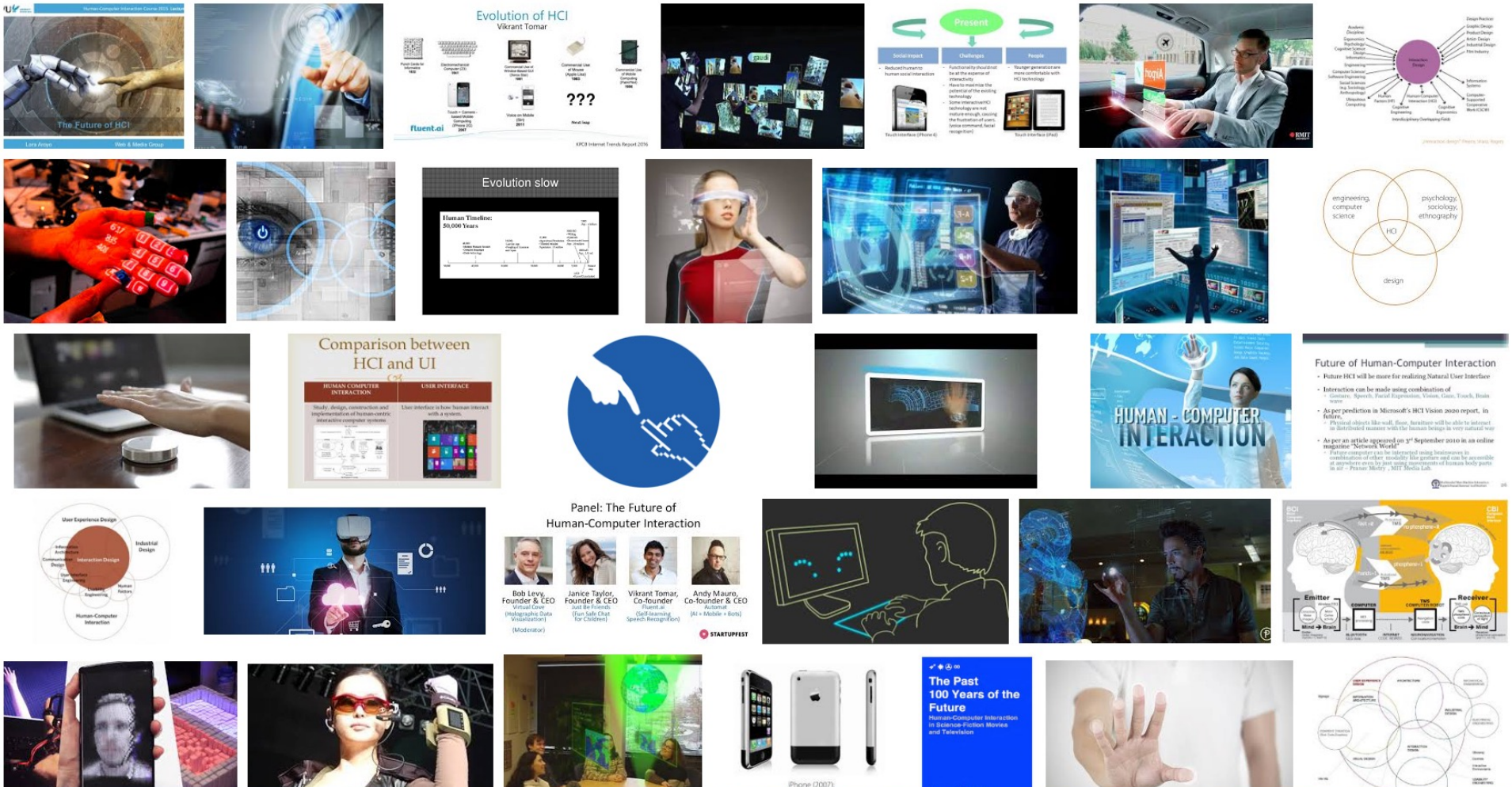
Lecture 7

Advanced Topics in Human Computer Interaction

COMPSCI 705 / SOFTENG 702



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YAHOO!
tumblr.

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Associate Professor

Lecture 7

HCI Research Approaches

UNIVERSITY OF AUCKLAND

COMPSCI 705 / SOFTENG 702

Dr Danielle Lottridge

Lecture 7 Outline

- What is knowledge
- What is epistemology
- Three paradigms of HCI

- Readings
  - Today: Harrison, S., Tatar, D., & Sengers, P. (2007). The three paradigms of HCI. In Alt. Chi. Session at the SIGCHI Conference on Human Factors in Computing Systems San Jose, California, USA (pp. 1-10).
  - Friday: Creswell, J. W. (2003). Chapter 1: A framework for design. Research design: qualitative, quantitative and mixed methods. Sage Publications, Thousand Oaks, CA.
- Additional Resources
  - Fallman, D. (2003). Design-oriented human-computer interaction. In Proceedings of the SIGCHI conference on Human factors in computing systems (pp. 225-232). ACM.

Learning Objectives

- Understand main theoretical approaches to design
- Understand major types of epistemology
- Understand what constitutes academic knowledge claims
- Know the history of HCI
- To be able to identify the epistemology underlying research articles

Where do design ideas come from?


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Science Design Humanities

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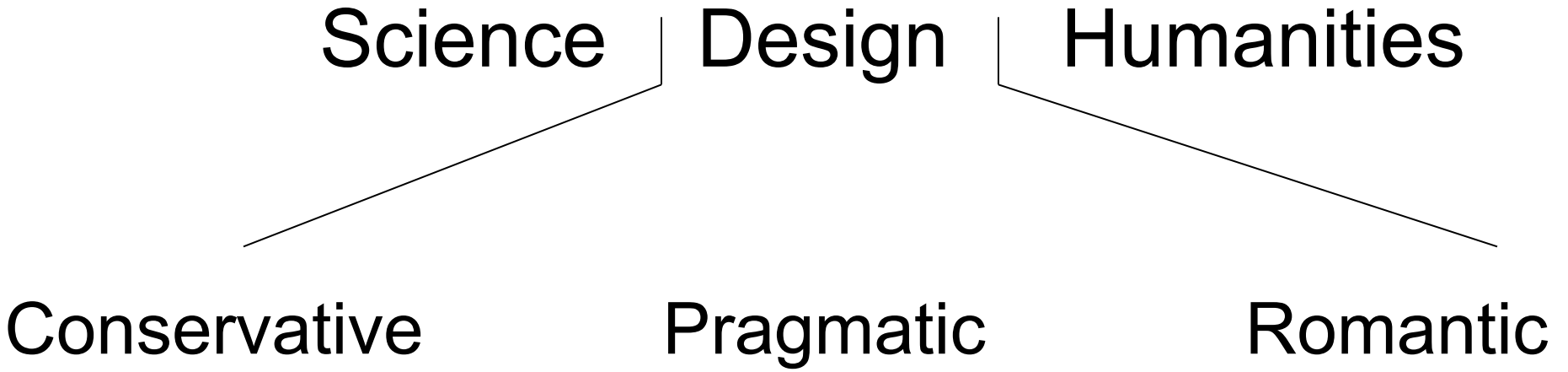

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Science | Design | Humanities

Conservative	Pragmatic	Romantic
engineering	bricolage	art
glass box	self organizing system	black box
result of process	outcome of dialogue	functional art
methods	experience	creativity
rational	reflective	mystical

Fallman, D. (2003). Design-oriented human-computer interaction. In Proceedings of the SIGCHI conference on Human factors in computing systems (pp. 225-232). ACM.

Ways of thinking and knowing

Google hci discipline

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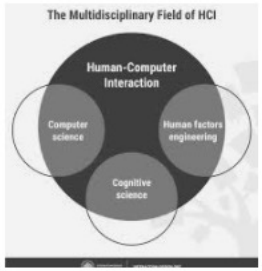

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interaction-design.org

Human-computer interaction, cyberpsyc...
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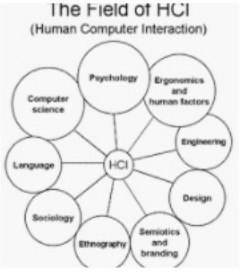

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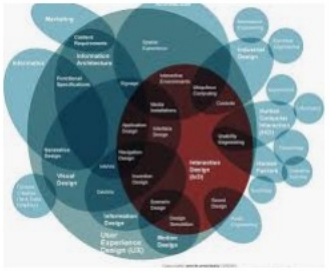

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The Paradigm Birth of HCI ...
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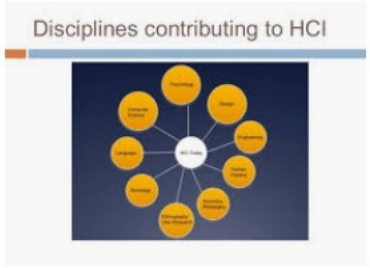

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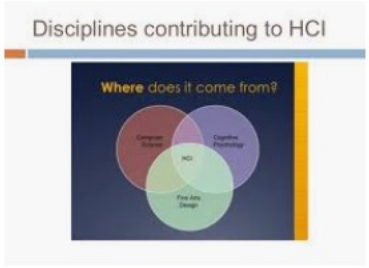

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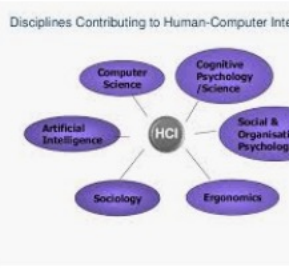

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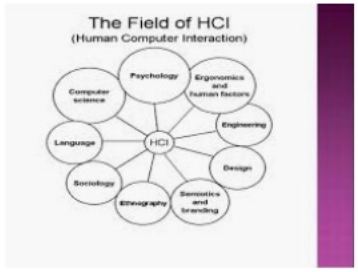

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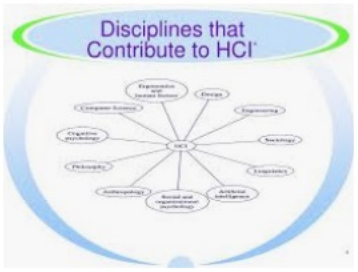

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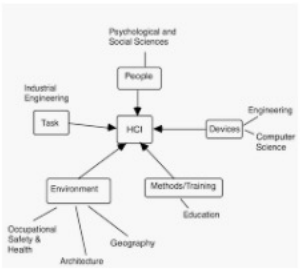

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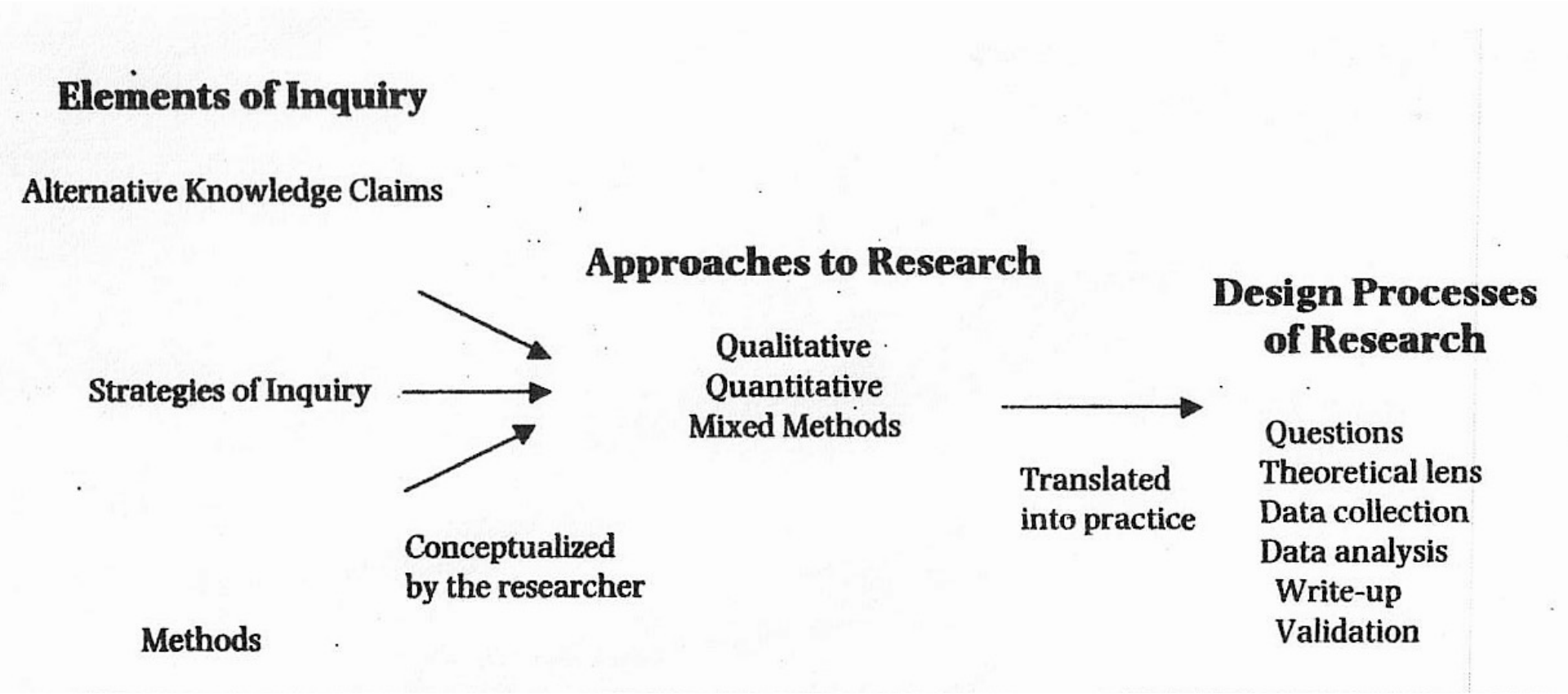
epistemology

/ɪˌpɪstɪˈmɒlədʒi,ɛˌpɪstɪˈmɒlədʒi/

noun PHILOSOPHY

the theory of knowledge, especially with regard to its methods, validity, and scope, and the distinction between justified belief and opinion.



Creswell, J. W. (2003). Chapter 1: A framework for design. Research design: qualitative, quantitative and mixed methods. Sage Publications, Thousand Oaks, CA.

Alternative knowledge claim positions

Postpositivism Determination Reductionism Empirical observation and measurement Theory verification	**Constructivism** Understanding Multiple participant meanings Social and historical construction Theory generation
Advocacy/Participatory Political Empowerment issue-oriented Collaborative Change-oriented	**Pragmatism** Consequences of actions Problem-centered Pluralistic Real-world practice oriented

Creswell, J. W. (2003). Chapter 1: A framework for design. Research design: qualitative, quantitative and mixed methods. Sage Publications, Thousand Oaks, CA.

Research Approach	*Knowledge Claims*	*Strategy of Inquiry*	*Methods*
Quantitative	Postpositivist assumptions	Experimental design	Measuring attitudes, rating behaviors
Qualitative	Constructivist assumptions	Ethnographic design	Field observations
Qualitative	Emancipatory assumptions	Narrative design	Open-ended interviewing
Mixed methods	Pragmatic assumptions	Mixed methods design	Closed-ended measures, open-ended observations

Figure 1.2 Four Alternative Combinations of Knowledge Claims, Strategies of Inquiry, and Methods

Creswell, J. W. (2003). Chapter 1: A framework for design. Research design: qualitative, quantitative and mixed methods. Sage Publications, Thousand Oaks, CA.

Q1 Short Answer Question

Write one research question and method about videogame play, from each knowledge claim position.

Postpositivism Determination Reductionism Empirical observation and measurement Theory verification	**Constructivism** Understanding Multiple participant meanings Social and historical construction Theory generation
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The three paradigms of HCI

	Paradigm 1	Paradigm 2	Paradigm 3
Metaphor of interaction	Interaction as man-machine coupling	Interaction as information communication	Interaction as phenomenologically situated
Central goal for interaction	Optimizing fit between man and machine	Optimizing accuracy and efficiency of information transfer	Support for situated action in the world
Typical questions of interest	How can we fix specific problems that arise in interaction?	▪ What mismatches come up in communication between computers and people? ▪ How can we accurately model what people do? ▪ How can we improve the efficiency of computer use?	▪ What existing situated activities in the world should we support? ▪ How do users appropriate technologies, and how can we support those appropriations? ▪ How can we support interaction without constraining it too strongly by what a computer can do or understand? ▪ What are the politics and values at the site of interaction, and how can we support those in design?


itchin' Betty" Says Farewell: Beloved Voice B...
Watch later
Betty: Pull up! Pull up!
EOS
0:03 / 1:38
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	Paradigm 1	Paradigm 2	Paradigm 3
Legitimate kinds of knowledge	Pragmatic, objective details	Objective statements with general applicability	Thick description, stakeholder "care-abouts"
How you know something is true	You tried it out and it worked.	You refute the idea that the difference between experimental conditions is due to chance	You argue about the relationship between your data(s) and what you seek to understand.
Values	▪ reduce errors ▪ ad hoc is OK ▪ cool hacks desired	▪ optimization ▪ generalizability wherever possible ▪ principled evaluation is *a priori* better than ad hoc, since design can be structured to reflect paradigm ▪ structured design better than unstructured ▪ reduction of ambiguity ▪ top-down view of knowledge	▪ Construction of meaning is intrinsic to interaction activity ▪ what goes on around systems is more interesting than what's happening at the interface ▪ "zensign" – what you don't build is as important as what you do build ▪ goal is to grapple with the full complexity around the system

Q2 Short Answer Question

Thinking of a project topic you're interested in, how would the research question and methods change if approached from each paradigm?

	Paradigm 1	**Paradigm 2**	**Paradigm 3**
Legitimate kinds of knowledge	Pragmatic, objective details	Objective statements with general applicability	Thick description, stakeholder "care-abouts"
How you know something is true	You tried it out and it worked.	You refute the idea that the difference between experimental conditions is due to chance	You argue about the relationship between your data(s) and what you seek to understand.

Summary

- Three theoretical approaches to design: conservative, pragmatic and romantic
- Four major types of epistemology: postpositivism, constructivism, advocacy/participatory, pragmatism
- Academic knowledge claim contributions based on the standards of the epistemological foundation
- Historically, HCI has gone through three paradigms:
  - 1) man-machine coupling,
  - 2) optimizing accuracy/efficiency
  - 3) understanding situatedness, phenomenology
- Research articles have underlying epistemology shown through their questions, methods, and claims

Up next...

- Preparing for the literature review presentation