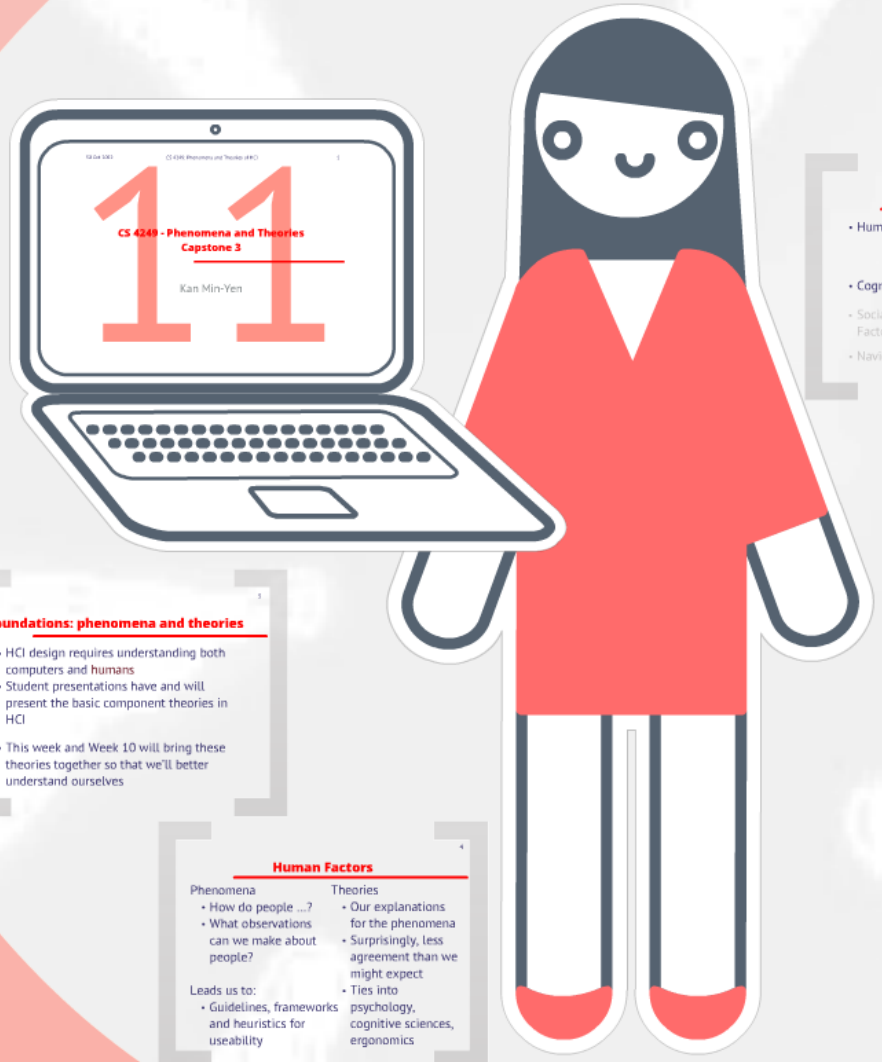
CS 4249 - Phenomena and Theories
Capstone 3

Kan Min-Yen

Crowdsourcing



Outline

- Human Information Processing
  - Memory and Attention
  - Human Abilities
- Cognitive Models
- Social, Emotional and Affective Factors
- Navigation and Wayfinding

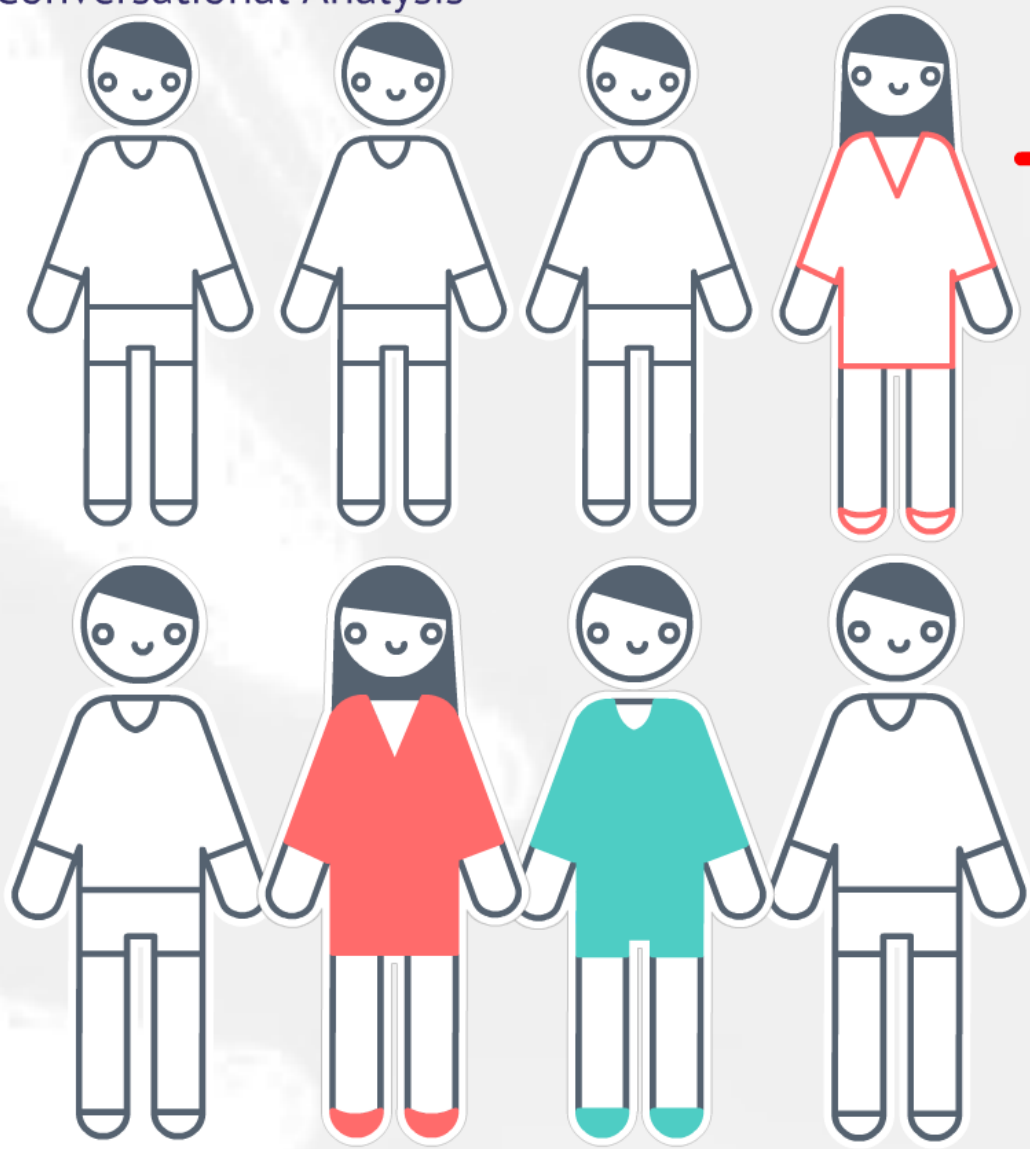
Foundations: phenomena and theories

- HCI design requires understanding both computers and humans
- Student presentations have and will present the basic component theories in HCI
- This week and Week 10 will bring these theories together so that we'll better understand ourselves

Human Factors

Phenomena	Theories
• How do people ...?	• Our explanations for the phenomena
• What observations can we make about people?	• Surprisingly, less agreement than we might expect
Leads us to:	• Ties into psychology, cognitive sciences, ergonomics
• Guidelines, frameworks and heuristics for useability	

Collective Effort Model
Social Loafing
Conversational Analysis

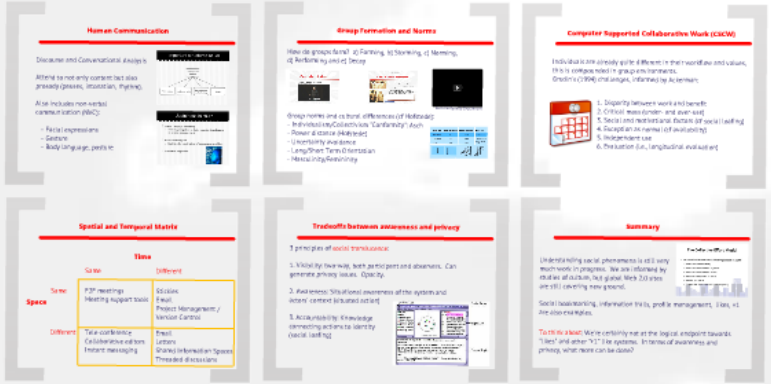


Social Interaction

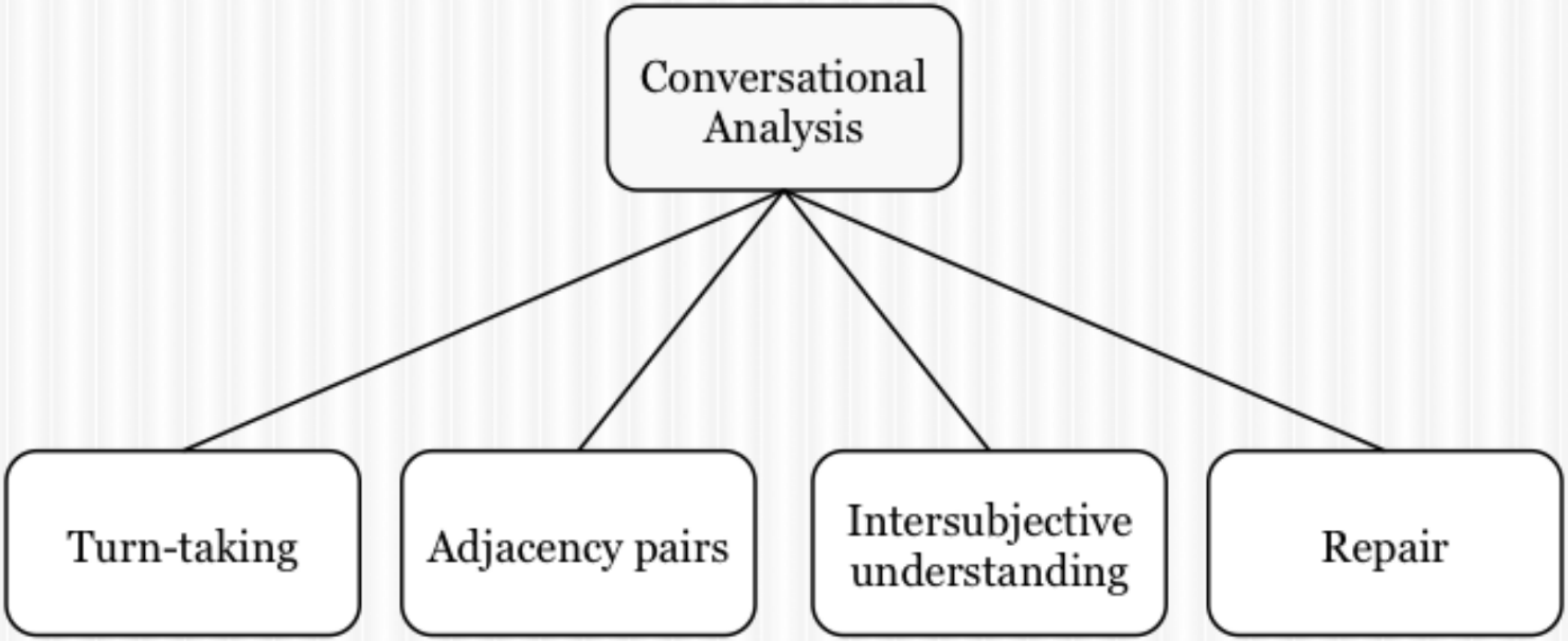
Human communication

Group Dynamics

Challenges in Computer Supported Collaborative Work



Important structures of CA



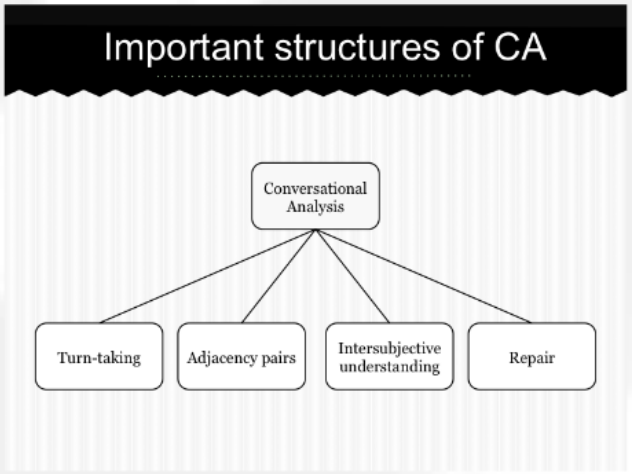
Human Communication

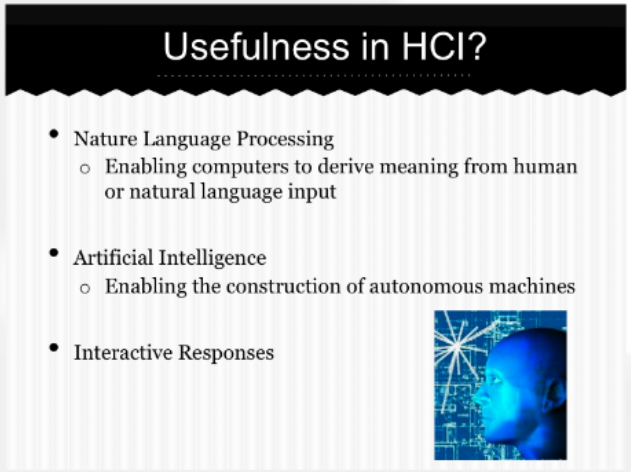
Discourse and Conversational Analysis

Attend to not only content but also prosody (pauses, intonation, rhythm).

Also includes non-verbal communication (NVC):

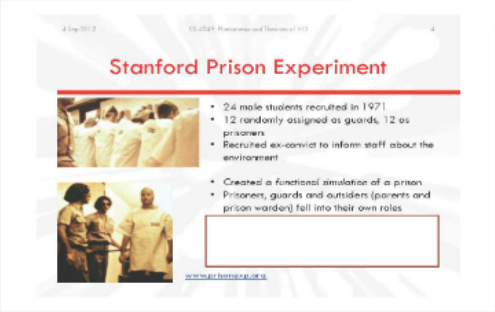
- Facial expressions
- Gesture
- Body language, posture





Group Formation and Norms

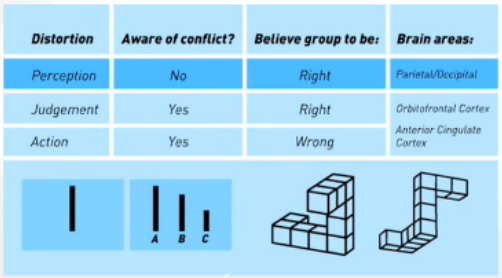
How do groups form? a) Forming, b) Storming, c) Norming, d) Performing and e) Decay



Asch Conformity Experiment

Group norms and cultural differences (cf Hofstede):

- Individualism/Collectivism "Conformity": Asch
- Power distance (Hofstede)
- Uncertainty avoidance
- Long/Short Term Orientation
- Masculinity/Femininity



Distortion	Aware of conflict?	Believe group to be:	Brain areas:
Perception	No	Right	Parietal/Occipital
Judgement	Yes	Right	Orbitofrontal Cortex
Action	Yes	Wrong	Anterior Cingulate Cortex

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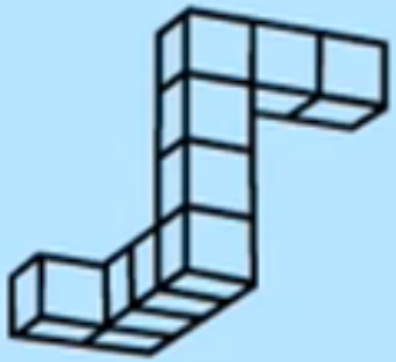

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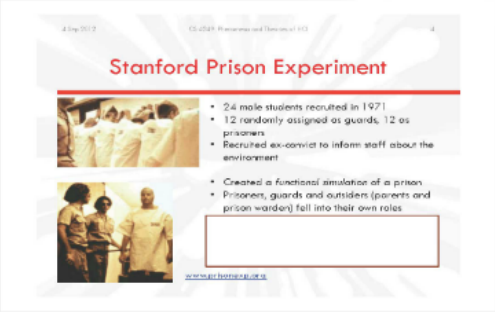

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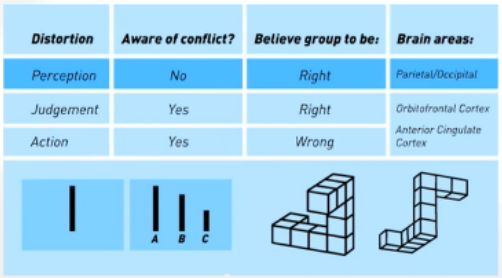

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Computer Supported Collaborative Work (CSCW)

Individuals are already quite different in their workflow and values, this is compounded in group environments.
Grudin's (1994) challenges, informed by Ackerman:

1. Disparity between work and benefit
2. Critical mass (under- and over-use)
3. Social and motivational factors (cf social loafing)
4. Exception as normal (cf availability)
5. Independent use
6. Evaluation (i.e., longitudinal evaluation)

Spatial and Temporal Matrix

Space	Time: Same	Time: Different
Same	F2F meetings Meeting support tools	Stickies Email Project Management / Version Control
Different	Tele-conference Collaborative editors Instant messaging	Email Letters Shared Information Spaces Threaded discussions

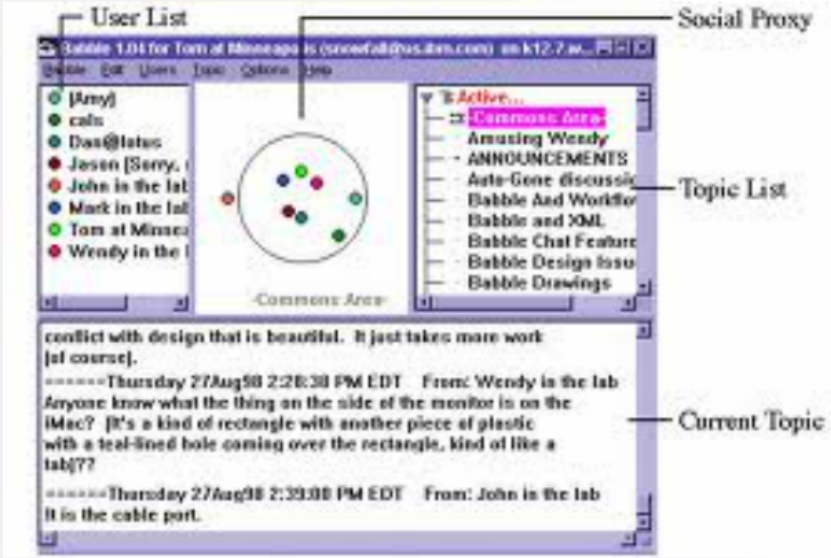
Tradeoffs between awareness and privacy

3 principles of social translucence:

1. Visibility: two-way, both participant and observers. Can generate privacy issues. Opacity.

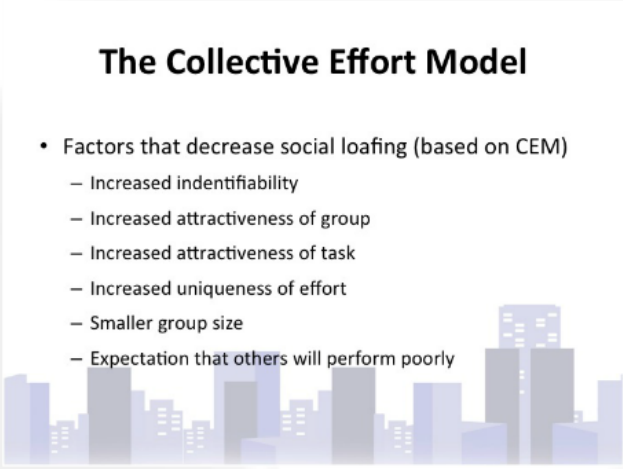
2. Awareness: Situational awareness of the system and actors' context (situated action)

3. Accountability: Knowledge connecting actions to identity (social loafing)



Summary

Understanding social phenomena is still very much work in progress. We are informed by studies of culture, but global Web 2.0 sites are still covering new ground.

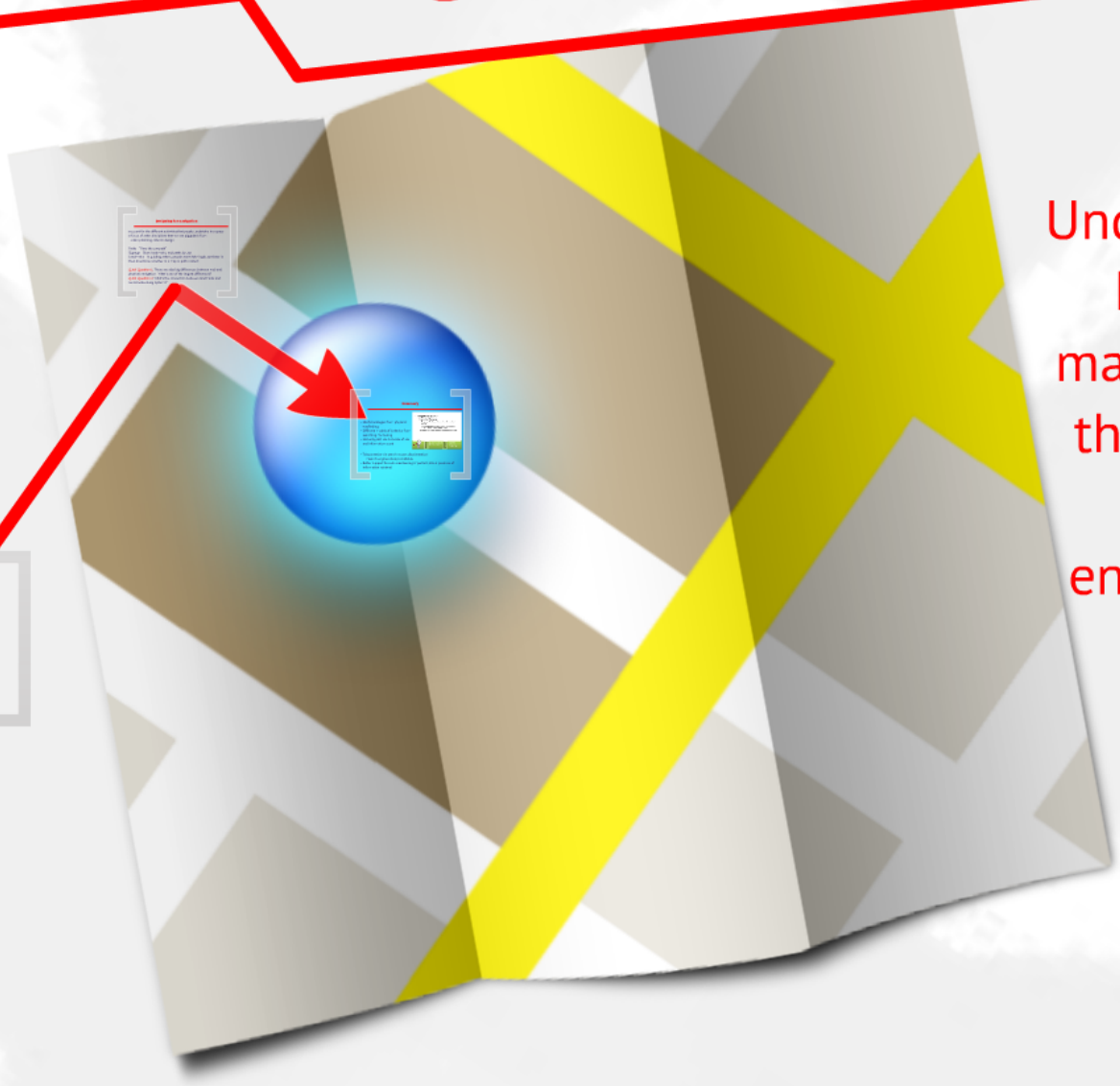


Social bookmarking, information trails, profile management, likes, +1 are also examples.

To think about: We're certainly not at the logical endpoint towards "likes" and other "+1" like systems. In terms of awareness and privacy, what more can be done?

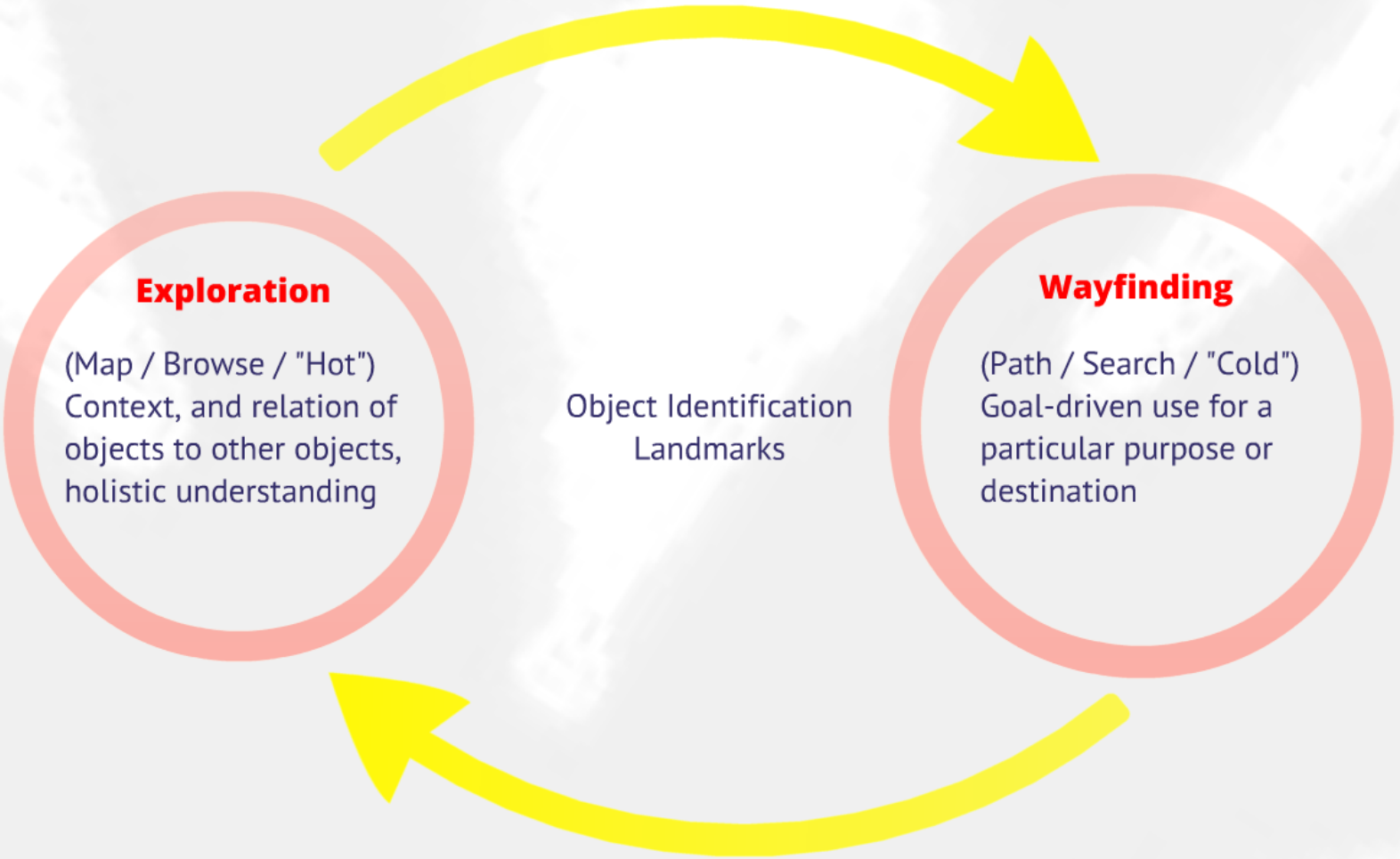
Information Scent
Berrypicking

Navigation



Understanding how people make sense of their physical and virtual environments

Navigation


Exploration
(Map / Browse / "Hot")
Context, and relation of objects to other objects, holistic understanding
Object Identification
Landmarks
Wayfinding
(Path / Search / "Cold")
Goal-driven use for a particular purpose or destination

Information Foraging and Berrypicking

- For tasks that are not completely well-formed.
- Rely on multiple sources, use strategies that work in other contexts.
- Connections to distributed cognition and CSCW.

- Change of source after taking some information

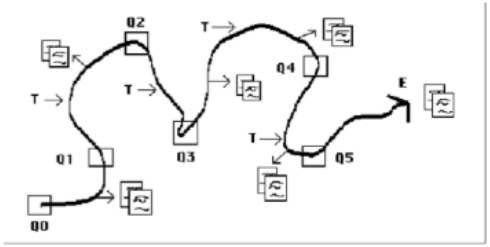


Image courtesy of http://pages.gseis.ucla.edu/faculty/bates/berrypicking.html

- Six strategies widely used
  - Footnote chasing
  - Citation searching
  - Journal run
  - Area scanning
  - Subject searches in bibliographies and abstracting and indexing (A & I) services
  - Author searching

What are the related methodologies in (web) information seeking tasks?

Berrypicking
Traditional Search Model
Evolutional Search Model
Applications to HCI
Information Foraging
Diet Selection
Patch Leaving
Information Scent
Application to HCI

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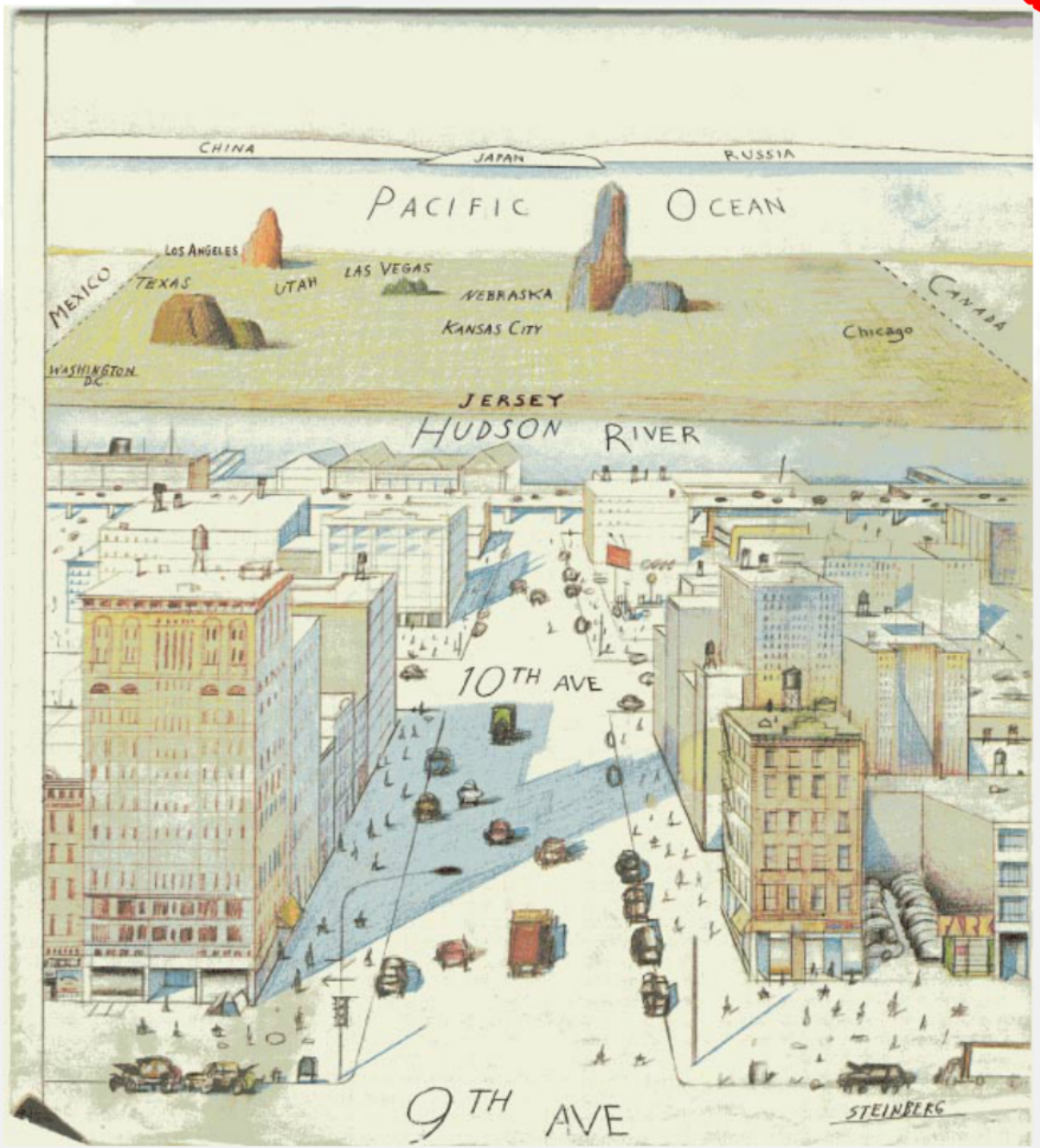
View of the World from 9th Avenue
The New Yorker, Saul Steinberg



Designing for navigation

Account for the different activities that people undertake in a space.
A focus of other disciplines that we can piggyback from:
urban planning, interior design.

Paths - "Pave the cowpath"
Signage - Show landmarks, and paths by use
Landmarks - In guiding others, people overwhelmingly use these in their directions, whether in a map or path context.

Quick Question 1: There are also big differences between web and physical navigation. What's one of the largest differences?
Quick Question 2: What's the connection between landmarks and social networking systems?

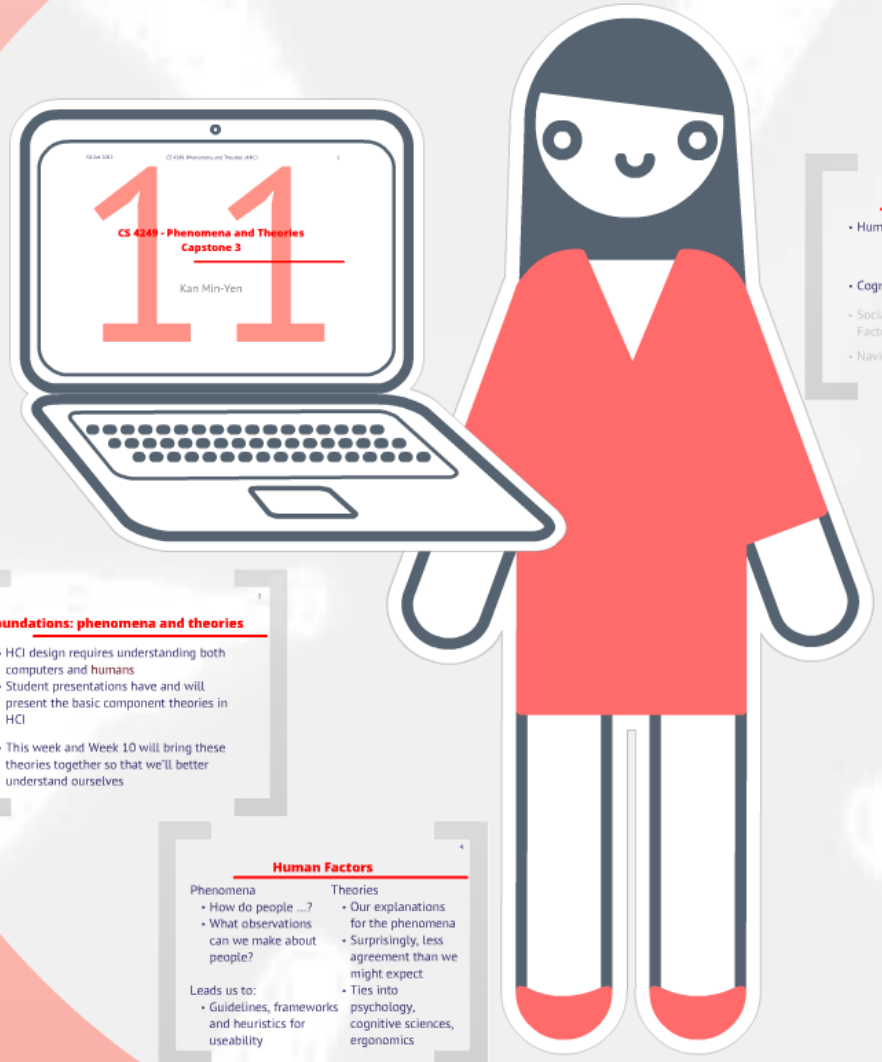
Summary

- Useful analogies from physical wayfinding
- Different models of behavior from searching / browsing
- Not only past use but ease of use and information scent

- Things to Take Away
  - Information Foraging
    - People prefer the *easiest* and *most beneficial* source
    - Must create a good *scent, clearly* suggesting to users a source has what they need
    - Retain users loyalty by encouraging user to stay

- Teleportation via search causes disorientation
  - Search engines always available
- Better support for web orienteering important, also a province of information retrieval.

Crowdsourcing



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