

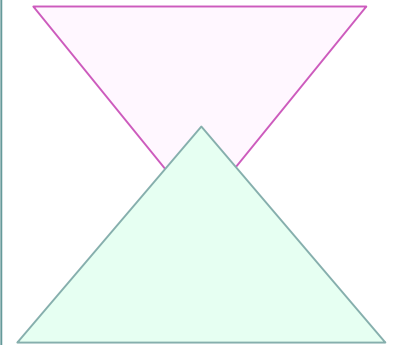
# Designing an Infrastructure for Heterogeneity of Ecosystem Data, Collaborators, Organizations

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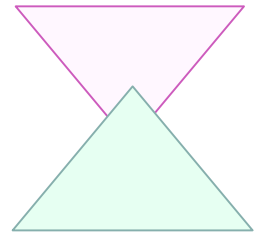
**Geoffrey C. Bowker**, Dept of Communications, UCSD

**Helena Karasti**, University of Oulu, Finland & UCSD



## What is this project?

We will observe the data ecologies and work practices within the LTER, elicit and articulate significant elements of collaboration and community, and consider design artifacts that enhance network science in order to better understand and to plan for the management of scientific heterogeneity.



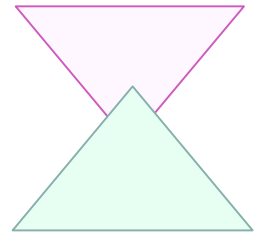
## What is our support?

NSF/BDEI - Biodiversity and Ecosystem Informatics incubation grant

SIO/UCSD - Scripps Institution of Oceanography Matching Funds

NSF/LTER Palmer/Network - Matching Time

Academy of Finland - Research Abroad Support



# Ethnography

Ethnography is an approach for developing understandings of the everyday activities of particular communities of people.

It is both a field practice and a discursive practice:

- a “process” of conducting fieldwork (e.g. observations, interviewing, participation)
- an analytic lens through which human activity can be viewed
- in the case of CSCW/SI it is a lens through which multiple voices can be heard in the process of designing effective information systems

# Participatory Design

is an approach to the design and development of technological and organizational systems that places a premium on the active involvement of workplace practitioners in design and decision-making processes.

# Exploring and understanding scientific heterogeneity through bridging environmental sciences and social sciences

## SOCIAL SCIENCES

Computer Supported Cooperative Work

Social Informatics

Ethnography

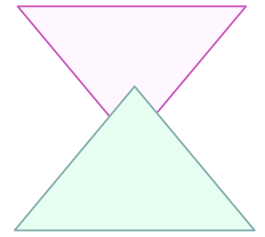
Participatory Design

LTER Network Science

EcoInformatics

Information Management

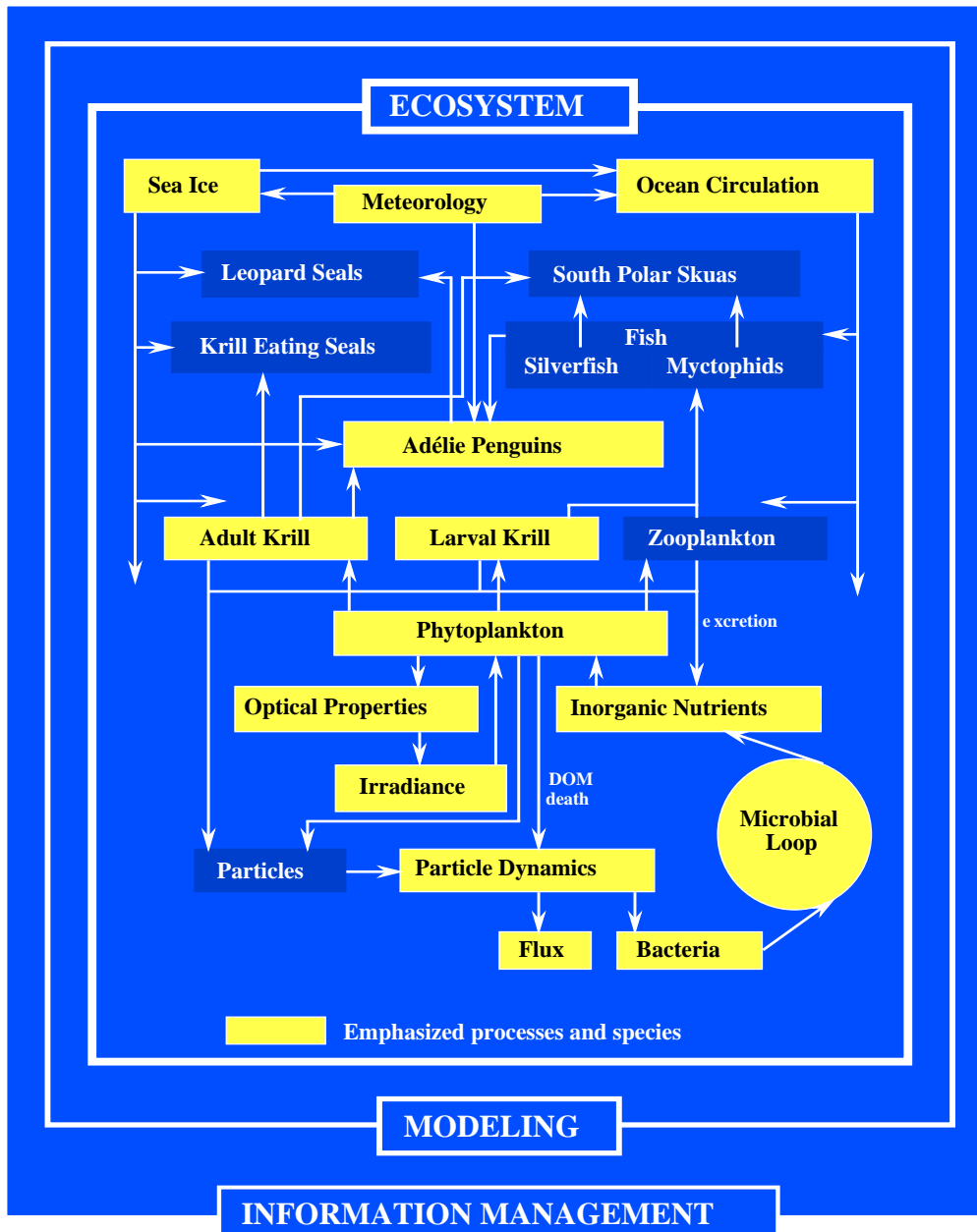
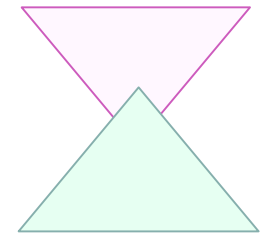
## ENVIRONMENTAL SCIENCES



## Ecologies exist at multiple levels

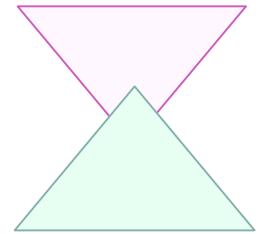
- **Data:** data collection and archive
- **Collaborator:** multiple views and human interfaces
- **Organization:** organization environment and memory

# One view of the Antarctic marine system:

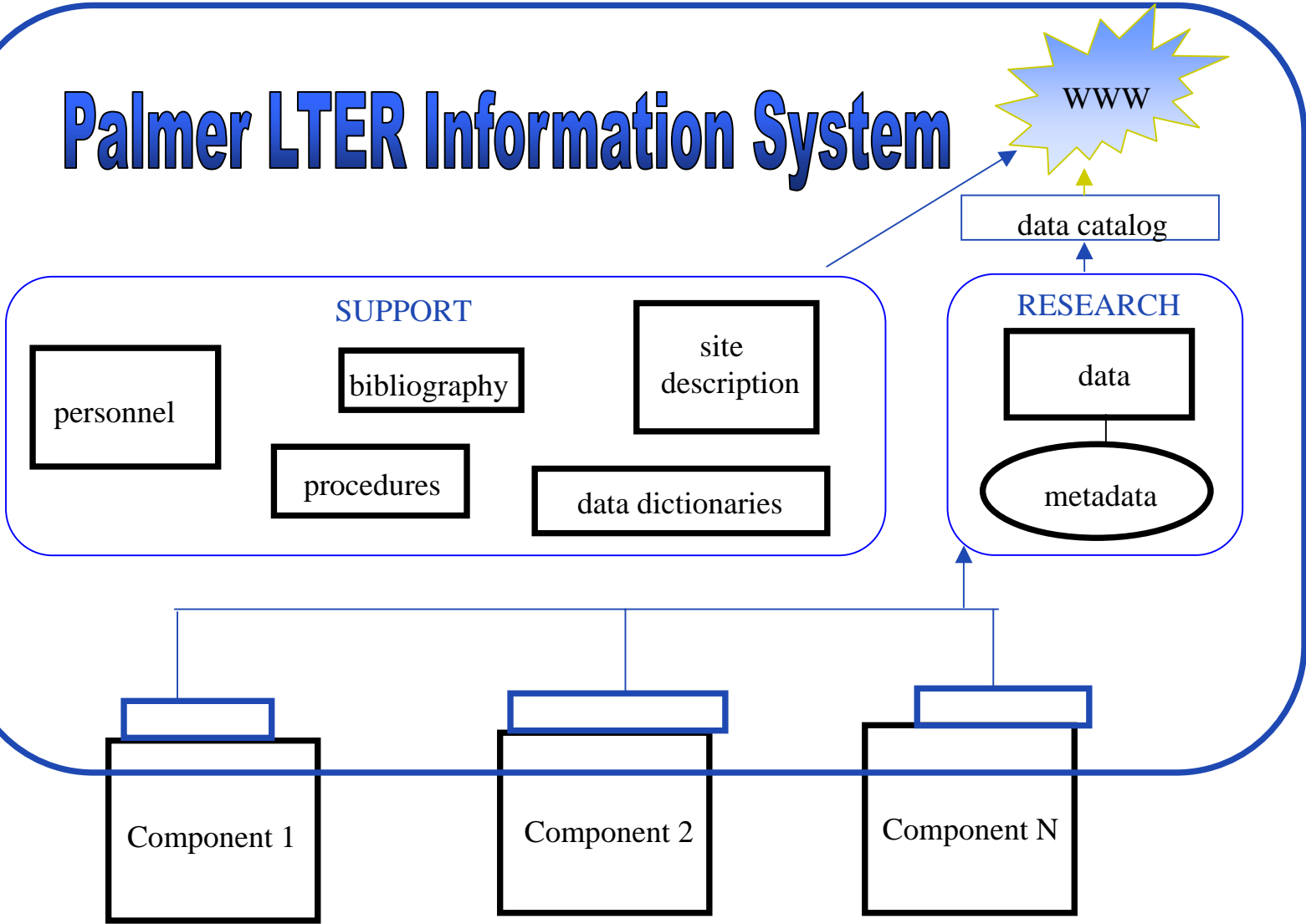


Palmer LTER, 1998

# One view of data ecology:

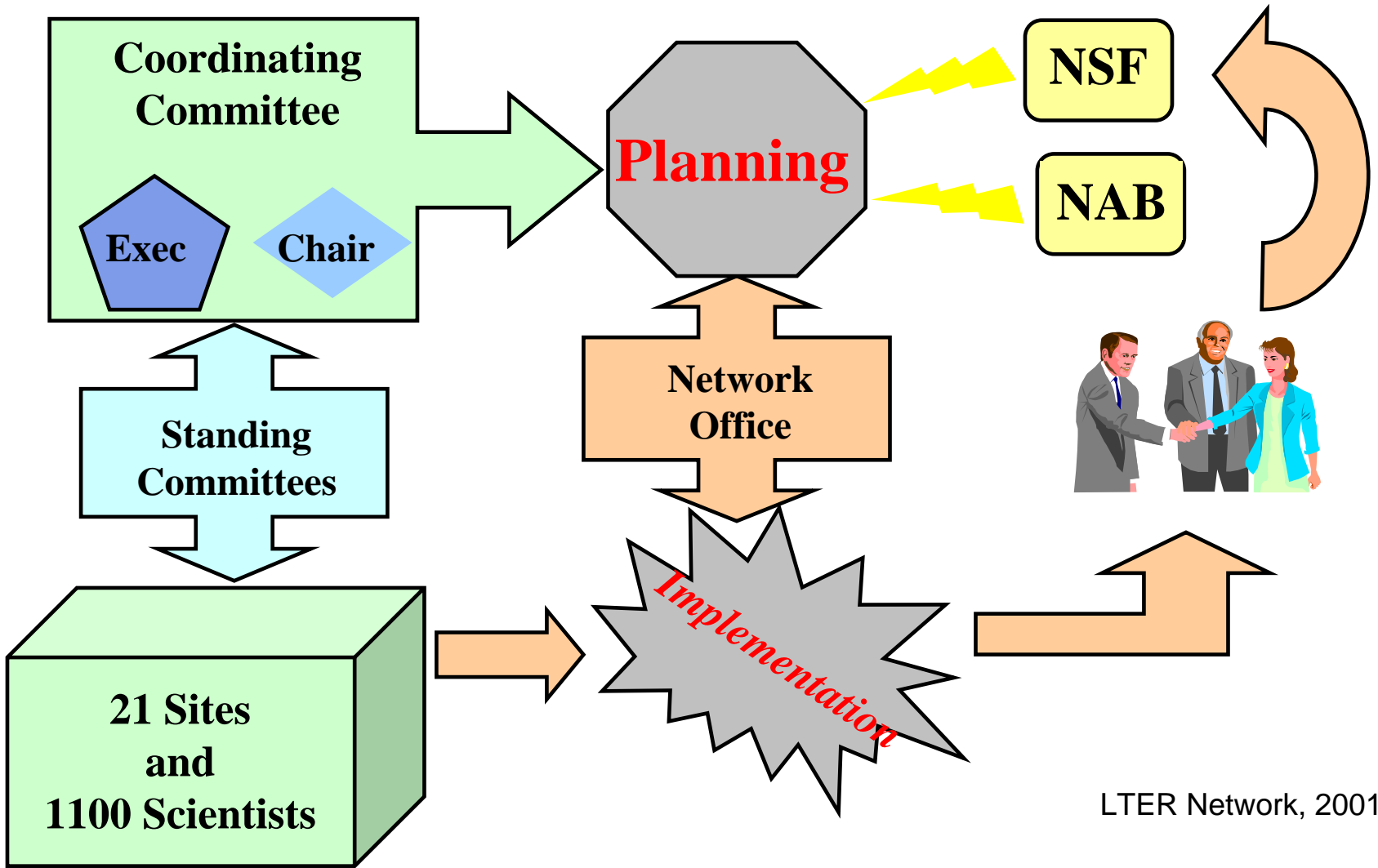


## Palmer LTER Information System



# One view of network ecology:

## LTER Operational Chart





One view of the earth:

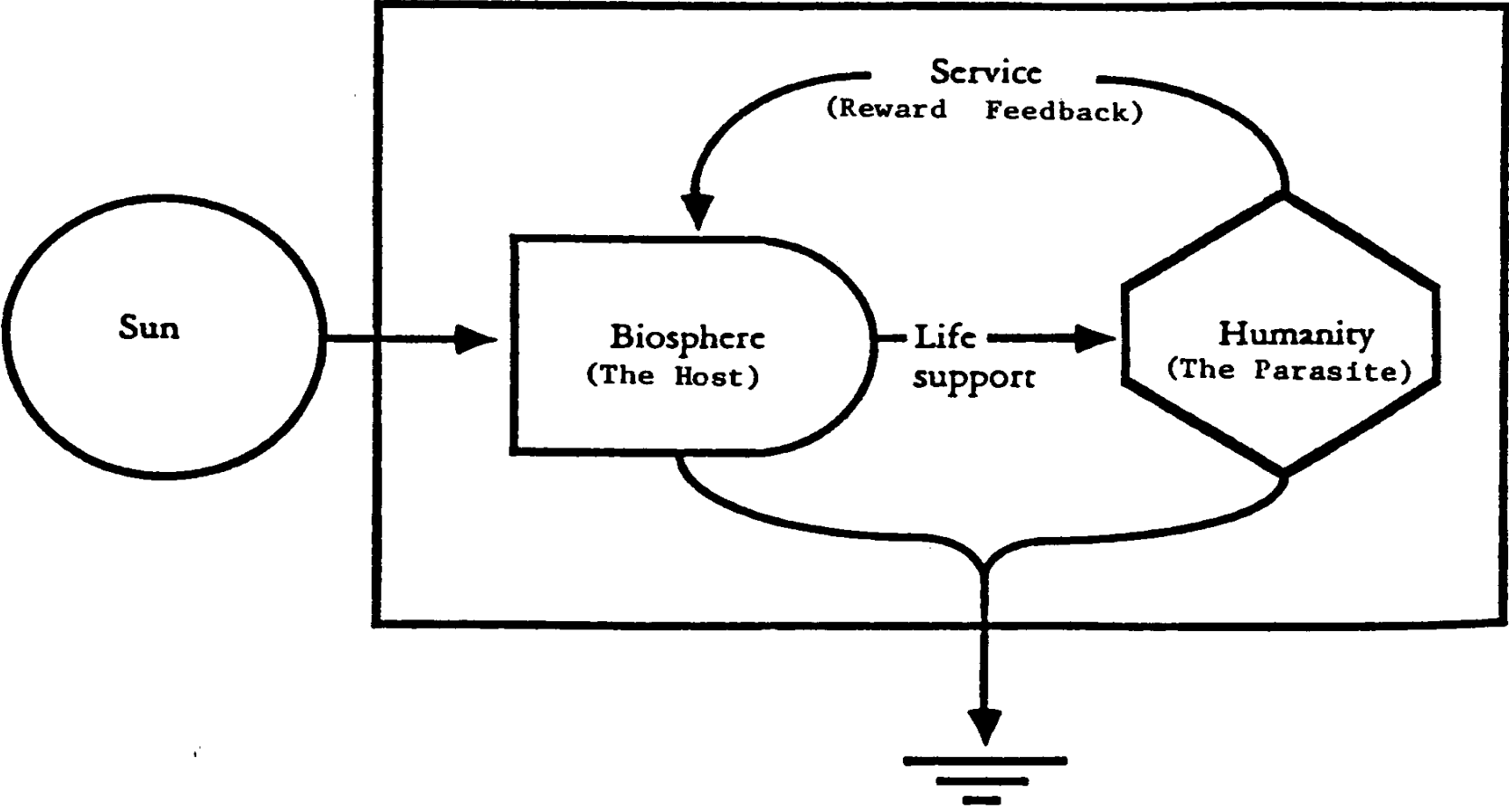
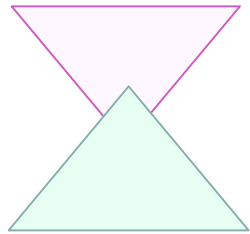
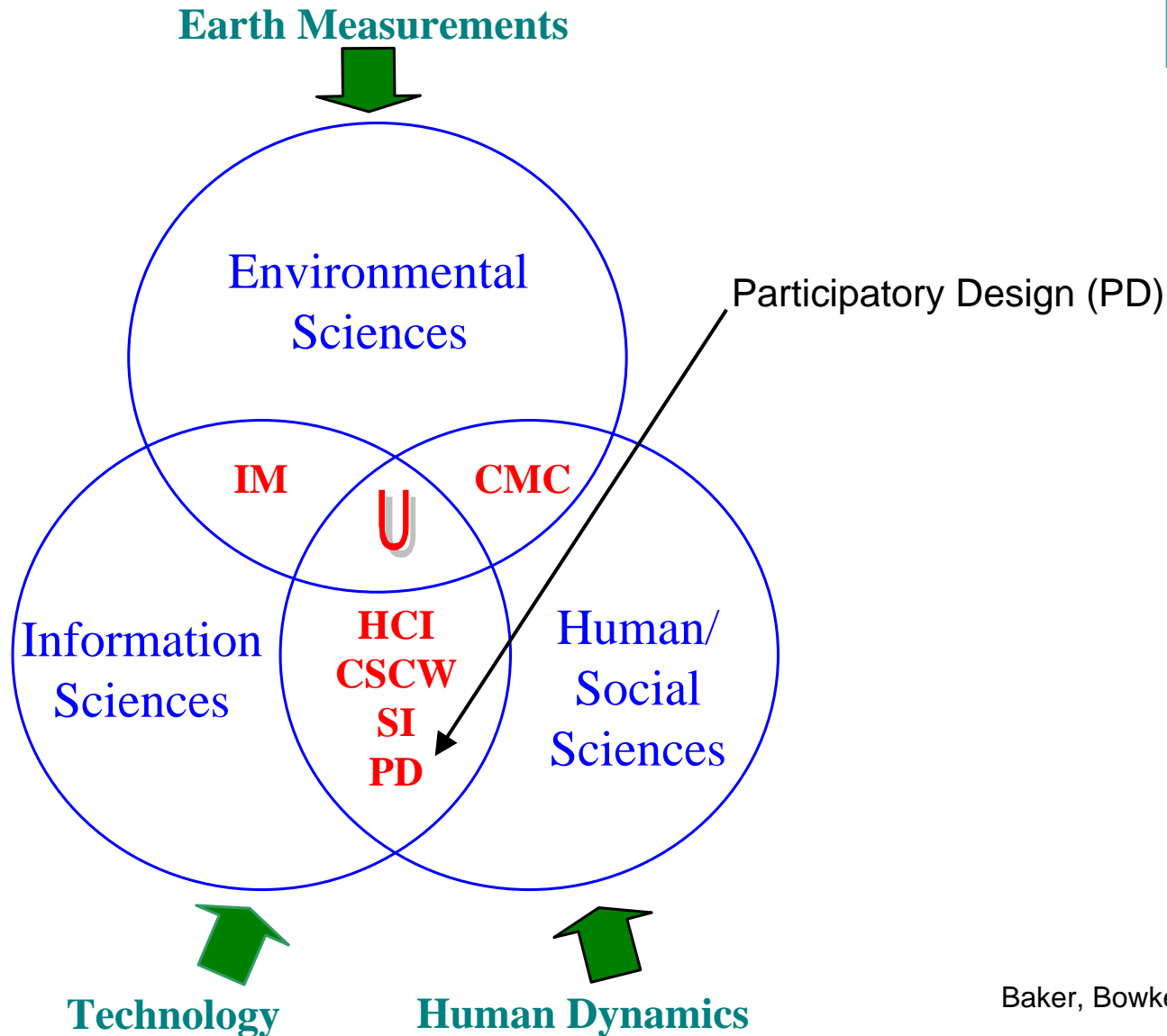
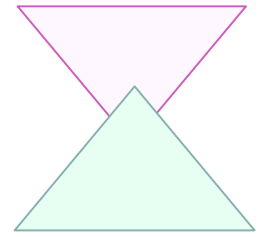


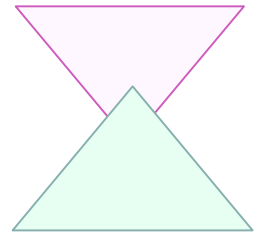
Figure 8.1 Two-component conceptual model

Odum, 1998

# A three-component conceptual model with established domains and communities of practice (CoP)



# Databases as communication tools in a biodiverse world



- **The Data:** We gather, document, archive and manipulate ontologically diverse data
- **The People:** We possess a variety of different views of the environment
- **Heterogeneity in Our Working Knowledge:** We find the digital culture leads us very quickly into deep theoretical questions and to questions of communication patterns within and between scientific disciplines as well as with legal and political bodies