Group Memory In Boundary-Spanning, Organizational Knowledge Management

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Purposeful human activity

Computerised Information system

Supports

Adapted from Winter et al. (1995)

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Collaborative practices in organizations take place in groups that involve stakeholders from multiple business areas, with little shared understanding or common language.
Analysis

• Ongoing discussion and interpretation of observed meetings, interactions, interviews, artifacts (documents, models, systems of technology)

• Understanding situational contexts and contingencies across
  – Actors (disciplinary & functional domains)
  – Time (tracking emergence of knowledge)
  – “Projects” – coordinated, purposeful work.

• A content analysis of
  – Knowledge-sharing mechanisms
  – Use of boundary objects (virtual and physical) for collaboration, knowledge exchange, and group memory
  – Actor roles in spanning group boundaries
    • Focusing on expertise and domain knowledge
  – Knowledge-leadership processes: who defines relevant and valuable knowledge.
Dialectics of Collective Discovery

Opening Up Design Problems

- Explore organizational possibilities, constraints
- Explore current problems, emergent design goals, boundaries, constraints
- Analyze possible solutions & impact on other problems
- Assess organizational outcomes - reframe problems

Closing Down Potential Solutions

- Synthesize design: agree & model system form & requirements
- Assess understood parts of system against agreed goals, boundaries, constraints
- Review partial solutions against problem-definitions
- Agree actions/scope for organizational & technical change

Implement design (technological & organizational change)

A “dual-cycle” model of enterprise system design.

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Process Drivers and Breakdowns in Boundary-Spanning Design

Primary Generator Concept – Solution model provides design process framework and abstract goals

Gap analysis – what remains to be resolved?

Mobilizing Vision of Problem-Structure

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Mobilizing Vision of Problem-Structure

Aligned problem, solution, & process space frames

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Gradual dissonance between individual problem frames and implied problem structure of mobilizing vision

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Rapid problem reframing

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Collective breakdown, caused by need to collectively define a boundary object artifact

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Concrete Model of Design Solution

Concrete Model of Design Solution

Repeated episodes & breakdowns

Coordinated problem partitioning

results in project completion

Longitudinal study of management group in co-design of business and IT systems

Content analysis, focusing on trajectories of action in framing collective visions of the design, and mediating role of boundary objects

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A Political Trajectory Of A Boundary-Spanning Design Project

- Actor-network analysis of boundary objects as mediating artifacts in collective design

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Modes of knowledge use at various stages of design emergence

<table>
<thead>
<tr>
<th>Explicit Knowledge</th>
<th>Tacit Knowledge</th>
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<tr>
<td><strong>Stage A</strong></td>
<td><strong>Stage B</strong></td>
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<tr>
<td>LOCAL KNOWLEDGE SHARED THROUGH STORIES</td>
<td>PROCESS EXEMPLARS TESTED THROUGH STANDARDIZED REPRESENTATIONS</td>
</tr>
<tr>
<td>Process = pooling knowledge for problem inquiry</td>
<td>Process = surfacing, then synthesizing knowledge for design</td>
</tr>
<tr>
<td>Focus on <em>know-what</em> and <em>know-why</em></td>
<td>Focus on <em>know-how</em> and <em>know-why</em></td>
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| **Stage C**        | **Stage D**    |
| SCENARIO GENERATION AND EXTERNAL COOPERATION ACHIEVED THROUGH STANDARDIZED REPRESENTATIONS | DIVISION OF LABOR ACHIEVED THROUGH EXPLOITING DISTRIBUTED EXPERTISE AND GENRES OF COMMUNICATION |
| Process = incorporating distributed knowledge into group synthesis for design validation and extension | Process = distributed responsibility for disseminating knowledge for design implementation and user adoption |
| Focus on *who-knows-what, know-how* and *know-why* | Focus on *know-why* and *who-knows-what* |

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Soft Systems Methodology

1. The Problem Situation - unstructured
2. Problem Situation Expressed (Rich Picture)
3. Root Definitions of Relevant Systems
4. Conceptual Models
5. Comparison of Rich Picture and Conceptual Model
6. Feasible and Desirable Changes
7. Action to improve the Problem Situation

REAL WORLD
SYSTEMS THINKING ABOUT THE REAL WORLD

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Research Question

How are different forms of knowledge managed and coordinated across the boundaries of a virtual, global organization?
Group Boundaries

**EXPERTISE BOUNDARIES**
- Executive Management
- Finance
- Technical Operations
- Client Strategy
- Client Facing Applications
- European Operations
- Backend Applications

**OTHER BOUNDARIES**
- Group affiliation
- Professional affiliation
- Political (reporting) affiliation
- Project affiliation

**GEOGRAPHICAL BOUNDARIES**
- ParentCorp
- EU Operations
- eCommerce Group HQ
- Apps Vendor
- EU Customer Service

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Method

• Researchers “attend” by telephone and transcribe meetings
• Sample statistics through April 2006
  – Over 280 meetings
  – 815 pages of transcription
  – Average length: 0:30
  – Shortest: 0:04
  – Longest: 1:35
• Longitudinal, ethnographic, exploratory
Setting - eServCorp

- eServCorp Global eCommerce Group
  - **Virtual** - EVP eCommerce, Local Direct Reports, International “Dotted Line” Reports, Vendor Staff
  - **Distributed** - US Headquarters, Remote Vendor, Operations in about 40 Countries

- Standing “virtual team meeting”
  - 7:30 a.m. teleconference
  - 4 days per week
Organizational Problem-Structuredness

- **Well-structured problem**
  - Problem-structure clear.
  - Unambiguous consensus goals for change.

- **Ill-structured problem**
  - Problem-structure uncertain
  - Multiple alternative solutions may achieve consensus goals for change.

- **Wicked problem**
  - Multiple, interrelated problem definitions and boundaries
  - Multiple, often competing *goals for change* prioritized by stakeholders.

↓ **Increasing Problem Emergence, Ambiguity, Multivocality**
Knowledge Coordination Span

(i) Local coordination span
• Local group acts as *project manager*, controlling and defining problem

(ii) Conjoint agency
• Local group acts as a *hub*, coordinating expertise from other (internal or external) groups to define and resolve problem.

(iii) Distributed Collaboration
• Local group part of a *web* of organizational/external groups, collaborating or subordinate in problem definition.

↓ Increasing Diversity of: Locus-of-Control, Expertise, Frameworks for action
Group Memory Boundary Objects

• Interpersonal interactions of group / between groups
  – Daily conference call
  – Project conference calls
  – Client conference calls

• Persistence
  – Emails
  – Spreadsheets and documents – modified by multiple actors
  – Project documents (specs and contracts)

• Roles, social networks, and expertise
  – Boundary-spanner roles change with problem-distance
Group Memory Processes in a Global, Virtual Organization

**Collective knowledge networking:**
Leader frames group identity in terms of role in global network. Multiple group members are delegated to acquire external knowledge, providing a “web” of domain experts who advise the group, acting as a conduit to influential managers & decision-makers, maintaining extra- & inter-group memory.

**Delegated knowledge-leadership:**
Individuals are delegated or self-nominated to become domain experts. Leader defines procedures and rules for action at the interface, selecting relevant social network contacts to maintain inter-group memory.

**Situation Interpretation:**
Group leader manages meaning, providing standardized rules and procedures, communicated through stories and analogies to create a group memory.

**Diversity of: Expertise, Locus-of-Control, Frameworks for action**

Local Coordination (Spans intra-group, expertise boundaries)
Conjoint Agency (Spans inter-group boundaries, local group has managing role)
Distributed Collaboration (Spans inter-group boundaries, local group negotiates control)

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What Changes With Problem Distance?

(i) Low problem distance
   - *Intra-group memory is situational*, focusing on how to recognize common problems and communicating lessons learned

(ii) Intermediate problem distance
   - *Intra-group memory* relates to who-knows-what, as knowledge leadership in specific domains of action is delegated to boundary-spanners
   - *Inter-group memory* focuses on coordination at the boundary with other groups: boundary-spanning domain-expert roles, coupled with shared procedures and rules for collaboration at the boundary

(iii) Low problem distance
   - *Intra-group memory* aggregates knowledge of external domains (boundary-spanners move into external domain expert roles)
   - *Inter-group memory* maintained by group leader through negotiated shared interests with social network of influential decision makers
   - *Extra-group memory* maintained through extended social network roles: group members who have boundary-spanner roles are connected by the group leader with influential decision-makers in other groups
## Modes of Organizational Problem-Solving

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<th>Ill-Structured Problems</th>
<th>Wicked Problems</th>
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<td><strong>Local Coordination</strong></td>
<td><em>Situation interpretation:</em> stories &amp; analogies create shared resource to identify similar problems</td>
<td><em>Group identity construction:</em> plans, processes &amp; checklists formalize procedural memory</td>
<td><em>Framing collective strategy:</em> group agrees evolving goals of change, to clarify approach to problem</td>
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<td><strong>Conjoint Agency</strong></td>
<td><em>Scope interpretation:</em> stories &amp; analogies communicate rules, evaluation-criteria, responsibilities at boundary</td>
<td><em>Delegated knowledge-leadership:</em> domain expert roles assumed. Rules &amp; procedures at coordinate knowledge transfer at boundary</td>
<td><em>Defining a collective response:</em> delegated boundary-spanner locates knowledge &amp; controls evolving boundary procedures</td>
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<td><strong>Distributed Coordination</strong></td>
<td><em>Coordinating division of labor:</em> functional domain-expert roles and social network leveraged for knowledge exchange</td>
<td><em>Managing external networks of influence:</em> group domain-experts jointly formulate problem, negotiate group responsibilities</td>
<td><em>Collective knowledge networking:</em> leader negotiates group role; group members become expert in evolving set of knowledge-domains</td>
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Work Systems and Information Systems

Purposeful human activity

Computerised Information system

Technical System

Data processing

Data Store

Supports

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