Theoretical Trends in Environmental Sociology: Implications for Resource Management in the Modern World (Steve Picou)

[Dr. Picou's presentation was based on the following paper]

Selected Theoretical Themes in Environmental Sociology: Implications for Resource Management in the Modern World*

J. Steven Picou
University of South Alabama
Department of Sociology and Anthropology
HUMB 34
Mobile, AL 36688
spicou@jaguar1.usouthal.edu

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The modern world has been increasingly sensitized to “risk” as being “the organizing concept that gives meaning and direction to environmental regulation” (Jasanoff 1999:135). Although there is no consensus for defining the concept of risk, most definitions make the distinction between “reality” and “possibility.” However, different epistemological approaches have emerged for identifying and constructing risks, or managing uncertainty, in the modern world. Traditional quantitative assessments view “risk” as a calculable statistical determination of the probability of harm from a specific natural or human action. “Knowledge experts” operate within a clearly specified domain, utilizing a “rational actor theory” context for approaching risk (Freudenburg 1988; Jasanoff 1999; Clarke 1999). The outcome of this process is “effective planning” for situations of relatively “low” and “moderate” uncertainty. However, under conditions of “high” uncertainty, this “nonreflexive realist” approach results in a rhetoric of justifying a promise of control, or more simply, a discourse that says “trust me” (Clarke 1999).

A broader view of risk emanates from a sociology of knowledge perspective, viewing environmental policy as a socially-constructed issue, based on a continuing discourse among organizations which seeks to transform dissent into consent (Hannigan, 1995; Eder 1999). As Jasanoff (1999:139) has noted:

> “Consensus on such “facts” as the risks of formaldehyde or DDT arises not from demonstrated deaths, disability or environmental damage, but from repeated confrontations among disparate scientific observations, their interpretations by experts and stakeholders, and the ingrained moral and social commitments of decision-making institutions.”

The social constructivist perspective on risk expands our concerns to understanding various cultural manifestations of the social and political interpretations of “risky ventures”. This discursive response was created by modern technology because modern risks are “highly mediated risks, extremely open to social definition and interpretation” (Szerszynski 1999:240). In fact, the image of risk in the modern world has shifted from a positive, enlightenment view to a more critical, reflexive posture. This trend has given rise to “risk movements”, which reframe mathematical risk calculations in terms of “the preservation and extension of community” (Halfman 1999:179).

Modern social theory, particularly recent developments in Europe, have illuminated theoretical themes in environmental sociology. Although, historically presenting a definite atheoretical character, environmental sociology has recently begun to contest the time-honored epistemological assumption of the natural environment as an independent, objective reality. In short, with the emergence of environmental degradation "as a barometer for the distribution of technological risks" comes a shift to a more direct theoretical concern with the social consequences of environmental degradation and resource management by environmental sociology (Picou and Gill 1999:144).

A social constructivist position characterizes much of this work, which argues that science itself provides "manufactured explanations of the world that should have no privileged claim on authenticity" (Cohen 1999:14). In its most extreme forms, the constructivist theoretical paradigm has been harshly criticized; however, this recent theoretical exploration of environment-society relationships has provided a number of themes relevant to institutional and organizational resource management. In fact, the constructivist paradigm identifies both macro and micro theoretical narratives that are relevant for understanding why the National Research Council recently identified the need for "risk characterization" rather than "risk assessment", recommending a broader, socially-based conception of risk for future assessments (Sterns and Feinberg 1996).

In the remainder of this paper, I will describe two macro-level theoretical themes which have framed global environmental political discourse over the last decade. Next, I will briefly address two micro-level theoretical themes that illuminate the local biophysical environment as a sociocultural variable, discursively linked to multiple groups for the management of resource-based risks. I conclude with a preliminary identification of areas of concern that need to be addressed by modern resource management in order to facilitate social and economic policy directives for the next millennium.

Risk Society and Ecological Modernization

Two global theoretical models of post-industrial development have recently emerged out of Germany that have direct relevance for environmental sociology. From the writings of Ulrich Beck, which also parallel the contentions of Anthony Giddens, "risk society theory" identifies a shift in concern from the logic of wealth distribution to a concern with the logic of the distribution of risk. This is the orienting characteristic of the modern world (Beck 1992). As such, new technological risks and hazards pose a challenge that can only be overcome through sub-political reorganization of environmental politics and the democratization of technical knowledge (Beck 1992). A second global model embraces "sustainable development"as the key issue for establishing harmonious relationships between economic development and environmental stewardship. "Ecological modernization", originally emerging out of the writings of Joseph Huber, Barry Commoner and Udo Simonis, sends a contradictory

message to risk society theory with regard to the positive benefits of science and technology (Simonis 1988; Commoner 1990; Mol and Spaargarten 1993). I will briefly review the major contentions of these two perspectives.

Risk Society Theory: Ulrich Beck's view of the modern world is one of transformation, that is, "the modernization of modernity" or the demise of industrial society through two narratives–the risk narrative and the individualization narrative. The risk narrative suggests that social conflict and inequality will emerge from the distribution of technological risks which were created by the very successes of industrial society. These modern social threats differ from previous risks because: (1) they are undectable by human sensory perception; (2) they transcend generations; and (3) they preclude causal attribution and compensation for victims (Beck 1992; 1996). Modern "manufactured" technological risks are "intangible" and cannot be smelled, heard, tasted or touched (Vyner 1988). Subsequently, modern risk judgments are made on the basis of "expert knowledge". Knowledge of risk in the modern world is viewed by Beck as, at best "second-hand, non-experience" (Beck 1992). Modern risks set the stage for societal self-annihilation and Beck's writings portend the dire consequences of contemporary technological hazards for the future and clearly illuminate the destructive side of progress.

Societal response to this shift in concern to omnibus technological catastrophe involves the process of "reflexive modernization" expressed through Beck's individualization narrative (Beck 1992). As Beck has written, reflexive modernization means:

> the disintegration of the certainties of industrial society as well as the compulsion to find and invent new certainties for oneself and others without them. But it also means new interdependencies, even global ones. Individualization and globalization are in fact two sides of the same process of reflexive modernization" (Beck 1996:14).

Beck sees structural change in the modern world as the process by which individuals are "set free from the certainties and modes of living of the industrial epoch – just as they were 'freed' from the arms of the church into society in the age of the reformation" (Beck 1992: 14).

"Choice and calculation" become more viable for people in the modern world as the restructuring of social conflict along risk cleavages coincides with the reorganization of social forms to include new sub-political groups. As Beck (1996:23) has written:

> sub-politics, then means shaping society from below. Viewed from above, this results in the loss of

> implementation power, the shrinkage and minimization of politics... Politicization thus implies a decrease in the central rule approach.
>
> As such “the authoritarian decision and action state gives way to the negotiation state, which arranges stages and conversations and directs the show” (Beck 1996:39).

This social transformation to risk society involves the “unbinding of science” through a broader sub-political critique by “citizen science.” (Irwin 1995). Non-government organizations (NGOS) proliferate, responding to the inability of industrial society’s institutions to insure and compensate victims of modern risks. Increasingly, modern institutions appear organized by the narrative of “irresponsibility” and must engage in a discourse over society’s capacity to deal with the “side effects” of modern technology, especially toxic pollution and ionizing radiation (Beck 1992).

This discourse also signals a change in the nature of “trust” in the modern world. Trust in traditional industrial society reflected an “unexamined and habitual confidence” in science and technology. As we move to risk society, trust now becomes “bestowed trust” which “has to be won,” or earned, by modern governments, organizations, and groups from “autonomous, reflexive individuals” (Giddens 1990;1991; Szerszynski 1999). This view portends an adversarial society, mobilized through risk anxiety and dominated by sub-political discourse on science, technology and environmental risks. Risk society portends a corrosive discourse, subject to conflict and anxiety.

Ecological Modernization Theory: The emergence of this “alternative” macro-theoretical model of ecological degradation came in response to the failures of the initial wave of environmental management of the 1970s and early 1980s (Cohen 1997). During this phase pollutants were dispersed over time and space, rather than reduced. Furthermore, industrial responsibility for “ecological harm” provided an irresolveable discourse on causality, impact and responsibility that resulted in, at best, ambiguous claims and counter-claims (Cohen 1997). Out of this impasse came ecological modernization, a model of resource and risk management that purportedly “transcends” these various conflicts and interests. The “dissolution of conventional antagonisms between economic progress and responsible environmental management” is based on a “reframing” of environmental discourse.

> In other words, [ecological modernization] reframes the terms of discourse by interpreting pollution reduction as a means of enhancing economic competitiveness rather than as an externality

> requiring the installation and maintenance of expensive remedial technologies (Cohen, 1998).

Cohen (1997; 1998A; 1999B) has summarized the theory of ecological modernization in terms of six general principles. First, ecological modernization will correct “the design flaws” of industrial technology through the process of “super industrialization” (Cohen 1997; 1998A). This process involves a change to cleaner, less resource intensive technologies and production processes that will reduce the necessity for expensive, add-on, remedial technologies. The correlation between economic development and environmental degradation will be significantly reduced, thereby “propelling” modern industry” onto a new developmental trajectory” (Cohen 1998B).

Second, acknowledging the ineffectiveness of past corporate volunteerism, ecological modernization requires the existence and implementation of “strict government regulations” (Cohen 1998A). Such regulation should promote “first-mover advantages” and economically viable “green” products to innovative production systems (Cohen 1998C). Third, ecological modernization promises to overcome the transfer of pollutants within the biophysical environment by developing “integrated pollution management” strategies. Such strategies would be part of the redesign of regulatory procedures and production processes. Fourth, ecological modernization requires industry to be more timely and responsive to their generated health and environmental hazards through “anticipatory planning practices”. Based on the German notion of vorsorgeprinzip, or “the precaution principle,” this tenet argues that “the lack of scientific certitude is insufficient reason to postpone the taking of prudent measures” for reducing environmental risk (Cohen 1998B).

Fifth, most proponents of ecological modernization endorse the “organizational internalization of environmental responsibility” through the Dutch principle of verinnerlijking. (Cohen 1998B) notes that this concept:

> requires all public and private entities to integrate a concern for environmental quality into all of their activities as a means of overcoming the standard approach of treating ecological considerations as add-on considerations.

Ecological modernization requires that “stand alone” organizational components for assuring ecological responsibility should be dissolved and reembedded throughout all decision-points in production systems.

Sixth, in response to emerging ecological antagonisms and conflict over environmental policy, ecological modernization requires a broader organizational network for decision- making. The development of “constructive relationships” between industry, government, NGOS and the public need to be achieved. The

resulting discourse should be “grounded in good faith and the free exchange of information” (Cohen 1998B).

Ecological modernization provides a theoretical alternative to risk society theory that has seen some acceptance by national governments and industry. For example, the Organization for Economic Cooperation and Development (OECD) and the European Union have endorsed selected principles of ecological modernization (Gouldson and Murphy 1996; OECD 1996). Furthermore, a consortium of major multinational corporations, the World Business Council for Sustainable Development, has advocated an “eco-efficiency” approach for improving organizational performance (Porter and Vand der Linde 1996; Cohen 1998B). Nonetheless, the ability of ecological modernization to overcome the lethal hazards of risk society provides the basis for a meta-theoretical discourse for ecological-based patterns of social change.

The contradiction between these two global models in environmental sociology focuses on the potential role of modern technology for either overcoming or exacerbating environmental degradation. This duality has been addressed by Cohen (1997) who proposes a two dimensional typology of societal development and risk emergence. This typology suggests that in the transition from pre-modern to modern to ecologically-modern societies, the cycle of ecological degradation and economic advance cannot continue indefinitely (Cohen 1997). A shift in the social construction of the environment from an “expendable resource to a valued amenity” sets the stage for risk society conflict and/or ecological modernization corrections to design flaws. Risk society is not necessarily an objectively more hazardous society; rather it is a society preoccupied with the threats of technological failure and environmental catastrophe. This fact identifies the social organization of global environmental narratives that have emerged during the last decade. These narratives are embedded in debates over toxic pollution, toxic waste siting, toxic technological disasters and the responsibility and compensation for impacts (Edelstein 1988; Beck 1992; Picou and Rosebrook 1993; Erikson 1994)

Ecological Symbolic and Resource-Dependency Models

Two micro-theories of social response to environmental degradation have been recently put forth by American environmental sociologists. Both of these conceptual models illuminate various themes from the more global risk society and ecological modernization paradigms. Arising out of studies of localized environmental degradation in the United States, the ecological-symbolic framework focuses on the abrupt severance of the unconscious relationship between people and their immediate biophysical surroundings (Couch and Kroll-Smith 1985; Edelstein 1988; Kroll-Smith and Couch 1993A; Erikson 1994). Resource dependency theory utilizes a similar social constructivist narrative, but identifies subsistence cultures of indigenous people and economic systems of

resource harvesters as the focal point of theoretical concern (Gill 1994; Oliver-Smith 1996; Picou and Gill 1996; Gill and Picou 1997).

Ecological-Symbolic Theory: Toxic contamination severs the exchange relationships between human communities and their biophysical environment (Kroll-Smith and Couch 1993A; 1993B). The intrusion of invisible toxic risks through contamination alters one's "lifescape", or personal security with the immediate biophysical envelope, producing social disruption and the erosion of institutional trust among victims (Edelstein 1988; Freudenburg and Jones 1991; Erikson 1994). Toxic contamination, either objectively measured or subjectively constructed, is seen as a "new species of trouble" which "contaminate(s) rather than damage; pollute, befoul, and taint rather than just create wreckage" and "scare human beings in new and special ways "(Erikson 1994). The uncertainty and anomie resulting from environmental contamination "is further compounded when physicians using sophisticated equipment are unable to confirm cases of exposure". (Picou and Gill 1999: 148).

The ecological-symbolic approach also identifies various elements of the social constructivist framework by viewing continuous claims-making and litigation as part of a "corrosive community" response to the failure of traditional institutional support systems for diagnosis and compensation of damages from contamination (Hannigan 1995; Freudenburg 1997; Hirsch 1997). "Popular epidemiology" and public challenges to both government and corporate scientific experts, in the form of alternative expert opinions, have emerged within the context of litigation in the United States (Brown and Mikkelsen 1990; Kroll-Smith and Couch 1993A). Documentation of the severe nature of the social and psychological impacts resulting from this breakdown in socially-mediated exchange relationships between people and the biophysical environment has been provided by case studies of Three Mile Island and the *Exxon Valdez* oil spill (Baum 1987; Baum and Fleming 1993; Green 1996; Picou et al 1997; Picou and Arata 1997).

Resource-Dependency Theory: Although similar to ecological symbolic theory in that it is predicated, once again, on social constructivist assumptions of culture-environment linkages, resource-dependency theory focuses on cultural and economic linkages, rather than lifescape assumptions (Oliver-Smith 1996; Picou and Gill 1996; Gill and Picou 1998). As such, traditional knowledge of indigenous subsistence cultures provides an alternative discourse narrative. Such a consideration broadens resource management concerns to include elements of traditional culture within the framework of impact assessment. In contradistinction to the discourse of opposing scientific experts, resource-dependency theory identifies alternative epistemological positions as legitimate participants in a mutual beneficial discourse network. The traditional knowledge of Alaska Natives has been increasingly integrated within the objectives of MMS, reflecting this aspect of resource-dependency theory.

Whereas the ecological-symbolic approach focuses on health risks, resource-dependency theory focuses on threats to cultural and economic resources. The economic and cultural connections to the biophysical environment of "renewable resource communities" provide another dimension of consideration for resource-dependency theory (Picou and Gill 1996; Gill and Picou 1997). Resource contamination threatens economic stability and quality of life, thereby producing "resource loss spirals" for victims dependent on harvests of renewable natural resources (Picou and Arata 1997). In short, resource-dependency theory extends the scope of resource management to include traditional ethnic knowledge and economic harvesters as stakeholders in an expanded discourse on environmental degradation in the modern world.

Implications for Resource Management

This brief discussion of emerging theoretical trends in environmental sociology may initially appear as a recondite exercise, quite distant from the daily exigencies of resource management, in general, and in particular, the more practical objectives of MMS. However, several themes converge from these theoretical approaches. I will extract these selected themes and identify issues relevant for further commentary at this conference.

This is, at best, a daunting task since all four theoretical themes involve considerably more detail and interpretation than I have provided to this point. But here goes.

First, all four perspectives suggest the general issue that modern societies are striving to enhance rational decision-making for resource management through expanding the "nature of" and "participation in" environmental discourse. For example, we have seen that for the concept of "risk", an expanded field of players is now required. As the National Research Council's recent panel on *Understanding Risk* stated that "interested and affected parties" take part in a discourse on "risk characterization," it is apparent that technical assessments of risk cannot stand alone while an extension of stakeholder participation is occurring (Stern and Fineberg 1996). But, what is the relevance of a "fuzzy concept" like discourse to the rational management of environmental resources?

Social discourse can refer to a number of communicative events, including the coordination of behavior through interaction. Furthermore, social discourse can develop to an emergent social form which becomes embedded in social structure (Eder 1999). Beck's "risk society" and the theory of "ecological modernization" both recognize that discursive social arrangements have accompanied the rise of modern political institutions. The rise of social democracy, parliamentary forms of government, the judicial system and science have all been characterized by complex and elaborate discourse systems over the last 250 years. Critique and enlightenment require public space and the invitation to participate (Habermas 1987). As Eder (1999) points out, "old vertical command systems" are replaced

by expanding “horizontally-organized” systems of discourse. Thus, discourse systems are also a characteristic of the Modern World.

It should be noted that the ecological modernization perspective views discourse as “functional,” that is, as a mechanism to go beyond “adversarial gridlock.” Environmental discourse does not necessarily insure a specific future outcome, but discursive systems are binding through commitments, which, in turn, facilitate an expressive function through appropriate decision-making systems. If this ecological modernization theme becomes more politically viable in the United States, then agencies like MMS should anticipate an expansion of discourse participants. Given this convergent theme, it is apparent that resource management in the modern world will require the involvement of new combinations of government, corporate, voluntary and regulatory organizations in policy decisions at all stages of deliberation.

This expansion should also include Traditional Ethnic Knowledge (TEK) of indigenous populations. Therefore, the discursive integration of TEK in resource management and risk characterization should be a primary objective for the next millennium.

Given these three broad themes regarding the rational and functional expansion of environmental discourse for resource management, the theoretical approaches discussed above also suggest potential problems that need to be addressed. More specifically, both risk society and ecological modernization themes address discursive systems that involve multiple issues related to the “unbinding of science” (risk society) and the potential for enforced science and technology regulations to reduce the zero-sum game of production and contamination (ecological modernization). As such, resource managers should consider the importance of investigating public understanding and skepticism of science.

The science-society relationship provides an important backdrop for environmental discourse. Global resource management issues, such as ozone depletion, acid rain and global warming, are often debated in terms of a rhetoric informed by scientific inquiry (Cohen 1999). Indeed, public skepticism of science appears to be increasing, while alternative epistemological explanations grounded in TEK, mysticism, etc., have gained public endorsement (Holton 1993). One area of future research that MMS should consider would entail research into sociocultural variations in the science-society relationship and the relationship of public opinion of science to successful resource management discourse.

The rational and functional expansion of discourse participants for resource management also invites analysis of trust relationships between individuals and institutions. Public trust in responsible institutions involves a consideration of a

broader notion of relevant information as well as the significance of relational dimensions of trust. As Wynne (1996:58) has stated:

> public risk perceptions rationally involve some element of judgment both of the quality of relevant social institutions, and of their relevance, in other words of the roles of different social agents including one's own relationship to them....

Indeed, ecological-symbolic and resource-dependency theory identify a loss of institutional trust as a primary response to technological disasters (Freudenburg 1997; Picou and Gill 1999).

A second area of research should focus on the nature of public institutional trust for successful resource management discourse. All four theoretical themes reviewed include issues of public trust and skepticism regarding science, organizational mission and institutional dependency. Risk society theory portends increasing public skepticism and growing distrust of the institutional management of modern risks, while ecological modernization theory invites increasing trust and public confidence in science, technology and resource management. Both theoretical themes point to areas of inquiry that need to be addressed in the future by MMS. It is apparent that successful discourse, i.e. consensus-building, on environmental risk and resource management policy will require a high degree of confidence in science, as well as, strong institutional trust bonds, by all parties participating in the discursive system.

In summary, recent theoretical themes emerging from European social theorists and sociologists in the United States suggest that the social and economic research agenda for MMS be expanded in the future. This agenda should include: (1) an awareness of an expanding pool of participants in the discursive construction of resource management policy; (2) a concern with organizing functional discursive systems; (3) an understanding of public perceptions of science; and (4) the development of institutional trust bonds among agencies, organizations and groups who will participate in future discursive systems. The achievement of these research objectives would also require continuing tolerance and expansion of epistemological positions by MMS and consequently a broadening of the concept of "science" to include more discursive methodologies (For example, see: Park et al 1993). Such activities would promote consensus building and the empowerment of traditionally "peripheral" NGOs in future discursive systems. This development of a consensus-building discourse structure would not only serve as an extension of the transition to ecological modernization, but also as a deterrent to perils of risk society.

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