

## Culture and Computers:

A review of the concept of culture and its analytical usage

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## Outline of this Presentation

- ❑ Introduction
- ❑ Definitions of Culture
- ❑ Analytical Issues
- ❑ Empirical Findings
  - ❑ Culture and Behavior
  - ❑ Culture and Communication
  - ❑ Culture and Cognition
  - ❑ Culture and Computers
- ❑ Dissertation Research
- ❑ Discussion
- ❑ References

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## *Introduction*

### ▶ **What is Culture?**

- ▶ Raymond Williams: One of the most difficult words to define like home
- ▶ Roots in the German notion of *kultur*
- ▶ Technical and Vernacular uses of the word
  - ▶ High culture vs. Low/Popular Culture
  - ▶ “Culture Wars” in the USA
  - ▶ “Multiculturalism” in the USA and Western Europe
- ▶ *Academic subfields: Cultural*
  - ▶ *Anthropology*
  - ▶ *Sociology*
  - ▶ *Psychology*
  - ▶ *Philosophy*
  - ▶ *Studies*

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## *Definition of Culture*

- ▶ First Definition attributed to Edward Tylor:

*“culture or civilization, taken in its wide ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and other capabilities and habits acquired by man as a member of society.”*

(1903/1988, p. 64),

- ▶ Subjectivity (Time, History)
- ▶ Identity (Space, Geography)

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## *Definitions of Culture*

- ▶ Kroeber and Kluckhorn's (1952) Compilation and Categorization:
  - ▶ Compiled 200 definitions of culture
  - ▶ Categorized into 6 distinct groups of definitions

Groups	Emphasis
<b>Descriptive</b>	"Enumeration of content" (p.81)
<b>Historical</b>	"Social heritage or tradition" (p.89)
<b>Normative</b>	"Rule or way" (p.95)
<b>Psychological</b>	"Culture as a problem solving device"
<b>Structural</b>	"Patterning or organization of culture"
<b>Genetic</b>	"Culture as a product or artifact" (p.125)

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## *Culture: Analytical Issues*

- ▶ "Fading Quality"
  - ▶ Between variation
  - ▶ Within variation
  - ▶ Culture & Personality
- ▶ Unpacking Culture
- ▶ Priming

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### Culture and Behavior

▶ (Hofstede, 1997)

Cultural Profile		
Cultural Dimension	“Anglo-Americans”	“East-Asians”
<b>Hierarchy</b>	<b>Lower Power Distance</b>	<b>Higher Power Distance</b>
<b>Group Cohesion</b>	<b>Higher Individualism</b>	<b>Higher Collectivism</b>
<b>Gender Roles</b>	<b>Moderate Overlap</b>	<b>Lower Overlap</b>
<b>Uncertainty Avoidance</b>	<b>Lower</b>	<b>Higher</b>

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### Culture and Communication

▶ (E. Hall, 1966)

“Anglo-Americans” Low-Context Communication	“East-Asians” High-Context Communication
Informational Emphasis	Social/Emotional Emphasis
Hurried Effective Speech	Unhurried Persuasive Speech
Unambiguous Interpretation Sought	Ambiguous Interpretation is Tolerated
Context is Functional	Context is Structural

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## Culture and Cognition

▶ (Nisbett and Norenzayan,2002)

- ▶ **Universality:** Basic cognitive processes of sensation, perception, attention and memory are universal.
- ▶ **Content Independence:** Basic cognitive processes are invariant across contents.
- ▶ **Environmental-Sufficiency:** Cultural differences in cognitive processes are due to different environmental influences and not social influences.
- ▶ **Infinite Cultural Variance:** Cognition places no constraints on the possible evolutionary design space of cultures.

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## Culture and Cognition

▶ (Nisbett and Norenzayan,2002)

Cultural Profile		
Cognitive Process	“Anglo-Americans”	“East-Asians”
Attention	Object	Field
Perception	Object-Oriented	Relation-Oriented
Causal Inference	Dispositional	Situational
Knowledge Organization	Categorical Rules	Relational Similarities
Reasoning	Analytical	Holistic

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- ▶ Reeves and Nass's (1996) "The Media Equation"
  - ▶ Social aspects of human-computer interaction
- ▶ **User Interface Design**
- ▶ **Usability Evaluation**
- ▶ **Web Design**
- ▶ **E-Commerce**
- ▶ **Information Systems**
- ▶ **Computer Supported Cooperative Work**
- ▶ **Online Learning**

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## Dissertation Research Statement

- ▶ John Dewey: "experience" and "inquiry" and "curriculum" (1902/1956; 1938; 1938/1991):
- ▶ Educational technology paradigms based on social constructivism (like CSCL) therefore emphasize three interdependent aspects of learning:
  1. **social behavior**
  2. **cognitive processes**
  3. **pedagogical technologies**
- ▶ **Three distinct lines of empirical research have demonstrated that:**
  - ▶ *culture affects social behavior* (E. Hall, 1966; Hofstede, 1997);
  - ▶ *culture influences cognitive processes* (Nisbett & Norenzayan, 2002); and
  - ▶ *culture influences online learning pedagogies* (Hewling, 2005; Kim & Bonk, 2002)
- ▶ **Culture as an independent variable of interest has not been actively considered in experimental studies of human-computer interaction (HCI) and educational technology paradigms.**
- ▶ Integrating these three lines of empirical research into a conceptual framework of *culture, technology and learning*, this project investigates the basic question of
  - ▶ *(how) does culture vary the social affordances of technology?*

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## Operational Definition of Culture

- ▶ Culture: As a Cognitive Schema
  - ▶ Cultural schemas are putative structures
- ▶ Definition of Culture:
  - ▶ “*the collective programming of the mind which distinguishes the members of one group or category of people from another*” (Hofstede, 1997, p. 5).
  - ▶ Collective programming of the mind in the sense of Vygotsky’s **social formation of the mind** (Wertsch, 1985).
  - ▶ Subjectivity & Identity
  - ▶ Being & Becoming

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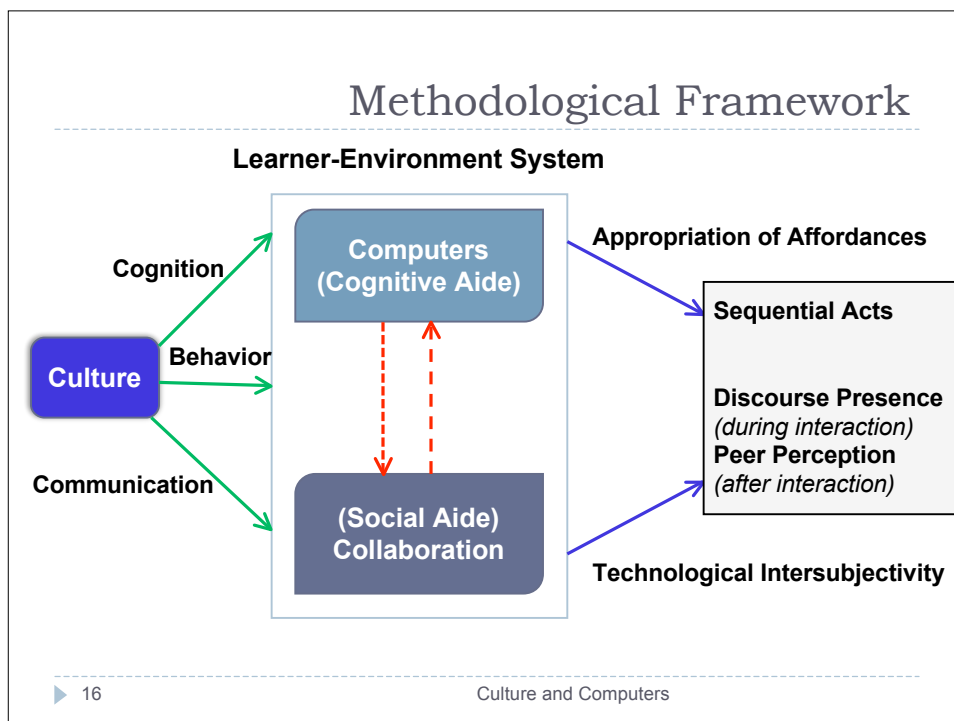
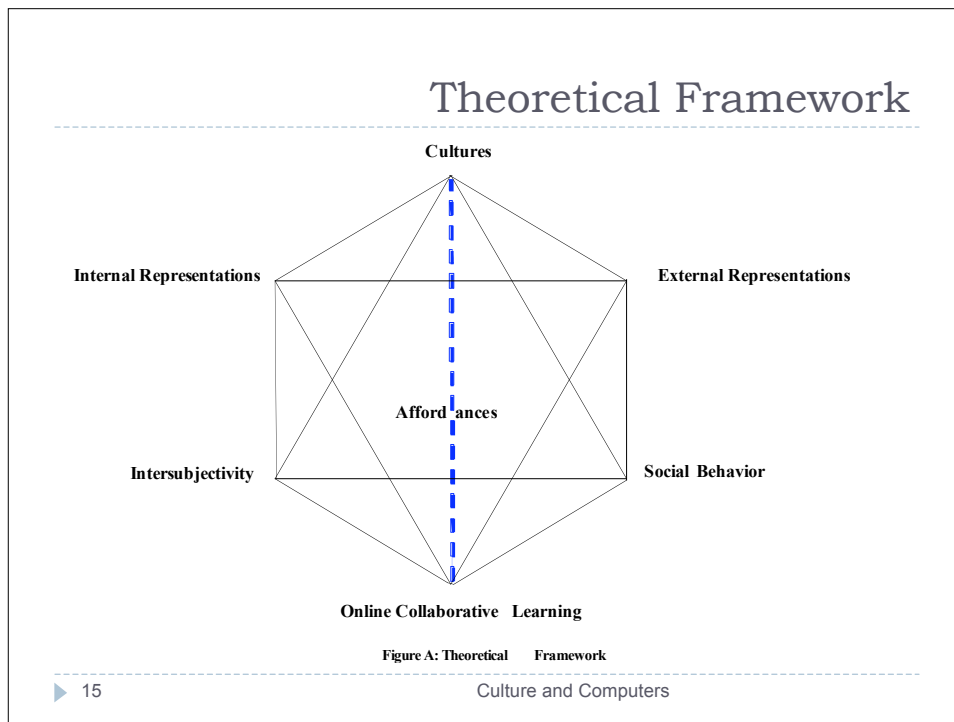
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## Research Questions

- ▶ **R1.** To what extent does culture influence how a participant **appropriates the affordances** of a technology environment as means for interacting with others?
- ▶ **R2.** To what extent does culture influence **technological intersubjectivity**?

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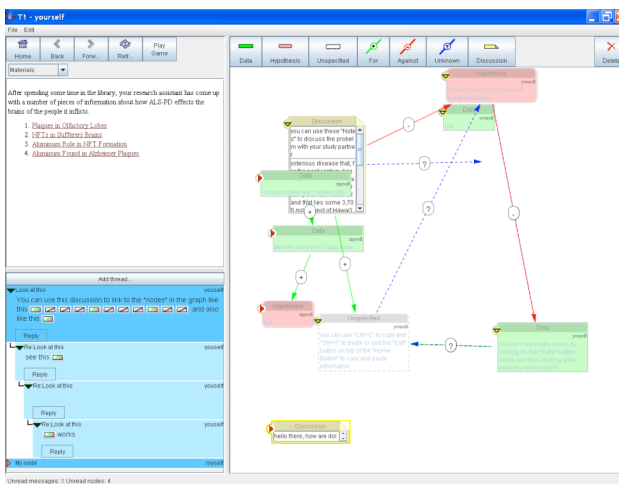


## Method: Experimental Design

Dyad's Cultural Profile	Measures of appropriation of affordances	Measures of technological intersubjectivity
East-Asian East-Asian		
Anglo-American Anglo-American		
Anglo-American East-Asian		

**Table A: Experimental Study Design**

## Method: Materials: Software



## Discussion

- ▶ *Critiques, Questions, Suggestions, Comments and Opinions*

## References

- ▶ Dewey, J. (1902/1956). *The Child and the Curriculum and the School and Society*. Chicago: University of Chicago Press.
- ▶ Dewey, J. (1938). *Experience and education*. New York: Macmillan.
- ▶ Dewey, J. (1938/1991). Logic: The Theory of Inquiry. In J. A. Boydston (Ed.), *John Dewey: The Later Works, 1925–1953* (Vol. 12, pp. 1-5). Carbondale, IL: SIU Press.
- ▶ Hall, E. (1966). *The Hidden Dimension* (Vol. 6). Garden City, NY: Anchor Press.
- ▶ Hofstede, G. (1997). *Cultures and Organizations: Software of the Mind, Intercultural Cooperation and its Importance for Survival*: McGraw-Hill. Kroeber, A. L., & Kluckhohn, C. (1952). *Culture: A Critical Review of Concepts and Definitions* (Vol. 47): *Harvard University Peabody Museum of American Archeology and Ethnology*.
- ▶ Nisbett, R. E., & Norenzayan, A. (2002). Culture and Cognition. In D. L. Medin (Ed.), *Stevens' Handbook of Experimental Psychology* (3rd ed., pp. 561–597 (Page numbers used in the document refer to the manuscript retrieved on August 531, 2006 from <http://www-personal.umich.edu/~nisbett/cultcog2002.pdf>)).
- ▶ Tylor, E., B. (1903/1988). Primitive Culture: The Science of Culture. In P. Bohannan & M. Glazer (Eds.), *High points in anthropology*. New York: McGraw-Hill.
- ▶ Wertsch, J. (1985). *Vygotsky and the social formation of mind*. Cambridge, MA, USA: Harvard University Press.
- ▶ Williams, R. (1983). *Keywords: A Vocabulary of Culture and Society*. New York: Oxford University Press.