**Wisdom is not the product of schooling
but the lifelong attempt to acquire it.
- Albert Einstein**

Games and Simulations : Constructing Shared Understanding through Participatory Tools for Collaborative Planning and Design

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Topics

- **Related topics –**
  - Design and planning
  - Informed participation
  - Communities of practice
  - Distributed cognition and constructionism
  - Evolutionary growth
  - Reasoning behind design
  - Beyond gift wraping
  - Critiquing

- **Conceptual concerns & examples behind tools**

- **Water simulations for kids – L3D lab (L. Lieu, E. Scharff, E. Arias)**

- **A Critique – A Discussion**

Creating shared understanding: Ideas behind Games / simulations as participatory planning & design tools

Conceptual Concerns

- **Shared understanding - what can be said**
    - **specification components**
    - **making information relevant to the task at hand**
    - **situation awareness**
    - **incremental formalization**
    - **interpretable information structures**
- **Collaborative learning, participatory design concepts**
    - **Informed participation**
      CSCL paper, 1999 - Beyond Access
      Urban Studies paper, 1996 -- Helping Neighbours Help Thenselves
    - **Resolution of conflict**
      Informed compromises (individuals)
      Consensus building (group)
      Critical coalitions (Arias, 1984, 1998)
    - **Information technology support**
      Physical games
      EDC vs. SimCity

Conceptual Concerns Cont'd.

- **Context behind technology and tools – locational decision analysis**
  - Multiple stakeholders (multiple perspectives)--poorly understood
  - Conflict - "my problem is more bigger than yours" ... Cole Neighbor
  - Collaboration – always a challenge
  - Change (changing perspectives)
  - Complex systems -- as domain of application (interrelationships)
  - Wicked problems -- ill structures and ill behaved (Rittel)
  - On demand – can't wait because the problem will be gone (Fischer)
  - Contingent on situational variables (Arias)

- **Decision-making support as aim**
  - Usable and useful information (Lindblom and Cohen, 199)
  - Multiple objective-multiple criteria (Arias and Anselin '83, '84, '94)
  - Symmetries of ignorance (Rittel, 1984)/Asymmetries of Knowledge
  - Trade-offs and Trade-backs (Decision-making literature)
  - Preferences (order and intensity) – (Saaty '82, Arias '93)

Gaming-Simulations as decision-support media

- **SIMLab – CAP**

- **Typology – Field games –**
  Competition vs. Decision-making
  Board vs. non-board field games
  Single vs. multiple systems
  Games vs. simulations

- **Games - learning**
  Situation given
  Activities supported – evaluation and prescription
  Role playing stressed

- **Simulations - designing**
  Situation constructed
  Activities supported – description, evaluation and prescription
  Role playing not stressed

- **Hybrids –**

Components – requirements in thinking about IT functionality

- **Common Languages**
  - Virtual-physical integration
  - Object-meaning construction
  - Cognitive Activities supported
    - Description, Evaluation, Prescription

- **Action space - Simulation-game board**
  - Problem setting / study area
  - Virtual-physical integration
    - Object-board interaction

- **Reflection space**
  - Before and now
  - Limitations

Components – requirements for functionality Cont'd.

- **Protocols, rules and roles**
  - Interaction between player
  - Interactions between player-tool
  - Player simulation-world linkage
    - Verisimilitude-abstractness

- **Information**
  - Real time data
  - Archival data bases
  - Challenges

- **User – stakeholders and human behavior**
  - predisposition - motivation (Maslow 54)
  - competence - physiological and psycological (Lawton 73)
  - fundamental processes of behavior-(Lang 87, Arias 88, among others)
  - perception, cognition and expressed behavior
  - Participation (see lecture and discussions)

Conceptual research issues for IT development

- **On Artifact-World relationship**
  Support group participation/collaboration (face to face and distributed)
  Support *trade-offs* and *trade-backs*

- **On Usability, Usefulness and Reusability**
  Support knowledge construction, communication and collection
  Support critiquing approaches (prescriptive and performance oriented)
  Enhance user control and transparency

- **On Integration of Real and Virtual**
  Hardware-software development (major)
  Data bases
  Capture design argumentation and rationale

- **On Assessment and Evaluation**
  Reliability
  Validity
  Applicability
  Flexibility
  Efficiency and effectiveness
  How to do it? -

A Critique: Discussions on Affordances and Limitations

Conclusion – Discussion at L3D lab

- **Lecture on Games**
  - Critically discuss:
    The usefulness of games as SimCity in real city planning problems
    Draw comparisons to the EDC, the water tools for kids and the physical games
  - Discuss notions such as
    Collaboration support
    End-user modifiability
    Evolution and open systems

- **Lecture on Participation**
  - is participation a useful concept in the context of information (computational) media? Why or why not?
  - what implications can be drawn from the concept to information technologies? to design? to art?
  - what are the limitations of information technology in supporting participation