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James J. Kennedy

Forest Resources Department, Utah State University, Logan

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TEACHING NATURAL RESOURCES 101 AS MANAGING FOR SOCIAL VALUES AND HUMAN-ECOSYSTEM RELATIONSHIPS

James J. Kennedy

Professor of Natural Resource Policy and Administration,
Forest Resources Department, Utah State University,
Logan, UT 84322-5215: e-mail: jkennedy@cc.usu.edu

ABSTRACT: From the beginning lecture in their Principles of Natural Resource Management course, College of Natural Resources students at Utah State University (e.g., wildlife/fisheries managers, foresters, geographers, rangeland managers or environmental studies majors) are taught that they will not just manage for ecosystems and not just for people, but for valued *relationships* between the two (Brunson and Kennedy 1995, Koch and Kennedy 1991). These people-ecosystem relationships generate social values that are communicated to managers by interrelated economic, sociocultural and political/legal systems for society living and (to a lesser extent) for generations of humans and other life-forms yet to be born.

How these concepts evolved in American society and natural resource education, and the professional attitude and spirit in integrating them into a curriculum, are also discussed.

INTRODUCTION

Most of my undergraduate forestry education in 1958-62 was hard-science, mathematics and silviculture-similar to the European-model forestry curriculum proposed for the U.S. by Hough(1878). In a forstmeister tradition (Miller and Gale 1986), my Principles of Forestry course focused on protection and efficient wood production, with other human forests values and uses usually presented as constraints, costs, annoyances or of marginal benefit. For about 20 years I have taught Principles of Forestry at Utah State University as managing for complex, diverse and evolving natural resource *social values*, of which wood production has been declining in the Intermountain West (Kennedy 1985). In the last couple of years my colleague Mark Brunson has helped me carry this one step further, presenting the fundamental goal of natural resource management as providing for valued human-nature or human-ecosystem relationships (Brunson and Kennedy 1995). From managing forests for obviously good deer, wood of water stuff, to managing natural resources for social values, to providing for valued human-ecosystem relationships is quite a transition in manager, natural resource, and client roles and relationships.

This paper presents how managing natural resources for social values and its extension to managing for human-ecosystem relationship was developed and integrated into a basic Principles of Forestry course, that soon will be the initial Principles of Natural Resource course required of all College of Natural Resource majors (e.g., foresters, rangeland managers, geographers or wildlife managers). The basic

premise and course strategy will be discussed, but so will the convictions and excitement in teaching it—for spirit in education is often as important as content or technique.

WHY REQUIRE PEOPLE/SOCIETY EDUCATION FOR NATURAL RESOURCE MANAGERS?

An attempt to display the range of justifications for teaching people/society aspects of natural resource management is briefly presented in Table 1. It indicates how and why these three educational modes evolved, plus the motivation and the spirit for including people/society education in natural resource management curriculae. Note that integrating the social sciences into natural resource management education is not the issue here, for that is too limited. To understand important people/society interactions and influences in natural resource management will also require the inclusion of broader knowledge, in the arts or humanities, in history or religion, and more.

Traditional Educational Mode: Natural Resources Foremost and Forever.

This traditional perspective of natural resources (Table I) assumes that ecosystems have obvious human value in long-standing wood, game or water outputs, and emerging wildlife or recreational services. The preface to the first textbook on silviculture (and an initial handout in my course) is a poetic, passionate and traditional description of German forester's

roles and social responsibilities at the beginning of the 19th century (von Cotta 1817), that largely reads fresh and true today.

Such a forest protection and wood-focused silviculture focus was probably an adequate appraisal of natural resource social values in the Agricultural or the Industrial Stages of Western-world socioeconomic development (Gulick 1951, Koch and Kennedy 1991, McGee 1910). Economics was the only social science willingly introduced early in forestry and latter natural resource management curriculae. But the focus was usually microeconomics efficiency, with much less attention to human aspects in demand or regional socioeconomic development (Hays 1959). This orientation was rather bluntly stated by one of the fathers of American forestry, Professor Fernow (1902:85), in the first American forest economics textbook: "The first and foremost purpose of a forest growth is to supply us with wood material; it is the substance of the trees itself, not their fruits, their beauty, their shade, their shelter, that constitutes the primary object..." Any questions?

Changing U.S. social, economic and political forces increasingly conspired to insert themselves in natural management after W.W.II, and professional educators and managers were increasingly required to include them. This inclusion of people/society considerations was often not done eagerly or willingly, but prudently (Cliff 1963). We young natural resource managers often heard from our elders in the 1960s that in a more perfect world, there would not be all this public and political interference in our professional wisdom, and we would be liberated to "manage for the good of the resource". This good was usually not well articulated, and often involved more intensive wood or deer production, but somehow we were convinced that it would emerge from our science and professional ethics. The American public, it seems, was not so convinced (Reich 1962).

TABLE 1. Rationales for providing people/society education to natural resource (NR) managers.

Educational Modes:	Educational Rationales:	Human-NR Relationships:	Motto For NR Management:
<u>Traditional Mode:</u> NRs Foremost & Forever	Changing socio-economic & political pressures compel us to incorporate social sciences.	NRs foremost within people & societal constraints	Regardless of people or political distractions, stive always to mangle for the good of the resource.
<u>Transition Mode:</u> NR Management Involves People, for Better or Worse	NR management is driven and impacted by socioeconomic & political systems.	NRs first, but their management is driven & impacted by people.	Manage NRs on sustained yield basis for people now & in future.
<u>Relationship Mode:</u> NRs = People and People = NRs	NR definitions, use, protection and management are human-ecosystem relationships.	NRs & people & society are equally & inextricably intertwined.	Manage not for ecosystems or for people, but for their relationships.

Transition Mode: Natural Resource Management Involves People.

Increasing 1960s outdoor recreational and other "multiple" uses of wildlands (Cliff 1963, Hopkins 1970) and the turbulent 1970s (Duncan 1971, Reidel 1971) was natural resource managers' introduction to the complex and diverse social values of an emerging urban, post-industrial (Drucker 1993) and globally integrated (Reich 1991) U.S. society. Few natural resource professionals by the 1980s believe that foresters or other natural resource managers were omnipotent (Behan 1966). Few would deny, for better or worse, that socioeconomic, political or legal aspects are an increasing and important part of their management, and require more education in that area. For myself and many colleagues, the transition was often a confusing and threatening journey.

A 1983 Fullbright Scholar appointment at Trinity College, Dublin, provided the time 20 try to make sense of all the different sociocultural, economic and political systems impacting natural resource management that I had observed in the U.S. and on several international assignments. I was also searching for a new central construct to make my forest economics courses more integrated with other social and political systems, and inclusive of broader natural resource values impacting the Intermountain West in the 1970s. The concept of managing natural resources for multiple, diverse, long and short-term social values was the result (Kennedy 1985). After several years of teaching these concepts on campus, it became a core concept in a USDA-Forest Service shortcourses taught with a suspicious wildlife biologist colleague, by the name of Jack Ward Thomas. After he became convinced that social value concepts could legitimately incorporate biocentric values, we refined it and jointly wrote another paper (Kennedy and Thomas 1995). For over 15 years this has been the central management paradigm in my introduction to forestry and resource economics courses. The concept includes all my student's values and all the active systems (i.e., economic, social and political/legal) driving and impacting natural resource management.

The *Readers Digest* version of the concept goes something like this:

- 1) We do not manage natural resources for fixed, unchanging and intrinsic values that fall from the sky, are generated only by the economic system, or are whispered in our ears by the ghosts of Gifford Pinchot or Aldo Leopold, but for multiple, diverse, long and short-term *social values* as the natural resource system interacts with interrelated sociocultural, economic and political/legal systems.
- 2) Natural resource social values *originate* in only one of these four systems (the sociocultural) as it interacts with the natural resource/environmental system. These values originate: from human needs, are not part of our feelings or intellect upon birth, and are largely socially learned. Natural resource

values, like human needs, range from human-dominant to human-mutual relationships with the natural world. At the human-dominant end of this value continuum, ecosystems and their natural resources have worth only as they fulfill human needs—be these needs material, recreational or spiritual (Kennedy and Thomas 1995). On the human-mutual end of the continuum, more biocentric worth of the natural world (independent of utilitarian values) is recognized. Here plants and animals have value (and often rights) similar to the human species.

3) Natural resource social values are *communicated* individually and jointly by three of these four interrelated systems: the *economic* (in prices, taxes or jobs), the *political/legal* (via laws, budgets or litigation) and the *sociocultural* in symbols/messages on T-shirts, social protest, newspaper articles, interest group pressures, community acceptance or shunning of managers and family, awards and recognition.

This management paradigm accommodates the full spectrum of evolving human-nature values in our diverse urban, post-industrial society—from the human-dominant and utilitarian perspective to more biocentric human-equal orientations. It also includes all those systems other than economics that seem more present today in natural resource planning and management decisions. In addition, it can be applied to forestry (Kennedy 1988), range (Kennedy et al. 1995) or wildlife (Kennedy and Thomas 1995), in North America or Europe (Koch and Kennedy 1991). Although effective at the management level, this model can be enriched by looking deeper at the origin of social values and the ultimate justification for managing natural resources in the first place—human-nature relationships.

Relationship Mode: Manage for Valued Relationships Between Humans and Ecosystems.

In discussions and writing with critics and kindred-spirits (Brunson and Kennedy 1995), it became apparent that a relationship perspective lay behind the social value concept—and could be the initial, fundamental concept teaching natural resource management as if people really mattered (Egan 1996, Magill 1988).

Initial lectures in defining what are and are not natural resources illustrate to students that they are: 1) very personal and often passionate mental constructs, 2) heavily shaped by one's culture, and 3) considerably different in the heads and hearts of a class of 100-250 young adults. Since religion is an important aspect of Utah society, we begin by examining the central role that relationships between natural resources, humans and God played in the most common creation story in Western culture (Genesis I)—why not begin at the beginning. Neither God, humans or the Garden ecosystem in this story can be understood in independent isolation, only in relationship to each other. Ecosystems and natural resource are also central to the story plot in: 1) God's first six days of

labor, 2) humans being gifted almost all his creation, 3) invited to name the important plants and animals (i.e., identify and claim those worthy of natural resource status), and 4) the first natural resource conflict over a wilderness-type allocation around a sacred tree.

The central paradigm from course start to finish, is:

- 1) we never manage ecosystems just for themselves (whatever that might mean), or...
- 2) just for people,
- 3) but for the many meaningful and valued relationships between ecosystems and people (which may or may not include a god in the matrix)—whether that relationship is artistic or wood-construction, a rancher or backpacker self-image and life-style, bird watching or bird shooting, mining or photographing a landscape, biocentric or preservationist meaning (Table 2 is a class handout that summarizes these concepts).

People-natural resource relationships is not where we *end* the course, in a lecture or two on outdoor recreation, wilderness or other new values and uses. It is where we begin and what we emphasize *throughout* the course (Table 2). With such a human-ecosystem relationship perspective, there is little resistance or antagonism rationale in not incorporating people/society considerations into natural resource education or management. Which is the topic of the next section.

Natural Resource Manager Attitudes Toward People and Social Institutions as an Essential, Legitimate Part of Planning and Management.

Many of my undergraduate professors, in the forstmeister mode, took an antagonistic attitude toward people and political involvement in natural resource management. The transition mode (Table I) is a more enlightened perspective. It is also more likely to survive in a democratic U.S. society that increasingly demand s such processes occur in natural resource planning and management—especially on public lands (Kennedy 1988, Reich 1962). Yet there is often professional natural resource manager reluctance and sense of sadness in this human/society inclusion, similar to Victorian sexual attitudes encountered in my youth.

Even in the transition mode, people flocking to wildlands or heavy involvement by the press or politics is often discussed as unfortunate events, in an imperfect world, with which we professional managers must learn to cope, whether we like it or not. Such a modern world might require increased cross-campus social sciences and natural resource policy/administration education to more effectively react to these increased people/society complexities in our professional lives. But like spinach or Victorian sex, they may be good for us or are required means to necessary ends—but probably should not be enjoyed for their own sake. What a sad way to learn and live life.

The left column of Table 3 is a less dramatic illustration of traditional natural resource aversion or reluctance in embracing people/society as an essential and Legitimate aspect of natural resource management. The right column (in contrast) begins with a human-ecosystem relationship premise, that remains a central and binding concept throughout. Yet note that although the traditional and relationship natural resource management perspectives in Table 3 start with very different perspectives, both reach the same ultimate conclusion: that our paramount management responsibility is to *pass on adequate, diverse, sustainable*

TABLE 2. Core concepts in natural resource/environmental (NR/E) management—a class handout

1. Natural resource/environmental (NR/E) managers (especially of public resources) manage more than *things* (e.g., deer, trees, water or recreational opportunities)—regardless of how useful, beautiful and personally-cherished these nature “things” may be to you or me.

2. Consider that we manage these NR/E things for *social value...* for clients living, and ... for millions of humans yet to be born (see: Kennedy and Thomas 1995).

3. Thus a new definition of NR/E management (whether wildlife, forest, recreational or environmental management) could be:

Provide a mix of social values from healthy, sustainable ecosystems for society living—with adequate, diverse sustainable ecosystems available for social values and options of future generations of humans and other life forms.

4. NR/E social values originate from human *needs*, for a wide spectrum of human-nature *relationships*, that range from: commodity and consumptive...to... non-consumptive and appreciative relationships; direct and short-term...to...indirect and long-term values/relationships; concrete and practical...to... abstract and symbolic nature values.

Thus NR/E management can be viewed as *human-nature relationship management*. What!! ! I will be a relationship manager???

5. When NR/E managers enhance or diminish important, valued human relationships, we had better do it with: deep awareness and empathy... sensitivity and caution...and... good, valid intentions.

6. Many human-nature and society-nature relationships are highly valued and in sociopolitical conflict today.

Therefore NR/E management can also be viewed as *sociopolitical conflict management*. What!!! I will be a NR/E sociopolitical conflict manager! ! !

Generations of NR/E managers have selected their professions to protect and manage personally-cherished trout, tree, water or scenery things, in rural settings away from human and urban complexities, where seldom would be heard a discouraging word. After an education focusing on math, science and tree or wildlife thing management, NR/E professionals are often shocked and disappointed in their initial jobs to discover how much people/social aspects of management dominate their work-week. You should not be surprised. Start working now on your insecurities and attitude barriers to learning how to better understand and respond to people and their institutions. Without such attitudes and skills, you will not be very satisfied in your career or very effective in protecting and managing those deer, tree or scenic beauty things you (and society) cherishes.

ecosystems to future generations. After all this prolonged and often reluctant acceptance of human beings as a central and legitimate ingredient in the definition and management of natural resources, we end up where forstmeister von Cotta (1817) started in his classic jewel of a preface to the first textbook in silviculture! Good for us. Good for society, too, if we can only walk our talk—in spite of a discouraging record of our species in doing so (Perlin 1989).

STRATEGIES FOR INCLUDING PEOPLE/SOCIETY VALUES AND CONCEPTS IN A NATURAL RESOURCE MANAGEMENT EDUCATION

I have surveyed and interviewed hundreds of entry-level and mid-career USDA-Forest Service employees on the professional impacts of their education (Kennedy 1985 and 1991, Kennedy and Mincolla 1985). Never once did a professional employee recall a course title, its general content: or specific scientific concepts that greatly impacted them, without a memorable human educator being recalled. Almost all name and describe an intelligent, caring and involved educator who taught *what they knew* by *who they were*, and how that educator role-modeled their values and knowledge. Often this acquired special power in a mentor relationship (Kennedy 1991, Kennedy and Mohai 1987).

So I never use the verb educate alone. Educate and role-model (pardon making a verb of this) is what we do most powerfully to educate our children, students and the public. We are always in the education business, and role-modeling is one of the most impactful and enduring educational processes I know. And faculty role-modeling will enhance or marginalize any well

planned and executed people/society educational strategy that we might propose below.

Strategy I. Values and Concepts Integrated Into Natural Resource Faculty Professionalism and Core Courses.

A natural resource faculty can effectively teach and role-model many subjects within their own community, whether they be traditional skills (e.g., measurements) or more recent additions (e.g., ethics, the role of art or poetry, or international aspects of natural resource values and management). Even with developing the best new course on natural resources and society (Strategy II, below) or cross-campus course options (Strategy III), they will be marginalized without meaningful integration by core natural resource faculty role models and their courses. This is as true of integrating writing or statistical knowledge learned across campus and/or in a specialized natural resource course, as it is for people/societal values and concepts.

Let me share an example of integrating people/society concepts at the most basic, traditional and technical levels of forestry education in timber cruising. On the first morning of measurements week, in our six week summer camp, students are as eager as race horses to engage in this macho/a professional ritual. Yet we sit them down and ask, “Why we are going to measure some characteristics of some tree species today and not others? We may feel in charge and cool today, but we will be behaving as puppets in many of our measurement ‘decisions’. What values and systems will be pulling our strings?”

Although the first moments are often meet with student impatience and confusion, within 30 minutes we unravel the traditional strings that connect to U.S. wood preferences and tree construction or pulping qualities, expressed through prices in the economic system, that will direct us to throw a diameter tape around a Douglas fir and not other species. We also discuss our evolving professional attitudes toward dead trees. How and why they were only recently considered neutral or negative stuff in a well managed forest, the role of changing wildlife values of an urban, post-industrial US society and subsequent laws they passed, and how/why we will now measure certain quantitative and qualitative snag characteristics is also discussed. “Okay, now let’s go measure the height and DBH of socially valued trees, and also remember to not ignore the rest!”

To repeat, teaching and role-modeling (with me in my battered cruising, vest) this pre-cruising people/society module requires about 20-30 minutes. We also reinforce these concepts working in the woods or in casual conversations over lunch. The complexity, diversity, interrelatedness, beauty and wonder of socioeconomic and political systems are presented jointly and in an integrated fashion with those same qualities of the forest ecosystems that fill our hearts and minds that week. Without the motivation of exams, this learning is

integrated and enduring (e.g., months later on campus, students routinely use the snag lesson in discussions and on exams).

TABLE 3. Rationale for people/society considerations in natural resource (NR) management.

Traditional, Scientific Natural Resource (NR) Management for Obvious and Inherent Values-We Manage for Good NR Stuff

1) Start with NRs: Ecosystems provide obvious, long-standing goods and services society needs (e.g., wood or water) and resources of more intrinsic value, such as wildlife or wilderness.

2) To provide long-term flows of these valuable resources, they should be protected and managed in an efficient, sustained-yield manner.

3) Best people to manage NRs are objective, scientifically-trained professionals (traditionally foresters), who also understand economics and management.

4) Because people use NRs and impact their efficient management, they must (for better or worse) be considered in NR protection and management.

5) More, different and often conflicting human use, interest groups, laws, etc. are involved in NR management today .

6) Somehow and somewhere, NR management education must effectively incorporate social sciences into the curriculum to efficiently protect and sustainably manage NRs.

7) With all these people concerns and politics, never forget that natural resource managers should pass on adequate, sustained-yield NR systems to future generations.

Managing Ecosystems for Social Values Generated by People-Nature Relationships—We Manage for Valued Human-Ecosystem Relationships

1) Start with Human Relationships: In the Western-world perspective, human perceptions and values are the “re-” and ecosystems the “source” in conceptualizing and managing NRs.

2) People are born with few or no NR perceptions or values that must be learned, will vary with culture, and change over time.

3) Goals of NR management are based on socially learned human-ecosystem relationships, that are expressed to managers through interacting social, political/legal and economic systems.

4) Educating NR managers in human-ecosystem relationships, plus the origin and expression social value, is as essential as physical, biological and management knowledge.

5) In this social value orientation, NR managers must never forget that the majority of human stakeholders are yet to be born.

6). NR social values driving management are based on human-ecosystem relationships, thus NR managers are ultimately and basically relationship managers.

7) Since human-ecosystem relationships and social values 10 or 100 years in the future cannot be accurately predicted, society should pass on adequate, diverse, sustainable ecosystems to future generations of humans and other life forms.

Strategy II. Specialized Natural Resources Course(s).

Offering a special natural resource course in GIS applications, ethics or people/society aspects of management usually displays faculty commitment. Depending on how well this option is conceived, presented and integrated, this can be an enjoyable and effective educational strategy. But faculty community attitude in its support and integration are still critical.

Strategy III. Cross-Campus Model.

Often when new subjects or perspectives are required in a technical engineering or natural resource curriculum (be it writing, speaking or social science skills) it can be more economical, effective and convenient to send students across campus. Natural resource faculty can negatively role-model an “appendage”, “sacrifice” or “penance course” attitude here—where they communicate (in many overt or subtle ways) that these courses are marginal, a waste of time, or required for real or imagined professional sins (e.g., “Sorry gang, but you must take a sociology course with those long-haired students and professors in Hippie Hall because the public doesn’t understand or appreciate efficient wood production silviculture, and we are forced to better understand their ignorance and naiveté.”).

Now there are times when students and faculty are just fortunate to have relevant, well taught cross-campus courses available, with little coordination and collaboration required. But for strategy #3 to succeed, usually requires colleague

collaboration, respect and support in providing natural resource case studies, references, problems or guest lectures to cross-campus educators.

CONCLUSIONS

As a forestry student, I spent more hours in silviculture lectures than any other natural resource subject. In it we were usually taught, in a what’s good for General Motors is good for the rest of the country fashion, that if American forests were managed to be healthy and fast growing that other wildlife, water or recreational values would take care of themselves. What forest manager need worry about people or their social values with such a simple and convenient mind-set?

Later I would learn that this was formalized as the “wake theory” in European silviculture (do good high yield and sustained-yield silviculture and good multiple use will follow in the wake; FAO 1988 and 1989)—which probably gave such rubbish more potency in minimalizing the need for natural resource majors to respect and study humans and their institutions. Fortunately some of my undergraduate forestry professors were in the “transition mode” of recognizing, for better or worse, that people and society were of increasing importance in managing the resources we cherished. Yet even by the action and inaction of the more enlightened faculty (i.e., their role-modeling), it was communicated that, like our sex education in the 1950s, learning about people and society was something we would have to do mostly on our own and usually as on-the-job training.

Reserving such critical knowledge in achieving a satisfying and successful life and career for an informal, experimental education in the real-world could have worked better, if we were provided effective *attitudes* and *skills* to be good on-the-job learners. We were usually provided neither. Most of us learned how to be the lovers and the people-natural resource managers we needed to be the hard (and sometimes tragic) way—and in spite of many dysfunctional attitudes and role models we took along with our diplomas into the real-world. We can do better than that for the young people entrusted to us for a few years of education and role-modeling, and for the natural resources they may someday manage.

I’ve observed two contrasting educational perspectives in my professor career:

Empty Vessel Model—Fill students up with what they need to become professionals in the few years that they are in our control.

Continuous Learner Model—Provide students adequate starting professional knowledge to get a job, but focus on the values, concepts and skills for them to be eager, effective, adaptive learners throughout life.

I believe educating and role-modeling students that will manage a wide spectrum of natural resources for diverse and

changing social values, resulting from human-nature relationships, can be very effective and enduring in the continuous learner educational model. First and foremost it is people/society embracing and responsive, stressing our public service role (Magill 1988), and it concludes with the obligation to bequeath future generations adequate, diverse and sustainable ecosystems. Such a perspective also meets many generic requirements for natural resource management in the 21st century (Kennedy and Dombeck 1995), because it is: 1) *inclusive* of interrelated natural resource, socioeconomic and political systems, 2) *integrative* in illustrating the system interdependency of a complex, interrelated world, and 3) *adaptable* in the fluid way it introduces change as a natural, long-standing way for social, economic or ecological systems to interact and adapt. I also believe these social value and human-nature relationship concepts can and should be taught from students' first, beginning principles of natural resource management course(s) or traditional, sacred field rituals (e.g., timber cruising).

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