Wisdom is not the product of schooling but the lifelong attempt to acquire it.
- Albert Einstein

Design = f{Media}: Revisiting Design from a Learning and Collaboration Perspective in the context of Pull and Push Technologies

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Intersection of Design, Learning and Collaboration and their Changing Nature through New Media
User <----> Listener Role in System Design

• user in listener role
  - examples:
    * menu systems (including natural language based menu systems, specification components in DODEs)
    * push systems
  - recognition memory
  - specification of information: clicking at information displayed
  - advantage: only terms the systems knows can be used
  - disadvantage: the information has to be on the screen, user has to understand the system model

• user in speaker role:
  - examples:
    * Unix/Emacs style interfaces
    * pull systems
  - recall memory
  - specification of information: keyboard input, voice input
  - advantage: users can type in whatever they want; can express themselves in their own way
  - disadvantage: users may use terms which the systems does not understand

source: Fischer/Nieper-Lemke: “HELGON — Extending the Retrieval by Reformulation Paradigm”, CHI’89 proceedings, pp 357-362
A Challenge for Pull Systems

Articulation of a Query

Situation Model

- ring
- doughnut
- tire
- wheel
- washer

Application Goals

System Model

- Symbolics:
  (graphics: draw-cricle
   x-center y-center radius inner-radius)

- Fortran package:
  CALL BLCIR (xcntr, ycntr, radius)
  CALL SHADE (xcrds, ycrds, npts, angle, gaps, ngaps, 0, 0)

Implementation Units
HFAs in the Context of “Push and Pull” Technologies
Usage of Sophisticated Help Systems

- Expected usage of help system decreases with increasing expertise of user.
- Observed usage of help system increases with increasing expertise of user.
User Modeling: Creating Context for Push Technologies

• different user modeling techniques:
  - explicit user modeling
  - implicit user modeling
  - observing user performing specific task / tests

• examples from general domains:
  - going to a doctor’s office
  - coaching in sports (skiing)

• examples from computational systems:
  - “How the West Was Won” (question: what characteristics of the environment simplified the user modeling task in the West system)?
  - Critiquing Systems

Providing Context

Intention of the Designer:

Procedure Written by the Designer:
define triangle
repeat 3 [forward 100 right 60]

Feedback from the Environment:

"Intent" Articulation and Communication (communicated to the system):
closed figure
Critiquing Supporting Contextualized Push Strategies

• critiquing lets learners see for themselves the usefulness of new knowledge for actual problem situations; users are informed
  - when they are getting into trouble
  - when they are missing important information
  - when they come up with suboptimal solutions

• most of our critic rules state what one may not do; this makes for greater freedom of choice than if the rules were prescriptive
  - “You must not do X!” leaves open a whole range of possibilities in terms of what one may in fact do
  - “You must do X!” reduces the range of possibilities to the scope of X itself

• unasked-for help breeds incompetence and is often seen as an intrusion