing with inevitable conflicts over public forest management. Steel et al. (1992–93) have shown that an individual's value orientation is an important determinant of their level of trust of natural resource management agencies. Clarifying the value systems and orientations of groups of forest stakeholders could facilitate building trust and managing conflict in some cases. A key for successfully dealing with value-based conflict is the creation of public forums where open and honest discourse can occur and stakeholders can work through their value differences and build trusting relationships (Shindler and Cramer 1999, Yankelevich 1991).

The ongoing shift in forest values in the United States was clearly articulated by Michael Dombeck, Chief of the USDA Forest Service from 1997 to 2001 in an interview shortly after he stepped down as Chief. He was asked about the utilitarian maxim that public resources should be managed for the greatest good of the greatest number in the long run, and whether society's definition of the greatest good has changed in the past generation. In part, he replied:

... now we're focusing a whole lot more on recreation. We're focusing on water. We're focusing on the spiritual value. We're focusing on the cultural values. We're focusing on the values of quality of life, the scenic beauty, all of these kinds of things. And so the social values have changed over time. And I continually ask myself... what value will the forest be to society and to the American people 20 years from now and 50 years from now? (Simon 2001).

## SHIFTING FOREST VALUE ORIENTATIONS

Dombeck identified a key question for forest planners, managers, and policy makers: What forest values will be most prominent in the coming decades? Given the long term nature of forest management and the lasting effects of today's management activities, forestry decision makers must continuously ask themselves this question, keep focused on the likely direction of public forest values, and work to establish management priorities and practices that are congruent with Americans' evolving relationships with their forests.

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## NOTES

<sup>1</sup> These two value orientations underlie two parallel natural resource management paradigms, sometimes referred to as the 'dominant resource management paradigm' and the 'new resource management paradigm' or ecosystem management (Bengston 1994, Shindler and Cramer 1999). The former approach is based on a utilitarian ethic and stresses the belief that natural resources should be managed for the production of goods and services beneficial to humans; the latter is based on a Leopoldian environmental ethic and has the goal of maintaining the ecosystem as an interconnected whole while allowing for sustainable commodity production.

<sup>2</sup> Individual paragraphs were the unit of analysis in this study. Paragraphs that contained multiple expressions of one value orientation were counted as a single expression. If a paragraph contained expressions of more than one of the value orientations, however, then each of the categories was counted once.

<sup>3</sup> Creighton (1983: 153) noted that a common strategy for communicating environmental values is prediction of dire consequences: 'The kind of consequence they fear will reflect their values. The man from the Chamber of Commerce will predict a loss of jobs, while the preservationist will predict a total disruption of the ecosystem.'

<sup>4</sup> The slope of the regression line for the share of the anthropocentric value orientation is significantly different from zero (P-value < .05).

<sup>5</sup> The slope of the regression line for the share of MSA values is not significantly different from zero (P-value > 0.05).



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