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LTER/CC Strategic Planning
4/14/89 Albuquerque, NM

Following is a summary of a workshop/preliminary planning session on strategic planning conducted as part of the LTER/CC meeting by Jacob E. (Jack) Hautaluoma, Ph.D., former Program Director for NSF and currently an organizational psychologist and Dean of Natural Sciences at Colorado State University, Fort Collins. Included after Dr. Hautaluoma's materials are discussion notes and notes from the five breakout discussion groups.

Why should LTER do strategic planning?

1. Ensure its growth and survival - counteract entropy
2. Deal with change
3. Control rather than be a creature of fate
4. Deal with organization-environment mismatches
5. Help competitiveness - provide a base from which to appeal for support
6. Help make choices about organization's emphases, constituents, etc.

We should think through:

1. What it is that we are supposed to do - What is our mission?
2. How do we fit into the big picture of ecological science and action?
3. What is it that we should be doing if we were doing the best we could do?
4. What opportunities exist for us now?
5. What targets should we be aiming at?
6. What barriers might prevent us from hitting our targets?
7. How should we go about trying to hit our targets?
8. How should we organize ourselves?

What do we need to do to effectively communicate, share, integrate our work, support each other, develop people and resources, be productive, and be useful?

All the above are covered in doing good strategic planning.

Conditions Influencing How We Can Manage

1. **Problems are more complex than before.**
More knowledge is required to be an expert.
-Knowledge explosion
-Many technologies

Conditions Influencing How We Can Manage, continued

More disciplines are involved.
-Need for teams rather than single discipline approaches

Higher cost of doing research and putting programs in action.

2. Changing workforce.

Different values and expectations.
-Clang between old and new workers

More diversity.
-Women, ethnic groups

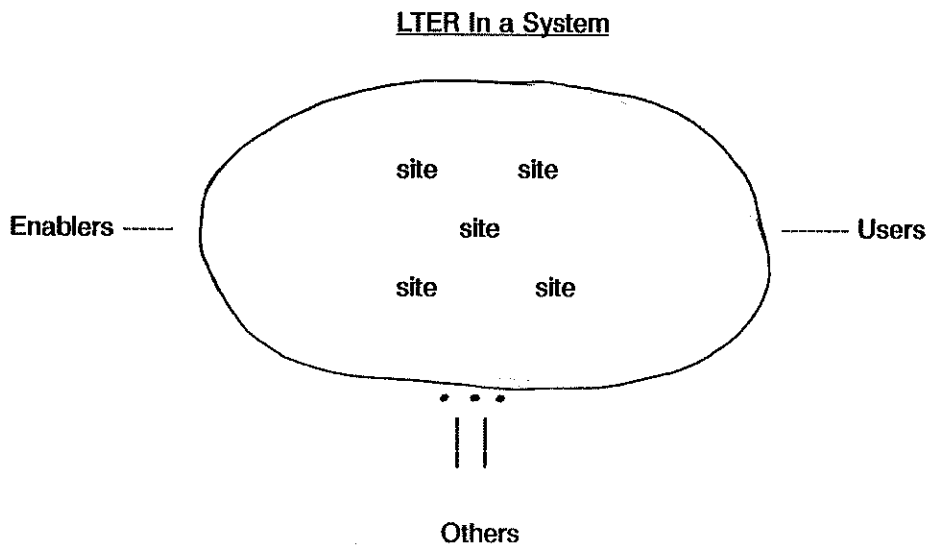
Shifting loyalties.
-Less for institutions, more for professions.
-More mobility
-More urbanization

3. Outside Pressures.

More competition for research and other \$.

Political issues.
-More constituencies.
-"Golden Fleece," animal rights, preservation, etc.

Accountability demands.



Enablers and Users are constituents. They benefit or are negatively affected by you.

LTER In A System, continued

<u>Enablers</u>	Those who allow you to exist, support you, influence you, e.g. NSF, DOA, DOE, NASA, legislators, thought leaders, scientific leaders, taxpayers, etc.
<u>Users</u>	Those who receive useful products from you, e.g. yourselves, the rest of the scientific community, policy planners, farmers, land-use people, etc.
<u>Others</u>	Competitors, detractors, sister systems overlapping yours, etc.

Questions About Your Relationship With Enablers or Clients

What are your mission and objectives? (What is your unit supposed to do?)

What do the enablers and clients hope or expect from you?

Are their expectations being met? How do you know?

What can happen to your unit because of their unmet expectations?

What must you do to get them what they want?

Strategic Planning Session Notes

Systems theory suggests that business as usual is not good enough. The lifespans of organizations are determined in part by the amount of outside energy fed in. LTER, viewed as an organization, has evolved from the strong individual scientist model to the site model and then to the network model.

The assumption behind strategic planning is that one need not be at the mercy of fate--fate vs. action/pragmatism. Systems concepts place importance on identifying boundaries, which can become less and less permeable, and on identifying enablers, or users/constituents and their expectations. In the case of LTER these would be the Forest Service, NSF, DOE, NASA, Fish & Wildlife, etc. It is also crucial to know who are your competitors, detractors and sister systems, if any, and where you stand in relation to them.

Discussion: Good site science alone doesn't meet constituents' expectations.

LTER's loose confederation is moving almost ad-hoc toward addressing larger regional, national and global questions. But constituent expectations evolve and escalate with increased funding commitments. The Network evolution/mission is not entirely imposed from outside.

Discussion: Individual and collective **goals are not either/or** (intersite questions vs. site questions) **but and**. Need to modify output and direct the development of expectations, be proactive with PR. Need to identify the level of site commitment and each individual scientist's commitment, as well as that of all sites collectively. Need to evaluate accessibility of data, and sites' willingness to make data available

Session Notes, continued

across sites. Network data management is a possible solution; some discussion around issue of centralization, governance, formalized structure. Network Office an enabler/facilitator or hindrance/competitor (for NSF funds)? It was noted that individual site NSF awards have increased, rather than decreased since Network concept has begun to be implemented. Need for greater responsibilities--has LTER accepted perhaps more than it can perform?

Jerry Franklin's summary of discussion: A minority is interested in both temporal/spacial scale interaction; a minority is interested only in their individual sites; the majority sees the potential of the Network.

BREAKOUT SESSION

Site representatives broke into five groups and were charged with describing their vision of the LTER Network at its best:

Group One (North Temperate Lakes, North Inlet, Niwot Ridge)

1. LTER would be both long-term and wide-area.
2. An effective hierarchy (intersite = site = individual scientist) would be established. (Don't preclude, but catalyze each other; generalize to global level.)
3. LTER would be integrated with the entire ecological community.
4. LTER would make a difference to biospheric problems (help solve, respond to, identify new).
5. LTER would be thriving, changing, energetic, well-funded and respected.
6. LTER would be a National Treasure!

Group Two (Arctic, Bonanza, Andrews)

1. Network research would be question-driven.
2. New money would be provided for Network research.
3. Physical sciences would be better represented; emphasis on method.
4. Older sites would bear greater burden in developing "Network."
5. Feedback loops to NSF would be established to set realistic expectations.
6. If the Network is expected to provide continental or global perspectives, goals, programs and geographic location considerations would be developed.
7. In addition to MSI guidelines, the Network would also have developed guidelines for Minimum Site Expertise--ecologists, modelers, physical scientists, etc.
8. LTER would be accepted as a national resource for the entire scientific community.
9. LTER would integrate long-term ecological research in natural resource management in the United States.

Breakout Session, continued

Group Three (Hubbard Brook, Konza Prairie, Luquillo)

1. The LTER Network would have been prescient enough to predict (or recognize) important new factors affecting the environment (i.e. room temperature fusion) and to have incorporated them into its research agenda.
2. LTER sites would have demonstrated and would continue to demonstrate the importance of biological processes in regional and global climate.
3. Each site would have maintained its reputation as a center of excellence in ecological research.
4. Network activities would flow from individual scientists at each site; each site, however, would have the obligation to cooperate with if not necessarily participate in Network activities. (This obligation would be a collective policy, not forced.)
5. A "biotic tool-kit" would be developed--a feeling for how to develop an ecosystem (example: genetic engineering).

Group Four (Coweeta, Cedar Creek, Virginia Coast, CPER)

1. LTER would receive direct personal recognition for its efforts. Network and sites stable; team would form around.
2. There would be general recognition that certain issues require an organization (example: climate change).
3. The Network would include managed systems.
4. Issues would provide the organizing force for the Network.
5. The network would have achieved a predictive, mechanistic understanding of ecosystems, with emphasis on method.
6. There would be a denser network of sites, with sub-sites developed.
7. Transient groups would form around issues and disband following provision of solutions.
8. There would be a global network of LTER sites.

Group Five (Harvard Forest, Kellogg, Jornada)

1. Networking focus would be on applying basic ecological findings to problems of sustainability of natural resources.
2. The Network would support efforts aimed at regional and global syntheses; but these would be supported by supplemental findings--"carrot and stick."
3. The Network would be expanded and would include non-LTER long-term ecological research.
4. The focus of the Network would be on providing leadership in applying new technologies to research (example: application of molecular biology techniques).

General Discussion Following Group Reports:

The LTER Network is an implied resource service to a user community, offering applied services. Discussion re impossibility of distinguishing between "pure" and "applied" science, or defining a "pure" ecosystem.

Question posed as to whether there are **successful network models**.

Possibly the ecotonal collaboration between the Scandinavians and Russians, but others mentioned (Forest Service, Nature Conservancy, Biosphere Reserves) were described as having the structure and potential, but not the will. LTER has the resources and, presumably, the will; however, there was some discussion about the necessity of having need before will and LTER responding to real scientific need. LTER is to some extent, however, NSF-driven (NSF's John Brooks quoted: "To exist you have to have a network").

Other comments on desired emphasis of LTER included:

- o Desire and interest are one thing, the rigorous posing of questions another. LTER should aggressively pursue collaboration with earth and biological sciences.
- o The organizational necessity of cross-site work is overwhelming.
- o The emphasis should be on the mechanistic, controls and processes.
- o LTER needs to have the mechanisms in place as man controls more of his environment.
- o Regular-scale climate change work is now doable. Is global change out of scale, unrealistic for LTER?
- o LTER needs to effect policy decisions at the political level.
- o LTER is moving to a more general understanding. Small-scale, non-extrapolatable studies are becoming boring.
- o Long-term work is less tractable but more important.
- o A multi-disciplinary, long-term approach is needed. One useful function for the Network would be to identify what site data is common and most useful and pull it together first. Not all data immediately meet this criteria (alternative to across-the-board standardization).

Chair Jerry Franklin summarized by noting the **areas of agreement among the five groups**. Their visions for LTER are not conflicting; but they do reflect a struggle to balance between opportunity and obligation. The **shared visions** include:

- the concept of an expanded network and larger participation;
- an expanded understanding of ecosystems in time and space, including the mechanistic, long-term and wide-area.

A vote for/against developing an LTER Strategic Plan was taken. The results: **16 for, 1 abstained**. The Executive Committee will work with Dr. Hautalouma before the October meeting and will prepare a document for the group's response.

A count was taken of the institutions and agencies with which LTER sites collaborate. The results: **75**.

LONG-TERM ECOLOGICAL RESEARCH GOALS
(defined @ 11/88 LTER/CC)

Research Goals (In order of priority):

1. Conduct parallel manipulative experiments across LTER sites and test predictions
2. Conduct comparative studies to test ecological theories in a broad array of ecosystems
3. Predict and test predictions of effects of climate change on ecosystems
4. Synthesize long-term, landscape-level ecological principles across sites
5. Develop predictions across scales, from small scale to global
6. Determine sensitivity indices, directions of ecosystem change
7. Compare ecosystem processes that buffer change
8. Extrapolate LTER results to a broader geographic region
9. Conduct comparative analyses with remotely sensed data
10. Incorporate studies of biodiversity into LTER research

Operational Network Goals

1. Develop network capability (LAN, WAN)
2. Develop GIS capability
3. Develop LTER as a leader in U.S. IGBP
4. Develop question-driven intersite databases
5. Transfer information from basic research to applied problems
6. Develop interactive computer-based database management system
7. Develop a body of expertise for solving fundamental problems
8. Develop LTER as a leader in a National Ecosystems Center
9. Foster research with non-LTER persons/sites
10. Educate/train persons in comparative ecosystem analysis