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Integration of Human/Social Dimensions into the Traditional European Model of Natural Resource Education and Management¹

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1. Three stages of Western-world natural resources management

Although we two foresters come from different continents, our professional forestry educations in the United States and Denmark were similar. Both were the centuries-old European model of a hard-science and mathematics foundation, followed by traditional silviculture and tough-minded management courses that maximized the production of obviously valuable resources. The focus was on «sacred stuff» production – usually tall, straight trees and deer with large antlers. With the increases in amount and diversity of users since the 1970s, one often hears that natural resource management is now all people management. Natural resource management is neither sacred-stuff nor people management. It is both and more. We propose it is human-ecosystem relationship (or interaction) management, and that is what natural resource use and management has always been.

From prehistoric European or North American rock art, to God inviting Adam to identify and name the natural resources of Eden, to people logging, hiking or photographing forests today, natural resources are human-ecosystem relationship, with the parts of earth ecosystems (1) cognitively recognized and (2) emotionally valued (BATESON 1979). As social animals, our human ecosystem relationships usually have ritual celebration, social status and other cultural components that natural resource managers intentionally or unintentionally, directly or indirectly impact by their action (or inaction). Our paper will: (1) examine how natural resources management has shifted from a sacred deer, water or tree stuff focus to include human-dimensions, and (2) present a human-ecosystem relationship perspective that we believe is a better life-long learning concept for university students or experienced natural resource professionals.

Table 1 displays a range of justifications over the last couple of centuries for including people/society aspects in natural resources education and management. It indicates how and why these modes evolved, plus the motivation and the spirit for including them. These perspectives are presented as three modes of thought and behavior in the following three sections.

2. Traditional sacred-stuff mode: natural resources first, foremost and forever

The traditional perspective of a natural resource education or management (table 1) assumes that ecosystems have obvious human value in long-standing wood, game or water outputs. Emerging non-game wildlife or recreational services were sometimes mentioned, but usually as constraints to the efficient production of primary, sacred-stuff outputs. In his preface to one of the Western-world's first natural resource textbooks (in 1817), von Cotta provides a poetic, passionate and ecologically sound description of German foresters' roles and social responsibility – much of which reads fresh and true today (von COTTA 1902). Such wood-focused silviculture was an adequate appraisal of the dominant forest social values in that agricultural and emerging industrial stage of European socio-economic development (EVELYN 1706, MCGEE 1910, KOCH & KENNEDY 1991). Economics or policy courses provided some social science in forestry or other types of natural resource education, but the focus was usually microeconomic production efficiency (HAYS 1959) and a history or law emphasis in policy courses. There was little focus on the human aspects of natural resource use, values or regional socioeconomic development.

¹ Revised and shortened version of the paper «Viewing and managing natural resources as human-ecosystem relationships» – «Forest Policy and Economics», Vol 6, No 5, 2004, Kennedy and Koch, pp 497-504. Copyright (2004) with permission from Elsevier.

Table 1: Several rationales for including people/society considerations in natural resource (NR) education or management.

Educational or Management Modes:	Rationales for People Considerations:	Humans and NR Relationship Models:	NR Management Mantra:
1. Traditional Sacred-Stuff Mode: NRs First, Foremost and Forever.	Market & political pressures compel us to incorporate economic & policy considerations.	NRs foremost, within economic & political/legal constraints.	Sustained-yield NR management of sacred tree or deer outputs, without damage to long-term site or habitat productivity.
2. Transition Mode: NR Management, for Better or Worse, Involves People.	NR management increasingly interacts with diverse, complex political & socioeconomic systems.	NRs first, but their management is driven & impacted by people.	Regardless of people or political distractions, strive always to manage for «the good of the resource.»
3. Relationship Mode: NRs = Human and Ecosystem Relationship.	NR definitions & symbols, direct or indirect use, protection & management are all human-ecosystem relationships. Without a «human dimension», there are no NRs.	NRs & society are equally & inextricably intertwined over time and space.	Manage not just for ecosystems or for people, but for their complex, diverse, short- & long-term sustainable relationships.

Changing European and USA social, economic and political forces persistently conspired to insert themselves into a sacred wood or game management focus after World War II (GULICK 1951), and professional educators and managers were increasingly required to include people/society considerations (HERMANSEN 1970, KENNEDY 1988). Such inclusion usually was not done eagerly or willingly, but warily and prudently (CLIFF 1963, STRIDSBERG 1984). Young natural resource managers often heard from their elders that in a more perfect world there would not be all this public and political interference in our professional wisdom, and they would be liberated to «manage for the good of the resource». This «good» was generally not well articulated, but usually involved more intensive, efficient wood or game production. Somehow foresters or wildlife biologists were convinced that ultimate insight of what was good for the resource would emerge from scientific purity and professional objectivity (BEHAN 1966, MAGILL 1988). The European and USA public, it seems, was not so convinced (REICH 1962, HYTONEN 1995).

3. Transitional mode: natural resource management, for better or worse, involves people

Increasing outdoor recreational and other multiple uses of European or USA wild lands of the 1960s (CLIFF 1963, HOPKINS 1970, HASEL 1971) and other sociopolitical change of the turbulent 1970s (DUNCAN 1971, REIDEL 1971) educated natural resource managers to the complex and diverse human-ecosystem relationships of emerging urban, post-industrial societies (DRUCKER 1993, REICH 1991). Most natural resource professors and managers of the 1970-80s eagerly embraced the emerging concepts of ecosystems being more complex, diverse and interdependent than initially imagined – after all, it was just an expansion of interest and involvement natural resource scientists and managers have had with ecosystems since EVELYN (1706), VON COTTA (1817, 1902) or LEOPOLD (1939). Embracing the interrelatedness of complex and diverse socio-cultural, economic and political systems into our management of those ecosystems was no more intellectually difficult, but seems to have been more professionally threatening (HASEL 1971, KENNEDY *et al.* 1998).

The concept of managing natural resources for multiple and diverse social values was developed to make sense of all the different sociocultural, economic and political/legal systems impacting European and USA natural resource management in the 1970s (KENNEDY 1985, KOCH & KENNEDY 1991). After becoming convinced that such social value concepts could legitimately incorporate biocentric values, suspicious wildlife ecologist also began to entertain this thinking (KENNEDY & THOMAS 1995).

The beginning course version of this natural resource social value model goes something like this:

- (1) Earth ecosystems are not managed for fixed, unchanging and intrinsic values that fall from the sky, are generated only by economic systems, or are whispered in our ears by the ghosts of professional ancestors (e.g., Aldo Leopold or von Cotta). Natural resources are managed for multiple, diverse, long and short term social values – as (a) sociocultural, (b) economic and (c) political/legal systems interact with (d) earth ecosystems.
- (2) Natural resource social values originate from people in only one of these four systems (the sociocultural), as humans interacts with earth ecosystems. Such social values originate from human needs (e.g., MASLOW 1954). Natural re-

source perceptions and values also are not part of our intellect or feelings upon birth. They are largely socially learned. These values, like human needs, range from human-dominant to human-mutual relationships with earth ecosystems. At the human-dominant end of this value continuum, parts of ecosystems conceptually recognized and emotionally valued (i.e., natural resources) have worth only as they fulfill human needs – be these needs material, recreational or spiritual (KENNEDY & THOMAS 1995). On the human-mutual end of the continuum, biocentric values of the natural world (more independent of human use or value) are recognized. Here some humans have learned to believe that plants and animals have value (and often rights) similar to our own species (ROLSTON 1988, ROLSTON & COUFAL 1991).

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

This social value paradigm of natural resource use and management accommodates the full spectrum of evolving human-ecosystem values in our diverse urban, post-industrial society – from the human-dominant and utilitarian perspective, to more biocentric human-ecosystem relationships. It also includes those systems (other than economics) that are more present today in natural resources use, planning and management. In addition, it can be applied to forestry (KENNEDY 1985), range (KENNEDY *et al.* 1995) or wildlife (KENNEDY & THOMAS 1995), in Europe, USA or other cultures (KOCH & KENNEDY 1991, WIERSUM 1999).

Although effective at the conceptual level of ecosystem management, this model can be enriched by looking deeper at the origin of human-ecosystem social values, and the ultimate justification for valuing natural resources in the first place – to provide for valued short and long term earth ecosystem relationships for humans and other species.

4. Relationship mode: natural resources are valued human and earth ecosystem relationships

A human-ecosystem relationship perspective is the foundation for a social value model of ecosystem management. It can be the initial and fundamental concept in framing natural resource, or more general ecosystem, management as if people really mattered (BRUNSON & KENNEDY 1995, EGAN 1996, MAGILL 1988). In teaching students or experienced managers from this perspective, the core belief from start to finish, is:

- (1) we never manage ecosystems just for themselves (that is, for the «good of the resource», whatever that might mean) or...
- (2) just for people,...
- (3) but for the many meaningful and valued short- and long-term relationships between ecosystems and people – regardless if those relationships are of a logger or a backpacker's self-image and life-style, bird watching or bird shooting, mining or photographing a landscape, utilitarian or biocentric values.

People-ecosystem relationship is not where an introductory course in natural resource management course should end,

with a lecture or two on «human dimensions.» For without a human dimension, there are no natural resources. It is where one begins and what should be emphasized throughout a course or a 50 year career in natural resource management. With such a human-ecosystem relationship perspective, there is little resistance or antagonism rationale for not incorporating people/society considerations or different professional colleagues (e.g., anthropologists or poets) into natural resource education or management. Which is the topic of the next section.

5. Attitudes toward people and social institutions as an essential, legitimate part of natural resource planning and management

Many natural resource professors in the 1950–60s, in the forstmeister mode (MILLER & GALE 1986), took an antagonistic attitude toward the increased people (especially new urbanites) and political involvement in natural resource management (CLIFF 1963). The transition mode (*table 1*) is a more enlightened perspective. It is also more likely to survive in democratic societies that increasingly demand that decision power be more broadly and equitably shared in natural resource planning and management – especially on public lands (REICH 1962, KENNEDY 1988). Yet there is often natural resource manager reluctance and sense of sadness in such human/society inclusion in their professional lives, similar to human sexual relationship attitude in Victorian times. Namely, many natural resource managers felt they should not become involved in the social dynamics (especially politics) of human communities unless forced, then only as a means to an end, never looking forward to or enjoying the process.

Increasing numbers of people enjoying wild lands or increased involvement of the press or politics into natural re-

source management was often discussed as unfortunate consequences of the modern world, such as traffic congestion or air pollution. Our 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. But like spinach or Victorian sex, the social sciences may be required means to necessary natural resource management ends, but probably should not be enjoyed for their own sake. What a sad way to relate to and live life.

The left column of *table 2* 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 models in *table 2* start with very different perspectives, both reach similar ultimate conclusions: that our paramount natural resource or ecosystem management responsibility is to accommodate current human needs, while passing on adequate, diverse, sustainable ecosystem options and opportunities for future generations of our and other species. 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 have circled back to where Forstmeister von Cotta started in his classic jewel of a preface to one of the first silviculture textbook about 200 years ago, or what LEOPOLD (1939, 1949) celebrated (KENNEDY 1984).

We two foresters see no other choice for natural resource managers but to be this humble and conservative in ecosystem management – especially of public land and water ecosystems (KENNEDY *et al.* 1998). For if we cannot confidently predict human values and behavior as simple as (say) USA or European men's' hair styles in 2010, how can we confidently predict human-ecosystem relationships in 2050 for which to plan or

Table 2: Two different, yet similar, natural resource management perspectives – sacred-stuff and relationship models.

Traditional, Sacred-stuff Model: Traditional, Scientific Natural Resource (NR) Management for Obvious and Inherent Values – We Manage for Good NR Outputs:

- 1) Start with NRs: Ecosystems provide obvious, long-standing goods and services that society needs – commodities (e.g., wood or water) and more intrinsic or amenity values in 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 or game managers).
- 4) Because people use NRs and impact their efficient management, they must (for better or worse) be considered in NR protection and management.
- 5) A greater number and diversity of conflicting human uses, interest groups, laws, etc. often are involved in NR management today.
- 6) Somehow and somewhere, some policy and economics is required in the curriculum to efficiently protect and sustainability manage NRs.
- 7) With all these people concerns and all this politics, never forget that natural resource managers should bequeath adequate, sustained-yield NR systems to future generations.

Relationship Model: Managing Land and Water for Social Values Generated by Meaningful People-Ecosystem Relationships:

- 1) Start with Human-Ecosystem Relationships: In the Western-world perspective, human perceptions and values are the «re-« and ecosystems the «source» in conceptualizing and managing natural re-sources.
- 2) People are not born with NR perceptions or values. They 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 of human 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 of earth ecosystems are yet to be born.
- 6) The social values driving NR management are based on human-ecosystem relationships. Thus, NR managers are ultimately and basically relationship managers. Most of our decisions ultimately touch the human heart – so move slowly, be sensitive, think deeply and inclusively.
- 7) Since future human-ecosystem relationships and social values cannot be accurately predicted, current human society should bequeath adequate, diverse, sustainable ecosystem options to future generations of our and other species.

manage. Given such relationship and social value uncertainty, it may be best to provide future environmental choices and options rather, than explicitly and rigidly planned and developed landscape scenarios. This is explicitly stated as a goal for Nederland state forest lands (STAATSBOSBEHEER 2001, 13) as «sustainability means continuity ... about keeping our options open for future generations». In an 1850 or 1950s era of greater perceived certainty, it was easier to confidently foreclose future ecosystem choices with long-term road or dam development options – appearing rational, efficient choices at the time. A quick examination of the status of world ecosystems intensively used and managed for centuries reveals a common consequence of such hubris is often contraction of relationship choices for humans and ecosystems today (PERLIN 1989). Ecosystem relationship choices may be the greatest gift today's users and stewards of earth ecosystems (especially those publicly owned) can bequeath to future generations of humans and other life-forms.

Consciously or subconsciously, intentionally or unintentionally, a sacred-stuff orientation often creates a hubris-mode of ecosystem use and management. This hubris risk is greatest at extreme positions, be they genetically superior conifer plantations or ultra-diverse wilderness as the dominant paradigm. Striving for balance between current choice and future options, within and between public and private ecosystems, seems a good vision in a dynamic, unpredictable world. A human-ecosystem relationship perspective can foster this more humble-mode, which is our final thought and challenge.

6. Conclusions

USA or Danish forestry students of the 1950-60s spent more hours in silviculture lectures than any other natural resource subject. There initiates were usually taught that if forests were efficiently managed for wood production, that other wildlife, water or recreational values would take care of themselves – known as the «wake theory» in European silviculture: do good high-yield and sustained-yield wood production silviculture and good multiple use management will follow in the «wake» (FAO 1988, 1989). This fancy title gave such arrogance more legitimacy in minimizing the need for natural resource students or managers to respect and study humans and their institutions. Fortunately, some professors and managers of that era were in the «transition mode» of recognizing that people and society were of increasing importance in managing the natural resources we cherished. Yet learning about people and society was something to be done mostly on our own as practicing professionals.

Reserving such critical people and society knowledge for informal, experimental education in the «real-world» could have worked better if natural resource students were provided effective attitudes and skills to be good on-the-job learners. Usually they were provided neither. Most natural resource managers of the last century learned the hard (and sometimes tragic) way how to be the people-ecosystem managers they needed to be – and in spite of many dysfunctional attitudes and role models taken along with their diplomas into the real-world. Educators can do better than that for the young people entrusted to them and better for the earth ecosystem we cherish.

Educating and role-modeling students that will manage a wide spectrum of natural resources for diverse and changing social values (resulting from complex, diverse and dynamic human-ecosystem relationships) can be very effective and enduring management or educational perspectives. First and foremost, the relationship mode is people/society embracing

and responsive. It stresses our public service role (MAGILL 1988) and concludes with the obligation to bequeath future generations of our and other species adequate, diverse and sustainable ecosystems choices or options. In addition, the human-ecosystem relationship perspective challenges the potential arrogance and hubris of ecosystem management at either end of the natural resource commodity or biocentric value continuum.

The human-ecosystem relationship model also meets many generic requirements for natural resource management in the 21st century (KENNEDY *et al.* 1998), because it meets many criteria of lifelong-learning. Namely, it is: (1) inclusive of inter-related ecosystem, socioeconomic and political systems over time and space; (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. Finally, it encourages a humble-mode for natural resource managers as midwives, not masters, in a timeless relationship dance with complex, diverse and dynamic human beings and earth ecosystems.

Summary

The increasing diversity, complexity and dynamics of ecosystem values and uses over the last 50 years requires new ways for natural resource managers (foresters, wildlife biologists, etc.) to understand and relate to their professional roles and responsibilities in accommodating urban and rural ecosystem users, and managing the complimentary and conflicting interactions between them. Three stages in Western-world natural resources management are identified and analyzed, beginning with the (1) Traditional stage: natural resources first, foremost and forever, to (2) Transitional stage: natural resource management, for better or worse, involves people, to (3) Relationship stage: managing natural resources for valued people and ecosystem relationships. The impacts of these three perspectives on how natural resource managers view and respond to ecosystems, people and other life-forms is basic and can be profound.

Zusammenfassung

Einbezug der menschlichen und sozialen Dimension ins herkömmliche Modell des Ressourcenmanagements

Die zunehmende Vielfalt, Komplexität und Dynamik ökosystembezogener Werte und Nutzungen im Verlauf der letzten 50 Jahre erfordern neue Ansätze für die Bewirtschafter natürlicher Ressourcen (Forstleute, Wildbiologen usw.) in ihrem beruflichen Rollenverständnis sowie in Bezug auf ihre Verantwortung, urbane und rurale Ökosystemnutzer einzubeziehen und deren komplementäre wie gegensätzliche Beziehungen zu managen. Drei Stufen der Ressourcenbewirtschaftung in der westlichen Welt werden identifiziert und analysiert, beginnend mit: erstens der traditionellen Stufe, d.h. Naturressourcen zuallererst und für immer; dann fortgehend mit einer zweiten Stufe, d.h. beim Management von Naturressourcen sind auf jeden Fall die Menschen einzubeziehen; und weiter mit einer dritten Stufe der gegenseitigen Beziehungen, d.h. Bewirtschaftung natürlicher Ressourcen für wertvolle Menschen-Ökosystembeziehungen. Die Wirkung dieser drei Perspektiven auf die Art, wie Naturressourcenmanager auf Ökosysteme, Menschen und andere Lebensformen reagieren, ist grundlegend und weit reichend.

Résumé

Intégration de dimensions sociales et humaines dans le modèle européen traditionnel de formation et de gestion en matière de ressources naturelles

L'accroissement de la diversité, de la complexité et de la dynamique des valeurs et des utilisations de l'écosystème au cours des cinquante dernières années nécessite de nouvelles approches afin d'insérer les gestionnaires des ressources naturelles (forestiers, biologistes de la faune, etc.) dans leurs rôles et responsabilités professionnels en s'adaptant aux utilisateurs ruraux et urbains de l'écosystème et en gérant les interactions complémentaires ou conflictuelles. Trois phases de la gestion des ressources ont été identifiées et analysées dans le monde occidental: 1) la phase traditionnelle - les ressources naturelles envers et contre tout, 2) la phase transitoire - association des populations à la gestion des ressources naturelles pour le meilleur et pour le pire, 3) la phase relationnelle - une gestion des ressources naturelles permettant des rapports harmonieux entre l'homme et l'écosystème. L'effet de ces trois perspectives sur la manière dont les gestionnaires des ressources naturelles envisagent l'écosystème, l'homme et les autres formes de vie est fondamental et d'une grande portée.

Traduction: CLAUDE GASSMANN

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