Social indicators and sustainable forest management: Opportunities and limitations

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Themes/Objectives

- This paper is about the "Interdisciplinary Conversation" about forest modeling, public involvement and social indicators.

- Objectives:
  - To discuss the limitations of forest modeling approaches to handle **relevant** social indicators.
  - To outline the "means/ends" confusion regarding social values and forest management.
  - To discuss alternative approaches to address limitations of forest modeling.

Origins

- The subject originated due to colleagues in forestry who gamely and sincerely want to do a better job of including social variables in forest management.
- "If you can express social values in terms of forest conditions such as stand age, species composition, landscape diversity, and tree size, we can create a custom forest for you." (T. Erdle)
- My concern has been that if you can't express the social factors in these terms, they get left out of the planning agenda.

Pearls of Wisdom from Albert

- *"Not everything that counts can be counted, and not everything that can be counted counts."*
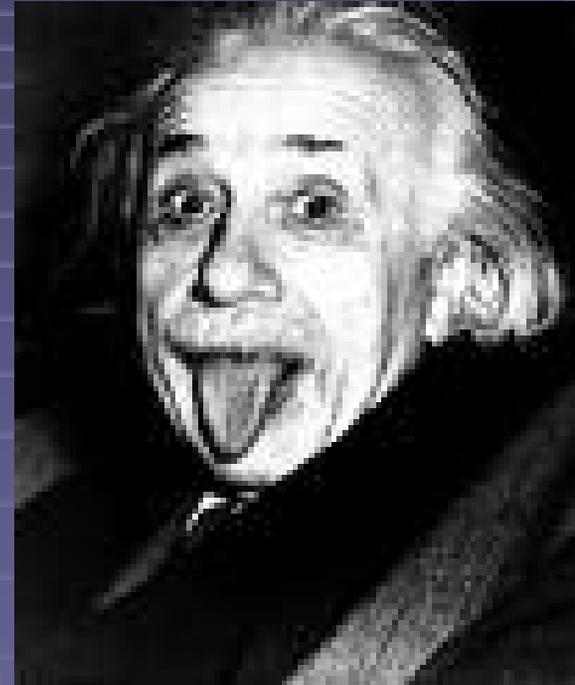
Background

- Desire of the forest management community to incorporate social values
- Lots of political pressure since Earth Summit in Rio 1992, Bruntland 1987.
- Social indicator approaches
  - CCFM, Montreal Process
  - Provincial "report cards", NGO "report cards"
  - Forest Certification Standards

Desired criteria for assessing indicators

Modelers say, "For indicators to be 'useful' they should be…" [Tom Maness, UBC]

1. Accessible — Data is available

2. Measurable — Data can be recorded and trends can be documented

3. Operable — Spatially explicit and quantifiable in a manner that computers can handle

4. Relevant — Meaningful to the forest management problem

The "Bad News"*

- Modeling approaches are limited in their ability to engage **relevant** social indicators
  - And the relevance criteria should trump all others
  - Operable, accessible, measurable
- Modeling approaches for SFM and management plans, in my view, confuse or confound means and ends.

•It is only bad news for forest modelers who wish to be able to include everything relevant and social in their models

Means/Ends paradox

- Modelers are looking for "social inputs" as **means** to produce **their** desired output of a sustainable management **plan** or enhanced sustained yield forestry.
  - "How can sociology help us do a culvert installation better?."
- Really, the whole purpose of resource management is to sustain society; primarily human desires, wants, needs that forests provide. Social scientists would view the **plan** as the means, and the satisfaction of these demands and desires as the **ends.**

Means/Ends paradox

Means/Inputs

Ends/Outputs

Social "stuff"
[accessible, measurable, operable and relevant Social Indicators]

→

Sustainable resource management plan
[forest condition]

Where do you want the road?
What sort of wildlife to you like?
How many jobs should the forest sustain?
How much income should those jobs pay?
What sorts of recreation do you prefer?

More bad news

- The second part of the bad news, is that many of the most relevant social indicators should be conceived of as outputs, not inputs, and many are extremely difficult if not impossible to quantify.

- Some of the biggest and most important things fail the test of accessibility, measurability, operability.

Means/Ends paradox

Means/Inputs

Sustainable resource management plan

[forest condition]

Species distribution

Biodiversity

Age class distribution

Access

Ends/Outputs

Social "stuff"
[not necessarily accessible, measurable, operable but nearly always relevant "stuff"]

Spiritual fulfillment
Attachment to place
Awe
Democracy
Jobs/Income
Diapers
Lumber

Problem for the "forest designer"

- Some of the things I want are related to forest structure and forest condition, but some are not.
- Spiritual experience:
  - May require tall trees, little undergrowth, species diversity.
  - But may also require solitude, heightened emotional state, silence, benign weather conditions, etc.
  - Forest variables may be necessary but not sufficient conditions for my spiritual experience

Example #1: Attachment to Place

- STATEMENT: Forest management should produce landscapes that enhance residents and visitors attachment to place.

- This is a desirable social outcome of SFM

- Attempts to quantify attributes of places that contribute to people's attachment are controversial and sensitive (both from a management context and academically).

- Intensity of attachment remains elusive (and for assessing trade-offs, this aspect is the most relevant).

Example #2: Consensus

- **STATEMENT: It is desirable to achieve a societal consensus for resource management decisions, and lacking full consensus, people should have an opportunity to articulate and deliberate about which values matter most.**

- Consensus & Participation are more process more than a product.

Example #2: Consensus

- You can "measure" # of meetings, # of participants, # of comments.
- But the degree to which people agree with a decision or action [e.g. consensus] is difficult to measure.
  - Repeated satisfaction surveys will lead to burn-out [but they are important].
  - Non-participation: lack of turnout may actually be a positive indicator of consensus, but it might also signify defeatism, ignorance, apathy, or fear of reprisal.
- Yet, societal consensus about appropriate management practices remains an extremely **relevant** social indicator.

Means/Ends paradox: Dynamic tension

Social "stuff"

Means & Ends

Ends and Means

Sustainable resource management plan
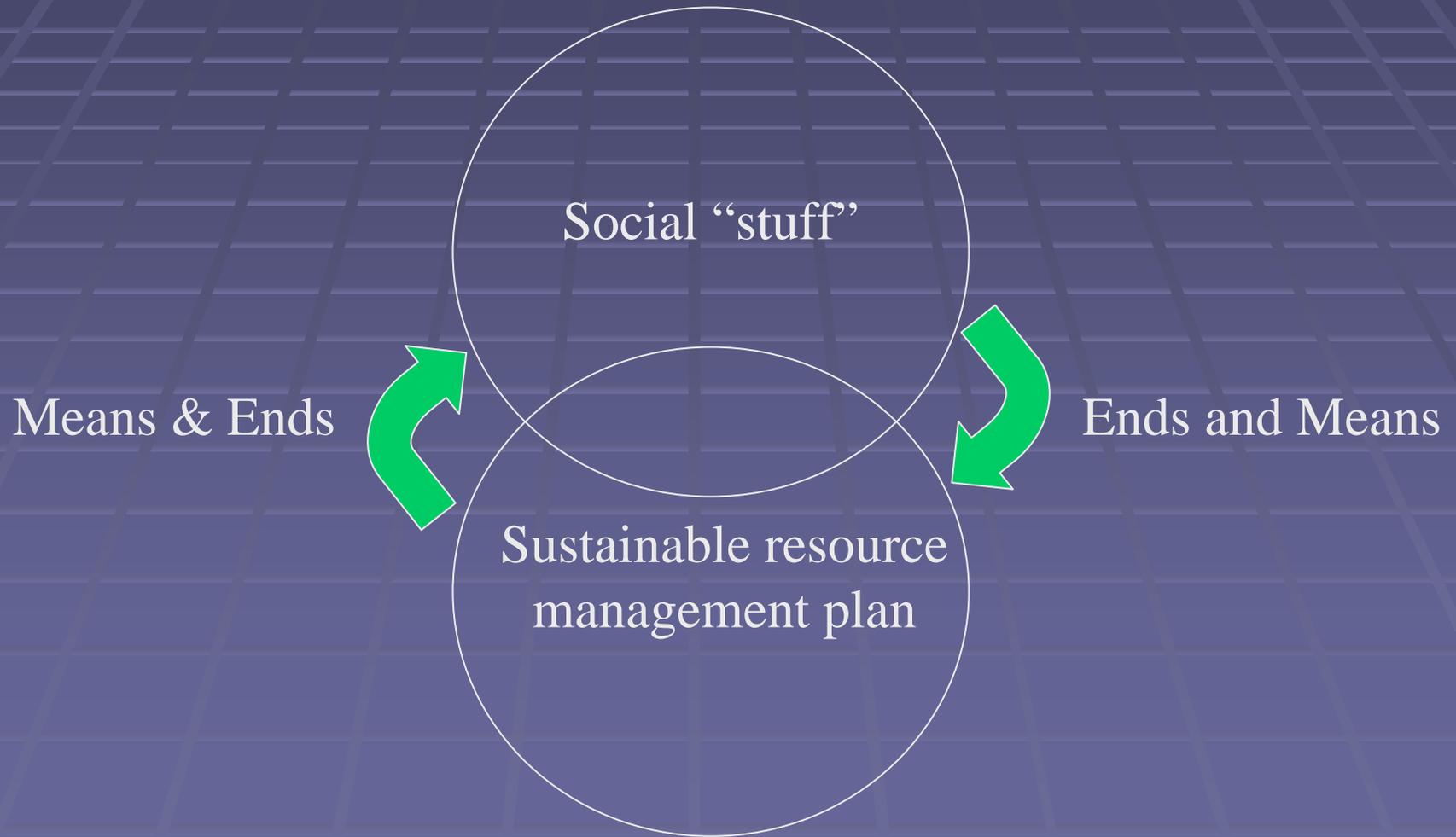
Good News

- Good news is that the bad news is OK.
- The fact that we cannot quantify everything and put it in a model does not mean that those things cannot be considered in **forest management and planning**.
- They just can't be considered in a **forest management planning strategic or tactical model**.

Three responses to this dilemma

- Identify the subset of relevant social indicators that can be quantified and operationalized in forest management and planning.

- Identify social indicators that are relevant but difficult, if not impossible, to effectively quantify, Make them explicit and show how they can be considered without being quantified. (It's a values issue and a judgment call for decision makers).

- It is important to continue to push the frontiers of quantifying heretofore difficult to quantify indicators, even if this is at a rudimentary level.

Three responses: #1

- Last point first: just because we can't measure these things now, doesn't mean we should not keep trying.
  - **Measure the unmeasurable.**
  - **Quantify the uncountable. Use foresters tools and language to attempt to express social values.**
  - **Use proxies where we believe it is reasonable and justifiable to do so.**
  - **Create compatibility matrices to show what values (desired outcomes) tend to cluster together when managers provide certain forest conditions.**

Simple woodlot compatibility matrix

	timber	Maple sugar	Wildlife habitat	Recreation
Timber	4			
Maple sugar	1	4		
Wildlife habitat	2	1	4	
Recreation	2	3	3	4

1 = low, 2 = moderate, 3 = good, 4 = excellent

Typology of Human Forest Use in N. America (Early 21st Century)

Timber

Extraction
Harvesting
Log/Chip Transport

Production
Furniture, value-added
Lumber, veneer, fibre-board
Pulp and Paper

Forestry Services
Forest resource planning
Regeneration/silviculture
Restoration

Tourism/Recreation
Wildlife viewing
Flora viewing
Hiking/camping
Resort/destination
Cottage/second home
Eco-tourism

Non-Timber Products
Maple Sugar Products
Wild Rice
Hides/pelts

Extracts, cones, wreaths
Mushrooms, pharmaceutical

Subsistence

Gathering
Food
Fuel
Building Material

Hunting/Fishing
Food
Craft Material

Sport Hunting/Fishing

Ecological Services

Bio-physical
Air, soil and water quality
Carbon sequestration
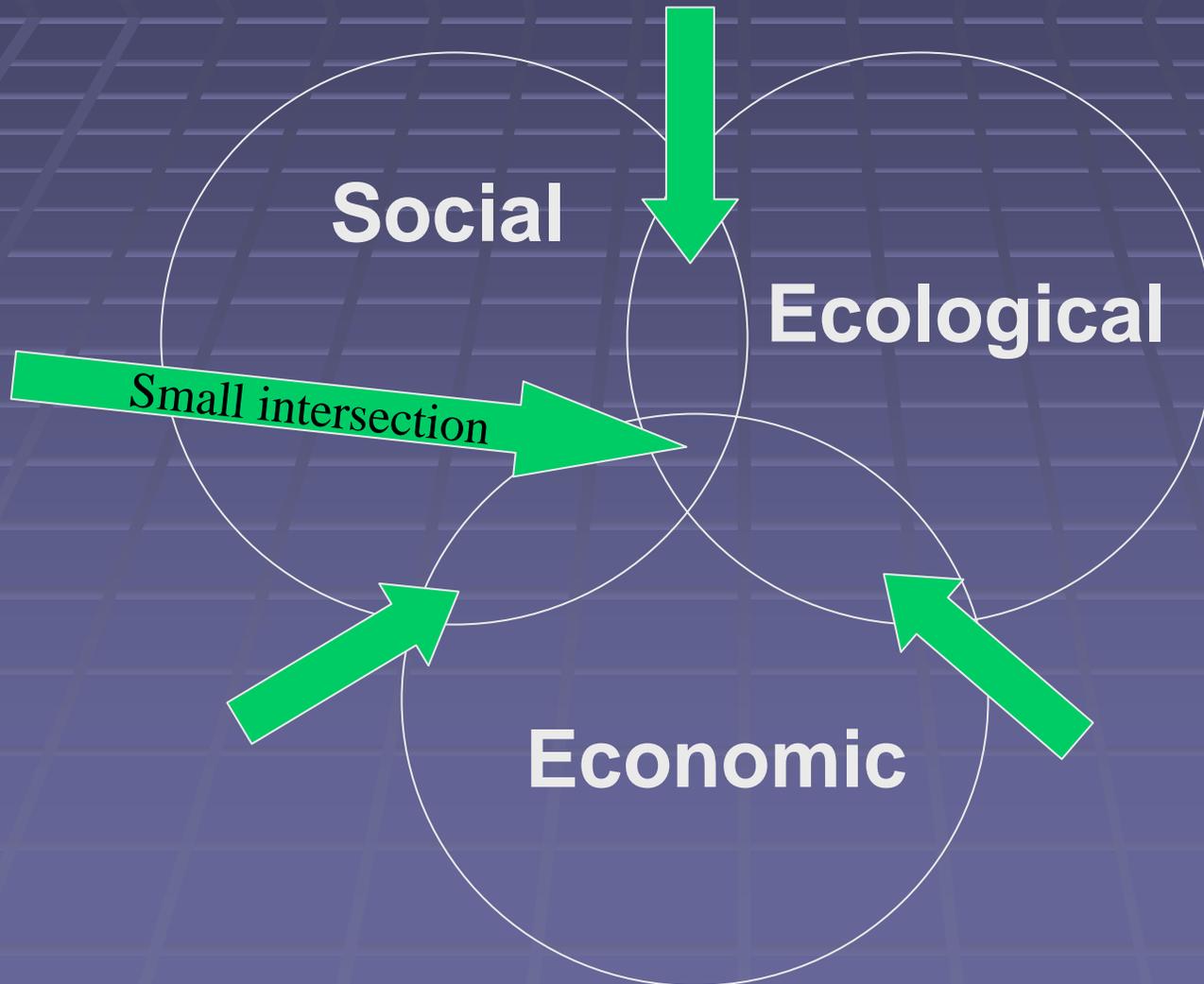
Biodiversity
Climate control

Psycho-cultural
Existence and Bequest Values

Historical and Spiritual Values

Three responses: #2

- Point out the connections

- What this means is that all sorts of "social values" or social indicators are already incorporated in ecological and economic indicators. No need to reinvent them.

- Quality, abundance, and a equitable distribution of goods and services between ecological and economic outputs are in large part the "social values" people wish to achieve through resource management.

Normal depiction of sustainability

A more accurate depiction of sustainability
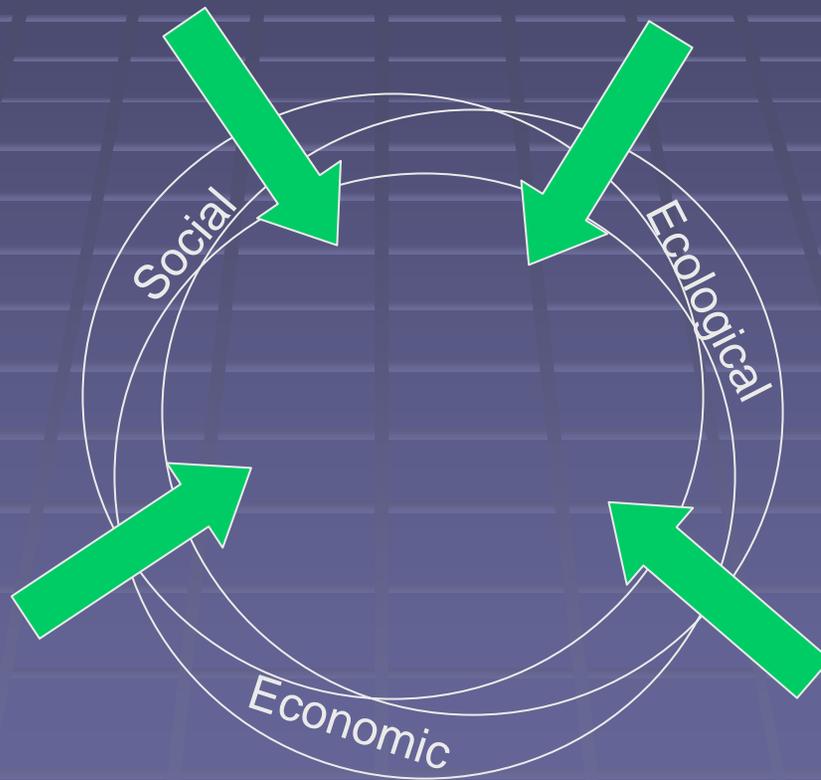
Example: social demand/desire for environmental quality.

- Survey after survey demonstrates that Canadians rate soil and water quality, biodiversity protection, over jobs and recreational opportunities.
- Satisfaction of this demand is measured by ecological indicators.
- But the demand itself is social.

Ranks for Specific Values

	% of respondents					Mean rank
	1st	2nd	3rd	4th	5th	
As a place for protection of water, air, and soil*	44	18	11	6	2	1.83
As a place for a variety of animal and plant life*	12	38	18	11	2	2.43
As a source of economic wealth and jobs*	18	12	17	14	21	3.10
As a place for recreation and relaxation*	5	6	20	27	24	3.72
As a source of meat, firewood, berries and other non-timber products*	3	7	16	24	32	3.91

* Significant differences between areas

Three responses: #3

- We can "parking lot" a whole bunch of important social variables and issues.

- We can set these outside the modeling exercise and say, "These still need to be dealt with through other mechanisms and processes, but in the model, they will just produce 'noise'".

- Responsible modeling will do this explicitly, rather than claim the model to be the be-all-and-end-all.

Process oriented social values

- These values typically need to be addressed outside traditional modeling approaches
- Equity
  - (between regions, user types, gender)
- Democracy
  - (participatory aspect, right to have values considered)
- Opportunity/Access
  - (a chance to use, benefit from the resource)

Role for Public in Forest Management*

Decide how the forests should be managed and instruct the professionals to carry out these plans

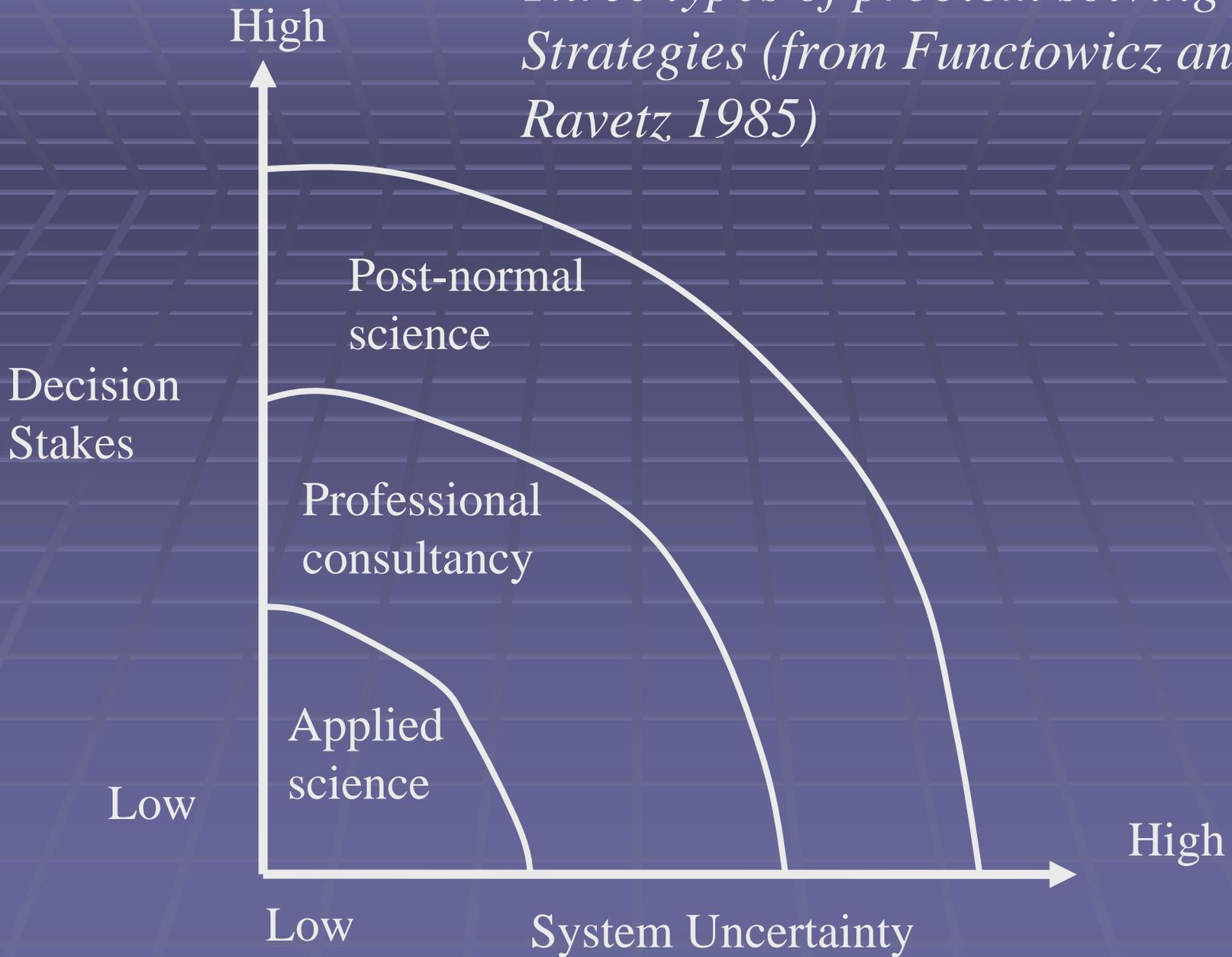Act as full and equal partners with the professionals in deciding how the forests should be managed

Suggest how the forest should be managed and let the professionals decide the priorities

Review and comment on what the professionals present as the best way to manage forest

Have no role; professionals decide how the forest should be managed

0% 10% 20% 30% 40% 50%

Three types of problem solving Strategies (from Functowicz and Ravetz 1985)

High

Decision Stakes

Post-normal science

Professional consultancy

Low

Applied science

Low

System Uncertainty

High

Adaptive Management

- Adaptive management gives us the framework and context to do this job.
- Compass – the science (and modeling)
- Gyroscope – the values, deliberation, politics, and art of reaching societal consensus.
- Forest and resource management has officially entered the Post-Modern Era.
  - Many voices, many perspectives, many values
  - Rational, empirical, scientific knowledge and discourse does not automatically trump all other forms of knowledge and discourse.

Summary

- Modeling is a necessary and important aspect of forest management.

- The development, measurement and monitoring of indicators are not the solution to all forest management problems.

- Unfortunately, in forestry, anything that the model can't handle gets tossed out of the wood supply analysis, and marginalized in the larger planning process.

Case in point from NB

- Wood supply debate
- Two initiatives sponsored by DNR
  - public opinion survey (what we should have)
  - Erdle Task Force to define possible future forest scenarios (what we can have)
- Current controversy over the public opinion survey because is it "values."
- Lots of weight placed on Task Force work because it is "science."
- Good forest management concerns both.
  - http://www.gnb.ca/0078/publications/ForestSurvey-e.pdf
  - http://www.cbc.ca/canada/new-brunswick/story/2008/03/03/forestry-meetings.html

Take home message for resource managers and planners

- Figure out ways to assess (other than counting) and incorporating non-quantitative social values and social inputs in planning.

- Recognize that planning is the means to desired social ends (more than the other way around).

- Remember that much "social demand" is ecological in nature, or has an economic dimension. The social "stuff" is largely about getting this balance right.

Take home message for social scientists

- Keep trying to develop available, operable, meaningful social indicators that can be used as inputs into wood supply models.
  - (hint: It is a foot in the door)
- Whenever you get a chance, point out the forest management/modeling means/ends confusion.
- Focus attention on process based tools for making the most relevant social values useful to forest managers and policy makers.
  - Direct and indirect public involvement tools

Thanks!

Question, comments, reflections