Adaptive Structuration Theory as a Meta-Theory

Robert Bostrom, Saurabh Gupta & Dominic Thomas
What is a Meta-Theory?

• A theory that **synthesizes** more than two theories into a coherent frame for simultaneously understanding them (Uto 2005)
• Three types of metatheorizing (Ritzer 2001)
• **Type 1**: Using meta-theory as a means of **attaining a deeper understanding of a theory**
• **Type 2**: Using meta-theory as a **source of overarching theoretical perspective**; goal of producing meta-theory or perspective that integrates into a coherent framework some part or all of a field
  - IS currently struggles with its identity and understanding its core, a successful meta-theory would help to clarify and solidify this core
• **Type 3**: Using meta-theory to **guide theory development**; describes, prescribes and gives direction to what is acceptable and unacceptable as a theory. Provides a
  - rich meta-theoretical view: an ontological arrangement of constructs in a system and
  - set of meta-theoretical assumptions or propositions for developing context-specific theoretical models
AST as Meta-Theory

- Provides a
  - rich meta-theoretical view: an ontological arrangement of constructs in a system and
  - set of meta-theoretical assumptions or propositions
- Provides a template and a set of guidelines for creating context or system specific theoretical models (Poole and DeSanctis, 1994 and 2003)
- Outcome: Articulate system specific structuration models that
  - provide more detailed accounts of constructs and relationships
  - that can be put to test with multiple research methods and
  - that lead to clear thinking about IT design, use and outcomes (Poole and DeSanctis, 2003)
- Other relevant theories can be embedded in AST framework to create hypotheses for predicting relationships between constructs
  - Embed IS related theories (Task-Technology fit)
  - Embed other relevant theories (Social Cognitive Theory)
AST as Meta-Theory

• Paper Outcomes:
  - Review literature in different areas where AST as been used as a meta-theory to guide theory development in a particular context
  - Develop better template and guidelines for theory development
  - Identify extensions to AST

• Our recent experiences:
  - E-learning (Gupta 2006, Gupta and Bostrom, 2005)
  - Virtual Teams (Thomas 2005, Thomas and Bostrom, 2005)
Meta-theoretical Perspectives on Social Reality

1. Actors determine structures: Structures are revisable products of free agents (Voluntarism, Interpretivism)

2. Objective structures shape actors’ behavior (Functionalism, Structuralism, Determinism): Structures determine, shape or heavily constrain actors’ behavior
   - Durkheim, Weber, Katz and Kahn

3. Actors enact structures and systems: focus on the inter-subjectivity of actors enacting structures (Gidden's Structuration Theory)

4. Adaptative Structuration Theory
   - Adds potential (technology) structures
   - Integrates perspectives 2 and 3

5. Sources/place from which agency/enactment is performed
   - Scharmer’s Theory U; Senge et. al. Presence
Construct Arrangement in AST

<table>
<thead>
<tr>
<th>Structural Descriptor</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirit</td>
<td>The general intent of the technology as it is presented to the user. It is reflected in the design and implementation</td>
</tr>
<tr>
<td>Features</td>
<td>Specific type of capabilities, rules and resources offered by or associated with the technology, technique or team</td>
</tr>
<tr>
<td>Dimensions</td>
<td>An aspect or characteristic of a structure, the bundled set of features implemented in a particular context</td>
</tr>
</tbody>
</table>
Meta-theoretical Guidelines/Requirements
(Poole and DeSanctis, 2003)

1. Identify relevant structures (both potential and in-use)
2. Relationship among structures
3. Description of how the social system works including effects of context
4. Identify structuration moves/appropriations
5. Identify effects on the context: outcomes/impacts
6. Identify actors and their roles
7. Critical inquiry into power dynamics of underlying structuration/appropriation process
### Virtual Teams Literature Reviewed/Synthesis

- Many studies relate inputs to outputs foregoing moderating process considerations.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Applicable Studies - (selected)</th>
<th>Qty.</th>
</tr>
</thead>
</table>
| **Structures** | • Becker et al. ‘99, Quereshi et al. ‘01 - common ICTs  
• Dennis et al. ‘99, Scott ‘99, Te’eni ‘01, Zigurs ‘93 - ICT comm. capability  
• Gorla et al. ‘04, Kaiser et al. ‘92, Sarker et al. ‘04, Blackburn et al. ‘03, Kirkman et al. ‘04, Ancona et al. ‘92, -diversity and demographics  
• Mantei ‘81, Mennecke et al. ‘98, Gorla et al. ‘04, Yoo et al. ‘04 - roles  
• Wheeler et al. ‘96, DeSanctis et al. ‘94, Knoll et al. ‘98 - ICT knowledge  
• Hertel et al. ‘04, Perlow ‘99, Reinig et al. ‘96, Edmondson et al. ‘00 - incentives  
• Straub et al. ‘98, Abdel-Hamid et al. ‘99, Hertel et al. ‘04 - goals  
• Glass ‘04 - work methodology                                                                                                                                                                                                                                                                       | Many more exist                                                   |
• Zigurs et al. ‘98, Menecke et al. ‘00, Huang et al. ‘02 - ICT -Task  
• Zigurs ‘93, Majchrzak et al. ‘00, Dustdar ‘02 - ICT - Task -People                                                                                                                                                                                                                               | Few                                                                 |
| **System**     | • Jarvenpaa and Leidner ‘99 - trust  
• Ahuja & Carley ‘99, Ahuja ‘03 - group structure & socialization  
• Ahn et al. ‘04, Hengst ‘04, Marks et al. ‘00 - knowledge contextualization & comm.  
• Maznevski & Chudoba ‘00, Montoya-Weiss et al. ‘01 - time  
• Tyre et al. ‘94, Majchrzak et al. ‘00 - structuration episodes  
• DeSanctis & Poole ‘94, ‘90, ‘97, Majchrzak et al. ‘00 - appropriation                                                                                                                                                                                                                           | Some                                                                |
| **Moves**      | • Kelly et al. ‘98, Tyre et al. ‘94 - proactive or reactive  
• Majchrzak et al. ‘00, Rutkowski et al. ‘02, Hollingstedt et al. ‘93 - triggering events  
• Archer ‘90, Kayworth et al. ‘02, Sarker et al. ‘03 - possible actions (not explicitly studied)                                                                                                                                                                                                 | Few                                                                 |
| **Contextual Impact** | • Easley et al. ‘03 - ICT impact  
• Many studies from GSS and CMC research fit here. A few VT studies fit here. See Powell et al. ‘04                                                                                                                                                                                                                                         | Many more exist                                                   |
| **Actors**     | • Kayworth & Leidner ‘00, ‘01 - leader effectiveness                                                                                                                                                                                                                                                                                                           | Few                                                                 |
| **Power**      | • Nicholson et al. ‘04, Edmondson et al. ‘00, Avolio et al. ‘00                                                                                                                                                                                                                                                                                               | Few                                                                 |
## Research Study Design Choices

<table>
<thead>
<tr>
<th>Choices</th>
<th>Optional approaches</th>
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<tbody>
<tr>
<td>System level of analysis</td>
<td>Institutional</td>
</tr>
<tr>
<td></td>
<td>Global</td>
</tr>
<tr>
<td></td>
<td>Micro</td>
</tr>
<tr>
<td>Structural focus</td>
<td>Related structure(s)</td>
</tr>
<tr>
<td></td>
<td>Diverse structures</td>
</tr>
<tr>
<td>Framing</td>
<td>Structure view: influence of structure on action</td>
</tr>
<tr>
<td></td>
<td>Actor view: actors’ structural moves</td>
</tr>
<tr>
<td></td>
<td>Alternating: structure and actor views</td>
</tr>
<tr>
<td>Dynamics</td>
<td>System change</td>
</tr>
<tr>
<td></td>
<td>System stability</td>
</tr>
<tr>
<td>Stance</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>Skeptical</td>
</tr>
<tr>
<td></td>
<td>Critical</td>
</tr>
</tbody>
</table>
E-learning Model

**Learning Goals**
Goals desired by the training program

**Epistemological perspectives** –
Beliefs and values about the nature of knowledge

**Structures** – formal and informal procedures, techniques, skills, rules, technologies.

**Learning process** – the way the group uses, adapts and reproduces structures

**Learning outcomes** –
Assessment of Goals
Need for Embedded Theories

- Need embedded theories to provide more detailed accounts of constructs and relationships: propositions, hypotheses, etc.
- Example: Structures and their impacts
- Focuses on the
  - Relationships between structures, e.g., task-technology fit
  - Criticality, scope and direction of impact
  - Why certain structures have more impact that others
- Example: E-learning model used Social Cognitive and Social Development Theories
- Similar arguments can be made for the process/appropriation perspective (likely vs. unlikely moves) and other constructs and relationships
Proposition: E-learning with higher perceived levels of structural dimensions, derived from SCT, will positively affect learning outcomes.
### Dimensions of IS Structures

<table>
<thead>
<tr>
<th>Structural dimension set</th>
<th>Communication support</th>
<th>Process structuring</th>
<th>Information processing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td>Synchronicity</td>
<td>Protectiveness</td>
<td>Comprehensiveness</td>
</tr>
<tr>
<td></td>
<td>Anonymity</td>
<td>Self-directivity</td>
<td>Sophistication</td>
</tr>
<tr>
<td></td>
<td>Simultaneity</td>
<td>Flexibility</td>
<td>Feedback</td>
</tr>
<tr>
<td></td>
<td>Interactivity</td>
<td>Synchronicity</td>
<td>Personalization</td>
</tr>
<tr>
<td><strong>Features examples</strong></td>
<td>Chat</td>
<td>Scheduling</td>
<td>Voting</td>
</tr>
<tr>
<td></td>
<td>Email</td>
<td>Syllabus and course</td>
<td>Decision tools</td>
</tr>
<tr>
<td></td>
<td>Audio/video/text</td>
<td>organizer</td>
<td>Simulated</td>
</tr>
<tr>
<td></td>
<td>Breakout rooms</td>
<td>Learning sequence</td>
<td>environment</td>
</tr>
</tbody>
</table>
Extensions to AST from E-learning Research

- Outcome: Articulated structuration model that
  - provides detailed accounts of constructs and relationships
  - that can be put to test with multiple research methods and
  - that leads to clear thinking about learning systems design, use and outcomes
- Spirit/Purpose defined and included in Study
  - Critical but often ignored in IS studies
  - Socio-Technical Systems principle of joint optimization; Case Western Positive Design work; Design and Critical inquiry research
- Development of Structural Dimensions
- Appropriation Support important construct missing from most IS studies
  - Address from both structure and process (appropriation moves)
- Methodologies
  - Experimental: SEM with latent growth and stacked group
  - Qualitative: Critical incidents methodology to study actors’ moves (Virtual Team work)
- Initial thinking on Content Appropriation
## IS Theoretical Models based on AST to be Analyzed

<table>
<thead>
<tr>
<th>Area</th>
<th>Embedded Theories</th>
<th>Important structures</th>
<th>Actor</th>
<th>Phenomenon of interest explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSS (DeSanctis et al 1994, 1989, Sambamurthy et al. 92 ...)</td>
<td>Conflict handling Social Judgment ...</td>
<td>Technology Group Task</td>
<td>Task oriented groups</td>
<td>Process of task Outcomes</td>
</tr>
<tr>
<td>GIS (Janakowski et al. 2001)</td>
<td>Collaboration, negotiation, communicative action</td>
<td>Social-institutional group participant GIS</td>
<td>Groups</td>
<td>Participatory decision situations</td>
</tr>
<tr>
<td>Virtual teams (Thomas 2005 and others)</td>
<td>Shared Mental Model Group Development</td>
<td>Team Process Technology</td>
<td>Virtual Team Leader</td>
<td>ICT facilitation effectiveness</td>
</tr>
</tbody>
</table>

Anything missing?
Non-IS Theoretical Models based on AST to be Analyzed

<table>
<thead>
<tr>
<th>Area</th>
<th>Embedded Theories</th>
<th>Important structures</th>
<th>Actor</th>
<th>Phenomenon of interest explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>Power/Knowledge Deconstruction</td>
<td>Accounting systems Power, psychological makeup</td>
<td>Organizational Managers</td>
<td>Accounting practices</td>
</tr>
<tr>
<td>Strategic Management³</td>
<td>?</td>
<td>Organizational Market</td>
<td>Organizations</td>
<td>Explaining the process of Organizational Learning</td>
</tr>
<tr>
<td>Strategic Management³</td>
<td>?</td>
<td>Team design, Roles, Experience, self-identity</td>
<td>Organizational/team members</td>
<td>Managerial innovation</td>
</tr>
<tr>
<td>Communications</td>
<td>Rhetorical Valance</td>
<td>Genres, institutionalized practices</td>
<td>Individuals Groups</td>
<td>Choice of communication practices</td>
</tr>
<tr>
<td>Business Ethics</td>
<td>Stakeholder Responsibility</td>
<td>Code of conduct, Values &amp; Norms, regulations</td>
<td>Auditor</td>
<td>Resolution of ethical decision making</td>
</tr>
<tr>
<td>(Dillard 2002)</td>
<td>Ethics</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Anything missing?
Conclusion

• AST useful meta-theory esp. for theory development
• Embedded theories provide predictive power
• Deliverables:
  - Literature review of different areas where AST as been used as a meta-theory to guide theory development
  - Develop better template and guidelines for theory development
  - AST extensions
End of Presentation
QUESTIONS???
References

- Thomas, D. M. (2005). *The IS team leader role in technology appropriation for effective IS project virtual teams*. Unpublished PhD, University of Georgia, Athens, GA.