

COMPARATIVE INFORMATICS: A CSCL RESEARCH PROGRAM

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June 09, 2009

RESEARCH PROGRAM

➤ To what extent are cognitive architectures culturally relative?

■ Socio-Technical Systems involve:

- Interacting with Technologies
- Interacting with Others

■ Seeking an empirically informed theoretical understanding of **how actors in socio-technical systems** :

- **interact with technology**
- **relate to each social others**

THEORETICAL FRAMEWORK: AFFORDANCES

▪ Cognitive Psychology

- Subjectivity of Meaning: Interpretation
- Internal Representations & External Representations
- Minded Meaning: Symbolic/ Semantic
- Mind : Brain :: Software : Hardware (Block, 1995)
- “Copying in the world”

▪ Ecological Psychology

- Relationality of Meaning: “Direct Perception” of “Circumambient Arrays” (Gibson, 1979)
- Affordances: Action-Taking Possibilities and Meaning-Making Opportunities
- Embodied Meaning: Informational/Phenomenal
- Mind : Brain :: Action : Perception
- “Coping with the world”

Problem

Logical Gap between Interpretive and Informational Theories of Meaning

Solution

Bridge the gap by making ***Meaning Ecologically Cognitive***

THEORETICAL FRAMEWORK: AFFORDANCES

- **Ontological Foundations of the Notion of Affordance** (Turvey, 1992)
 - Materialist
 - Dynamicist
 - Property Realist
- *“An affordance cuts across the dichotomy of subjective–objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer”*
 - (J. J. Gibson, 1979, p. 129)

THEORETICAL FRAMEWORK:

AFFORDANCES

- Affordances are relational properties in an actor-environment system.
- Affordances are “action-taking possibilities” and “meaning-making opportunities” in an environment with reference to an actor
- Appropriation of Affordances refers to the intentional utilization of affordances
- Not deterministic, actors can chose to enact culturally appropriate actions in a given situation

THEORETICAL FRAMEWORK

DEFINITION OF SOCIO-TECHNICAL AFFORDANCE

Let $Wpqr$ (e.g., person-sending-email-to-another-person system) = (Tp, Sq, Or) be composed of technology T (e.g., email technology), subject S (e.g., email sender), and other actor O (e.g., email receiver).

Let p be a property of T , q be a property of S , and r be a property of O .

The relation between p , q and r , $p/q/r$, defines a higher order property (i.e., a property of the socio-technical system), a .

Then a is said to be a **socio-technical affordance** of $Wpqr$ if and only if

- i. $Wpqr = (Tp, Sq, Or)$ possesses a
- ii. Neither $T, S, O, (T, S), (T, O)$ nor (S, O) possesses a

THEORETICAL FRAMEWORK:

TECHNOLOGICAL INTERSUBJECTIVITY

- Social consequences of connectivity augured by information and communication technologies
- Refers to the emergence, formation, and sustenance of an interactional socio-technical relationship between online participants
 - Psychological Intersubjectivity: Functional
 - Phenomenological Intersubjectivity: Experiential
- Cultural variation in the structures and functions of technological intersubjectivity

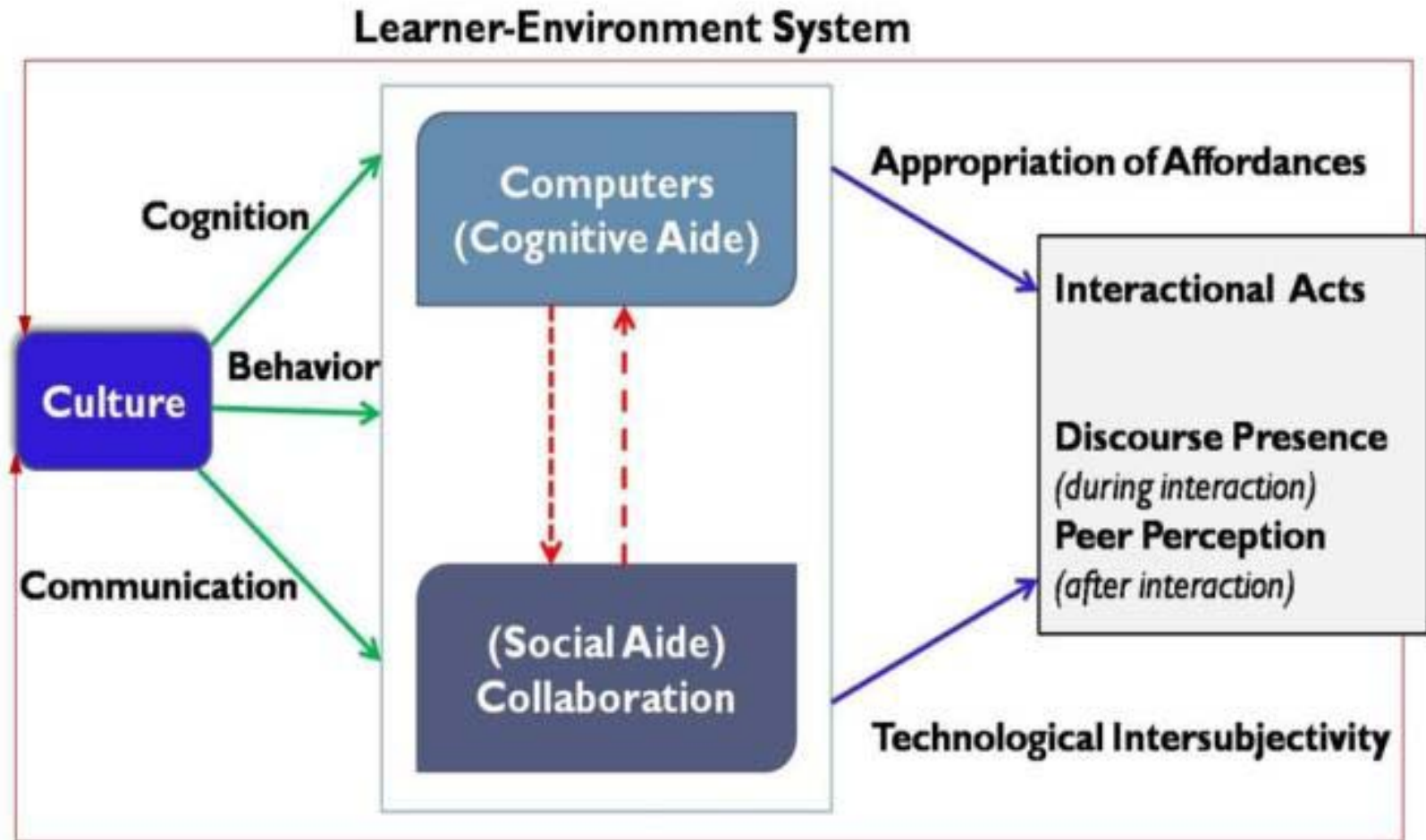
THEORETICAL FRAMEWORK: INTERSUBJECTIVITY

TECHNOLOGICAL INTERSUBJECTIVITY (TI)

Related Notions

- Time-Space Compression (Harvey, 1989)
- Networked Individualism (Manuel Castells, 2001)
- Information Subject (Poster & Aronowitz, 2001)
- Presence (Lombard & Ditton, 1997)

METHODOLOGICAL FRAMEWORK



COMPARATIVE INFORMATICS

THREE RESEARCH STREAMS

- Computer Supported Collaborative Learning (CSCL)
- Computer Supported Intercultural Collaboration (CSIC)
 - ACM International Workshop on Intercultural Collaboration (IWIC)
- Digital Government and Digital Democracy

COMPUTER SUPPORTED COLLABORATIVE LEARNING (CSCL)

- Collaborative Argumentation
 - Suthers' Representational Guidance
 - Belvedere: Knowledge-Map Environments
- **Is Representational Guidance Culturally Relative? (CSCL 2009 Paper)**
- **Notational Effects on Individual Essay Writing (CSCL 2009 Paper)**
- Uptake Analysis
 - Common Data Model and Formal Representation
 - Shared Analytical Methods and Visualizations
- **CSCL 2009 Workshop on Multivocality**
- **Inscriptions becoming Representations (CSCL 2009 Paper, BPN-BSPN)**

COMPUTER SUPPORTED INTERCULTURAL COLLABORATION (CSIC)

- Culture is the core concept
 - Needs specificity
 - “Fading quality of culture”
 - Within vs. Between group variances
 - **Measure it or Lose it**
 - Multiple measures
 - Individual Level
 - Collective Level
 - Multiple evaluative criteria
- One example
 - Computer Supported Collaboration

CSIC:

MEASUREMENT AND EVALUATION

- Move beyond Hofstede
 - GLOBE Study
- Go back to Bartlett's schemas
- Deal with “demand characteristics” of experimental settings
- Ecologically cognitive approach to culture
 - Process theory of culture (INTERACT 2009 Workshop)
 - Real-Time & Real-Space interactional theory

DIGITAL GOVERNMENT

- Robertson's Voter-Centered Design
 - www.votesby.us
- Facebook & US General Election 2008
- Digital Citizenship & Digital Literacy
- Digital Positivism and Civic Panopticon

TEACHING PHILOSOPHY

John Dewey: “experience” , “inquiry”, and “curriculum” (1902/1956; 1938; 1938/1991)

■ Three Interdependent Aspects Of Learning:

1. Considerate Social Behavior
2. Meaningful Cognitive Processes
3. Innovative *Pedagogical* Technologies

TEACHING INTERESTS

- Informatics: The “Information Quartet”
 - Human Information Processing
 - Information Visualization
 - Information Presentation
 - Personal Information Management
- HCI
 - Comparative Informatics
 - Computer Supported Intercultural Collaboration
 - Design Methods
- Learning Sciences
 - Computer Supported Collaborative Learning
 - Cultures, Technologies, and Learning

SERVICE

- Demonstrations Co-Chair, Second International Workshop on Intercultural Collaboration (IWIC), Feb 20-21, 2009, Stanford University, Palo Alto, CA, USA.
- Reviewer for CHI, NordiCHI, CSCW, CSCL, ICLS, HICSS, IWIC, ijCSCL, IJAIED, AI & Society, Interacting with Computers, and Computers and Education.
- Academic Chair, Graduate Student Organization (GSO), University of Hawai'i at Mānoa, Honolulu, HI, USA (2006-2007).
- President, Indian Student Association, University of Hawai'i at Mānoa, Honolulu, HI, USA (2003-2007).

QUESTIONS?