Social & Mobile Computing

DECO3500/7350 Semester 2 2017

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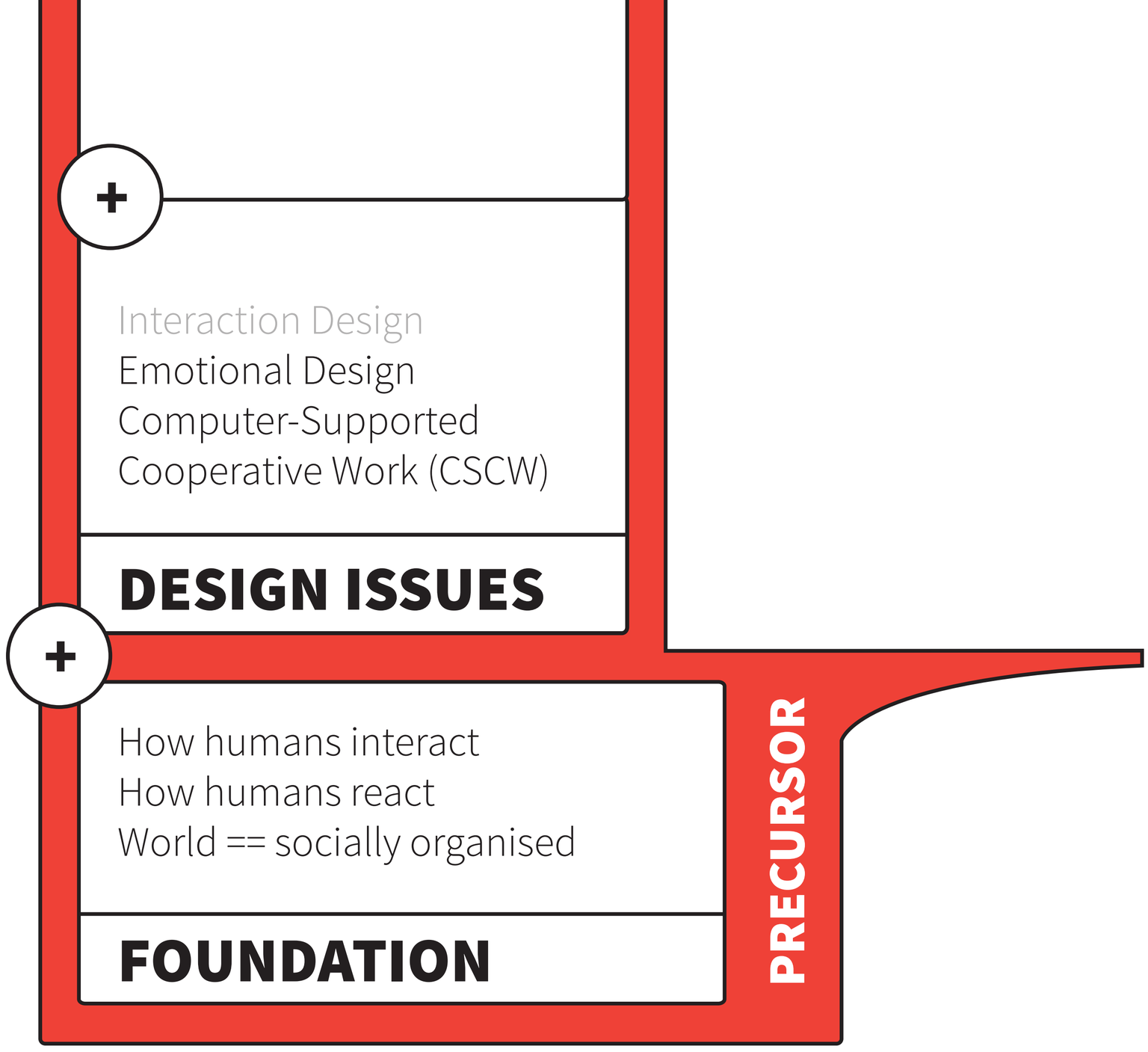
Today...

- Foundations
  - CSCW Origins
  - How humans interact
  - How humans react
- Project Problem Domains
  - Ageing - Jacki
  - Education - Marie Boden
  - Communities - Lorna

Foundations



CSCW Origins

Computer Supported Cooperative Work

- Research area borne out of traditional HCI
- Term coined by Irene Greif & Paul Cashman in 1984 workshop
  - AKA Groupware, Social Software (early)

Human interaction through & around computers

Broadened to “things that people do”

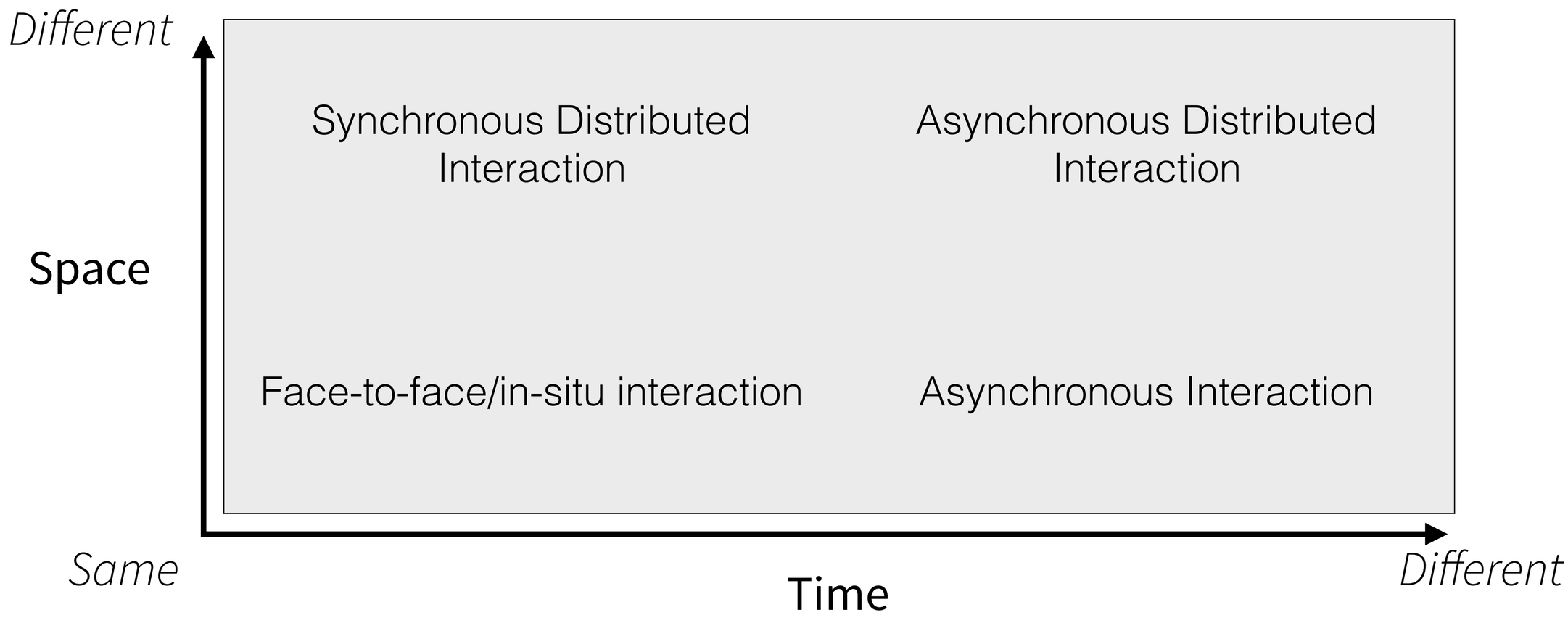
HCI with a group/social focus

Groupware Time-Space Matrix

	Same Time	Different Times
Different places (Remote)	Synchronous Distributed Interaction (Telephone, video-conf, IM)	Asynchronous Distributed Interaction (Letter, Email, SMS)
Same place (Co-located)	Face-to-face interaction (Conversation, meeting)	Asynchronous Interaction (Post-it, Bulletin Board)

Builds on matrix proposed by Dix et al. Human-Computer Interaction (3rd Edition) p665 & p691. 2004

Groupware Time-Space



Builds on matrix proposed by Dix et al. Human-Computer Interaction (3rd Edition) p665 & p691. 2004

Not just technology

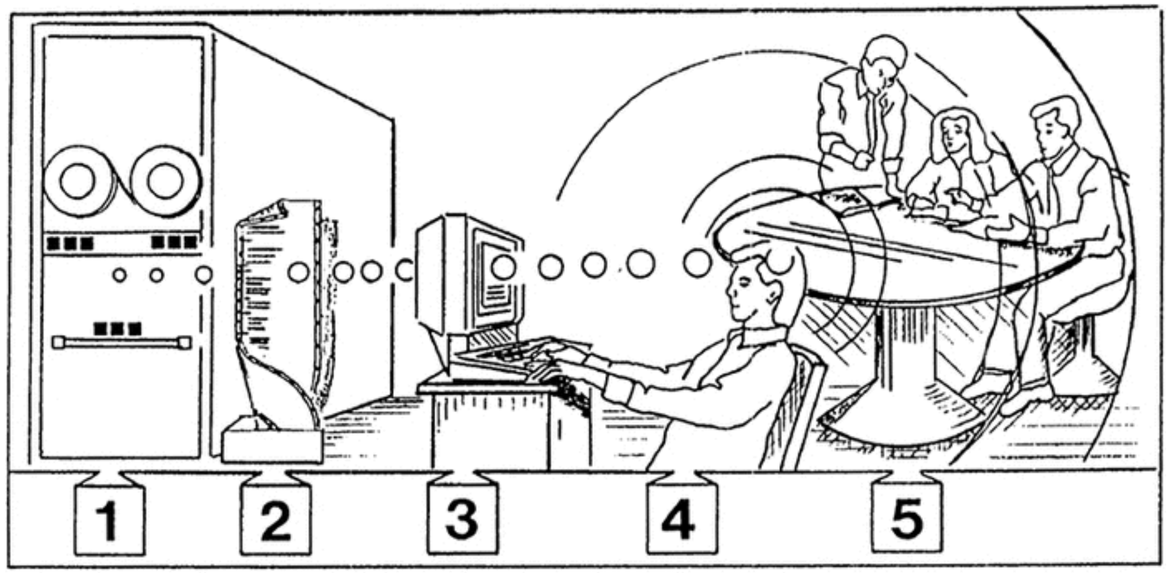


Figure 1. The five foci of interface development.

Interaction occurs not only with but around the technology

Key studies revealed importance of understanding broader social context (Air Traffic Control, London Underground & Ambulance Dispatch)

R. Bentley, J. A. Hughes, D. Randall, T. Rodden, P. Sawyer, D. Shapiro, and I. Sommerville. 1992. Ethnographically-informed systems design for air traffic control. In Proceedings of the 1992 ACM conference on Computer-supported cooperative work (CSCW '92). ACM, New York, NY, USA, 123-129. DOI=http://dx.doi.org/10.1145/143457.143470

Blandford, Ann, et al. "Multiple viewpoints on computer supported team work: a case study on ambulance dispatch." People and Computers XVI-Memorable Yet Invisible. Springer London, 2002. 139-156.

Heath, Christian, and Paul Luff. "Collaboration and control Crisis management and multimedia technology in London Underground Line Control Rooms." Computer Supported Cooperative Work (CSCW) 1.1-2 (1992): 69-94.
APA

Image from Jonathan Grudin. 1990. The computer reaches out: the historical continuity of interface design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '90), Jane Carrasco Chew and John Whiteside (Eds.). ACM, New York, NY, USA, 261-268. DOI=http://dx.doi.org/10.1145/97243.97284

Factors in human-human interaction

Conversation

Coordination

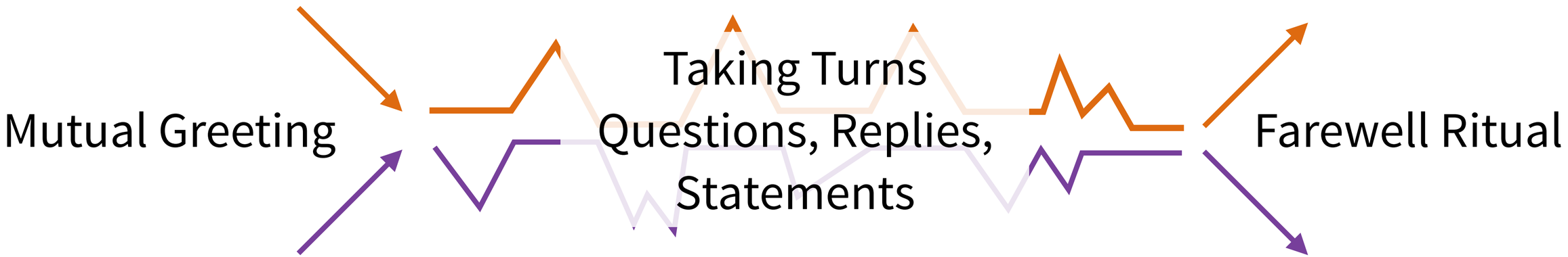
Awareness

>> Collaboration

Conversation

Complex process requiring skill

Typical conversation comprises



Implicit & explicit cues for what to do

More than just speaking

Conversations

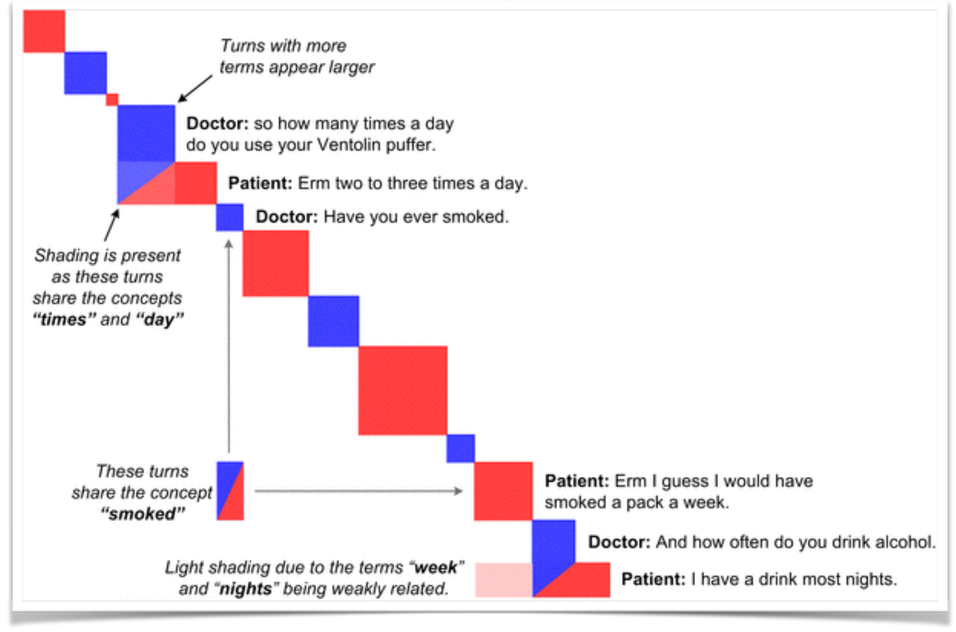
Amy & Sheldon, Pass the Butter, Big Bang Theory

https://www.youtube.com/watch?v=vkSwXL3cGUg

GirlBoss, Chatroom Scene

https://www.youtube.com/watch?v=lVGaok_aTXg

Conversation Analysis



Branch of social inquiry - study of “talk”

Understanding conversation, how it takes place (highly detailed)

H. Sacks, E. Schegloff & G. Jefferson. 1978.

Detailed study into rules of turn-taking in conversation

A Simplest Systematics for the Organization of Turn-Taking for Conversation in Language Vol 50, No.4

Discursis (Dan Angus, Andrew Smith & Janet Wiles)

Tool for visualising & analysing 2-person conversation

Image : Figure 1. Conceptual Recurrence Plot of 13 utterances and 4 corresponding recurrence elements from a Doctor/Patient consultation. from Angus D, Watson B, Smith A, Gallois C, Wiles J (2012) Visualising Conversation Structure across Time: Insights into Effective Doctor-Patient Consultations. PLoS ONE 7(6): e38014. https://doi.org/10.1371/journal.pone.0038014

Conversation Breakdowns

People not generally aware of the rules they follow

Sometimes deliberately broken

- Interrupting, talking over someone, not responding

Repair ambiguities & misunderstandings

Mechanisms for repair

- Repetition, intonation, gesture, facial expression, conversational tokens

Formal & Informal Communication

Formal

- Job interview, board meeting, wedding ceremony
- Predetermined roles, script & types of turns

Informal

- Coffee machine, walking down the street
- Idle chat, gossip, weather
- Team building, coordinating group work, reinforcing culture

Interesting when modes mix

Factors that influence what mode we use (context)

Coordination

Working as a group to achieve a common goal

- Software development, air traffic control, move a couch, team sports

Mechanisms to manage

Verbal & non-verbal communication (in the moment)

- Commands, nodding, glance, gesture

Schedules, rules & conventions (around the moment)

- Timetabling, road rules, clearing the table

Shared external representations (of the moment)

- Shared calendars, checklists, forms

Awareness

Knowing who is around, what is happening & who is talking to them

What we choose to make available about ourselves

Shared knowledge of what each other is doing

Limited resource that we direct & focus

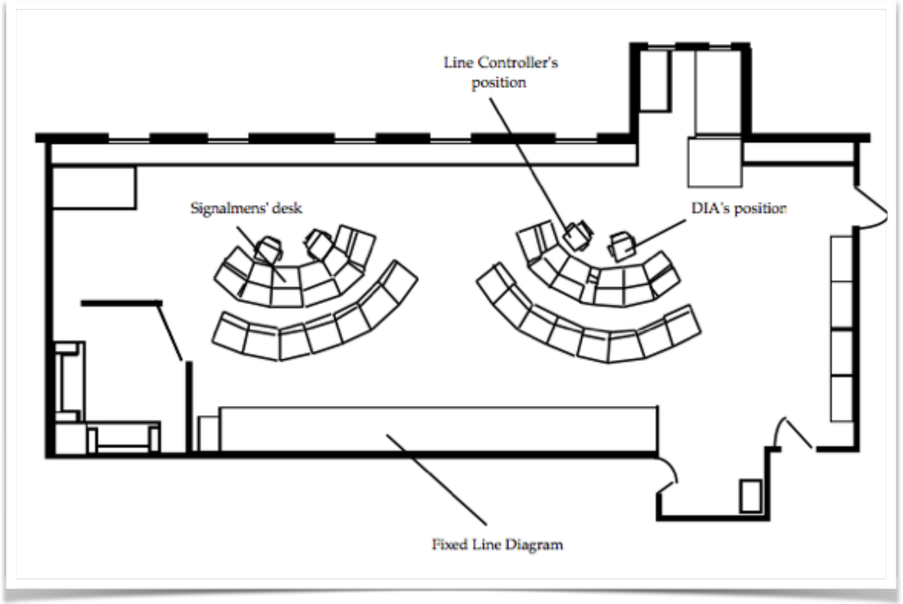
Peripheral/Focused

Different facets to awareness

- active/passive, synchronous/asynchronous, workspace, context

Paul Dourish and Sara Bly. 1992. Portholes: supporting awareness in a distributed work group. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '92), Penny Bauersfeld, John Bennett, and Gene Lynch (Eds.). ACM, New York, NY, USA, 541-547. DOI=http://dx.doi.org/10.1145/142750.142982

Awareness in CSCW



Study of control rooms (Air Traffic Control, London Underground, Dispatch)

A lot of activity in one place, complex tech

London Underground

Shared view of screens & line diagram

Different roles monitored each other (but rarely directly communicate)

Each role gave a running verbal commentary

Heath, Christian, and Paul Luff. "Collaboration and control Crisis management and multimedia technology in London Underground Line Control Rooms." Computer Supported Cooperative Work (CSCW) 1.1-2 (1992): 69-94.

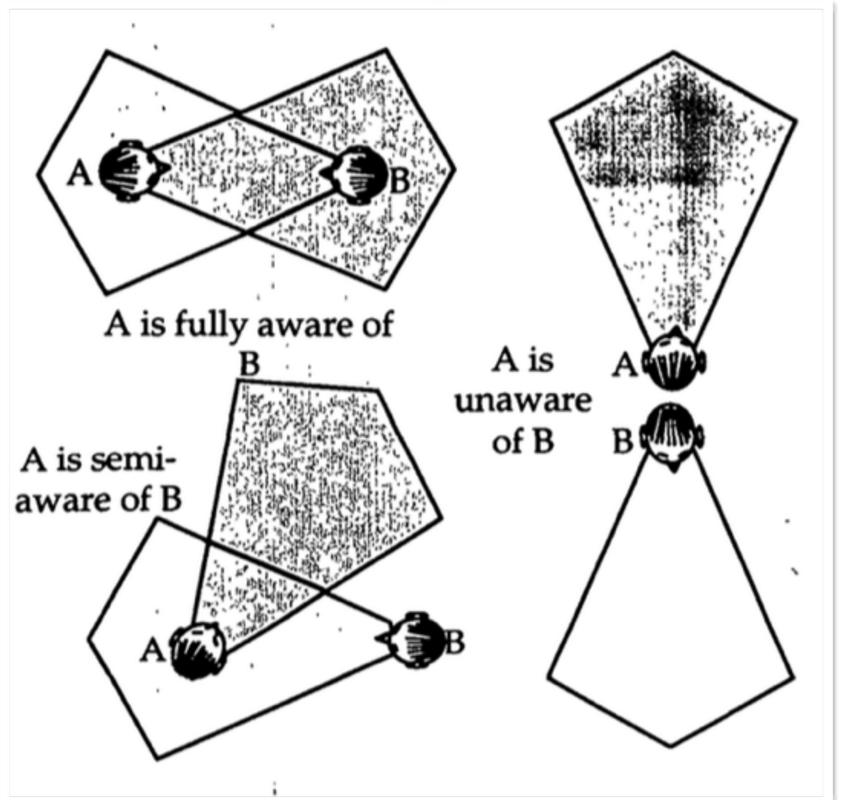
Awareness

Facets of awareness

- Aura (boundary) of awareness
- Focus (directed) of attention
- Nimbus (commanding) of attention

in a medium of communication

Adapters (amplify focus, attention)



Steve Benford and Lennart Fahlén. 1993. A spatial model of interaction in large virtual environments. In *Proceedings of the third conference on European Conference on Computer-Supported Cooperative Work* (ECSCW'93), Giorgio de Michelis, Carla Simone, and Kjeld Schmidt (Eds.). Kluwer Academic Publishers, Norwell, MA, USA, 109-124.

Factors of interaction

Conversation

How we talk, rules & repairs

Coordination

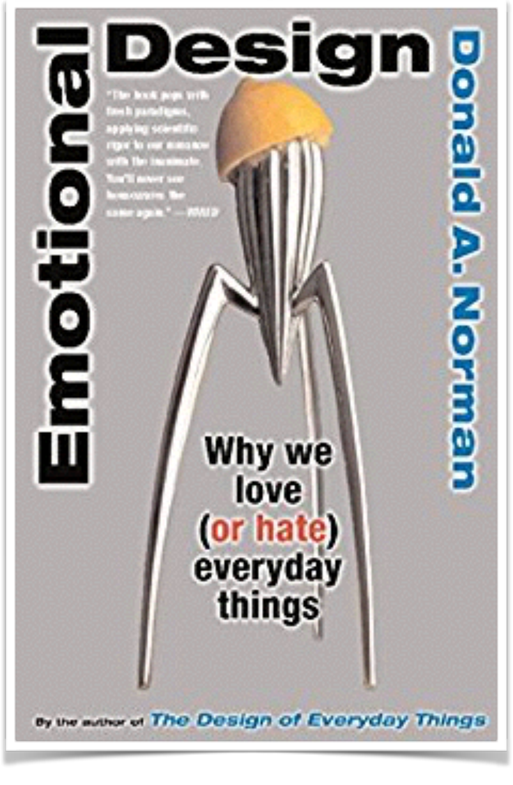
Mechanisms for getting things done

Awareness

Knowing what is happening & who is around us

Letting others know what we are doing

Human reactions



Don Norman

Usability testing can ignore the experience

- Focused on the task getting done

Much of human behaviour is subconscious

- Occasion, context & mood impact our choices

User-centred design has tended to focus on negative emotions

Emotion/Affect

Interweave emotion & cognition

Emotion is the conscious experience of affect

Emotional state changes how we solve problems

- Being happy broadens thinking & encourages creative thinking
- Positive affective state == open, creative
- Negative affective state == focused, anxious

Emotion > Mood > Traits

Levels of Processing

intellectual, learning

REFLECTIVE

enhance/inhibit

Image adapted from Norman p.22

CONSCIOUS

SUB/UNCONSCIOUS

SENSORY

MOTOR

physical action, getting things done

BEHAVIOURAL

enhance/inhibit

SIGHT
SOUND
TOUCH
SMELL
TASTE

primitive judgment

VISCERAL

Three levels of Design

self-image, rationalisation, personal satisfaction

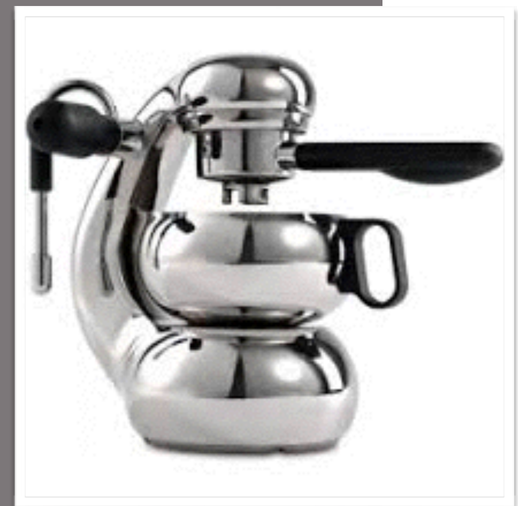
REFLECTIVE

CONSCIOUS

SUB/UNCONSCIOUS

function, performance, usability

BEHAVIOURAL



first impression, appearance, sensory impact

VISCERAL

Emotional Design

Attractive things work better

- By encouraging positive affect

Attractiveness (visceral) vs beauty (reflective)

- Ugly things can give pleasure - but relies on reflective process to override the visceral

Problem Domains

Ageing population - Dr Jacki Liddle (see attached slides)

Technology in education - Dr Marie Boden (review lecture recording)

Active Communities

Active Communities

Challenges in connecting with like-minded people

Coordinating community action

- Around location, issue, activity
- Persistence - ebb & flow of activity/membership
  - Activity distribution over time & location
  - Membership dynamics
  - Temporary - permanent

In-situ vs distributed community

Active Communities

Meetups, Clubs & Societies, Neighbourhood groups

YikYak (a not-so-good example)

“anonymous” Twitter for small area locations

AirTasker (http://airtasker.com)

I need someone to do something for me

Earn money by doing those tasks (15% commission to AirTasker)

NextDoor (https://nextdoor.com/about_us/)

Private social network for neighbourhoods (article)

Dashr (http://beta.dashrtheapp.com)

Beta app about finding someone to run with

Project Idea - due next week

Printed A4 slide to your workshop

- Slides will be viewed (not explained)

Idea for project within your chosen domain

- Not expecting “final” solutions

It might be a particular challenge you are looking to address

- Has anyone done anything similar?
- What initial ideas do you have to address that challenge?

Slides from each workshop online for comment & reference