Human-to-Human Communication

- A model for human-computer interaction?
- Important scope limitation: problem solving
- Why look at human-human interface?
  - The human-computer interface is really a human-human interface because a computer's intellectual substance is wholly derived from people!

- Computer messages are messages from human designers to human users:
  - Offset in time
  - Sent through a “mask”
    - Lowers inhibitions
  - Can bring out hostility or misdirected sense of humor
  - A phenomenon observed by sociologists in actors
Chapanis did study of nature of human-human communication for problem solving.

- Source and seeker of information
- Neither can solve problem alone
- Must work together
- Problem: assemble a trash toter

**Communication channels**
- Voice
- Hand-writing
- Typing
- Video

**Communication mode**
- Combination of channels
- The experimental setup

**Excerpt from typed communication**

**Excerpt from voice communication**
Human-to-Human Communication

- Results
  - Order of efficiency (time to solve)
    - Communication-rich mode (all channels)
    - Voice (but cannot see each other)
    - Hand-writing (including drawing sketches)
    - Typing (experienced)
    - Typing (inexperienced)
  - Time to complete
    - From less than 30 minutes (communication-rich mode) to over 60 minutes (factor of 2.5)

- Unexpected aspects
  - Small difference between experienced and inexperienced typists
    - Only about 1/3 of time on average used in typing
    - Different kind of typing (cf. business)
  - Small difference between communication-rich and voice only
    - In spite of all the information-bearing gestures
  - Voice was most important channel
    - All modes with voice did substantially better

Observations

- Communication was very ungrammatical
  - A big barrier to voice I/O in HCI
  - Almost unintelligible
  - Expected, but surprising in extent that it was true
  - Communication success is tribute to human ability
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- Observations
  - Voice channels are very verbose
    - Higher bandwidth got used, but not efficiently
  - Allowing interruption
    - Did not shorten solution time
    - Does cause different message packaging

In-class exercise
- Everyone: as you observe, write down important characteristics of human-human-communication for problem-solving
- Are these not also important in human-computer interaction?