

**Integration and Synthesis Meeting Notes
February 17, 2004 – Fort Myers, Florida**

Participants:

Tom Bartlett	Chase Huntley	John Mitchell	John Tanaka
Tom Bancroft	Brian Kernohan	Robin O'Malley	Lorie Wagner
Bob Dayton	Rhonda Kranz	Duncan Patten*	Bob Welling
Gary Evans	Bill Lange	Dave Radloff	<i>*via conference call</i>
Steven Gasteyer	Kristie Maczko	Ron Shafer	
Paul Geissler	Tim Mealey	Deborah Shields	
Ted Heintz	Richard Miller	Tim Smith*	

Action Items:

- Identify and characterize key distinguishing features of different concepts or definitions of sustainable development / sustainability - *Deborah Shields, Rhonda Kranz, and Brian Kernohan*
- Drawing from existing materials, develop and present a conceptual framework that will help answer the question of where human values fits in. – *Deborah Shields*
- Develop a template for collecting information on the origins, mission, unique focus, approach, and stage of development of these seven processes, along with information about the immediate next steps of these processes, such that the ISG can determine how to best influence these other processes through an iterative process of respectful exchange of ideas. Share the template with people who are in a position to provide the information for each of these seven processes. Collect the information and provide it to the ISG for consideration. – *Tim Mealey and Ted Heintz*
- Each roundtable puts together 1 page on their current activities for next meeting. – *Lorie Wagner, John Mitchell, Dave Radloff, Tim Smith*
- The Group agreed that they would make use of the work that the SRR did on its draft conceptual framework at their Feb. meeting, following SRR report back to ISG. – *John Tanaka*
- Provide SDI Report for ISG Website – *Ted Heintz*

General Discussion:

Q. Will ISG emphasize conceptual modeling or integration and interconnectedness of indicators?

A. ISG is not proposing that to develop a testable model, but rather a framework to clarify relationships among indicators by reassembling reductionist pieces of roundtable work. Note that the conceptual does not equal mathematical model. Roundtable Network will coordinate integration of ISG work

Note: Concerns on time commitment required by ISG, and participant diversity

Definitions:

- Definitions should be compared across roundtables for consistency.

- The Brundtland definition may not be sufficient
- Definition of “criteria” questioned by Robin O’Malley via email. If it is an unmeasurable decision point, go/no go, is “goal” a more appropriate even though MP has institutionalized the term “criteria?”
- Indicators – measures are quantitative, but indicator itself can be qualitative
- Definitions should include “framework;”
 - framework is not the same as model, since model implies equations
 - framework deals with how things are organized
- Concern expressed about indicators as thresholds/benchmarks/verifiers; an indicator is just a statement of “what is” while thresholds are value judgments or scientific judgment about where a system ceases to function
 - Benchmark → base level, beginning point of data set; what ought to be; LCD beware political content
 - “reference condition” --- “baseline (same issues as above)

Presentation on Networks and Hierarchies (Gary Evans):

See LUCID – Chapter 1

Structure	Function
1 – Dimension – width/height/length	Habitat
2 – Connectivity	Conduit
3 – Boundary - curvilinearity surfaces	Filter
4 – Rightness (??) rightness	Source Sink

ECOLOGY

HIERARCHY

SUSTAINABILITY

Biomes

Principle - Fundamental basis for action
Criterion - component of the structure & function of the landscape

Communities

Indicator - parameter that can be assessed relative to a criterion

Populations

No implied direction, measurement method, spatial or temporal scale or ref. value

Organisms

Cells

Measure - methodology & source of info
form, scale, timing & units of data

Data Element - elemental data supporting measure
eq – density/unit area
biomass/unit time

Reference Value -threshold expressing the desired future system over a given period

Hierarchy Theory – Landscape

- scale must be appropriate to the management issue
- understanding or insight at one scale may not translate to other scales
 - understanding at the landscape scale should be obtained by direct study at landscape scale
- levels are characterized by processes with time & space scales unique to each
- different processes apparent at different time scales

Networks are nodes and linkages, surrounded by a landscape matrix

Networks are building blocks of landscapes

- Movement and flows to and from adjacent land (patches) – the matrix

Definition – corridors of a single type intersecting to form a network

- differ according to objects moving, mesh size, rectilinearity
 - landscape etched with connected net of linear elements
 - networks overlap, but seldom do dual or multi-purpose corridors exist
 - objects and objectives often incompatible
 - real world is non-random
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- the more non-random the higher the energy level required to form and maintain it
 - energy causes networks to form and change
 - nodes formed at intersections of linkages of corridors

HIERARCHIES

- Stream order system from first order to higher order is dendritic network
- Highway system of feeder, trunk and bridge lines – rectilinear network
- Nodes have hierarchies, based on rate of movement or flow between nodes
- The degree of linkage differs at a particular level to understand the attributes of a node must analyze next higher order and next lower order

WHOLE NETWORKS

- corridor density – corridor length/unit area
- network connectivity – degree to which all nodes are connected
- network circuitry – degree to which loops or circuits are present in the networks
 - actual loops as a function of all possible loops
 - optimal routes are defined for avoidance or predation

Scale:

- Consider terms from Mitchell and Wright's scale poster
- extent – bounding

- grain – resolution
- what, for whom, for how long, at what cost?
- global vs. local; think globally act locally or vice versa
- tempo of function is relative to the size of system
- local organization may not give global answers
- relation from local level and national indicators -- “how does this affect me on the ground?”
- community level indicators look at how communities connect with
- landscape → how does this relate to higher level indicators
- mistake to think only one scale is relevant

Information Pyramid – Ted Heintz

- “info architecture”
- floor plan of relationships
- what informational material to produce
- break world (?) into understandable pieces
- synthesizing nation (?)
- emergent properties as indicators are integrated
- integrate roundtables too

Prescott Allen Egg Model – Ted Heintz

- comparable to 3 separate spheres
- might work if those are goals rather than focus areas
- different areas for 3 systems
- should add “cultural” to economic and social; in some areas there is no economic system; defining “social” broadly encompasses culture
- three circles emphasizes human since social and economic are 2 of 3
- Canada used the Prescott Allen egg model for minerals, and hasn’t found a way to integrate
- relationship between economics and social not clearly depicted since econ is driver of social

Note: conceptual model makes single point of one set of relationships; instead need a series/sequence of models

Ecosystem Models and Concepts: Duncan Patten

(See diagram handouts)

- interrelationships among parts of ecosystems; e.g. NPS vital signs
- no “context” for indicator development on SRR, however systems shows relationships so shouldn’t be ignored
- recreate Ted’s SRR diagram so the natural system is “centric
- Is sustainability based on human values, or human values of ecology?
- understanding of world; what way of diagramming prioritizes relationships correctly

- discussion must show value of diagram; diagrams are a powerful communication device
- value systems imply that natural system exists for benefit of mankind “ambiguity by design”
- sustainability as a concept is about humans and human values
- humans vs nature makes this political, which may jeopardize future of roundtable work

Note: Model of sustainability using a systems approach rather than modeling systems.

Socio-econ models and concepts: John Tanaka

- How do we deal with subsidies & incentives in socio-econ models?

Presentation on Pressure, State, Response Framework: Ted Heintz

- Mine is a rebate, yours is a subsidy; subsidy issues we probably want to stay away from.
- Issue of indicator neutrality raised
 - state what is with no good or bad direction attached.

SDI presentation: Ted Heintz

Ted will get the report of the SDI on the website if it is not there already.

LUCID presentation: John Mitchell

- fundamental difference between economists & ecologists is the ability to substitute. Economists see things as able to substitute & ecologists see it as no substitutes.
- LUCID (local unit criteria & indicator development) tried to model forest ecosystem sustainability

SWRR Model: Steve Gasteyer

SRR Model: Paul Geissler

SMR Model: Deborah Shields

- SMR does not have an “official “ model. The handout is an adaptation of the Canadian model. It appears that SMR could be subsumed within the model presented by SRR.
- For minerals sustainability is seen as sustaining the flow of benefits from a suite of minerals rather than sustaining a particular mineral operation.
- The other roundtable seem to look at extraction and discharge, minerals also includes processing

Heinz Center: Duncan Patten

- They are developing a conceptual model.

CEQ: Ted Heintz

- National system of Env. Indicators
- 3 tier level of indicators
 - Tier 1: headline indicators ≈ 25-30 indicators
 - Tier 2: policy, planning & management ≈ 300 indicators
 - Tier 3: Detailed data used to produce tier 1 & 2 indicators

Discussion and Comments:

- Duncan Patten: bring in NPS vital signs system (Steve Fancy coordinator)
- Paul G. can provide some information on this system.
- need multi representatives of diagrams of the models so we can communicate with each other and with others.
 - Level 1 – 3 nested circles
 - 3 equal circles - _____ diagram box and arrow diagram
 - attach one page narrative to each
 - Level 2 – do another step of how the pieces fit together
- suggestion to call CEQ indicators not environmental indicators, but natural resource and environmental indicators

3 things we need to address

- 1) treatment of sustainability
 - do not adopt the goal of producing a sustainability model (won't crank out 1 number)
 - (very value – laden and not in a place where we can do this)
- 2) scope of indicators talking about. (levels of detail, scale, 3 systems – social, econ, enviro)
- 3) re-articulate our hopes for what we would achieve if we succeed.