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Research methods from the social sciences in human computer interaction

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Research Methods from the Social Sciences in Human Computer Interaction

Norman G. Vinson,
Jean-François Lapointe
Irina Kondratova

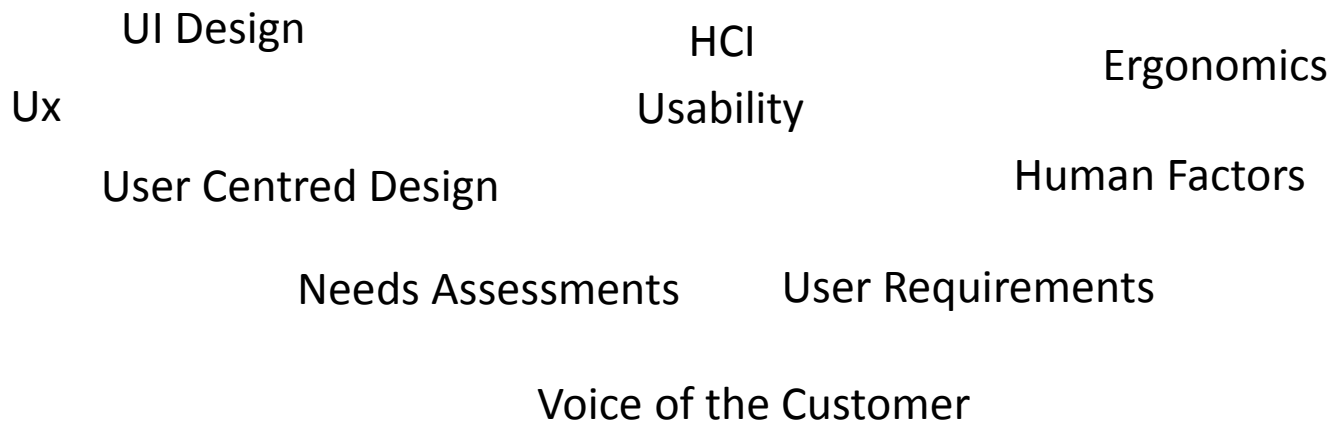


Outline

- Human Computer Interaction (HCI)
 - HCI, Ux, Usability, Human Factors, etc
- Methods
 - Field Methods
 - Ethnographic Methods
 - Interviews
 - Field Tests
 - Ethical Issues
 - Questionnaires & Surveys
 - Lab Experiments
- Relationships between methods

Human Computer Interaction (HCI) vs Usability

- Substantial overlap
- Effective efficient and satisfying use of computing technology
 - HCI = science -> general principles
 - Usability = practice -> specific product
 - NRC does both
- Many Related Terms



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Ethnographic Methods

- Observation (Nardi, 1997)
- Uses
 - Typically more focussed than classic anthropology studies
 - Needs assessment
 - Observation & documentation of workflows/processes
 - Development of use cases
- Example:
 - Examination of software engineers' work practices (Singer et al 1997/2010)

Interviews

- Often semi-structured
 - Specific questions, but open ended
- Responses coded as a function of topics of investigation
 - Summary statistics produced
 - Example
 - Interviews of nurses on medication distribution process (Sirois et al, 2013)
 - Frequency of missing doses
 - Useful for rare events that cannot be readily observed
 - Critical Incident Technique (Flanagan, 1954)

Field Tests

- Test a technology in the field, in real world
 - Tech has to work
 - Testing a product (but depends)
 - Similar to usability testing
- Quantitative or qualitative
- Example:
 - Developed software running on small tablets (iPad-like) for users to support their learning
 - Tested with real students taking classes (Munteanu et al 2012)

Field Methods: Ethical Issues

- Consent for Workplace Research
 - Consent from the organization
 - Consent from the employees
 - Undue Influence
 - Employee's work responsibilities (Vinson & Singer, 2004)
- Privacy & Confidentiality
 - Can employees be identified
 - Also a practical issue
- Difficult situations
 - Observing/recording behaviour that is not “by the book”
 - Safety violations
 - Theft

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Questionnaires and Surveys

- To confirm & generalize observation/interview findings
- Usability testing
 - User satisfaction questionnaire
 - <https://www.usability.gov/how-to-and-tools/methods/online-surveys.html>
 - Developed a video player with video-manipulating features (e.g. looping segments) for musician self-observation (Emond et al 2007)
 - Technology Acceptance Model (Davis, 1989)
 - Validated
 - Predicts whether people will use a technology
 - Ease of use, usefulness, intention to use

Questionnaires and Surveys

› Ethical Issues

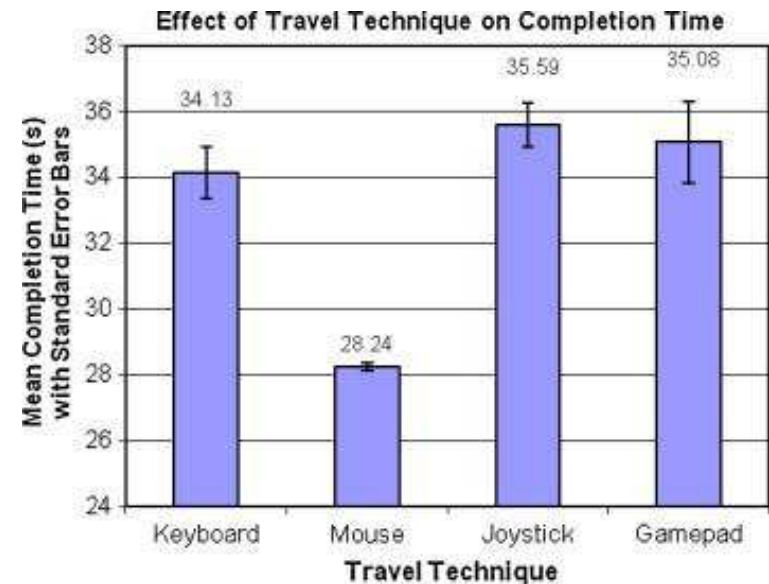
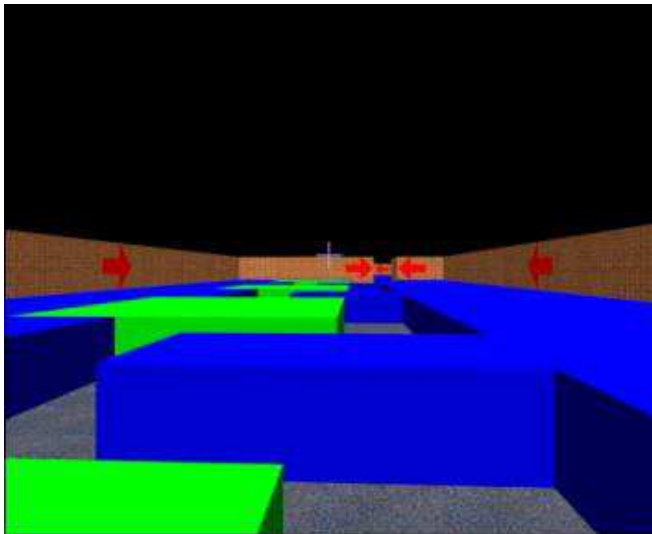
- Procedure not invasive
- Little contact with researchers
- Questions can pose a risk
 - Which of the following trigger your PTSD (please check all that apply)
 - On the following scale, rate your manager's competence

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Lab Experiments

- › Scientific research lab experiments
- › Typically involve a comparison of behaviour under different conditions
- › Focus on very very specific questions
- › Example: navigation with different input devices
 - a keyboard, a mouse, a joystick and a gamepad



Lab Experiments


- › Usability Testing is usually a type of lab experiment
 - Observe users scripted task performance
 - Follow a scenario
 - Take note of difficulties
 - Example: Flu assessment website
 - Can include questionnaire/survey
- › Remote usability testing
 - › Usability testing as above, but over the internet
 - Scenario (loop11)
 - A/B testing
 - Compare website 1 to website 2
 - Measure behaviour
 - Like sales “conversions”

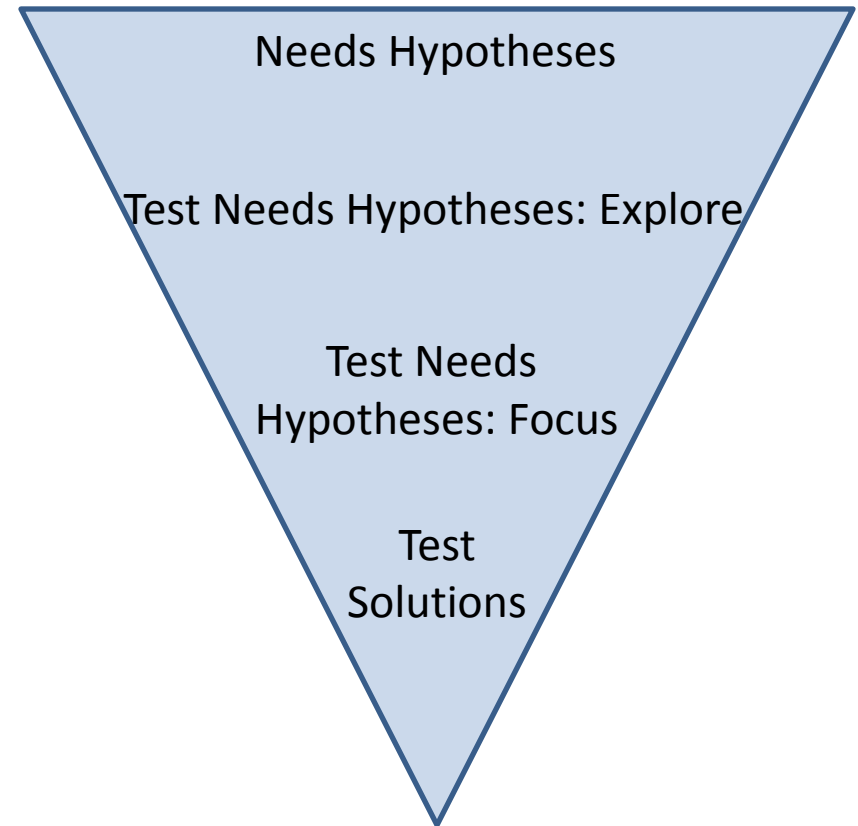
Lab Experiments

› Ethical Issues

- Typically very low risk in HCI
- Easy to follow consent procedures

Relationships

- 
- Ethnographic Methods
 - Interviews
 - Questionnaires & Surveys
 - Lab Experiments
 - Field Tests



Thank you

