

Issues in CSCW and Groupware

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Outline

- Two articles on CSCW
- What is CSCW and groupware and their relation to CSCL
- Historical development
- Basic problems addressed
- Research areas and concepts
- Components of groupware



Two articles on CSCW

- Grudin, J. (1994). Computer-Supported Cooperative Work: History and Focus. *IEEE Computer*, 27(5), 19-25.
- Ellis, C. A., Gibbs, S. J. and Rein, G. L. (1991). Groupware: Some Issues and Experiences, 1991. *Communications of the ACM*, 34(1), 39-58.



What is CSCW?

- CSCW: Computer Supported Cooperative Work
- Term introduced by Irene Greif and Paul Cashman in 1984, meaning :
- *“A set of concerns about supporting multiple individuals working together with computer systems”*
- Can be divided into two main areas, associated with 1) CS and 2) CW, respectively

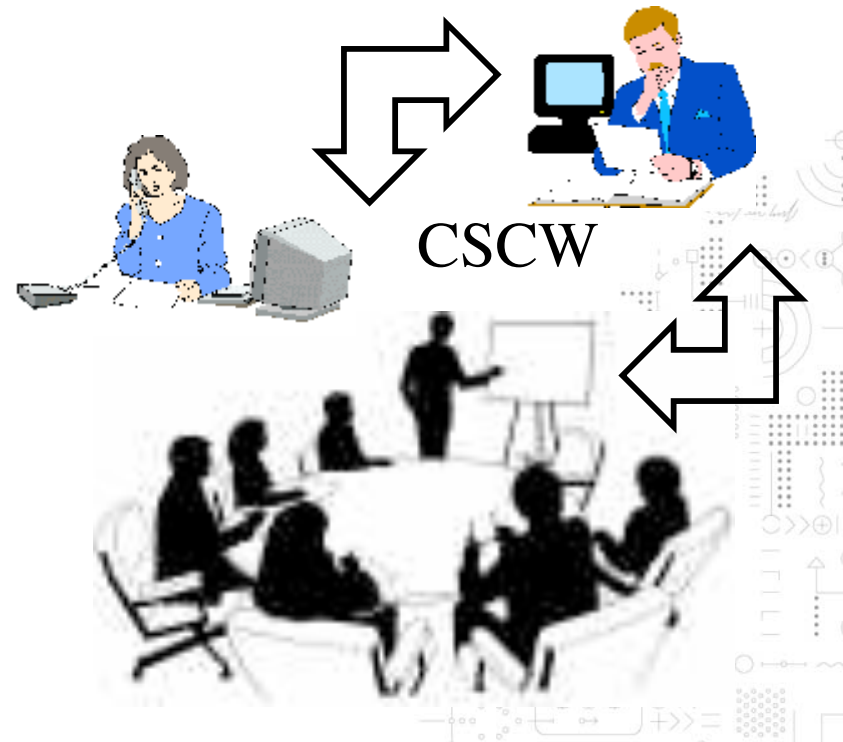


Illustrating the situation

- HCI is one of the precursors to CSCW and was concerned about supporting the work of individuals using interactive systems



HCI (Human
Computer Interaction)



What is groupware?

- Associated with the CS part of CSCW
- The term groupware was first used in 1982 in a paper by Johnson-Lentz in context of computer-mediated communicating (CMC) systems
- Defined by Ellis et al. in following way:
“computer-based systems that support groups of people engaged in a common task (or goal) and that provide an interface to a shared environment”
- This creates a need for concepts to describe the various aspects of groupware



Aspects of groupware

- Common task / goal
- Interface to a shared environment
- In addition, because there are more than two users, additional implications are
 - Communication support
 - Division of labor, explicit role assignment
 - Support for joint design of common artifact
 - Awareness of the other users who are interacting within the shared environment (since they are often not F2F)



Shared environments

- Referred to as “common information spaces” (Bannon & Bødker, 1997)
- Multiple ways to design them
 - Extending a single user environment to a multi user environment (*technology-driven approach*)
 - Identifying a collaborative situation that is currently unsupported by technology (*empirical-based approach*)
 - Basing the design on theories, models or design principles originating in fields outside of software design (e.g, communication, social sciences) (*theory based approach*)



Questions for discussion

- Do you know of groupware or other systems that have been developed according to the above approaches
- Do you know of groupware or other systems that have been developed according to other approaches?
- What other approaches to design do you now of, which are not falling into the three categories just described?



Early examples of groupware

- Ellis et al identifies the following type of groupware (1991)
 - Message systems (e.g. email)
 - Multi-user editors
 - Group decision support systems (e.g. discussion forums)
 - Video conferencing systems
 - Intelligent information sharing systems (Malone et al.)
 - Workflow coordination systems (Winograd et al.)



Contemporary groupware

- What are examples of groupware introduced after 1991:
 - Ex:
 - Ex:
 - Ex:

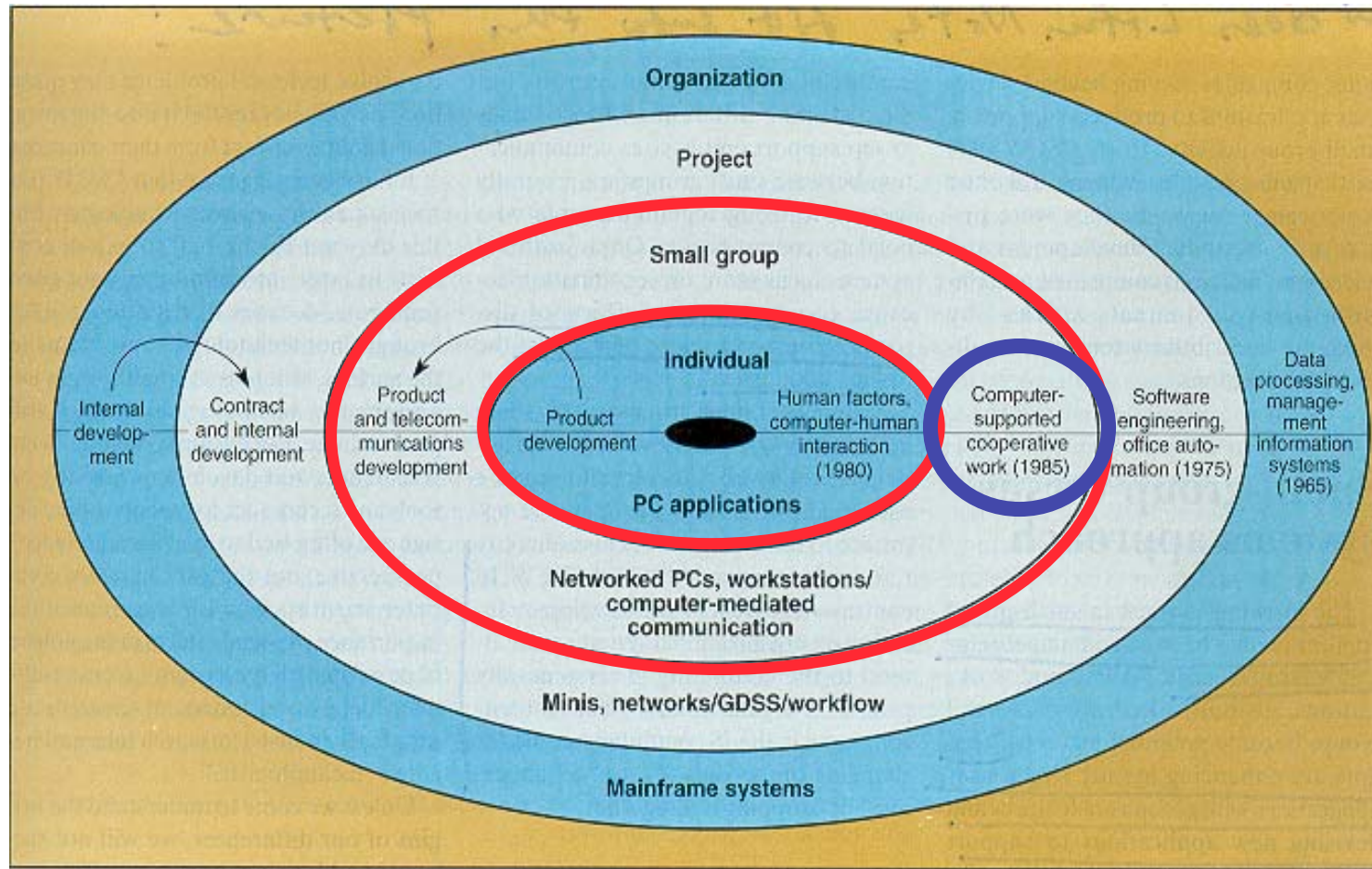


What is group work?

- Related to the *CW* part of CSCW
- Jonathan Grudin suggests the following:
 - Small group usually consisting of 2-3 people who works together to reach a common goal
 - There are also larger groups, but they are less efficient when supported by technology
- *Why do you think groupware works best in small groups?*
- *Any counter examples you know of?*



Historical development (Grudin, 1994)



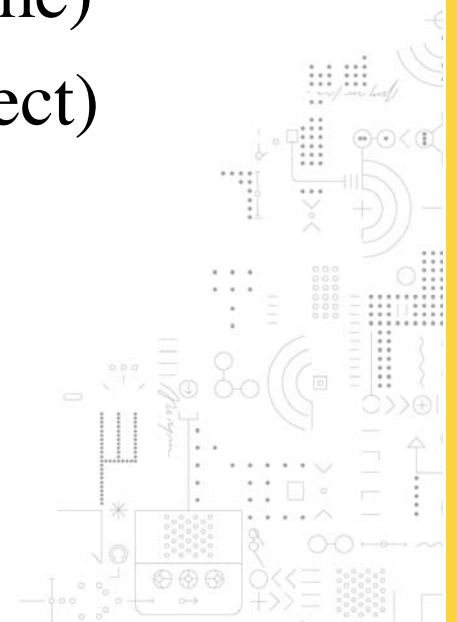
Basic concepts in CSCW

- Ellis et al. suggest the following three concepts are basic for CSCW research and groupware design:
 - Communication
 - Coordination
 - Collaboration (sometimes divided into):
 - Cooperation
 - Collaboration



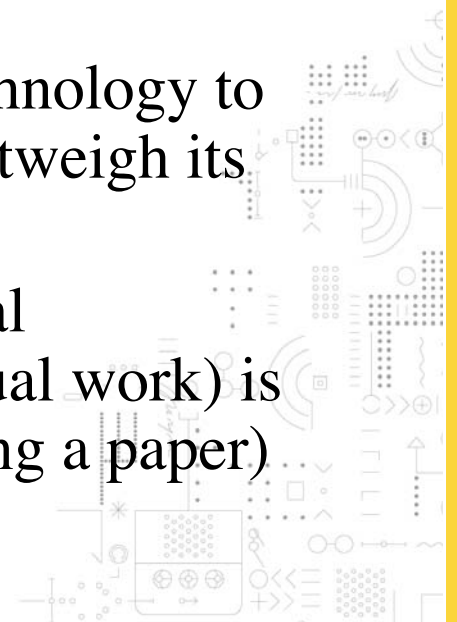
Supporting communication

- Groupware can be divided into two types depending on the kind of interaction it supports:
 - Synchronous communication (real time)
 - Asynchronous communication (indirect)



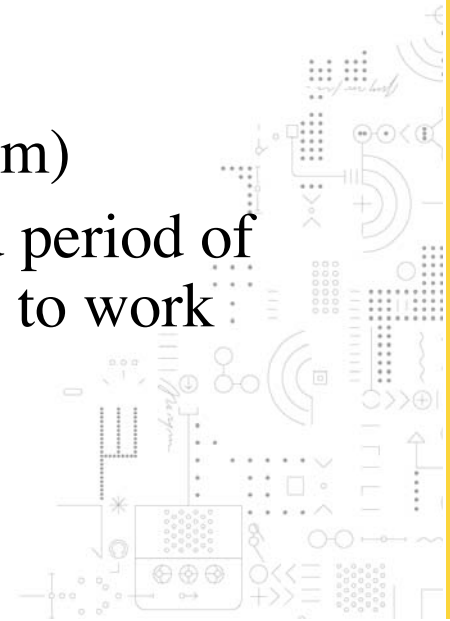
Synchronous communication

- Advantages
 - Good support for awareness of others (modeling F2F)
 - Appropriate for many kinds of situations resembling F2F
- Disadvantages
 - Complexity of developing from scratch technology to support this form of communication can outweigh its advantages
 - Work that require high amount of individual concentration (i.e. time consuming individual work) is not well supported (e.g. collaborative writing a paper)



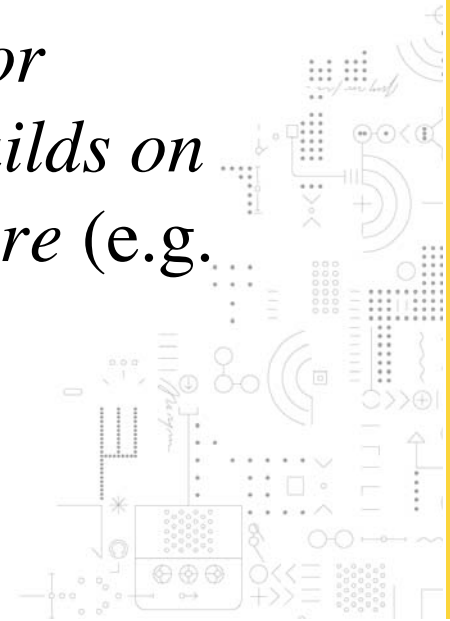
Asynchronous communication

- Advantages
 - Allows time for individual reflection before making a next move while interacting (over time) with others
 - Good for tasks that naturally lend themselves to clear division of labor
- Disadvantages
 - Social interaction is minimal (in its F2F form)
 - Motivation to work together over an extended period of time may be lower and requiring incentives to work



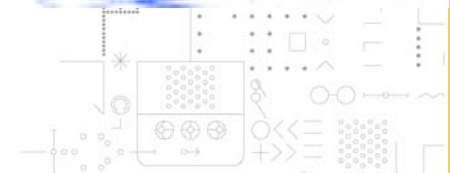
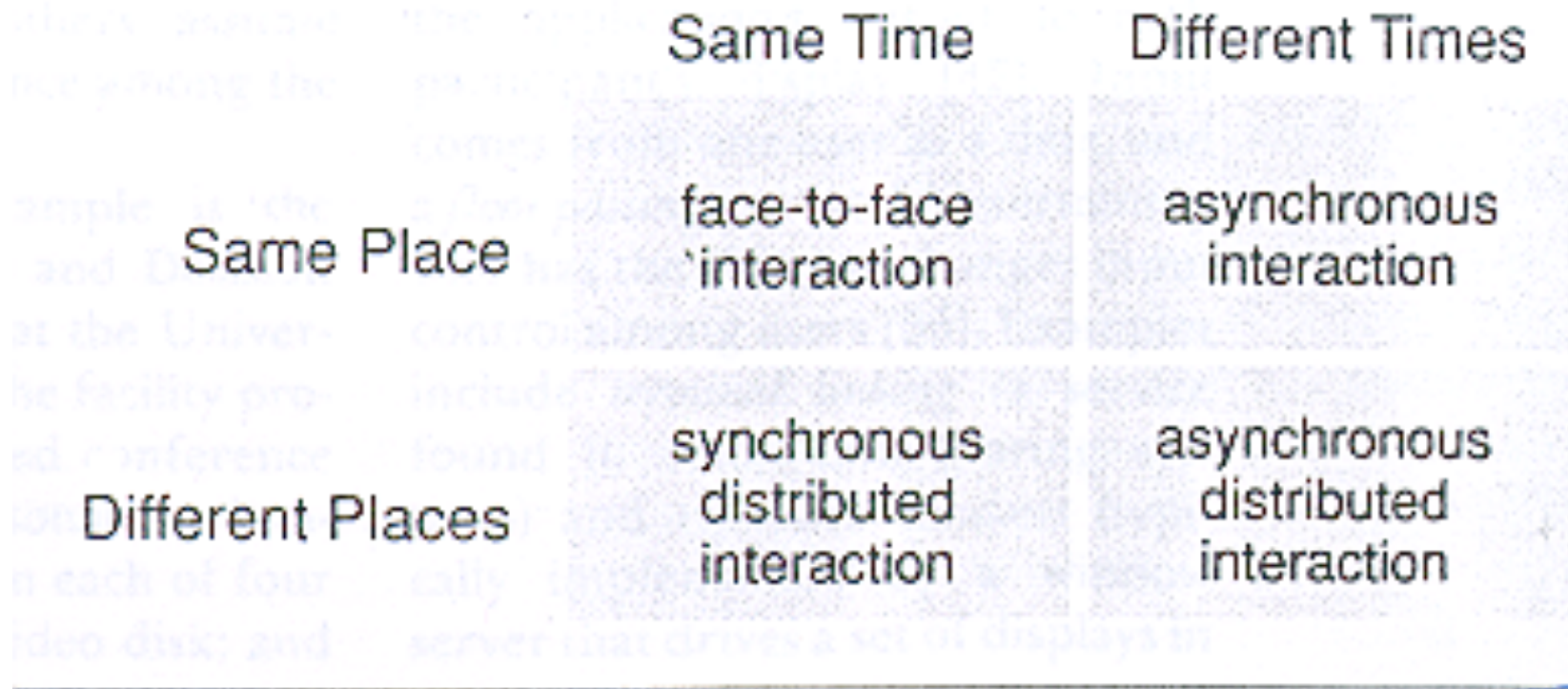
Modeling F2F vs. going “beyond being there”

- In recent years some researches have questioned the prevailing F2F metaphor of CSCW
- They instead ask how can we extend “beyond being there”
- They suggest we need *new metaphors for communication and cooperation that builds on and extends the strengths of of groupware* (e.g. Jim Hollan)



Time/place matrix

From Ellis et al, 1991



Extended matrix for CSCL

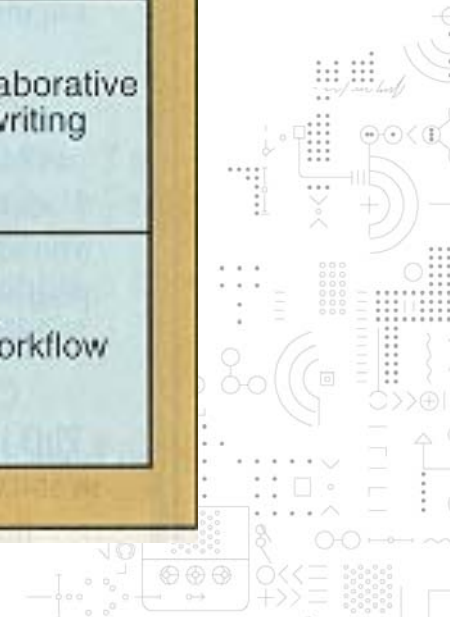
- One of the approaches to CSCL we address in this course is to use groupware for educational purposes
- *What additional dimensions would be necessary or recommended to add to the time/place matrix in order to be able to better account for the factors that emerge in educational contexts (e.g. classrooms, work & learning) ?*



Extended matrix for CSCW

From Grudin, 1994

		Time		
		Same	Different but predictable	Different and unpredictable
Place	Same	Meeting facilitation	Work shifts	Team rooms
	Different but predictable	Tele/video/desktop conferencing	Electronic mail	Collaborative writing
	Different and unpredictable	Interactive multicast seminars	Computer bulletin boards	Workflow



Supporting coordination and collaboration

- What are the unique features of groupware that supports
 - 1) coordination?
 - 2) collaboration?

