Why Cognition in the Wild?

- Cognitive anthropology, following cognitive science left society and practice behind
- Culture as ideas - the ideational definition
- Culture only affects content of thought
- An obsolete division of intellectual labor -
  - psychologists can be responsible for process,
  - anthropologists deal with content.

What is Cognition in the Wild?

- Human cognition in its natural habitat -
  - naturally occurring,
  - culturally constituted
  - human activity.
- Contrast cognition in captivity.

Cognitive Ecology

- Human cognition adapts to its natural surroundings (Leaky mind).
- Multiple time scales
  - on-going activity
  - learning in a lifetime
  - historical changes in activity systems
  - evolution of the human mind
Some important Claims

- Human cognition is intrinsically a **cultural** phenomenon.
- The connections between the past and future and between social and cultural structure are present in the microscopic details of everyday cultural practices.
- People cannot be described entirely in computational terms (challenges to both PSS and connectionist models).

Important claims (continued)

- A group may have computational properties that differ from the computational properties of any member of the group.
- The environments of human thinking are culturally constructed.
- Humans create their cognitive powers by creating environments in which they exercise those powers.

Important claims (continued)

- More communication in a group is not always better.
- Individual learning can be seen as adaptation in a dynamical system that is larger than the individual.
- Cognition cannot be understood without understanding the context in which it occurs.
Why Ship Navigation?

- Navigation is an interesting and complex, obviously cognitive, human activity system with a long, well-documented history.
- In order to understand human cognition we must carefully observe the complex ways in which cognition adapts to naturally occurring culturally constituted activity.
- This can only be done by attending to the fine details of some real activity system.

Why Ship Navigation?

- The focus is on navigation to the extent that it is necessary to understand how cognition is situated in that activity.
- The discoveries to be made here are about cognition, not about navigation.

What is Ethnography?

- The scientific study of culture...especially using participant observer methods.
  - live in a community
  - learn the language
  - do what the members of the community do
  - learn to see the world as it is seen by the natives
The Ethnographer’s responsibility

- To understand what things mean and why things mean what they mean.
- To make the grounds for interpretation explicit.
- This goes beyond just becoming a member of the community.
Navigation team on the bridge of the Palau

Navigation Duties

- Safety and accountability
- Advice for conning officer
- Limited set of well-understood problems
- Event driven - cannot quit or call “time out”.

Researcher Duty

- Civilian scientist
- Recording data
  - notes
  - audio and video recordings
  - still photos
- Transforming the data into other representations so that the cognitive properties of the system are visible.
### Three kinds of space that matter for cognition

<table>
<thead>
<tr>
<th>1. Physical space</th>
<th>2. Social space</th>
<th>3. Conceptual space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street, base, ship, navigation bridge</td>
<td>Civilian, military, navy, amphib navy, QMs</td>
<td>Everyday wayfinding, technology-based professional navigation</td>
</tr>
</tbody>
</table>

- What information goes where, when, in what form?

### Why physical space matters

- What is near to what
- What can be seen
- Architecture and cognition
- How bodies fit in space

- Arrangements of physical space affect where information can easily go.

### Why social space matters

- Social organization (groups, identities, statuses, roles, and ranks) all affect the flow of information.
- They therefore affect the cognitive properties of social groups.
- Social arrangements affect where information is likely to go.
Why conceptual space matters

- The conceptual structures of ship navigation determine the content of the information and the organization of the representations in which information is encoded.

Finding out what people do

- Read the standard procedures (only the beginning)
- Observe and document actual work practices.
Position Fixing by Visual Bearings

View through the Alidade
Indirect navigation measurements

- Sonar
  - sound bounce time ~ pen movement ~ depth
- Radar
  - EM pulse bounce time ~ distance
- Celestial navigation
  - altitude of body ~ distance from GP of body
- GPS
  - EM signal travel time ~ distance

Indirect navigation measurements

- Pit Sword
  - distortion of magnetic field ~ speed
- Dummy Log
  - Propeller RPM ~ speed
- DRAI
  - speed and heading ~ motors, gears, belts, cams
  ~ change in latitude and longitude