About HCI (Interdisciplinary) Research

(Part 2)

Close your laptops please

First…

What type of researcher are you? What's your desire?

Key comment about his talk: bad pancakes matter

Interdisciplinary work

Is very powerful

- Unique insights at the edges and between traditional disciplines
- Etc… (you already believe this)

Bob's take on Interdisciplinary work

Is very powerful

It's also hard to do

- Higher probability of failure
  - Getting the work done
  - Keeping the group together
  - Satisfying members
- It takes explicit effort to make it work
  - E.g., have to learn a lot about "the other side" just to be able to talk
    - burning issues, criteria for success, methodology to use, etc. likely much less obvious
  - Newell's take: don't just learn about, but become each but become each discipline
    - E.g. for cog sci: not just that they pass studies back and forth but KNOW the studies.

The following studies provide data that shows this.
- Bob

Diversity is a double edged sword

Diversity on job-related dimensions seems to

- Bring more ideas & skills into a group
- Increase contact with stakeholders outside the group
- Increase innovation and problem solving
- Decrease internal communication quality

Diversity (of many types, including functional area)

- Increases tension & conflict
- Decreases cohesion

Effects seems to decline with tenure

Model of Group Diversity
(Williams & O'Reilly)

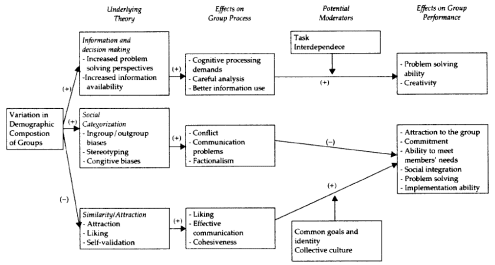

Figure 1. An Integrated Model of Demographic Impacts on Group Process and Performance

Recent Meta-Analysis: De Dreu & Weingart (2003) Task Versus Relationship Conflict

Theory:

- Relationship conflict: Interpersonal disagreements harms satisfaction
- Task conflict: Disagreements about the task & how to perform it improve performance

Relationship conflict

- To what extent are personality clashes present in your work group?
- How much anger is present in your work group?
- How much emotional conflict is there in your work group?

Task conflict

- To what extent are there differences of opinions regarding the task in your work group?
- How frequently are there disagreements about the task you are working on in this work group?
- How often do people in your work group disagree about the work being done?

Method

Analysis of data from 28 studies measuring the types of conflict, work performance, & member satisfaction

Types of tasks:

- Production (routine)
- Decision-making (semi-complex)
- Project (complex)

Results (bad news…)

Two types of conflict highly correlate (average r=.51)

Both types of conflict are associated with poorer satisfaction & poorer production

Outcome and conflict type	k	N	r_{obs}
Team member satisfaction			
Task conflict	12	1,048	−.27
Relationship conflict	14	1,370	−.48
Team performance			
Task conflict	25	1,726	−.19
Relationship conflict	24	1,808	−.19

- Negative aspects of relationship conflict on satisfaction is strongest
- Negative effects are weaker for simple, production tasks
- But no overall positive effect of conflict

Interdisciplinary work

Is very powerful

It's also hard to do

"Interdisciplinary work is hard, don't let anybody tell you otherwise. You have to work at it every day" - Scott

Working at it…

Effective Meetings

- Plan Ahead
  - Come prepared; provide key stuff before meeting
  - Agenda = Topic + Desired Outcome + Process
- Prioritize
  - Focus on the most important/most difficult first
- Plot
  - closure: end with goals for the next steps

Discussion Methods

1 Brainstorming

- Short time limit; No criticism
- Record ideas
- At end, categorize ideas

2 Open Discussion

- Planned Time out (N minutes)
- Assess level of agreement
- Iterate
- Decide (vote; unanimity; delegate; etc)

. *Divergence followed by Convergence is normal AND is a struggle to achieve*

Communication is key

Pro-active speaking
- You ___ escalates
- I feel ___ when you ____ because _____

Active listening
- Listen; Understand AND Summarize back

Negotiation: try to meet all interests
- Requires that you know what they are

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Disciplinary Differences

Interdisciplinary work involves differences of outlook, direction, methodology, etc.

Differences can be hard to deal with
- Academics in particular can be very conservative
- Goals can conflict
- Communication can be hard

But understanding of differences can help

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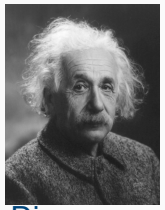
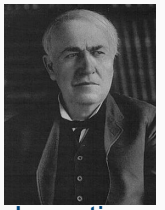
Review: Differences in HCI

At least two major related but distinct activities in what we do



Activities of



Discovery

Invention

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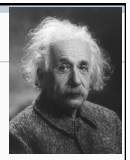
Discovery (Science)



Central goal: Discover facts about the world
- Finding truths
- Applying the fact is an added bonus, but uncovering the facts themselves is central
- *Method validity is very important* (must KNOW its true)

Progress by deciding between theories that predict the same gross phenomena, differing in the more detailed phenomena
- Larger "framing" truths → smaller detailed truths
- Deconstructionist

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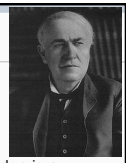
Invention (Engineering)



Central Goal: Building new things that didn't exist before
- The thing produced is central
  - Methodology less important; knowledge is a tool but not the goal
  - *Innovation and re-usability are very important*
  - *How/that things work matters*
- Progress by building bigger/more complex things from simpler parts
  - Simple parts → complex whole
  - Constructionist / Synthetic

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Invention (Design)

Central Goal: Building the right thing
- The thing produced is central
  - Methodology less important; knowledge is a tool but not the goal
  - How things work is also not central
  - *Relevance is key*
- The Artifact is the result
  - Encodes a solution to a complex, "wicked" problem
  - Holistic approach includes parts and whole
  - Field data is often central
  - Theory and reflection also important

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An observation about types of HCI researchers

Scientists are interested in the low order bits

Designers and Computer Scientists are interested in the high order bits

Overall leads to differences in values

Social science	Engineering	Design
• Goal is understanding: What makes social / technical systems tick? What are the effects?		
➢ Value on generalizing & stripping away details		

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➢ Value on generalizing & stripping away details	➢ Value: The devil is in the details	

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• Method: Examine bivariate (low order) relat. among variables, all else being equal		
➢ Value: Elegance in data collection & analysis		

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• Goal is understanding: What makes social / technical systems tick? What are the effects?	• Goal is the artifact: How can I make it work?	• Goal is the artifact: Why does it matter?
➢ Value on generalizing & stripping away details	➢ Value: The devil is in the details	➢ Value: The devil is in the details
• Method: Examine bivariate (low order) relat. among variables, all else being equal	• Engineering demands understanding complex relationships	
➢ Value: Elegance in data collection & analysis	• Method: Analysis + intuition → artifact	
	➢ Value: Elegance in design	

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Social science	Engineering	Design
• Goal is understanding: What makes social / technical systems tick? What are the effects?	• Goal is the artifact: How can I make it work?	• Goal is the artifact: Why does it matter?
➢ Value on generalizing & stripping away details	➢ Value: The devil is in the details	➢ Value: The devil is in the details
• Method: Examine bivariate (low order) relat. among variables, all else being equal	• Engineering demands understanding complex relationships	• Design demands understanding the whole
➢ Value: Elegance in data collection & analysis	• Method: Analysis + intuition ➔ artifact	• Method: a craft
	➢ Value: Elegance in design	Value: creating the right thing. Explaining/ generalizing a bonus

Other subtle differences

Different cultural roots (lots of subtle effects)

- *E.g. for design:* Some roots in fine arts/crafting (very different mindset); Teaching has much more central role for academics; More tied to practice

Vocab differences: discuss:

- Theory (what does it mean in each discipline?)
- Significant
- Elegan

Validation – how do you know when something is good?

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Specific effects of the differences

Discussion…

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Issue: Specialization vs. Unification

Should you be preparing to be an HCI researcher, or a researcher in one of the disciplines who does HCI?

Discussion

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