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The United States Forest Service: Changing of the Guard

by

Greg Brown and Charles C. Harris

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Greg Brown
Charles C. Harris*

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ABSTRACT

A 1991 analysis of United States Forest Service district rangers' and forest supervisors' responses to 13 attitude, value, and preference questions replicated from a 1981 study of the Forest Service found significant changes in the attitudes and values of individuals occupying these field-level line officer positions. Forest Service line officers today are less inclined than they were a decade ago to favor commodity resource outputs from national forests, such as timber and livestock forage, and they are more inclined to favor increased noncommodity uses of national forest resources such as recreation. Line officers today also express a significantly greater degree of environmental concern than 10 years ago. These changes in employee attitudes and values could have significant implications for the implementation of future national forest policies, large-scale organizational change, and the profession of forestry.

INTRODUCTION

> The values of our public and our employees have been rapidly changing and have become increasingly divergent . . . we are worried that if we don't make some major changes as an agency, our Mission Statement [Caring for the land and serving people] will never move from rhetoric to reality.
>
> —*Region One forest supervisors in an open letter to the chief*

The above statement by the Region 1 Forest Supervisors acknowledges the existence of a performance gap in the Forest Service—a discrepancy between goal expectations and goal achievement. The implied cause for the performance gap is the failure of the agency to keep pace with changing social demands on the national forests. The implied pathway to

*Brown has a doctoral degree in forestry, wildlife and range sciences from the University of Idaho. Harris is an associate professor, Department of Resource Recreation and Tourism, University of Idaho, Moscow, Idaho 83843.

reducing the performance gap is greater agency emphasis on nontraditional agency resource goals such as managing to enhance wildlife habitat and increase recreation opportunities. The thrust of our inquiry is the extent to which the attitudes and values of line officers in the Forest Service have changed in the last decade.[1]

Ten years ago, a national study was conducted of Forest Service employees. On the basis of that 1981 study, Twight and his colleagues concluded that the attitudes, preferences, and values of career Forest Service employees, as exemplified by district rangers, were quite similar to those of the agency's resource user constituency and "strongly at odds with their environmental constituency."[2] These researchers postulated that agency socialization practices described by Kaufman,[3] (e.g., hiring primarily from one profession, promoting from within, and maintaining regular lateral and diagonal transfers) precluded promotion of individuals sympathetic to the values and beliefs of newer constituencies such as environmental groups.[4] Further, they found support for the hypothesis that agency institutionalization practices had resulted in value homogeneity among district rangers with a "continued commitment to the traditional goals articulated in Forest Service ideology."[5] Citing research support for general attitude-behavior similarity,[6] they concluded that the considerable bias in Forest Service ranger attitudes should be reflected to some extent in their decisions. Twight and colleagues were not optimistic about

1. Attitudes, beliefs, and values can be considered distinct concepts: An attitude is a learned predisposition to respond in a consistently favorable or unfavorable manner toward an object or situation; a belief is an assessment of what a person thinks is true or false; and a value is an enduring belief that a specific mode of conduct or end-state of existence is personally and socially preferable to alternative modes of conduct or end-states of existence (M. Rokeach, Beliefs, Attitudes, and Values: A Theory of Organization and Change, 1968). However, when these concepts are operationalized, as in the case of single response items on a questionnaire, the distinction between these concepts becomes less clear. Fishbein and Ajzen (Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research, 1975) believe that the concept of "value" may be subsumed under the category of "attitude" because attitude implies a bipolar evaluation, that is, the attachment of valence or value to the object or situation.

In this study, we examined attitudes and values in the context of an organizational or social system's ideology, as discussed by Katz & Kahn (The Social Psychology of Organizations, 1978, pp. 385–89). They refer to attitudes as "evaluative beliefs," and describe values of the kind we examined in terms of what they call "pragmatic values associated with functional outcomes"; they elaborate: "System norms make explicit the forms of behavior appropriate for members of the system. *System values* or *ideology* provide a more elaborate and generalized justification both for appropriate behavior and for the activities and functions of the system" (emphasis added).

2. Twight, Lyden and Tuchmann, *Constituency Bias in a Federal Career System?*, 22 Admin. and Soc., 369 (1990).

3. H. Kaufman, The Forest Ranger: A Study in Administrative Behavior (1960).

4. Twight and Lyden, *Measuring Forest Service Bias*, 87 J. For. 40 (1989).

5. Twight and Lyden, *Multiple Use vs. Organizational Commitment*, 34 For. Sci. 481 (1988).

6. S. Oskamp, Attitudes and Opinions 230 (1977).

the prospect for changing the agency's traditional commodity resource orientation noting that there ". . . seems to be little possibility of any internal dissension or diversity developing in regard to attitudes, preferences, or environmental values."[7] Indeed, an earlier study of the agency's organizational identification process showed that the perspectives of agency members became more congruent with the total organization over time and that this organization identification developed more from tenure than from advancement.[8]

However, given that the above study by Twight was conducted a decade ago, its results may or may not be descriptive of the Forest Service today. By any measure, events and conditions surrounding the Forest Service have changed considerably since 1981. Changing conditions external to the agency include the strengthening of the environmental movement (socially and politically), increased public attention to threatened or endangered species such as the grizzly bear and northern spotted owl, increasing concern about the impacts of raw log export policies and community stability in the Pacific Northwest, increasing public exposure to the extent and magnitude of below-cost timber sales, increasing concern over accelerated, large-scale harvesting by timber companies on private lands, and recent scientific and media attention to tropical deforestation and global warming. During the 1980s, timber harvests from national forest lands were at or near historical record levels. Internally, the Forest Service experienced a change of leadership, the imposition of a court mandated workforce diversification program, and an increasingly restive workforce, culminating in 1989 with the creation of an internal group of Forest Service employees committed to agency reform called the Association of Forest Service Employees for Environmental Ethics (AFSEEE).

Few organizations today are immune to the changing social, cultural, and political environment in which they operate. Open systems theory of organizations, developed by Katz and Kahn,[9] posits that organizations exist in a dynamic and interdependent relationship with their environment. Organizations are dependent on environmental inputs to sustain their energy level, which cannot be assumed to be constant or assured. Apparent stability, especially in public agencies, may be deceptive:

> The fact that organizations have developed protective devices to maintain stability and that they are notoriously difficult to change or reform should not be

7. Twight, Lyden and Tuchman, *supra* note 2, at 374.
8. Hall, Schneider & Nygren, Personal Factors in Organizational Identification, 15 Admin. Sci. Q. 186 (1970).
9. D. Katz & R. Kahn, The Social Psychology of Organizations (1978).

> allowed to obscure their dynamic relationships with the social and natural environment. Changes in that environment lead to demands for change in the organization, and even the effort to resist those demands results in internal change.[10]

Most public agencies do behave as open systems,[11] and as such, must change from time to time to achieve equilibrium or negative entropy. To be effective, public agencies must incorporate political rationality into their adaptive strategies. Increasing public concern over how the national forests are managed[12] has created an increasingly uncomfortable and politically volatile situation for the Forest Service, an agency proud of its resource protection and human services heritage. Unaccustomed to wearing the black hat, the Forest Service has been the subject of a growing number of criticisms, both external[13] and internal, including several poignant letters addressed to the Chief from Forest Supervisors in Regions 1 and 6.[14] In response to increasing demands for change, recent empirical evidence suggests that a new resource management paradigm is emerging within the agency that emphasizes new values such as resource protection over resource utilization, "New Forestry" over traditional silviculture, and shared resource decisionmaking with the public.[15] A recent study of a comparatively small, select sample of Forest Service employees showed that the extent of organization identification (i.e., the integration and congruence of organizational and individual goals) has decreased from the level first measured by Hall and his colleagues back in 1970.[16] We could hypothesize that lower organization identification is an indication that more diverse values and employee needs now characterize the Forest Service and are competing with traditional values, norms, and resource practices, with the result of higher levels of internal conflict.

The studies conducted by Kaufman and Twight, combined with the vast organizational literature on the difficulty of change in large organizations,[17] suggest that the prospects for major change in the Forest Ser-

10. *Id.* at 31.

11. Gabris, Organizational Change, in Organization Theory and Management 137–89 (T. Lynch ed. 1983).

12. In an April 1989 public opinion poll of 1,253 adults, 54 percent of the respondents replied that the country is not doing a good job maintaining trees and forests. Information obtained from personal communication with Lou Harris and Associates, New York.

13. See, for example, R. O'Toole, Reforming the Forest Service (1988); The Forest Service: Time for a Little Perestroika, The Economist, March 10 (1990).

14. Both letters are reprinted in 2 Inner Voice 7,9 (1990).

15. Brown and Harris, The U.S. Forest Service: Toward the New Resource Management Paradigm? Society and Natural Resources (1992, in press).

16. J. Kennedy and T. Quigley, Conference Summary: How Entry-level Employees, Forest Supervisors, Regional Foresters and Chiefs View Forest Service Values and the Reward System (Unpublished results of survey done for the Sunbird Conference, the second meeting of the forest supervisors and chief held in Tucson, AZ., Nov. 13–16, 1989).

17. See, for example, H. Kaufman, The Limits of Organizational Change (1971); J. Pfeffer, Power in Organizations (1981).

vice, especially in its line organization, are not promising. Recent research findings that the number of Forest Service internal publics with diverse values, such as AFSEEE, has increased and that overall organization identification has declined reflect shifting Forest Service employee priorities and goals. But these results do not address the fundamental question of whether significant change has occurred in the value system of the line organization of the Forest Service, where decision authority is vested. It is highly improbable that an adaptive strategy of organizational change (that is, the unfreezing, moving, and refreezing of behavior, attitudes, and values of organization members to meet changing environmental demands) will be effective if new attitudes and values are not adopted by the chain of command—the "line" organization of the agency. Further, adaptive value changes must become integrated in the organization's culture and rooted in the everyday management activities of the line officers.

A comparison of current agency attitudes and values with those examined in previous studies of the Forest Service provides a unique opportunity to measure key aspects of organizational change—whether and how employee attitudes and values have changed over time. While we recognize that large public organizations are highly resistant to change, we would assert that in the long run, few organizations escape change in an increasingly turbulent and volatile environment. With this perspective, we sought to answer the following questions. First, have the attitudes and values of Forest Service line officers changed in the last 10 years? And, second, if they have, what are the implications of this type of change for the Forest Service of the future?

METHODS

To determine whether or not key attitudes and values of individuals employed in line positions in the Forest Service have changed in the last nine years, thirteen questions from a national study of the Resource Planning Act public involvement process[18] were replicated and administered to a national sample of Forest Service employees in the summer of 1990. The 1981 study included responses from 400 district rangers and 57 forest supervisors. In the 1990 study, 344 district rangers were randomly sampled and 124 forest supervisors selected from a current organizational roster provided by the Washington Office of the Forest Service. Questionnaires with cover letters were mailed to each individual using the mail survey techniques developed by Dillman.[19] Of the line officers selected,

18. B. Twight, Final report on the effectiveness of public involvement in goal and program analysis required by the Forest and Rangeland Renewable Resources Planning Act of 1974. Grant No. 13-1134. USDA For. Serv. Off. Inf. (1981).

19. D. Dillman, Mail and Telephone Surveys (1978).

246 (72 percent) of the district rangers and 70 (56 percent) of the forest supervisors returned usable questionnaires.

The 13 questionnaire items consisted of two distinct sets of questions. The first set of questions consisted of seven policy and value questions that relate to the major goals of national forest management such as timber, recreation, water quality, range, and energy development. These questions are a subset of a larger group of questions originally selected by the Forest Service as important for the accomplishment of the Forest Service's national plan. Respondents were asked to rate the favorableness (unfavorableness) of the statement on a five point scale with 1 being favorable and 5 being unfavorable.

The second set of questions consisted of six conservation questions used by Lou Harris and Associates in a national public opinion poll.[20] These questions represent opposing opinions about which direction the country should be moving toward. Respondents were asked to select their preference along a seven-point bipolar scale with opposing statements at each end of the scale.

RESULTS

In a comparison of district ranger attitudes on the RPA questions in 1981 and 1990, statistically significant differences in attitudes were found to exist on six of the seven items (See Table 1). All differences in attitudes reflect a greater sensitivity in 1990 toward protection of national forest resources and a greater emphasis on forest recreation. District rangers in 1990 view commodity outputs such as increased wood production, livestock grazing, and mining less favorably than district rangers in 1981. The most dramatic shift in attitudes occurred in regard to increased production of wood. In 1981, the mean score for district rangers shifted from 2.35, a position *in favor* of increased wood production, to 3.91 (a decrease in the 1981 mean score of 66 percent), a position where increased wood production is perceived as *unfavorable.* With a mean score of three as the dividing line between a favorable and unfavorable position, the district rangers' preferences for increased livestock grazing also shifted from favorable to slightly unfavorable (2.23 to 3.06, a change of 33 percent). A shift in attitudes away from commodity production is also reflected in responses to two questions associated with intensive forest management practices, the application of herbicides and pesticides. In the use of herbicides, attitudes shifted 54 percent from somewhat favorable (1.96) to slightly unfavorable (3.02). In the use of pesticides to control insect losses, the mean score

20. L. Harris and Associates. A Survey of the Public's Attitudes toward Soil, Water and Related Resources Conservation Policy (pts. 1–5), NTIS #PB 80-219942-77 (Mar. 1980).

Table 1:
Mean scores on RPA questions for District Rangers and Forest Supervisors
(Scale 1 to 5, 1 = Favorable, 5 = Unfavorable)

RPA Question	District Rangers			Forest Supervisors		
	1981 (N=400)	1990 (N=246)	% Change in Favorableness	1981 (N=57)	1990 (N=70)	% Change in Favorableness
1. Increased production of wood from National Forest System lands	2.35	3.91	-66*	2.21	3.99	-81*
2. Use of herbicides on brush in National Forest management	1.96	3.02	-54*	1.82	3.4	-87*
3. Use of pesticides to control insect losses in National Forest management	2.04	2.85	-40*	1.84	2.71	-47*
4. User payment for non-market services from National Forest lands	2.38	2.36	0	2.51	2.26	+10
5. Development of National Forest lands for recreation purposes	2.13	1.77	+17*	1.81	1.6	+12
6. Livestock forage development on National Forest lands	2.23	3.06	-37*	2.11	3.01	-43*
7. Development of energy-related and other minerals on National Forest lands	2.08	2.84	-37*	1.96	2.74	-40*

* Statistically significant, $P \leq .05$.

Table 2:
Mean scores on Lou Harris questions for District Rangers and Forest Supervisors
(Scale 1 to 7, 1 = Very Strongly, 7 = Very Strongly, 4 = Neutral)

Lou Harris Environmental Scale Item	District Rangers			Forest Supervisors		
	1981 (N=396)	1990 (N=247)	% Change in Environmental Concern	1981 (N=57)	1990 (N=70)	% Change in Environmental Concern
1. Save resources for future generations vs. use resources to benefit present generation	3.86	3.09	+20*	4.29	3.0	+30*
2. Environmental protection vs. economic growth	4.70	2.57	+45*	4.54	2.88	+37*
3. Decision delay—greater participation vs. few decisionmakers—faster	3.34	2.78	+17*	2.86	2.36	+17
4. Large farms vs. small farms	4.89	5.36	+10*	4.93	4.91	0
5. Preserve nature vs. use nature to produce goods	5.61	4.14	+26*	5.54	3.96	+29*
6. Meet energy needs through conservation vs. meet energy needs through exploration/development	2.58	1.81	+30*	2.96	1.87	+37*

* Statistically significant, $P \leq .05$.

shifted 40 percent from 2.04 to 2.85. Consistent with the shift in orientation away from commodity outputs, the 1990 district rangers favored greater recreational opportunities than the 1981 rangers (2.23 vs. 1.77). The one issue where attitudes of district rangers remain ambivalent is on user payment for nonmarket services.

Comparing mean scores on the Lou Harris general environmental scale (see Table 2), the district rangers of 1990 exhibited greater environmental concern than rangers in 1981 on all six items. The most dramatic shift in attitudes occurred on the questionnaire items which asked district rangers to choose between a country that believes protecting the environment is more important than economic growth (4.70 vs. 2.57, or a 45 percent change in mean score) and a country that emphasizes preserving nature for its own sake rather than using nature to produce goods (5.61 vs. 4.14, or a 26 percent change in mean score). District rangers' preferences also shifted in favor of greater energy conservation over energy development (2.58 vs. 1.81, or a 30 percent change in mean score). The results from these six questions are consistent and supportive of the positions expressed by the district rangers in the RPA questions.

The changes in forest supervisors' attitudes and values between 1981 and 1990 closely mirror the results described above for the district rangers. The exceptions to this general pattern of agreement involve four items (two RPA items, two Lou Harris items), where tests for statistically significant differences between forest supervisors attitudes, over time, failed.

In addition to comparing the same professional groups over time, the attitudinal positions of district rangers were compared with forest supervisors cross-sectionally (at the same point in time). Two comparisons were made for each item: (1) 1981 district ranger attitudes compared with 1981 forest supervisor attitudes, and (2) 1990 district ranger attitudes compared with 1990 forest supervisor attitudes. No statistically significant difference in attitudes between district rangers and forest supervisors were found for any item, either in the 1981 sample or in 1990 sample. This finding demonstrates strong consistency and homogeneity in attitudes and values between the two professional groups of district rangers and forest supervisors.

One socio-demographic variable—years of experience working for the Forest Service—was measured in both the 1981 and 1990 surveys. The mean years of experience for district rangers in 1981 and 1990 were 18.6 and 20.5 years ($P < .05$), respectively, while, for forest supervisors, the mean years of experience in 1981 and 1990 were 25.1 and 26.9 years (statistically insignificant, $P < .05$) respectively.

DISCUSSION

The attitudes and values of individuals occupying district ranger and forest supervisor positions have changed in the last 10 years. Individuals in these positions today show greater concern for environmental protection and land stewardship as measured by the Lou Harris scale. Perhaps more significant, they place greater value on non-commodity forest resources (recreation and water quality) at the expense of traditional commodity outputs (timber, livestock forage, and minerals). These findings have significant implications for three key areas of inquiry: 1) future policy implementation, and 2) "large-scale" organizational change, and 3) forestry profession diversification.

Policy Implementation

An issue of considerable importance vis-a-vis our results is the role that individual Forest Service line officers' attitudes and values toward agency goals play in determining eventual forest policy outcomes. A related issue is the amount of discretion Forest Service leaders have in pursuing their interpretation of legislatively established goals. Our concern here is with policy implementation—those events and activities that occur after authoritative public policy directives are issued—including both the agency's efforts to administer management programs and the substantive impacts of those programs on people and events.[21] Pressman and Wildavsky add that policy implementation also includes interactions between the setting of goals and the taking of actions geared to achieving those goals.[22]

In a rejoinder to Twight's analysis of Forest Service district ranger values, Culhane asserted that "Forest Service managers have less freedom than at any time in the Service's history—arguably, no freedom at all—to ignore group pressures and *make* policy based on their own personal or professional values" [our emphasis].[23] Our position is that personal and professional values are an integral and inseparable part of the decision-making process inherent in policy implementation. As policymakers or policy implementors (the distinction is not always clear) search out information for problem solving, they often look for data useful in implementing their own basic values. Policy decisions made by policymakers are often the result of an information search not for all relevant and valid information possible, but for data useful for implementing their own basic value systems.[24] Forest Service line officers' personal and professional

21. D. Mazmanian and P. Sabatier, Implementation and Public Policy 4 (1983).
22. J. Pressman & A. Wildavsky, Implementation (3rd ed. 1984).
23. Culhane, Rejoinder to Twight, Lyden and Tuchmann: *Decision Makers' Attitudes and Interest Group Preference*, 22 Admin. and Soc. 385 (1990).
24. D. Katz and R. Kahn, *supra* note 9, at 502.

values and beliefs can play a significant role in the administrative processes of choice and action that determine policy outcomes. These values and beliefs, whether held explicitly and implicitly by the persons and groups involved in the policy process, can function to constrain and stimulate individual action.[25] Lack of agency discretion in implementing policy may limit the extent to which decisionmakers can act upon their personal and professional values, but it can never entirely eliminate the importance of these values.

Well-intentioned policy formulation by no means ensures realization of desired policy outcomes. Mazmanian and Sabatier point out that knowing the objectives set by Congress, the Supreme Court, or the president provides only a general hint of what will actually be done by the agencies responsible for carrying out various programs; actual policy outcomes may bear little resemblance to original policy goals.[26] An agency that is handed a smorgasbord of legislative goals must give them specificity, resolve conflicts, and assign priorities. For example, the passage of the National Forest Management Act (NFMA) in 1976[27] was widely hailed by many in the public forestry community as a landmark piece of legislation that would solve many of the problems raised by national forest management. But the official goals established by the NFMA were multiple, conflicting, difficult to put into operation, and difficult to achieve. As a result, the Forest Service has to choose which NFMA goals to implement and pursue, which goals to satisfy, and which goals to displace or substantively ignore; these decisions are reflected in activities that actually get carried out on the ground.

We agree with Twight and his colleagues that line officers' dispositions toward various resource goals (a part of their "professional ideology") play a significant role in determining policy outcomes through their input to setting the agency's goal agenda, through the structuring and presentation of information to Congress, and through the agency's internal allocation of resources. This position receives support from evidence of considerable discretion in the implementation of agency goals. We have found support that significant discretion exists in determining policy outcomes within the agency, both from the perceptions of the line officers themselves and from Sample's study of the national forest budget process.[28] In our questionnaire, we asked the respondents whether they agreed or disagreed with the statement, "The agency can do little to change the most important policies affecting national forest manage-

25. R. Simmons and E. Dvorin, Public Administration: Values, Policy, and Change 409 (1977).

26. D. Mazmanian and P. Sabatier, *supra* note 21, at 4.

27. National Forest Management Act, Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended at 16 U.S.C. §§ 1600–1614 [1982 & Supp. IV 1986]).

28. V. Sample, The Impact of the Federal Budget Process on National Forest Planning (1990).

ment." Sixty-five percent of the line officers disagreed with this statement, indicating that the majority perceive that they can actually impact important policy outcomes. This perceived discretion may be a result of the expertise embodied in the agency and the control of information given to Congress. Sample, in his study of the impact of the federal budget process on national forest planning states:

> Through the complexity of its tasks, its large numbers of people with highly specialized expertise and its control over the flow of information, the Forest Service has considerable control over its own destiny. Congress' power over the agency is therefore far from absolute.[29]

Arguably, the most controversial and pressing national forest management policy outcomes will be determined through the policy implementation process. At the highest level, national forest policy consists of a series of resource goals (e.g., the level of timber harvest for the National Forest System) identified and determined through the national planning process required by the 1974 Resources Planning Act[30] and the 1976 National Forest Management Act; those goals are subject to modification, sometimes extensively, through the federal budget process.[31] National forest policy directives, in the form of resource goals and objectives, must be implemented through activities and actions carried out within the Forest Service through its chain of command. Because the Forest Service is highly decentralized, successful implementation of national forest polices ultimately rests with field personnel, including forest supervisors and district rangers.

In their model of the policy implementation process, Mazmanian and Sabatier identify the commitment of those officials responsible for policy implementation to achieving policy objectives as a key variable affecting policy implementation.[32] Likewise, Edwards cites dispositions or attitudes of the implementors as one of several preconditions for successful policy implementation.[33] Kaufman found this to be the case in his classic 1960 study of district rangers; he found that three specific national policies (i.e., control over private forestry, use of controlled burning, and land acquisition policies) were effectively thwarted by district ranger resistance that was, in part, fueled by a fundamental conflict between their personal values and agency goals.[34] Kaufman elaborates on the impor-

29. *Id.* at 214.
30. Forest and Rangeland Renewable Resources Planning Act, Pub. L. No. 93-378, 88 Stat. 476, codified at 16 U.S.C. §§ 1600–1687 (1982).
31. Sample, *supra* note 28.
32. D. Mazmanian and P. Sabatier, *supra* note 21, at 8.
33. G. Edwards, Implementing Public Policy (1980).
34. H. Kaufman, *supra* note 3, at 81–82.

tance of individual values and attitudes to successful policy implementation:

> Men do not enter organizations devoid of opinions, values, preferences, and their own interpretations of the world. Nor do they shed all these once they become members. True, these things may be modified by organizational experience. But job experience is only part of a person's total experience; many of the predilections each man brings with him to his work are reinforced elsewhere and therefore persist even when they are not in harmony with the objectives or desires of his organization's leaders. Since personal predilections and prejudices are presumably among the determinants of behavior, they can produce actions that clash with the proclaimed policies of the organization. This possibility is not confined to the field levels of any agency, of course, but it is especially problematic there because the leadership opportunities to manipulate individual outlooks by personal contact are more limited, and because so many other factors at the lower levels also generate centrifugal forces.[35]

To the extent that future policies for national forest management reflect an increasing emphasis on non-commodity forest resources, our results suggest that the implementation of these policies will meet less resistance from district rangers and forest supervisors than in the past. The 1990 RPA program does indeed call for a reduction in timber sales over the next decade as well as increased budgets for nontimber resources.[36] The four themes of the RPA program include:

- Enhancing the production of outdoor recreation, wildlife, and fisheries.
- Increasing the environmental sensitivity with which commodities are produced.
- Expanding research efforts to enhance compatibility among competing resources.
- Responding to global resource issues.

The themes of the 1990 RPA program echo the shift in attitudes and values found among our samples of district rangers and forest supervisors toward greater environmental sensitivity. The widening window of opportunity created by changing agency attitudes and values could be used by legislators and administrators to leverage new multiresource programs such as "New Perspectives" and implementation of the interagency

35. *Id.* at 80–81.
36. See O'Toole, *Final 1990 RPA Program Reduces Timber Sales*, 11 Forest Watch 13–14 (1990).

report on the northern spotted owl (the Jack Ward Thomas Report). However, given that the balance of funding among the various RPA resource programs "is moving away from the direction called for in Forest Service program planning,"[37] and that "congressional appropriations were apparently unswayed by the shift toward a greater emphasis on non-commodity resource programs recommended by each of the RPA Programs,"[38] Forest Service plans to "round-out" its resource programs still have considerable external obstacles to overcome before being realized. Clearly, changes in employee attitudes and values toward agency goals provide a necessary but not sufficient condition for substantive changes in an agency's management activities, which are constrained by administration and congressional decisions and directives—especially through funding allocation to specific management functions.

Large-scale Organizational Change

The results of this study also have major implications for "large-scale" organizational change in the Forest Service. Ledford and colleagues define large-scale organizational change "as a lasting change in the character of an organization that significantly alters its performance."[39] Changes in organizational character include changes in patterns by which the organization relates to its environment—that is, fundamental changes in the way the organization processes and transforms its organizational inputs into goods and services. Large-scale organizational change has three dimensions: depth of change, pervasiveness of change, and size of organization. Of particular interest to our discussion are the dimensions of depth and pervasiveness of change in the Forest Service organization.

Depth of organizational change refers to changes that go beyond superficial changes in structure and organizational practices, significantly modifying key subsystems and fundamental tenets of the organization. Ledford and his colleagues note that the heart of deep organizational change is a fundamental change in the values and beliefs of organizational members concerning the agency's mission and substantive goals:

> Deep, or large-scale, changes affect the most fundamental aspects of the organization. They entail shifts in members' basic beliefs and values and in the way the organization is understood.[40]

These authors relate deep organizational change with the Kuhnian concept of a paradigm shift,[41] postulating that change requires a

37. V. Sample, *supra* note 28, at 62.
38. *Id.* at 218.
39. G. Ledford *et. al.*, The phenomenon of Large-scale Organizational Change 2 (A. Mohrman et. al. eds. 1989).
40. *Id.* at 11.
41. T. Kuhn, The Structure of Scientific Revolutions (1962).

group of individuals (the "social matrix") who are committed to a new perspective:

> If deep organization change entails a paradigm shift, there are implications for how the change is accomplished. We might hypothesize that deep organizational change requires a new social matrix with a new way of looking at the world and a new way of doing things. But before this can happen, members must become aware of anomalies—cases in which the present way of doing and understanding is incapable of handling the organization's current reality. This change may involve the empowerment of individuals and groups of stakeholders who experience the organization differently from the dominant coalition and who consequently have less vested in the status quo.[42]

One might hypothesize that the emergence of AFSEEE within the Forest Service represents the emergence of an important group of stakeholders within the agency, and that this group is generating alternative ideas that may be gradually embraced by the dominant social matrix, including district rangers and foresters.

Our results suggest that the change in district ranger and forest supervisor values directly challenge the fundamental principle of *timber primacy*, which has been the basic operational, if not ideological, tenet of national forest management since the second World War. Although timber management remains the dominant subsystem within the organization—and this is hardly in danger of disenfranchisement as the predominant agency activity—it does appear that other resource values are increasing in importance in the minds of its field officers. This shift in attitudes and values is all the more significant when one considers that few formalized, institutional rewards exist within the agency to reward land stewardship behavior. In the 1989 Sunbird study, the values that respondents felt *should* be rewarded *most* by the agency (i.e., professional competence, care/concern for healthy ecosystems, and concern about future generations) were among those actually rewarded *least* by the agency.[43] Rather, the values that continue to be rewarded *most* by the agency are ones reflecting the importance of maintaining the organization's long-term viability: USFS loyalty, meeting targets, and promoting USFS image.

The pervasiveness dimension of large-scale organizational change requires that change involve multidisciplinary change agents along with intergroup cooperation and coordination. This change requires

42. G. Ledford, *supra* note 39, at 14.
43. Kennedy and Quigley, *supra* note 16.

integrated management effort between different professions within the Forest Service. Ledford and colleagues elaborate:

> Change mechanisms must cut across organizational units that have different ways of viewing the world, different performance and evaluation criteria, and differing goals. The change process must involve consensus building, multidirectional dissemination of ideas and techniques, and cross-functional implementation teams.[44]

The pervasiveness of change in the Forest Service is supported by the findings of our study which are representative of a large cross-section of district rangers and forest supervisors from all regions in the national forest system, and it is already in operation on many national forests through the use of interdisciplinary planning teams (e.g., teams consisting of silviculturists, wildlife biologists and hydrologists).

The pervasiveness of change in the values of Forest Service district rangers and forest supervisors coincides with the agency workforce diversification program that has sought to enfranchise minorities—in particular, women and other individuals from different resource professions and ethnic backgrounds. Our preliminary analysis of the attitudes, values and beliefs of important diversification groups in the agency suggests that one objective workforce diversification—to increase value diversity to make the agency more adaptive to change—is on sound footing.[45] Workforce diversity is a necessary and supportive strategy for implementing alternative resource management strategies. Some of the diverse multi-resource values that these individuals bring to the Forest Service will not only survive the agency's extensive institutionalized socialization processes, but eventually will reshape those processes as this diverse group of individuals move, albeit slowly, up through the organizational hierarchy. Our results suggest that the process of *value diversification* is well under way and has effectively penetrated the first two levels of the Forest Service line organization.

Forestry Profession Diversification

Occupants of the district ranger and forest supervisor positions in the Forest Service have been, and remain, dominated by professional foresters. The forestry profession has come under increasing criticism for its failure to respond more substantively to changing demands on forest resources. Behan has challenged the forestry profession to adopt a new forestry paradigm which recognizes, among other things, that social per-

44. G. Ledford, *supra* note 39, at 16.

45. Brown and Harris, The Implications of Work Force Diversification in the U.S. Forest Service, Admin. and Society (in press).

ceptions (and values) of forest utility are volatile and unstable and that successful forest management requires *social* as well as biophysical evaluation of forest programs.[46] In a similar view, Kennedy attributes some of the present conflicts over forest management to changing social values that are being resisted by the more defensive, reactionary segments of forestry professional groups and agencies.[47]

However, our results suggest that the attitudes and values of professional foresters in line positions in the Forest Service are beginning to come to terms with the changing social values of forestry. One inevitable outcome of the forestry profession's struggle to regain the higher ground in resource management is increased conflict within the agency over politically motivated resource goals that are seen as incongruent with resource-based, professional judgment. Just one recent example of the impending conflict can be found in Region One where a large discrepancy exits between "bottom-up" assessments of sustainable timber harvest levels, established by professionals in the Forest Service, and congressionally mandated timber harvest targets.[48] Such conflicts can expect to increase in frequency and intensity as the profession struggles to adapt to changing social values in an environment where prevailing political values lag behind general societal and professional expectations.

CONCLUSION

Twight and colleagues cited the emergence of AFSEEE in the Forest Service as a bit of agency glasnost and correctly stated that this movement was limited to Forest Service *staff* members. Their data suggested a bias in favor of the user, commodity-oriented constituency among field-level line officers and strong solidarity among the line officers; building upon an organizational literature supporting a resistance-to-change, the researchers suggested that this "glasnost should give way to Tien An Men Square."[49] Our results can neither confirm nor predict this outcome, but they do suggest that a fundamental change in resource attitudes and values is clearly not limited to the staff level of the Forest Service; it is finding its way into the agency chain of command. While the attitudes and values of AFSEEE members and line officers do differ,[50] the attitudes of field-

46. Behan, Multiresource Forest Management: A Paradigmatic Challenge to Professional Forestry, 88 J. For. (1990).

47. Kennedy, Conceiving Forest Management as Providing for Current and Future Social Value, 13 For. Ecol. and Mgmt. (1985).

48. See "Controversy Revolves Around Ambitious Timber Harvest Goals," Great Falls (MT) Tribune, Nov. 29 (1990).

49. Twight, Lyden and Tuchmann, *supra* note 2, at 375.

50. Brown & Harris, *supra* note 15.

level line officers toward greater emphasis on non-commodity resources have unequivocally shifted in the last decade.

Our results are best put into perspective by asking the following questions: Can significant redirection of resource programs for national forest management occur without commitment from line officers? Can large-scale organizational change occur in the Forest Service without changing individual attitudes, values and beliefs about agency goals and objectives? And can the forestry profession retain its hard-won prestige and respect without adapting to changing social values? Thoughtful answers to these questions suggest that individual values and beliefs do, and will continue to, play a key role in determining the future of national forest management. What remains to be seen is how these changing values and beliefs play out within a political and institutional framework designed to deflect potentially dysfunctional change.