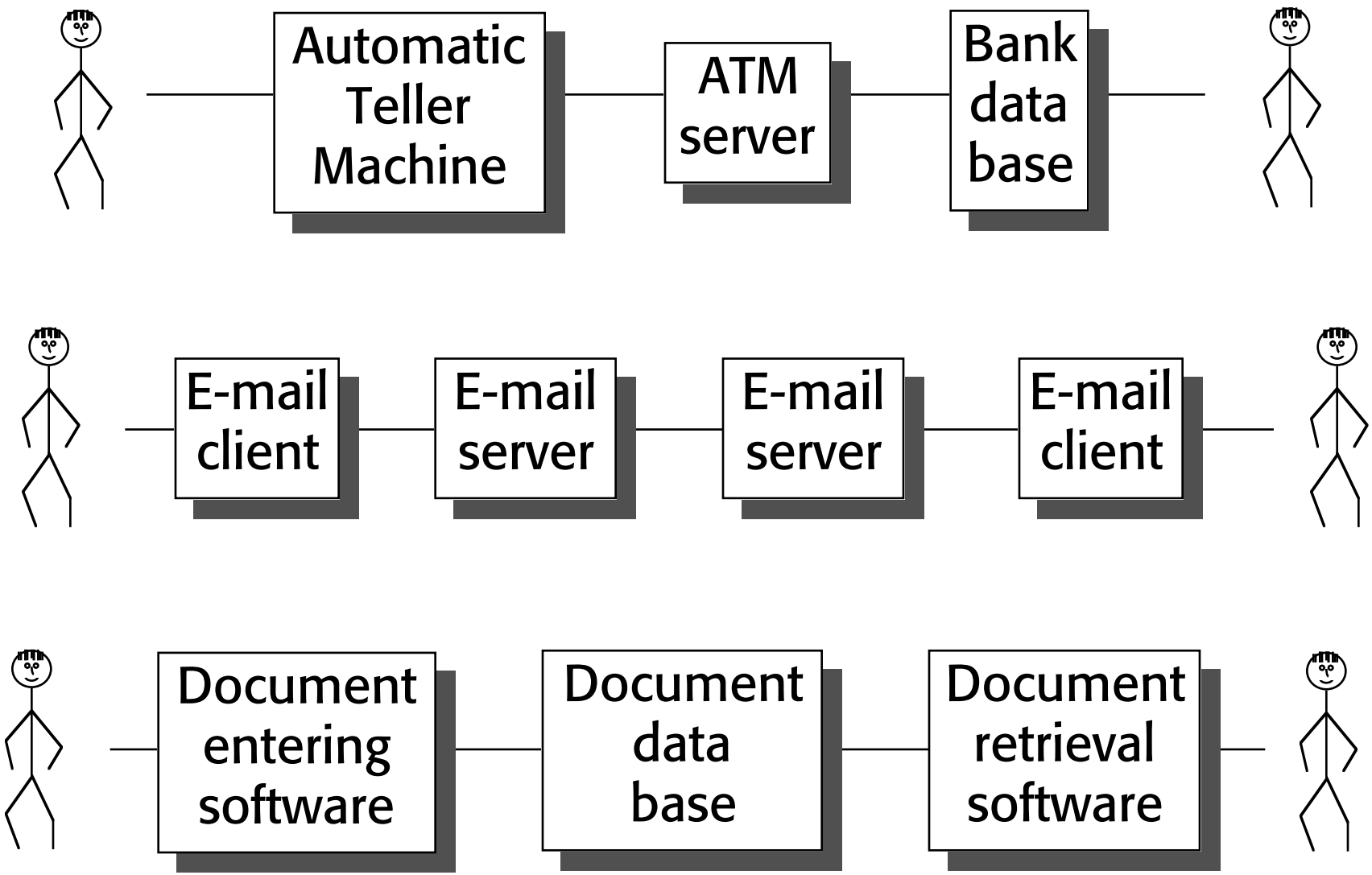
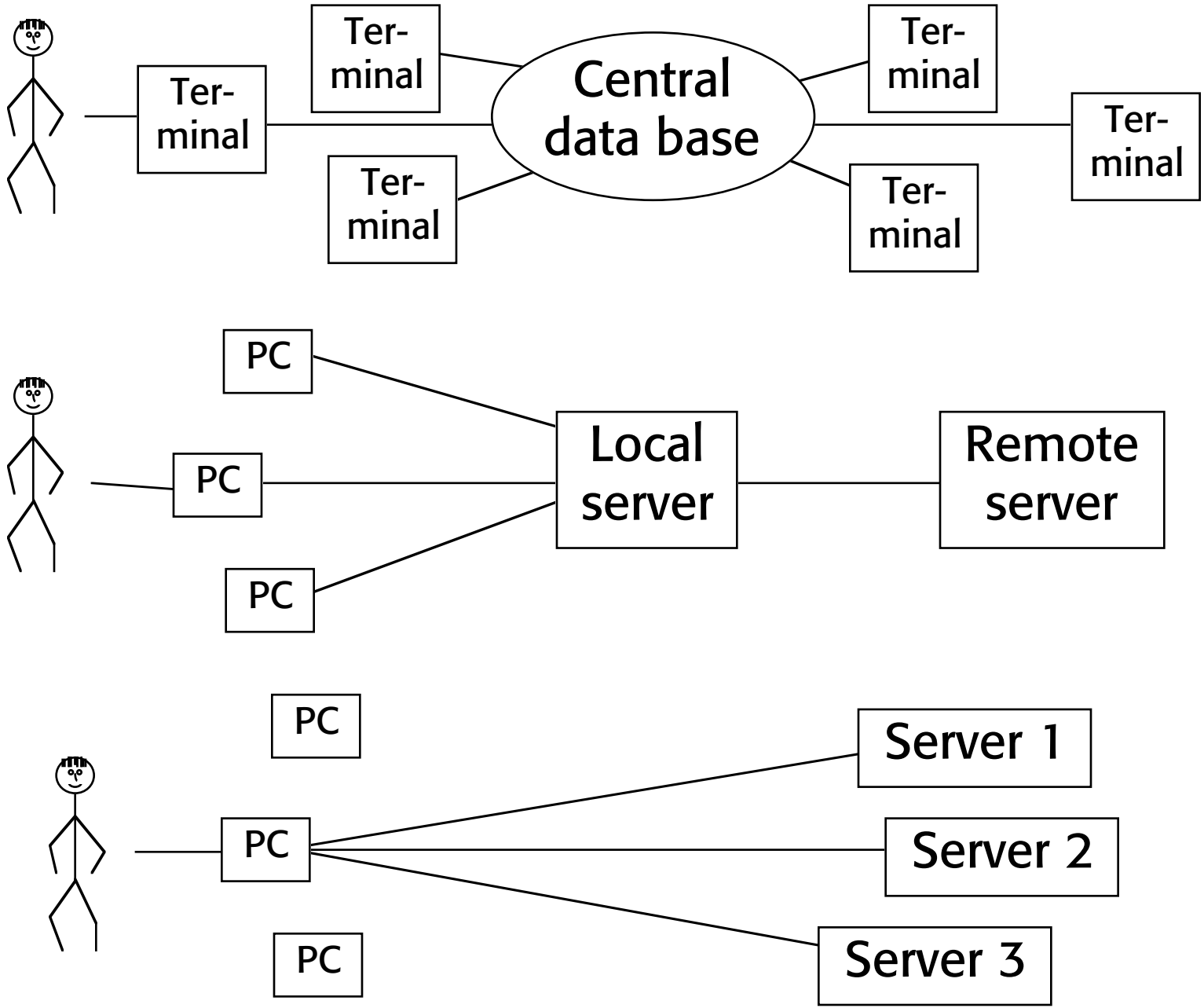
Data communication versus Computer Mediated Communication (CMC)

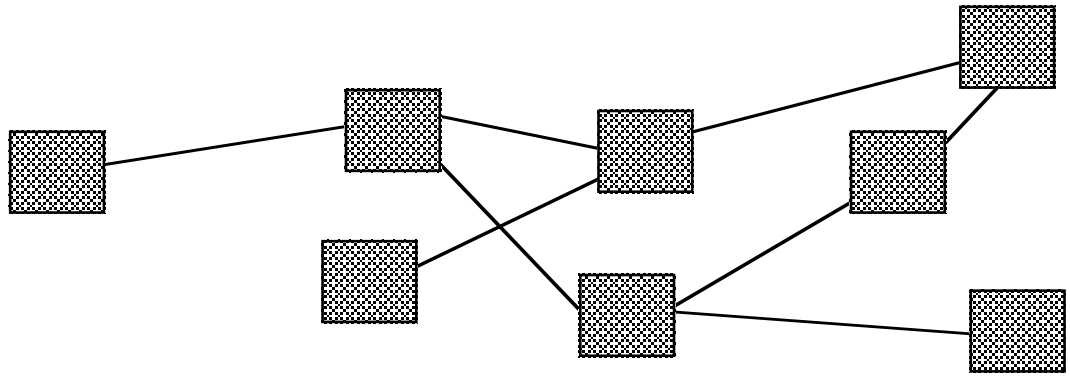


Distributed architectures

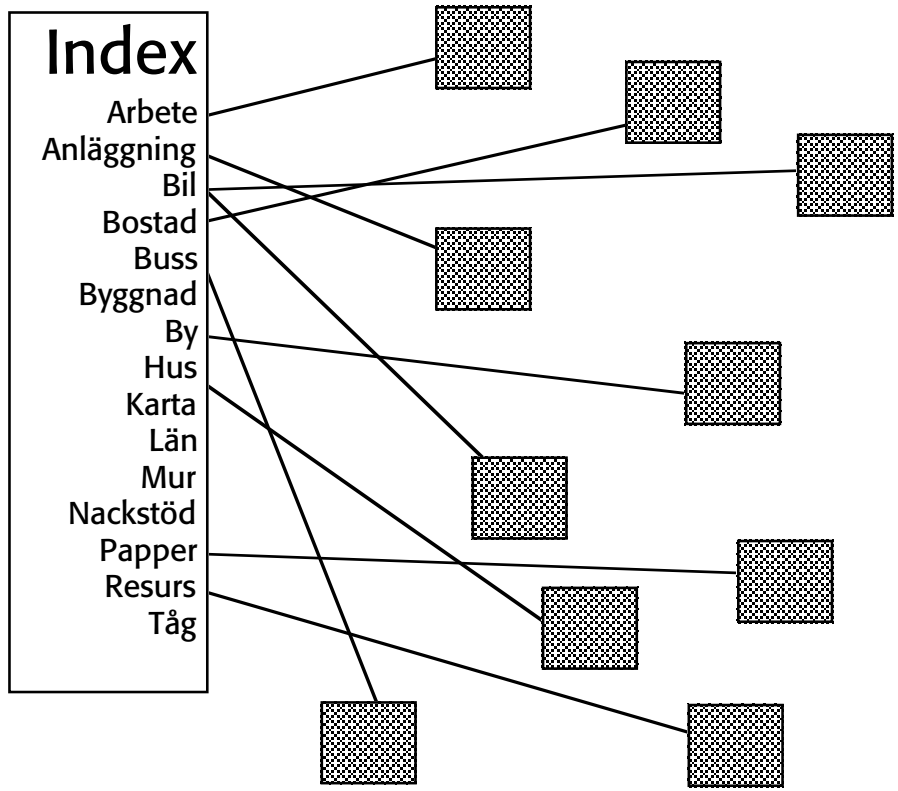


Information retrieval

Hyperlink style (Gopher/WWW)



Inverted word index style

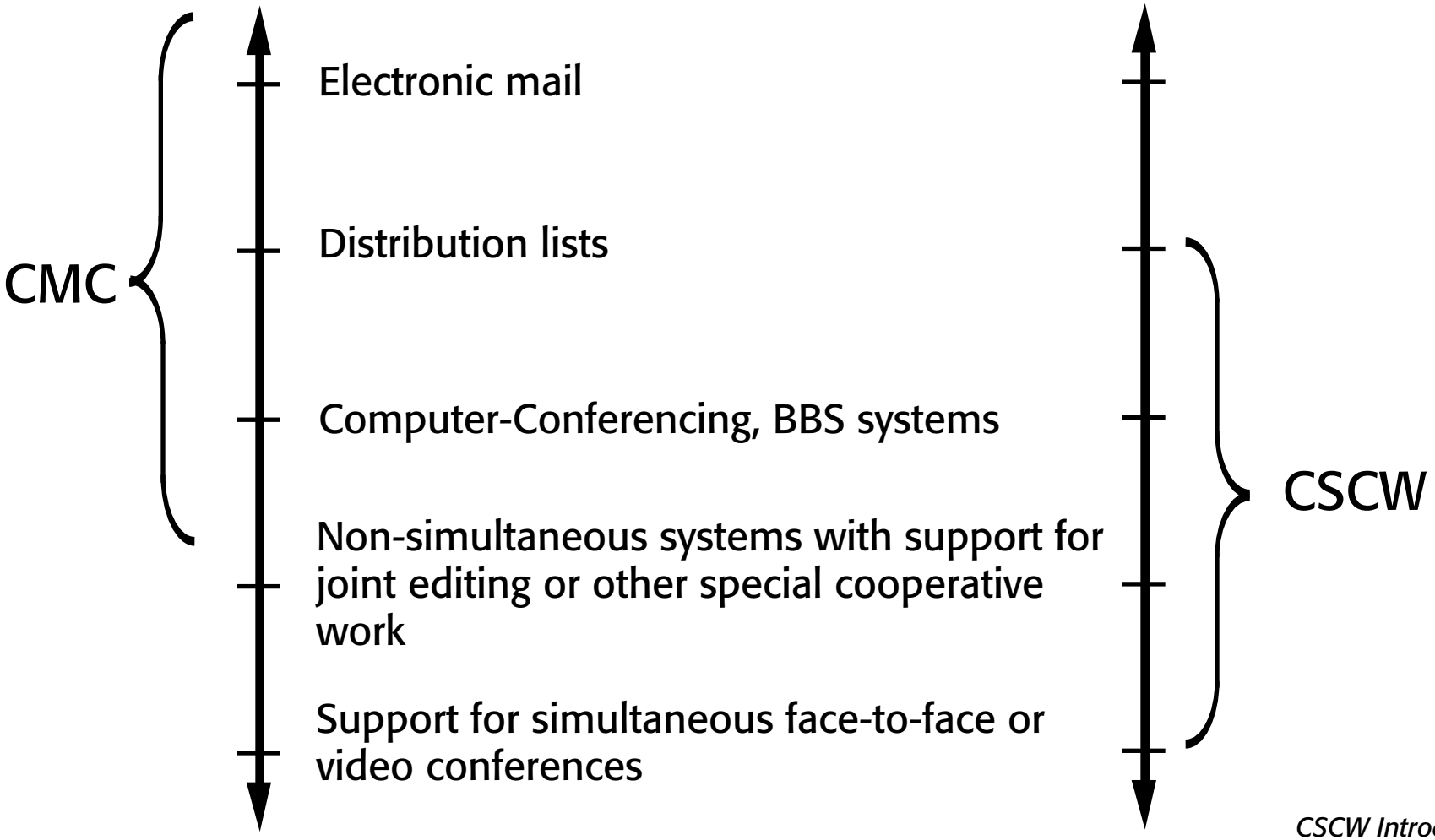


Terminology

CSCW - Computer-Supported Cooperative Work

CMC - Computer-Mediated Communication

Groupware



Four-square applications

(Johansen, Whitaker)

	Same place	Different place
Same time	*Face-to-face meetings* Copyboards PC projectors Meeting rooms	*Remote meetings* Conference calls Data sharing Video/audio-confer-encing
Different time	*Administration/ Data Management* Shared files Shift work	*Reliance on Coordination* Electronic mail Forms management Voice mail Structured messaging

Opportunities for Support in CSCW systems

Assistance in:

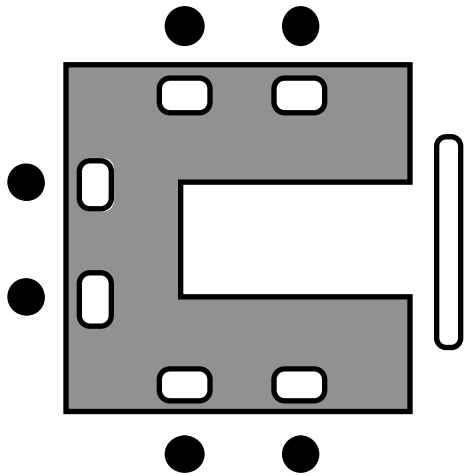
- Focusing of attention
- Coordination
- Representation
- Revision
- Short-term storage
- Long-term storage

Shared workspaces

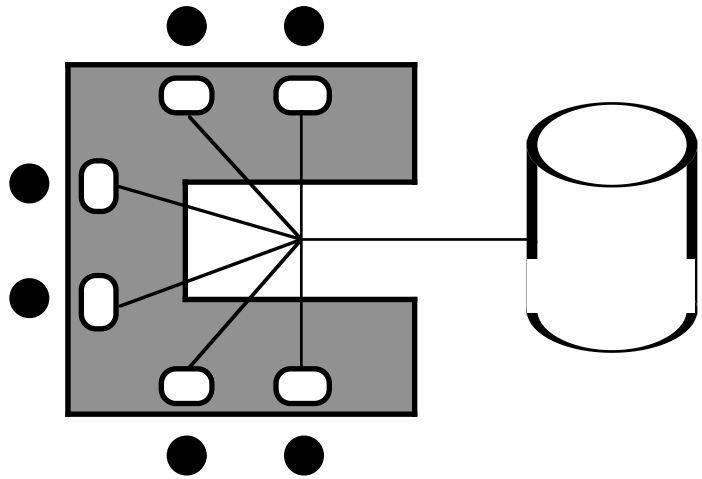
- Single object
- Editable object
- Expandable object
- Concurrent access
- Private & Public views
- Multimedia

(After Gary Olsen, University of Michigan)

Same time coworking: All the same or each his view?



Common screen, or common view on each screen



Each person works on his subtask, sometimes two people happen to work on the same piece of information

How often will access clashes occur?

Two modes of handling simultaneous access to data base:

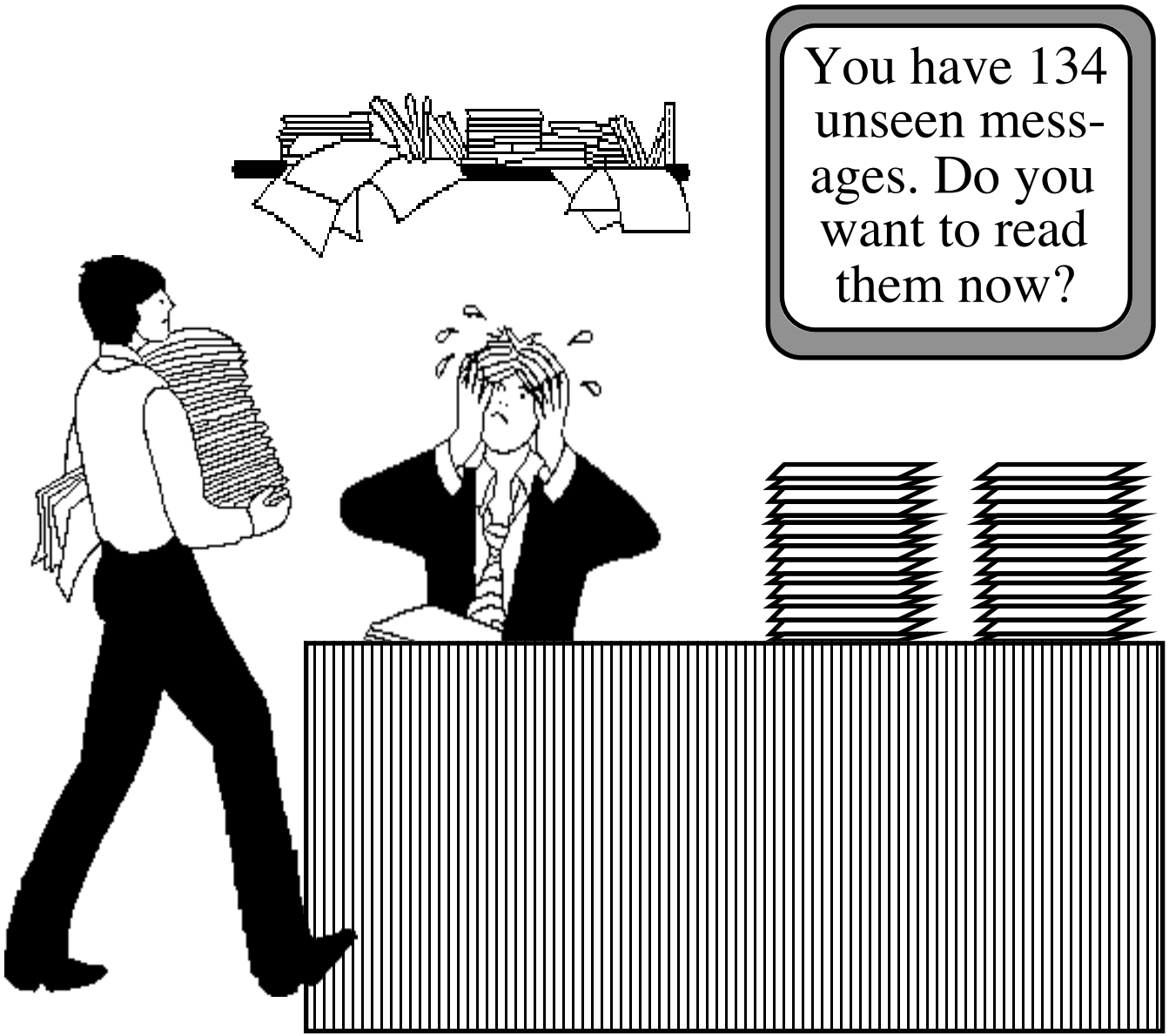
Weak coupling: Each has his own view

Simultaneous updating: One user locks a node when updating it, or merging of alternative revisions of one node

Strong coupling: Both have the same view, audio channel opens automatically

Simultaneous updating: Both can update, and see result immediately

News control and filtering



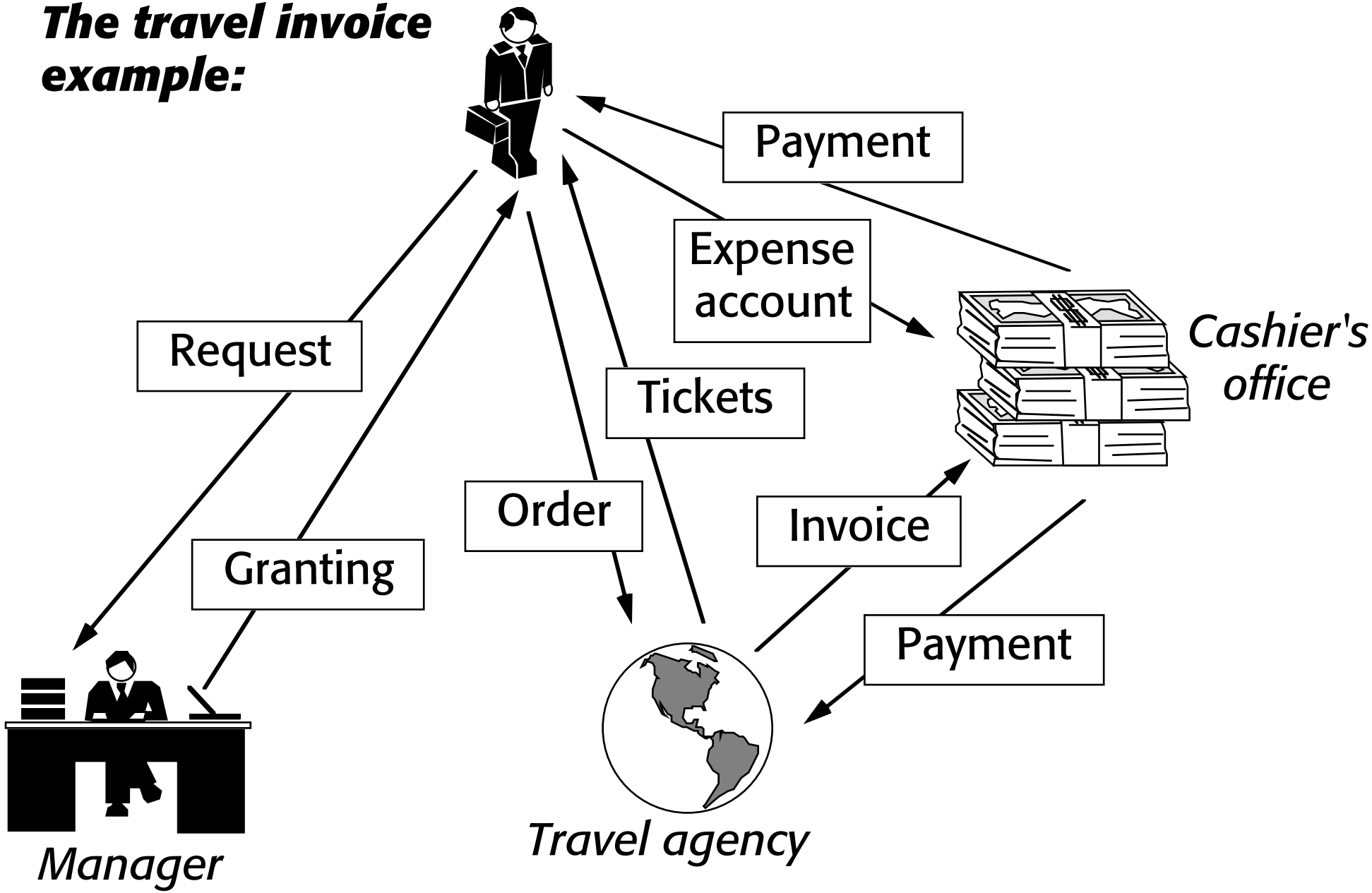
News Control: Knowing what you have seen and not seen

Simple example: Whenever a node has been modified by someone else, the node and its modified attributes are shown in yellow on the screen. After reading the modifications, you push a button to estinguish the yellow lightning.

Problems: When the whole structure has changed, not just some nodes.

Work Flow Applications

The travel invoice example:



The coordinator

Semantic actions:

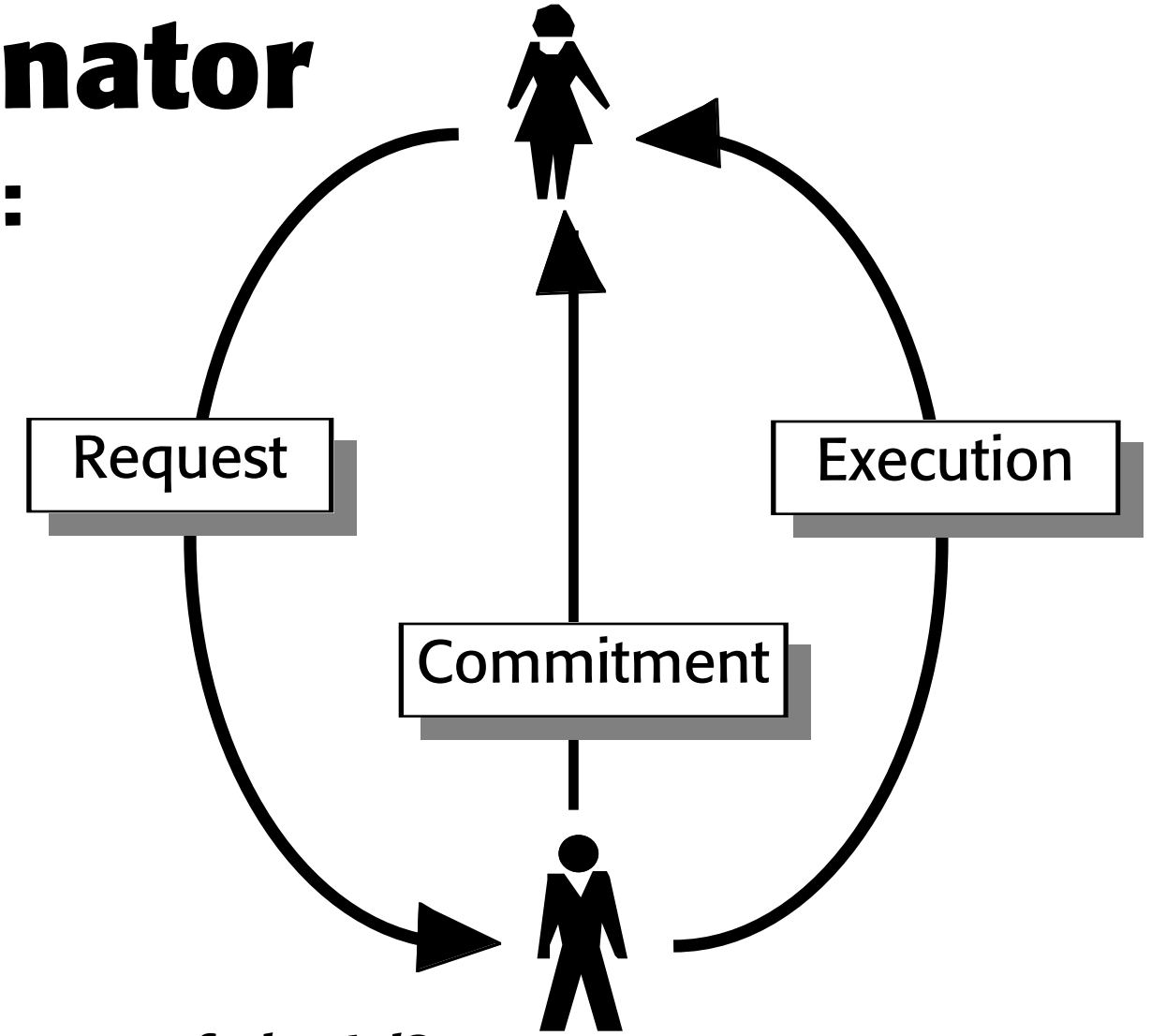
Request

Commitment

Execution

Question

Answer



Too controlling or a useful aid?

(Fernando Flores: Management and Communication in the Office of the Future, Logonet, Berkeley)
(R.P. Carasik, A case study of CSCW in a dispersed organization. CHI'88 proceedings, ACM-0-89791-265-9---788/004/0061)

Lucy Suchman: Do categories have Politics? The Language/Action Perspective Reconsidered

Categorisation: The organisation of people or their activties into a more or less simple typology.

Categorisation is politics. Categorisation is a tool to impose your view on other people, and forcing other people into roles prescribed by certain people on other people.

Speech act theory categorisation is a tool to enforce a simplistic categorisation on people and their actions.

Compare with military discipline: A tool for converting humans into machines, controllable, efficient, reliable, not threatening to authorities.

JP-s comment on ‘The coordinator’ controversy:

Any successful different time-different place systems must include e-mail which is at least as good as other e-mail systems, so that people can use the new system as a replacement for e-mail with added functionality.

Speech act theory provides one way of structuring interactions which is suitable in some cases. But it is better to allow users to create their own structuring as required by their tasks. Example: Instead of request–commitment, some tasks are better aided by problem-solution-pro-con-structuring.

Shared editors

Examples: Shredit, Aspect

Several users can access the same document at the same time

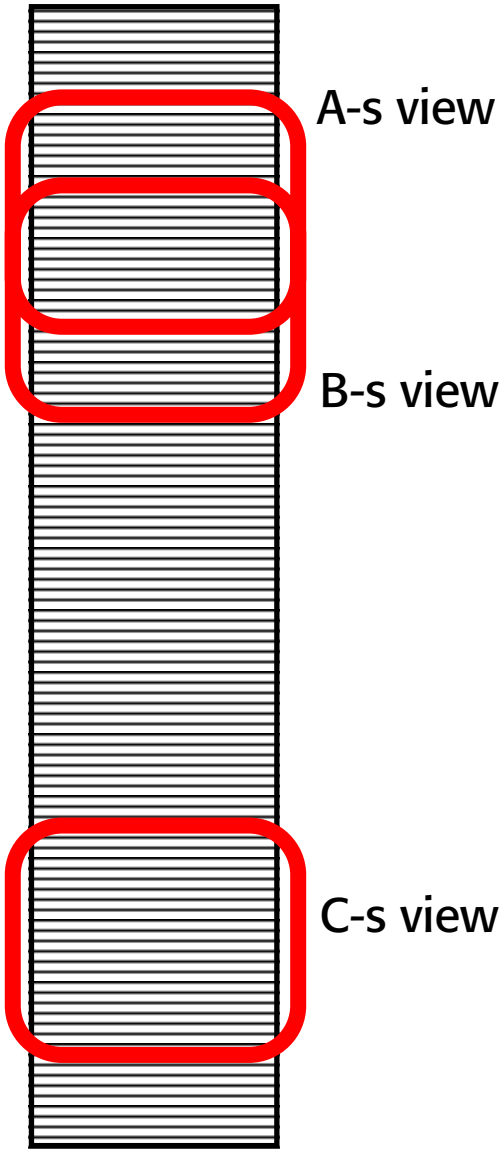
Any change made by any user is immediately shown on the screens of other members

Members need not look at the same window at the same time

Advantage: Flexible, does not restrict usage patterns

Compare to whiteboard, but everyone can write at the same time

Stages with joint viewing and stages with split writing tasks

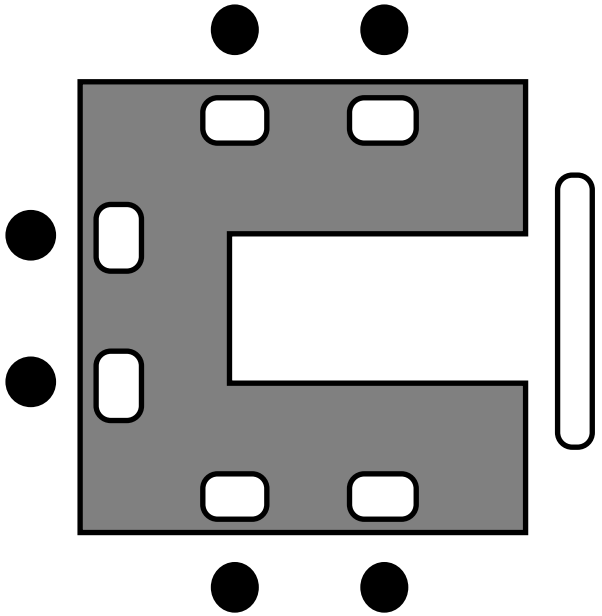


Simultaneous meeting support

Examples Visionquest, Ventana, TeamFocus etc.

Typical activity stages

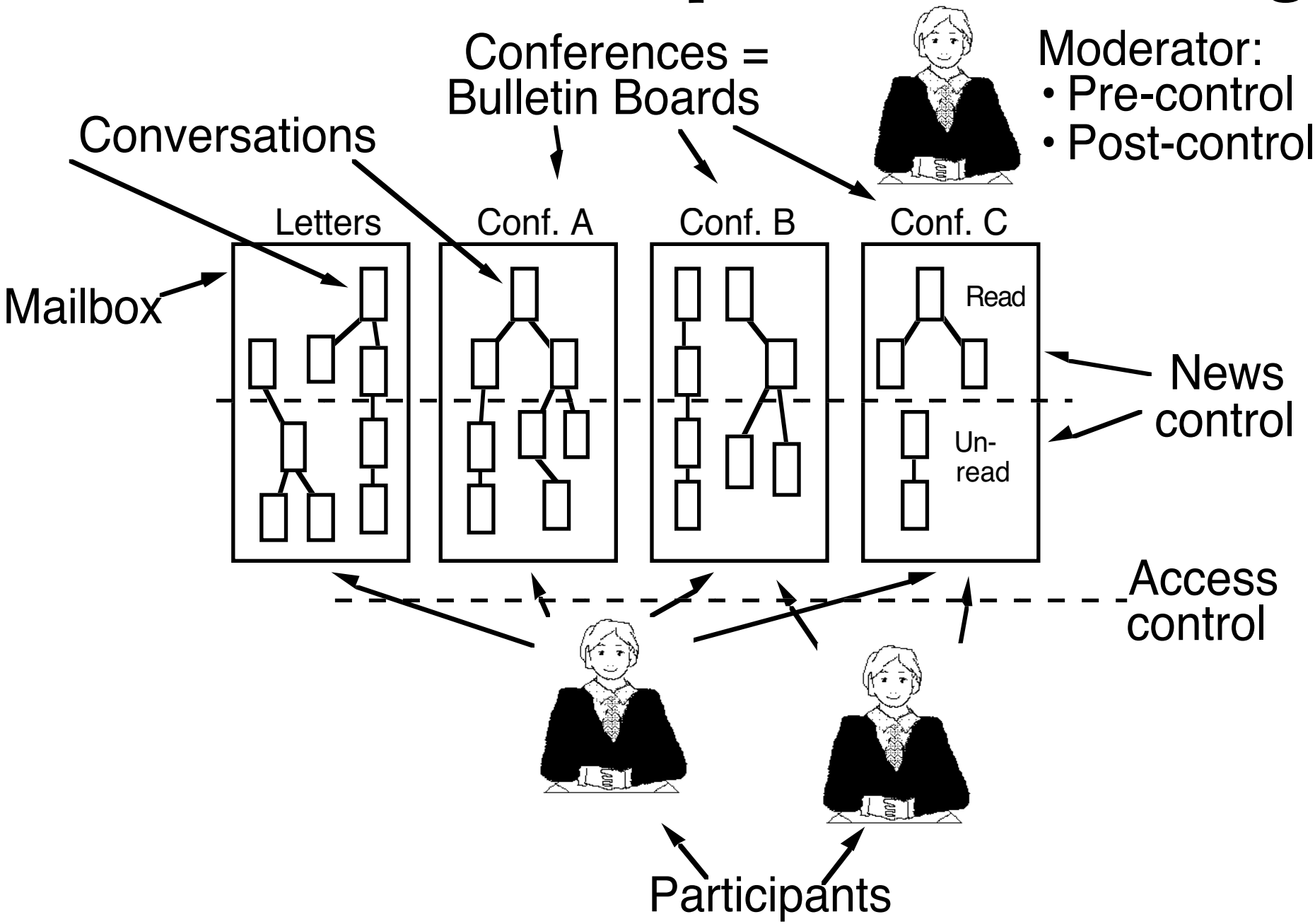
- Brainstorming
- Sorting and organizing
- Discussion of controversial issues
- Ranking
- Selecting
- Reporting



Effects and functions

- Cover subjects more fully
- Anonymity causes equality
  - *But may make system dull*
- Better documentation produced
- Facilitator/moderator important
  - *Might approve ideas before making them public*

Forum systems (**Computer conferencing**)



CMC = Computer-Mediated Communication: Olika (eller samma) tid, olika (eller samma) plats

Egenskaper

Objekt: Användare, Användargrupper, Meddelanden

Personlig och/eller gemensam databas

Länkar

Användare till grupp

Medddelande till grupp

Användare till meddelande

Meddelande till meddelande

Grupp till grupp

Exempel på beteckningar

Elektronisk post

Datorstödda forum-, konferenssystem

Koordineringssystem (workflow-system)

Gemensam redigering

Omröstningar

Exempel 1: En försäljare vill sälja produkten ABC till en kund i XYZ-området

Fråga I CMC-systemet: Vilka kunder i XYZ-området har köpt produkten ABC och är nöjda med den?

Fördel med CMC: Slipper bygga upp databas med information som "kanske behövs någon gång". Slipper förutse vilken information som kan komma att behövas.

Exempel 2: Stopp avvärjt inom 24 timmar!

Ett stort amerikanskt dataföretag skulle installera ett nätverk med 8000 person-datorer i ett stort amerikanskt regionalt telefonbolag. Ett tekniskt problem hotade att stoppa hela installationen. Med hjälp av CMC hittades den rätta personen inom företaget, som visste hur problemet skulle lösas. Inom 24 timmar var problemet ur världen!

Exempel 3: Produktutveckling startad på rekordtid

Vad som hände:

Förslag till ny produkt las fram i CMC-system med spridd användning över hela USA.

Några nappade på idén och hade egna synpunkter.

De intresserade bildade en sluten konferens för att diskutera förslaget grundligare.

Jämför med utan CMC:

Nytt produktförslag.

Upp i hierarkisk organisation till högsta chefsnivå.

Beslut att bilda en geografiskt spridd projektgrupp.

Exempel 4: Stort amerikanskt dataföretag hade köpt tre mindre företag.

Strategisk åtgärd: De anställda i de inköpta företagen kopplades in i det stora företagets globala CMC-nät.

Effekt: Snabbt skapande av gemensamhetskänsla till hela företaget (inte bara till den egna avdelningen eller den egna lokaliseringsorten).

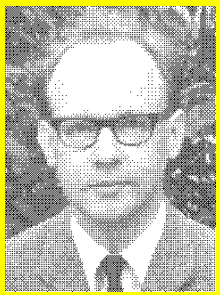
Jämförelse med personaltidning

En personaltidning löser inte de många små och stora problemen som dyker upp varje dag.

Vi i verket

Tisdagen den 25 maj 2003

Personaltidning för anställda vid statens verksverk



Jacob Palme installerar KOM i verket

Verket installerar gruppprogrammet KOM

Verket lämnar ny budget

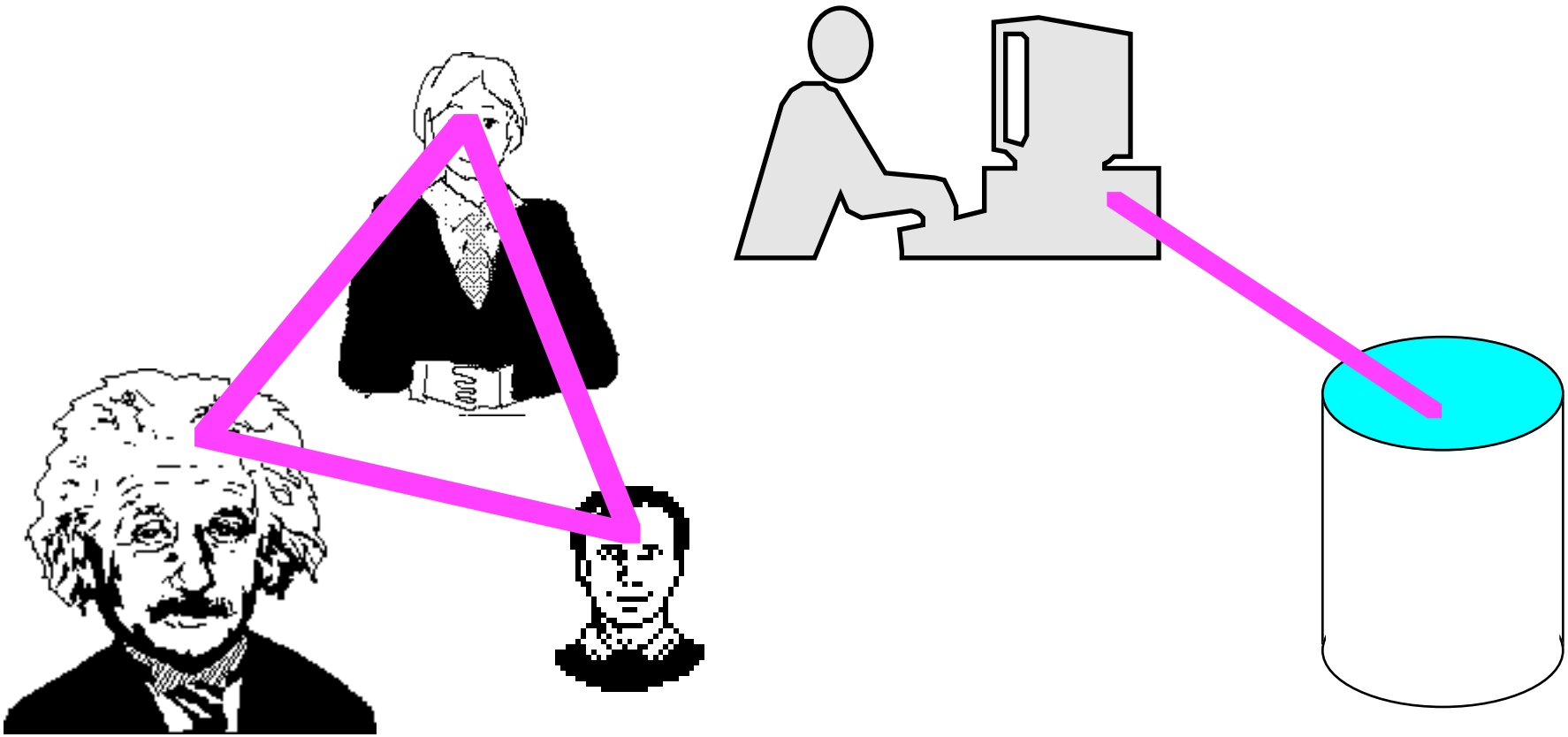
Verkets anställda trivs med sitt jobb

Verkets konstklubb köper tavla

Verket skall ombildas till aktiebolag

Jämförelse med informationssökningssystem

Information sökes i hjärnorna hos de personer som använder CMC-system.



Jämförelse med ansikte-mot-ansikte-möten

Man kan angripa ett problem omedelbart när det dyker upp, behöver inte vänta till nästa planerade sammanträdesdatum. Man kan flexibelt bilda de grupper som behövs. Fler personer nås av information och kan bidra med sina idéer.

Jämförelse med telefon

Man når mer än en person, sprider kunskap, samlar idéer från fler personer.

Man behöver inte veta vem man söker, och hur man når just den personen.

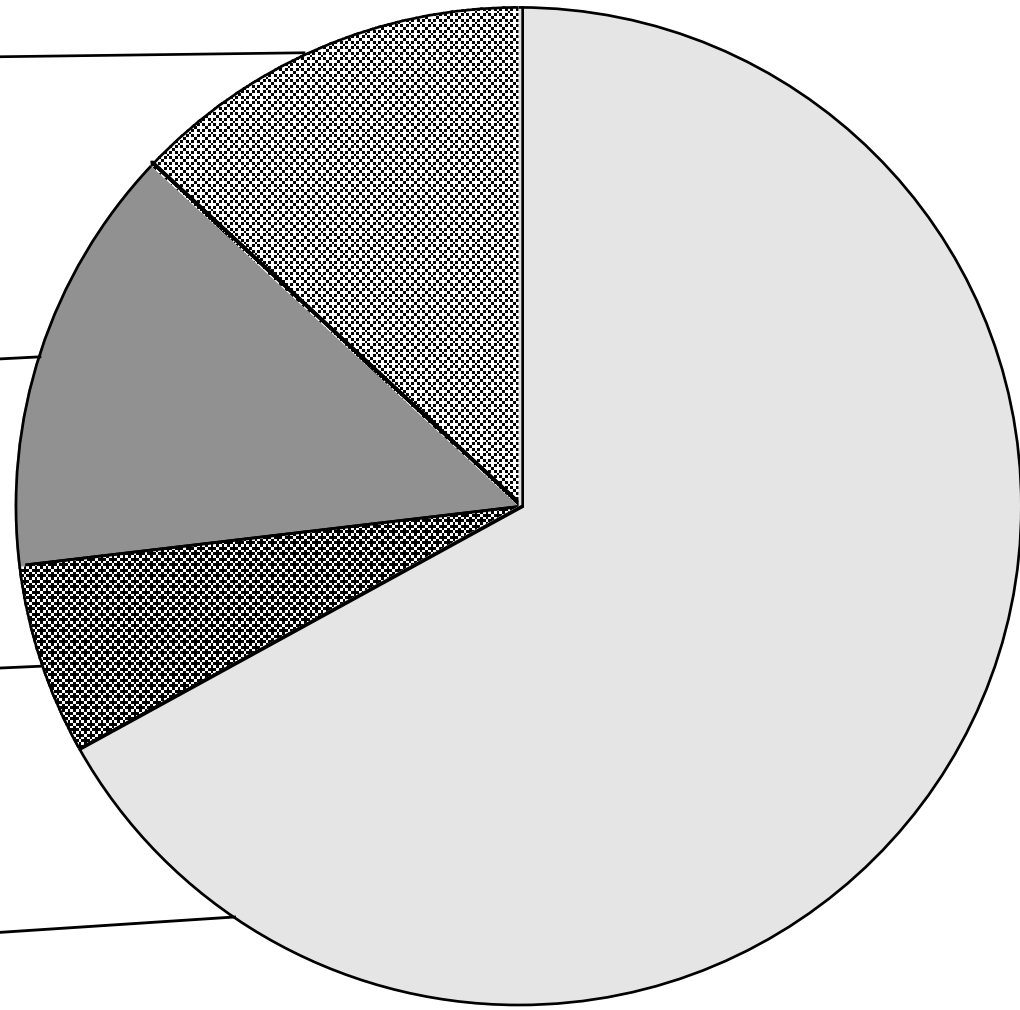
Ersättning för andra kommunikationsmedier?

13 % Ersättning för formella och informella ansikte-mot-ansikte-möten

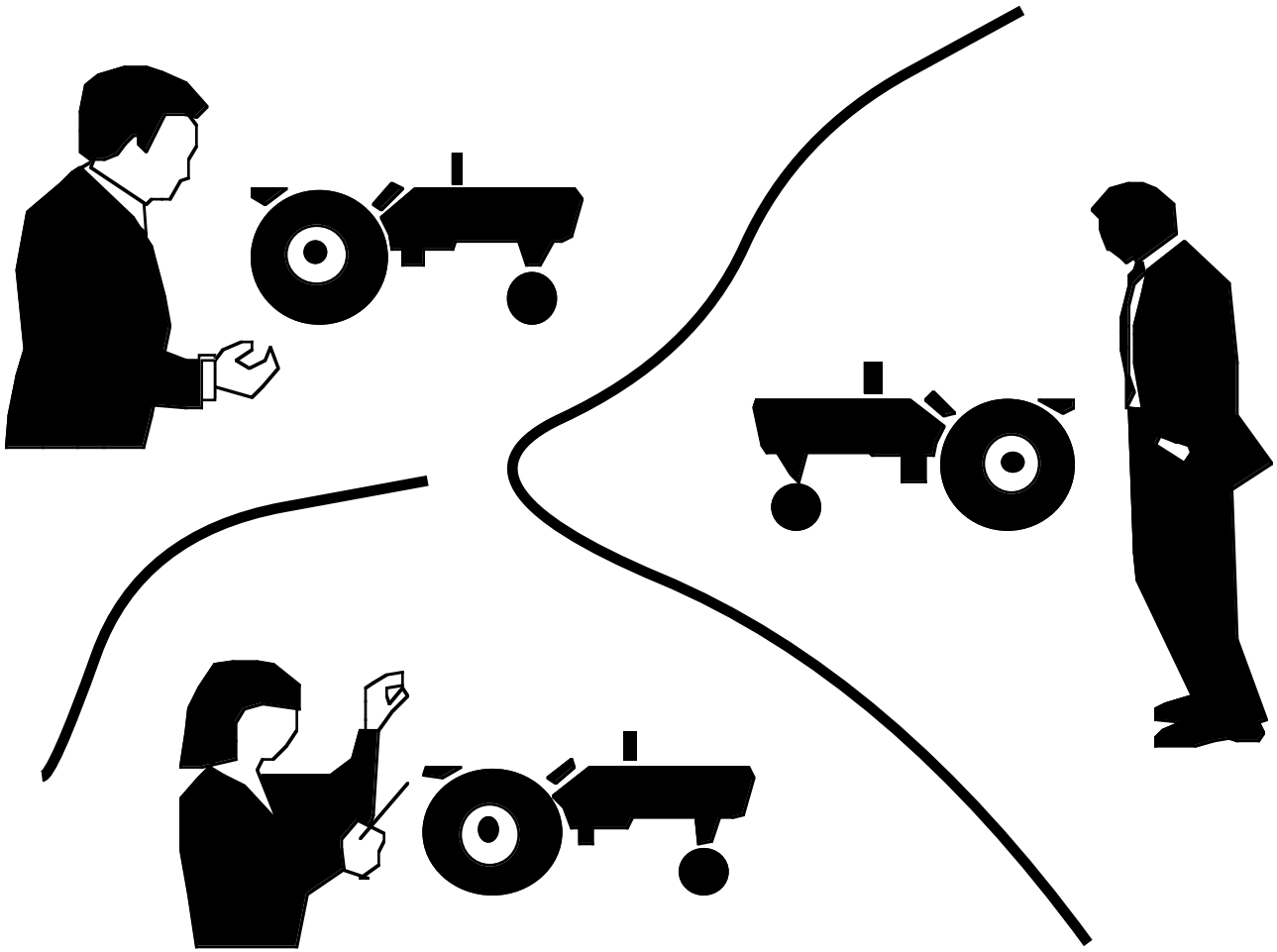
14 % Ersättning för telefon-samtal

6 % Ersättning för brev, cirkulär, meddelande-lappar

65 % Ny kommunikation

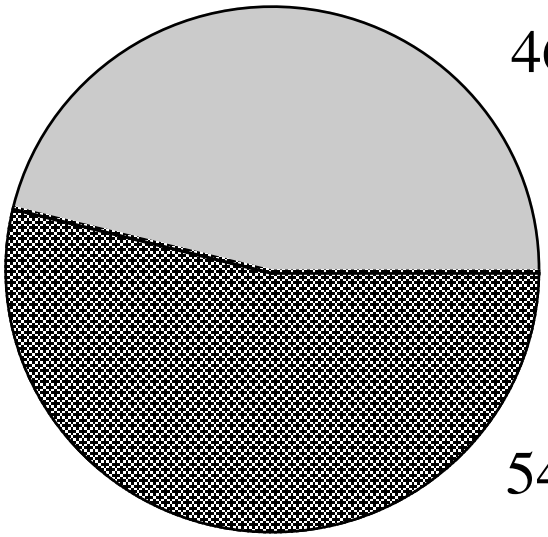


Koordinering av dem som jobbar med liknande problem på olika håll inom en organisation.



Kontakter på längre avstånd i organisationen

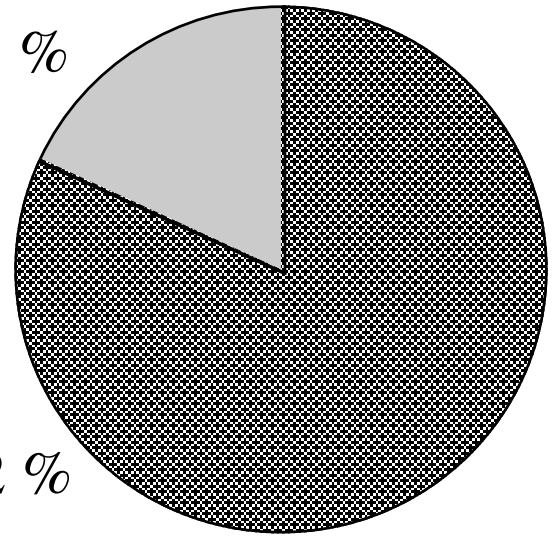
Personliga meddelanden



46 % Inom samma avdelning

54 % Över avdelningsgränser

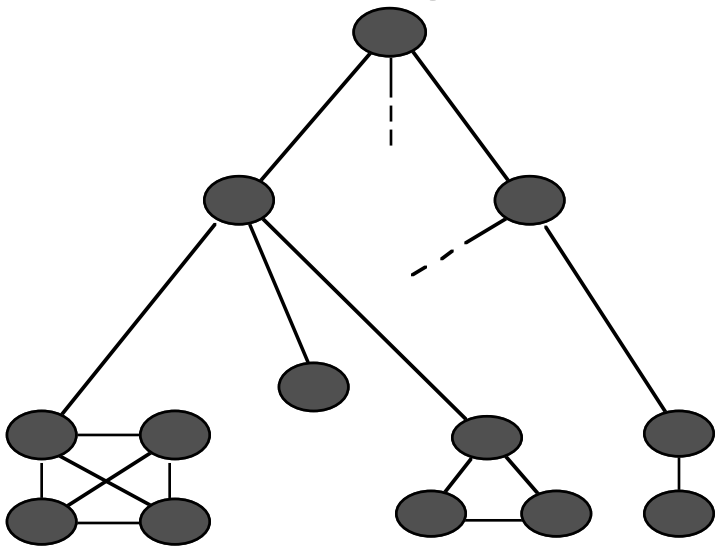
Gruppmeddelanden



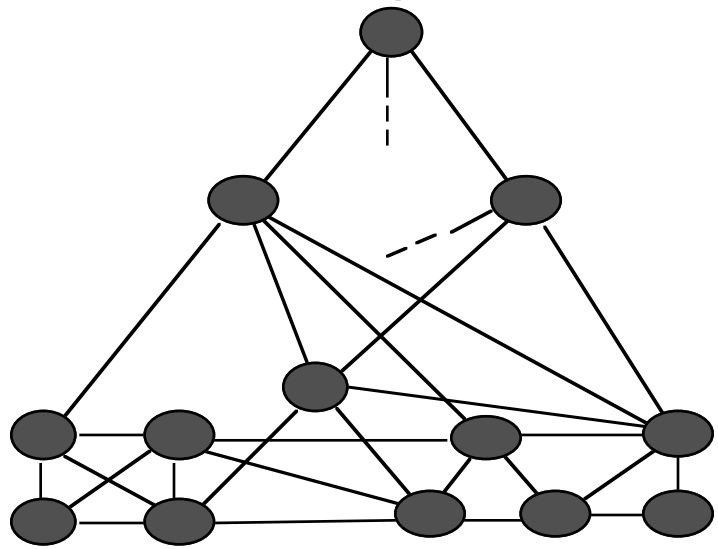
18 %

82 %

Hierarkisk organisation



Nätverksorganisation



Ett medium inte bara till för cheferna

15 % av alla anställda var chefer

I CMC-systemet

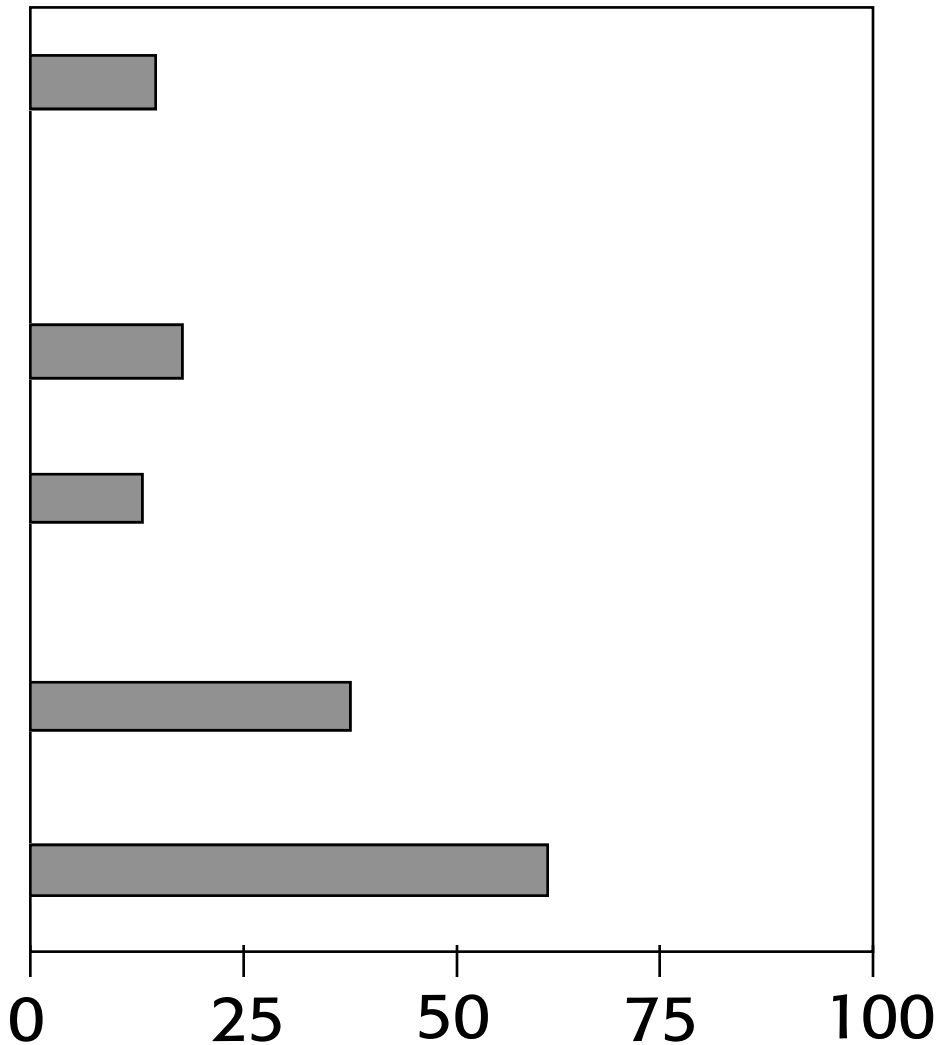
18 % av alla användare var chefer

13 % var mycket aktiva

Vid vanliga sammanträden

37 % av alla deltagare var chefer

61 % av deltagare i många grupper var chefer



Potentiella risker och nackdelar

Avsaknad av kroppsspråk, inflektion

Vanlig invändning från utomstående, framförs sällan av vana användare.

Svårighet att övertyga

Svårighet att fatta konsensusbeslut

Kan leda till "ställningskrig". Kräver komplettering med vanliga möten.

Svårighet att införa framgångsrikt

Svårt att uppnå kritisk massa, svårt få folk ändra på invanda mönster.

Användning utanför tjänsten

Exempel: Vinst 30 minuter/anställd och dag, förlust 10 minuter/anställd och dag.

Sammanfattning

Framgångsrik introduktion av CMC i en organisation ger stora förändringar i kontakterna inom organisationen

Större kontaktnät för var och en

Allsidigare belysning av frågeställningar

Fler kontakter på längre avstånd

En mera platt organisation

Lättare anpassa sig till förändringar

En effektivare organisation

Comparisons with other media

Compare with company newsletters

Company newsletters do not solve all the small and large problems which occur every day. The total effect of the solutions to many such small problems is large.

Compare with information retrieval systems

Information is collected from the brains of the people who use the CMC systems.

Compare with face-to-face meetings

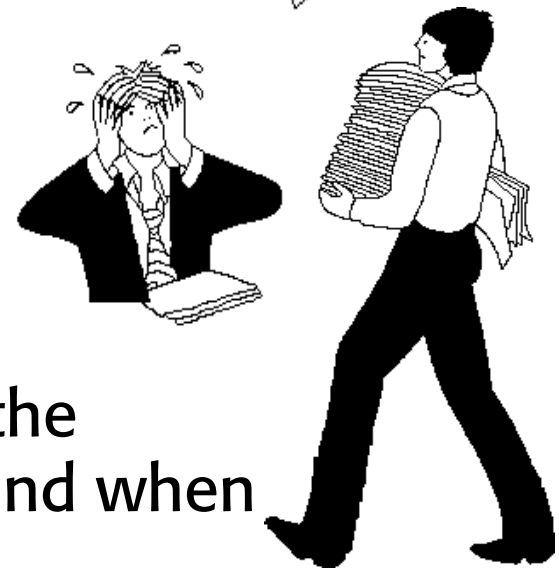
You can attack a problem immediately
when it occurs, you do not have to wait
for the next scheduled face-to-face meetings
You can flexibly form new groups as needed

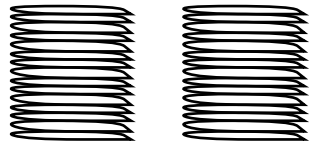
Example: New product idea, a task group with participants from many company departments could be formed in only one day to investigate the idea

Compare with phone calls

Knowing whom to call, reaching him/her

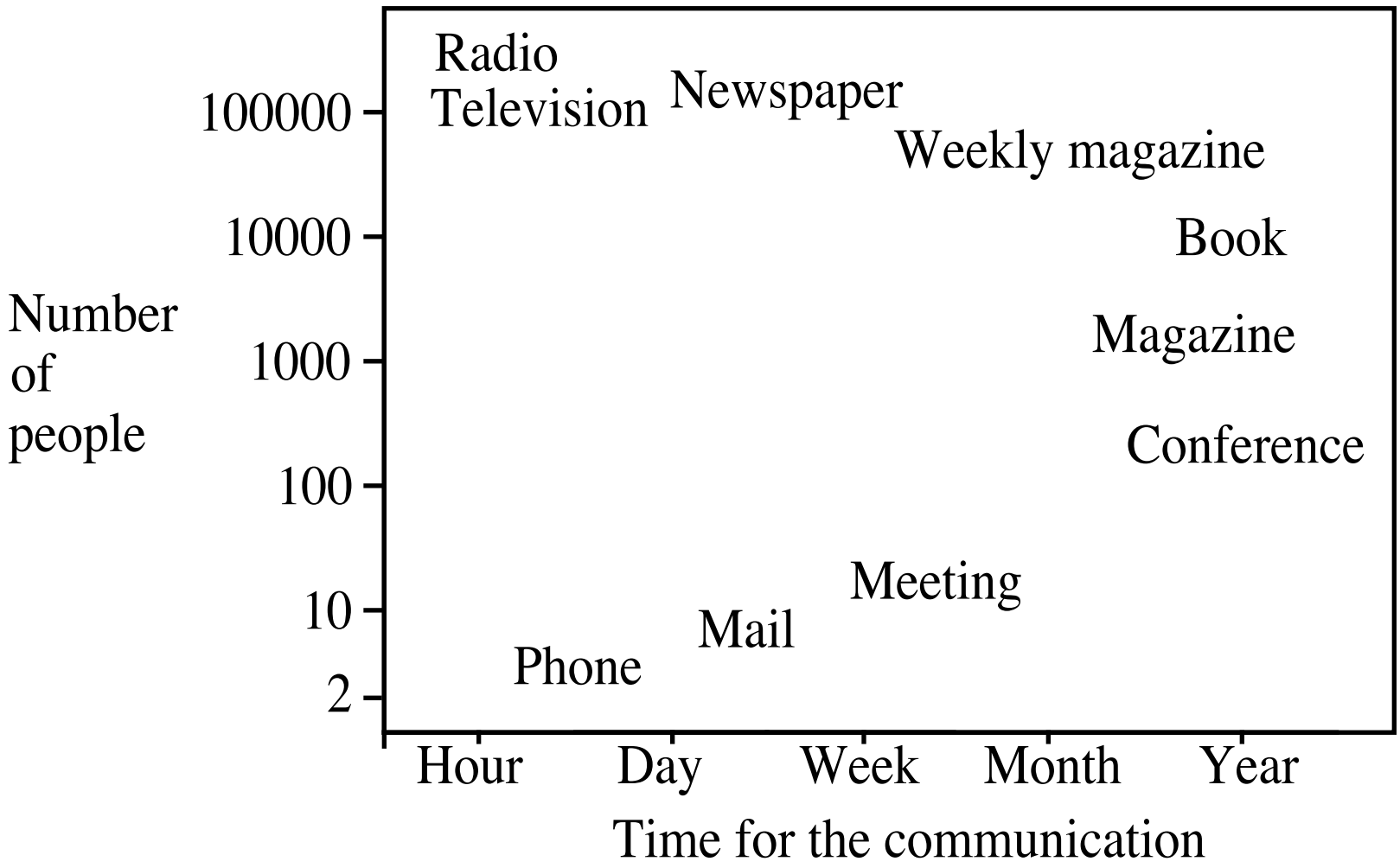
Problems





- Information overload problems
  - Information must be organised to make the recipient able to control what he reads, and when
  - Not too much information, too much not needed information
- Body language, inflection of voice etc
  - Difficult to reach consensus
  - Difficult to persuade people
  - More thorough penetration of problems is possible

New communication possibillities



The controversy about flaming

Sproull and Kiesler: CMC promotes flaming

Lea, O'Shea, Fung, Spears: Flaming is relatively uncommon, and when it appears, is context-dependent

Source: *'Flaming' in computer-mediated communication*, observations, explanations, implications by Martin Lea, Tim O'Shea, Pat Fung and Russel Spears, in *Contexts of Computer-Mediated Communication*, edited by Martin Lea 1992.

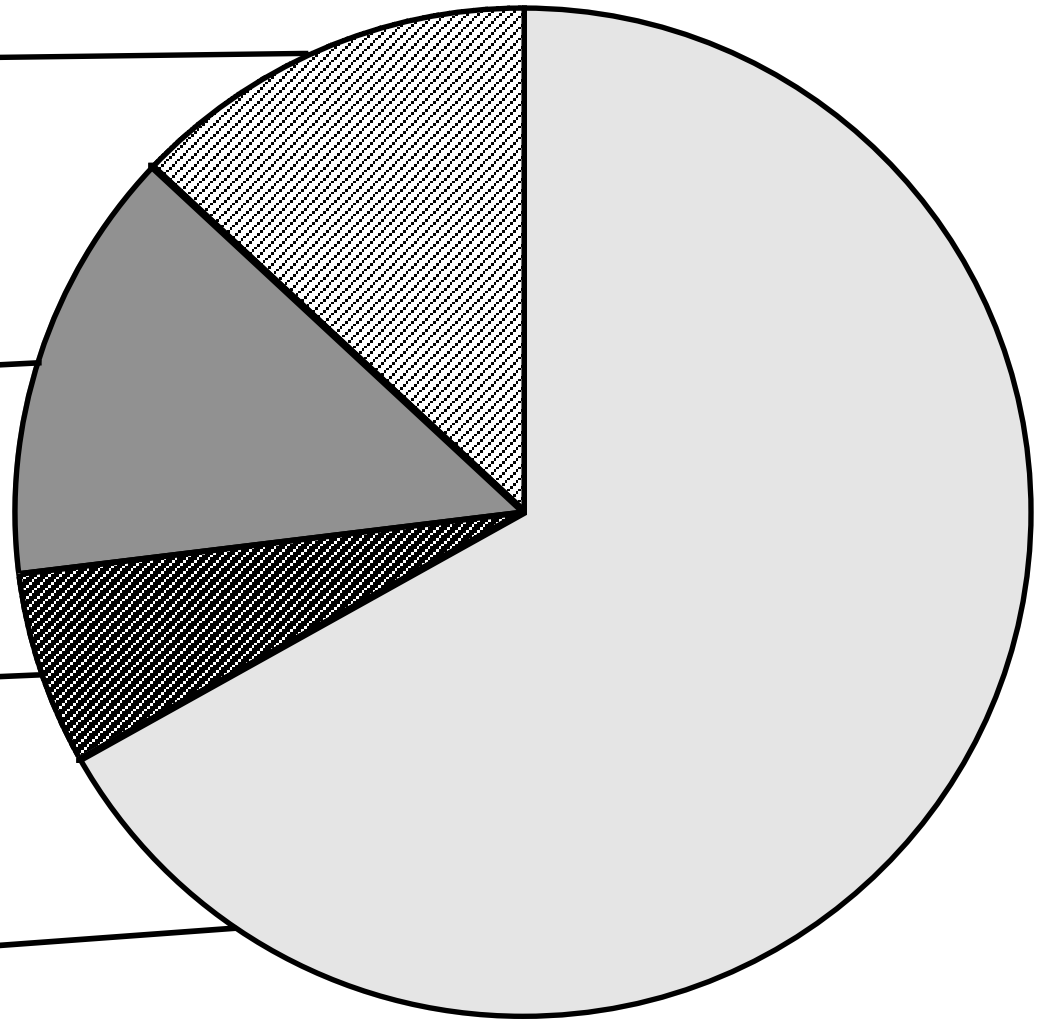
Replacement for other media?

13 % Replacement for formal and informal face-to-face meetings

14 % Replacement for phone calls

6 % Replacement for postal mail, circulars, message slips

65 % New communication



Researchers in the CSCW area:

Computer Science

Psychology

Sociology

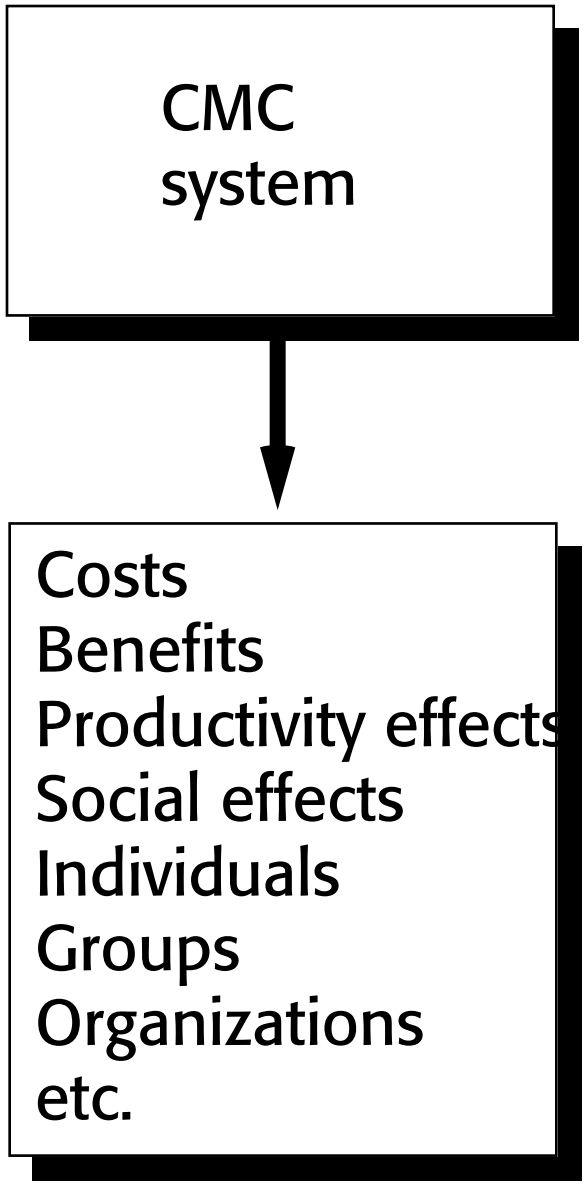
Etnography (Social anthropology)

Big controversy among CSCW researchers:

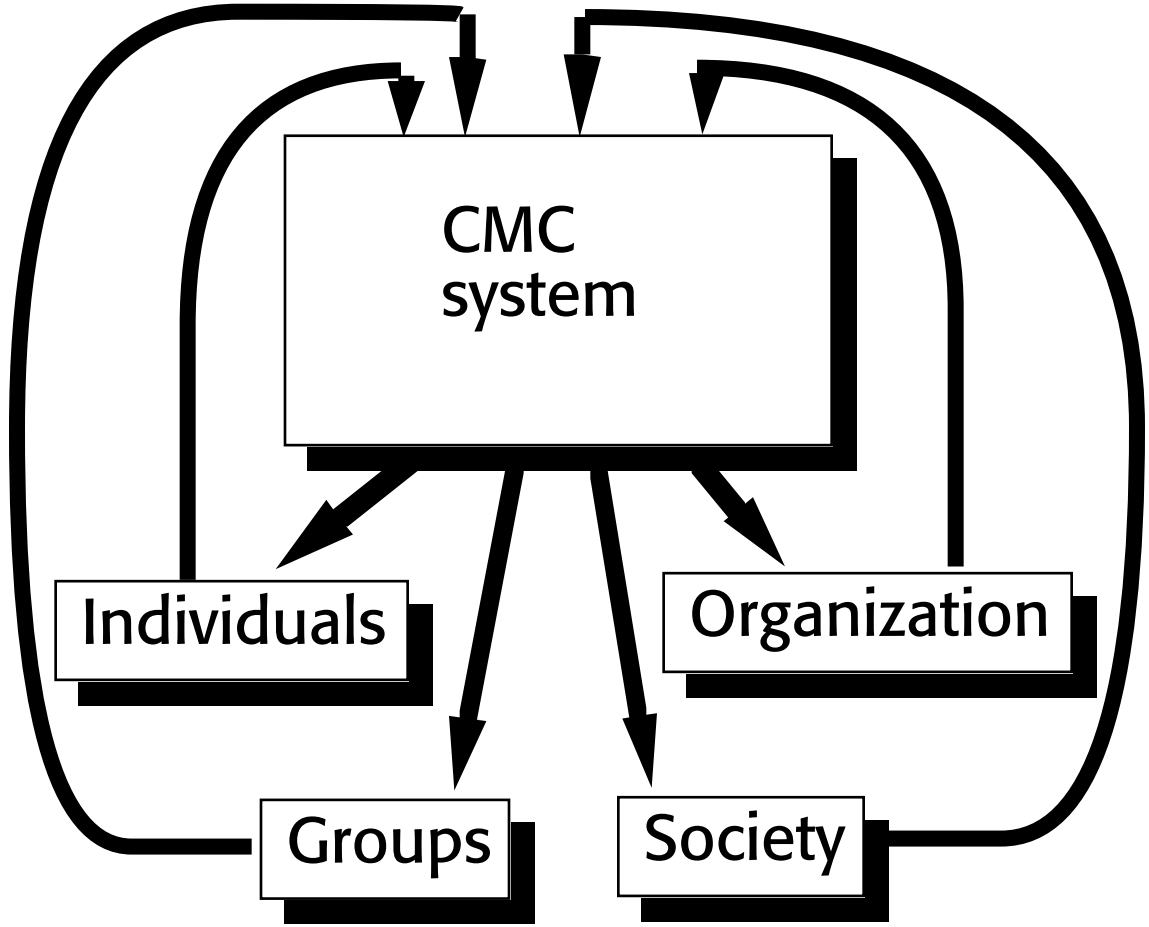
Computer scientists: Trying to develop rational, logical models of collaborative work, like petri nets, activity scripts, AI models etc.

Social scientists: Study real cooperation without CSCW support, analyse what really happens, base solutions on the outcome of such studies. The rational, logical models seldom are able to cater to the full variability of real collaboration. CS solutions are misused or circumwented by users in order to accomplish what they really need.

Traditional model versus context model

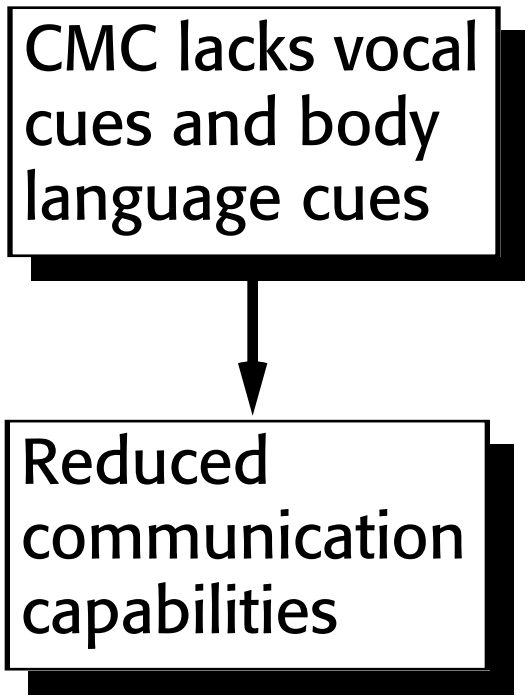


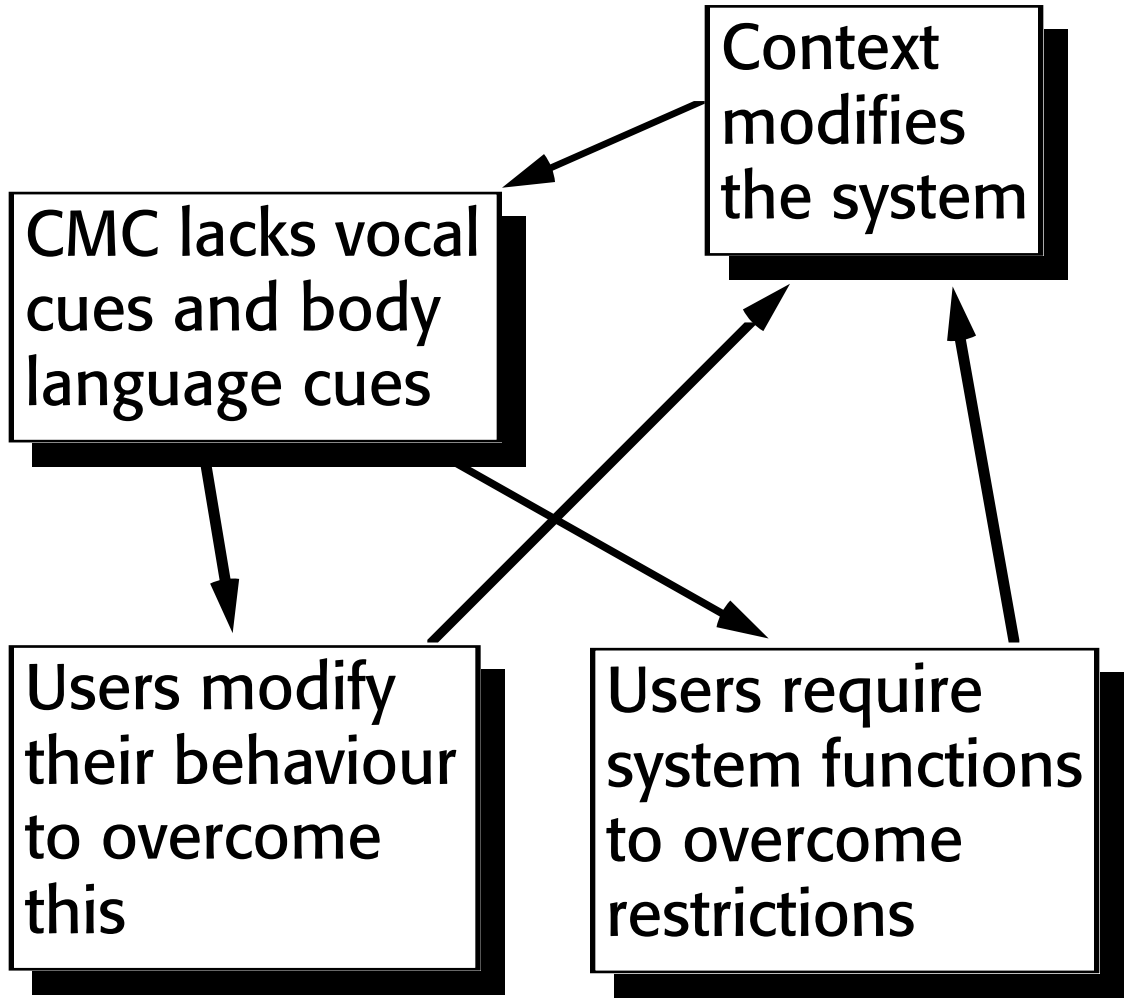
Traditional model



Context model

Example: Does cuelessness cause poverty?





Traditional model

Context model

Note: Contextual effects take time to develop

A solution in search of a problem

Prestel (U.K.) versus Teletel/Minitel (France)

Initial Prestel concept:

- Producers and consumers
- Each frame refers to other frames

Minitel concept:

- Terminals for everyone
- General-purpose network
- See which applications emerge
- Result: Communication rather than retrieval

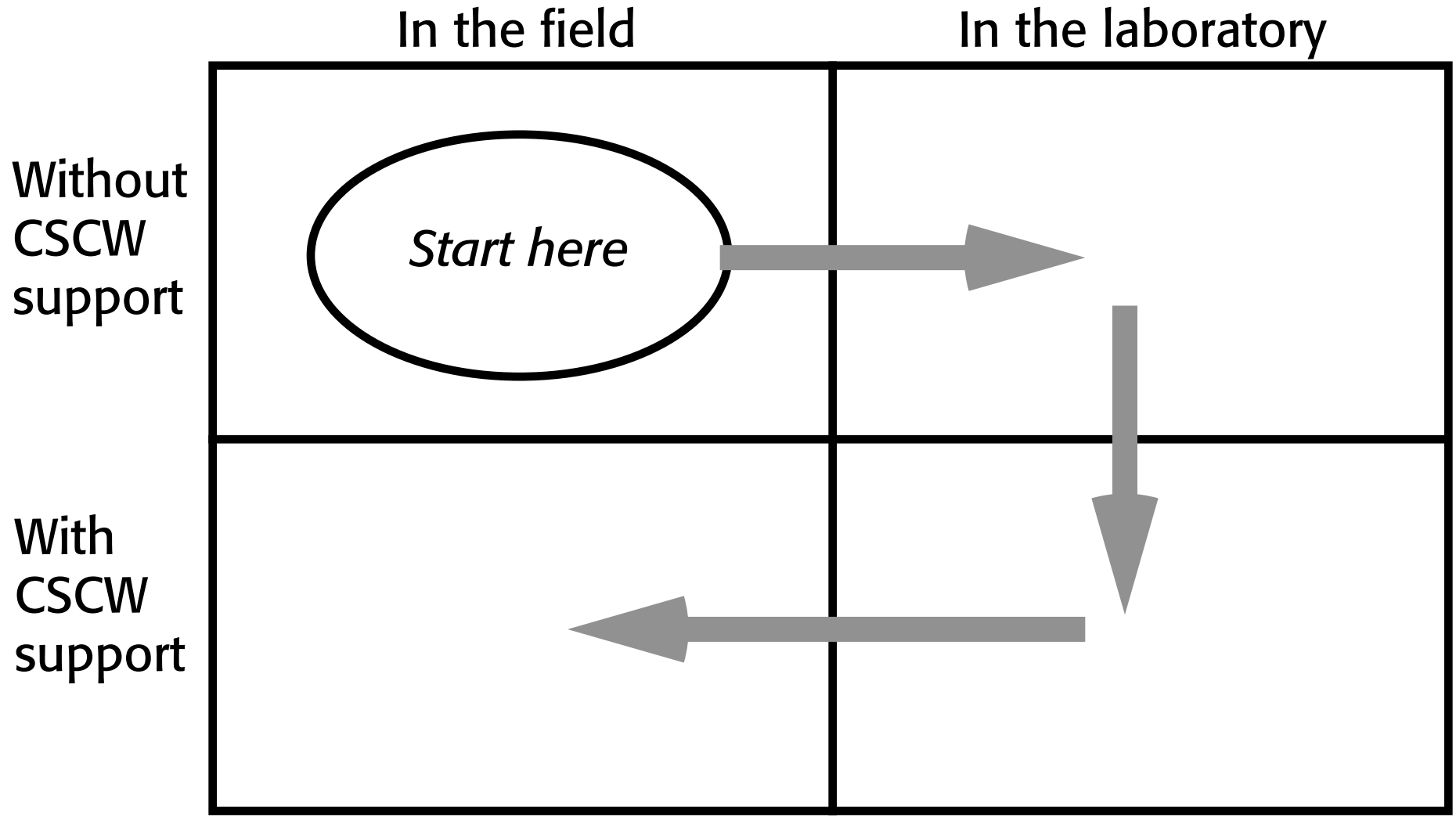
Problems when doing research on CMC/CSCW

- Computer companies are unaware and uninterested in social effects
- Field research expensive
- Experiments not realistic
- Social science studies on real usage: Too late to influence system
- Prototype building expensive

Stephen Gale: Desktop video conferencing: technical advances and evaluation issues, Computer Communications, Vol 15 no 8 1992

Research strategies

(Professor Gary Olson, University of Michigan)



Evaluation of CSCW-CMC systems

- Opportunistic versus planned research
- Participatory evaluation (action research, ethnographic studies, development process)
- Interviews (pre, post, intermediate)
- Self-reports (tape, video, diaries)
- Autologging

Which is the right question to ask?

Black and white questions:

- Is there a need for groupware?
- Is groupware worthwhile using?
- What are the merits and demerits of groupware?

Do something good questions:

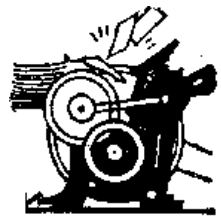
- What kind of groupware is useful?
- Which is best for what, same time or different time?
- How can groupware be made useful?
- How should good groupware be designed?
- How should information be structured to solve what kinds of problems?

Which research method is best?

- Studying Group work without computer?
- Studying group work with very flexible computer tools and no advice on how to use it?
- Comparing group work with tool A and tool B?
- Designing, testing and evaluating new tools?

Support for existing group processes with new tools, or support for new group processes?

CMC experience: Much of the group communication in CMC systems is found to be new communication, new ways of solving existing problems or even new ways of acknowledging and solving new problems.

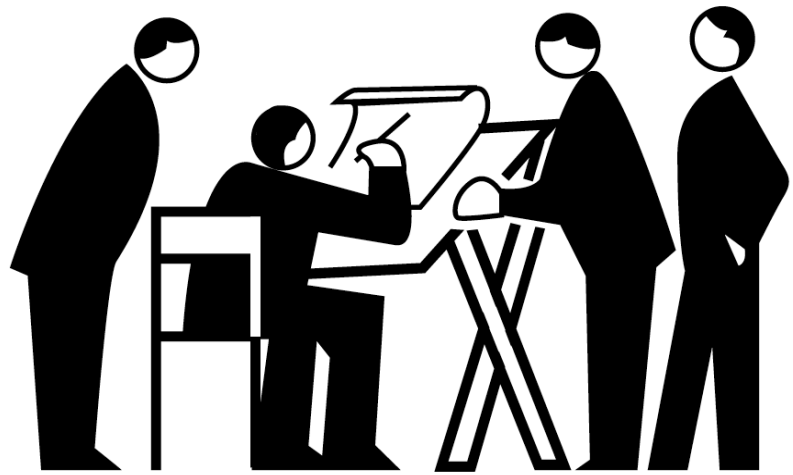
Example: Telephone  *printing press* 

CSCW experience: Most work is on studying existing group processes with and without CSCW support.

Unlawful Communication

- Examples of messages which may be illegal in many countries:
  - Slander,
  - Computer viruses,
  - Secret military information,
  - Privileged information supplied to lawyers, physicians, priests, etc.,
  - Personal information not allowed according to privacy legislation,
  - Copyrighted material, unless you have permission from the copyright holder,
  - Sedition (incitement to rebellion),
  - Racial agitation,
  - Pornography/obscenity,
  - Criminal conspiracy,
  - Disloyalty against your employers,
  - Misconduct of a public servant.

Best for the company or best for the employees?



Increasing competence

Increasing status

Increasing contact network

Increasing community in dispersed organizations

My language is my security

Why fights about languages and nationality so often get emotional!

"French is a beatiful language"

"The English language is a bastard"

"Real programmers use C"

Etiquette, behaviour patterns, ways of thinking

Economist view

Technologist view

Psychologist view

Bureaucratic view

Legalistic view

Example: Too long waiting times for the lifts

A waste of working hours?

Use in immediate work problems

Example: Our customers are complaining, what shall we do

Building competence/contacts for the future

Example: Disasters and how to avoid them

"private" usage

Poems, Recipes, Music etc.

Two ways of looking at this

Economical: Gain in productivity 10 %, loss through private usage 3 %

Moral/legal: Misuse of paid working time

Authoritarian or democratic attitudes

Authoritarian attitude	Democratic attitude
People are lazy and undependable and must be watched and controlled	People are dependable, can be motivated and can control themselves
The main goal for information systems is to give better support for managers	All employees should get support from the information system
Efficiency in the performance of work elements must be increased	The functionality and possibillities for growth of the organization shall be promoted
Work tasks should be split into many small elements, where each empoloyee only gets the information necessary to perform his/her element	Work tasks are organized so that changes and new needs are easier to handle, by promoting high competence and flexible contact and organizational patterns