CS449/649:
Human-Computer Interaction

Spring 2017
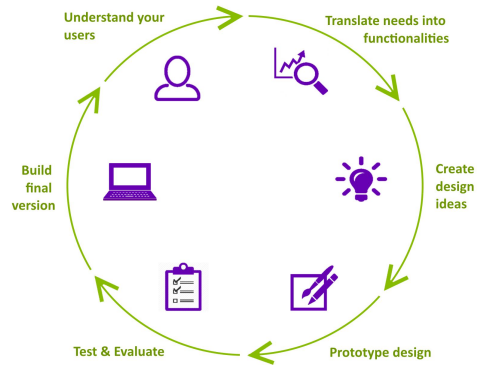
Lecture XVIII

Anastasia Kuzminykh

User Centered Design Process
May 1 - June 14

Understand your users

Translate needs into functionalities

Create design ideas

Prototype design

Test & Evaluate

Build final version

History of user centered design in HCI
June 19, June 21

Academic HCI
June 26, June 28

Special topics in HCI
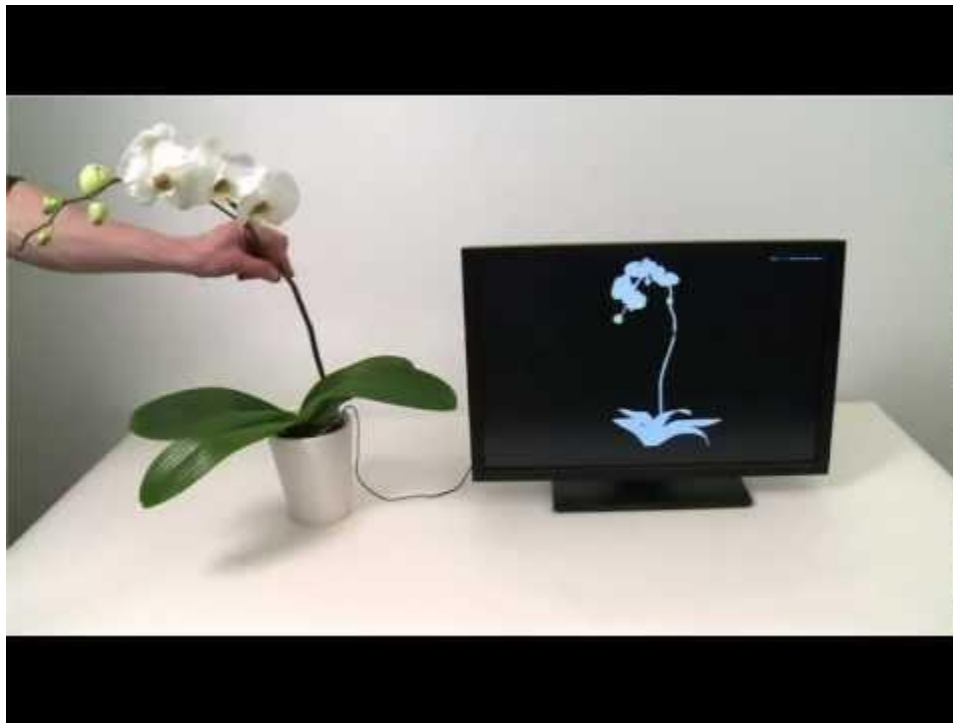July 5, July 10

Course Review
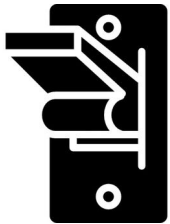July 12, July 17
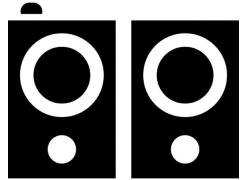
Presentation 2
July 19

Last class
July 24

Botanicus Interacticus: Interactive Plant Technology

Poupyrev, Ivan, et al. "Botanicus Interacticus: interactive plants technology." *ACM SIGGRAPH 2012 Emerging Technologies*. ACM, 2012.
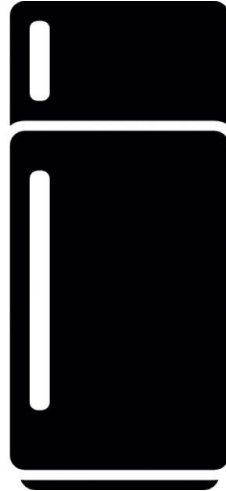
Academic HCI

Ubiquitous Computing -
Paradigm in which computing is made to appear anytime and everywhere, through distributed networked processing devices

Term coined by Mark Weiser in late 1980s

Weiser, Mark. "The computer for the 21st century." *Scientific american* 265.3 (1991): 94-104.

The most profound technologies are those that disappear into the background and become indistinguishable from the everyday environment

squares inside of a cirle depict a tuple of PWMs for each vibro-module
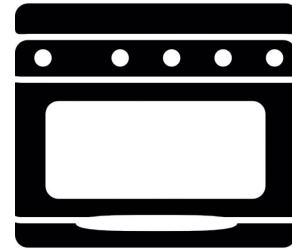
T. Parshakova et al. **"Furniture that Learns to Move Itself"**, CHI'17

A. Chua et al. "Shared Bicycling Over Distance", CHI'17

Academic HCI

Computer-Supported Cooperative Work (CSCW) - area concerned with understanding of the way people work in groups with the enabling technologies of computer networking, and associated hardware, software, services and techniques (Paul Wilson, 1991)
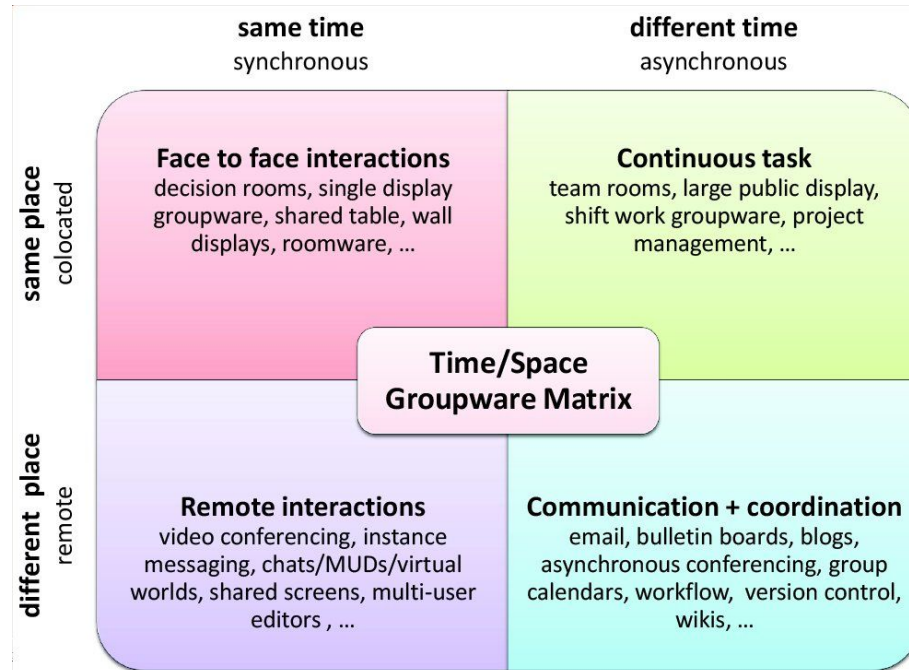
Term coined by Irene Greif and Paul Cashman in 1984

Irene Greif, Computer-Supported Cooperative Work: A Book of Readings. (1988)

Groupware - software designed to support collaborative activities and their coordination. Term coined by Trudy and Peter Johnson-Lenz, 1978-1981

Academic HCI

	same time synchronous	different time asynchronous
same place colocated	**Face to face interactions** decision rooms, single display groupware, shared table, wall displays, roomware, …	**Continuous task** team rooms, large public display, shift work groupware, project management, …
different place remote	**Remote interactions** video conferencing, instance messaging, chats/MUDs/virtual worlds, shared screens, multi-user editors , …	**Communication + coordination** email, bulletin boards, blogs, asynchronous conferencing, group calendars, workflow, version control, wikis, …

Time/Space Groupware Matrix

Johansen, R. Groupware: Computer Support for Business Teams, 1988

Academic HCI

	Real time	Asynchronous
Communication	• Telephone • Video conferencing • Instant messaging • Texting	• Email • Voice mail • Blogs • Social networking sites
Information sharing	• Whiteboards • Application sharing • Meeting facilitation • Virtual worlds	• Document repositories • Wikis • Web sites • Team workspaces
Coordination	• Floor control • Session management • Location tracking	• Workflow management • CASE tools • Project management • Calendar scheduling

From: J. Grudin, S. Poltrock, "Computer Supported Cooperative Work." The Encyclopedia of Human-Computer Interaction, 2nd Ed

Analyzing disasters on social media: Kate Starbird at the GeekWire Summit

Academic HCI

HCI for Development (HCI4D) -

area concerned with understanding the use and appropriate design of information and communication technologies (ICTs) in the context of developing regions

The first workshop on user-centered design and international development at CHI 2007 - Dearden, Andy, et al. "User centered design and international development." *Extended Abstracts on Human Factors in Computing Systems*. ACM, 2007.

Ho, Melissa R., et al. "Human-computer interaction for development: The past, present, and future." *Information Technologies & International Development* 5.4 (2009)

Kumar, Neha, et al. "Development consortium: HCI across borders." Extended Abstracts on Human Factors in Computing Systems. ACM, 2016.

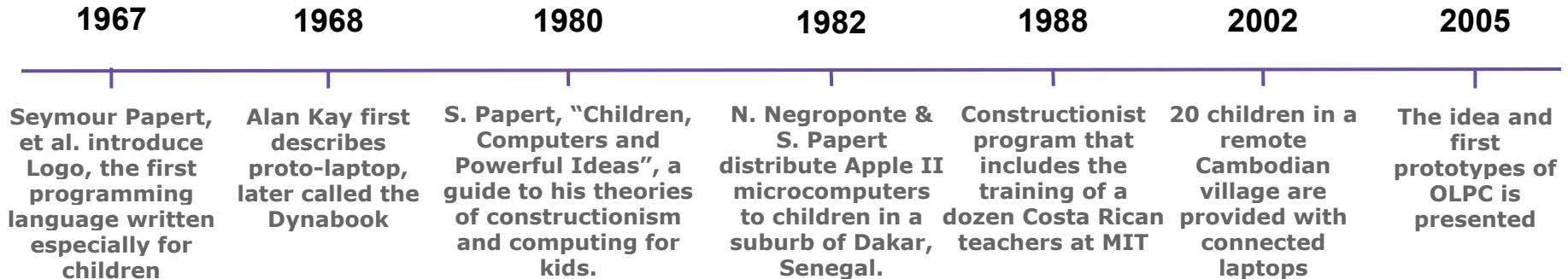**CHI 2017** SIGCHI Social Impact Award: Indrani Medhi Thies - Designing for Low-Literate Users

Academic HCI

One Laptop Per Child (OLPC) project -

non-profit initiative to enable children in low-income countries to have access to content, media and computer-programming environments.
Nicholas Negroponte, Seymour Papert, Alan Kay and colleagues

1967	**1968**	**1980**	**1982**	**1988**	**2002**	**2005**
Seymour Papert, et al. introduce Logo, the first programming language written especially for children	Alan Kay first describes proto-laptop, later called the Dynabook	S. Papert, "Children, Computers and Powerful Ideas", a guide to his theories of constructionism and computing for kids.	N. Negroponte & S. Papert distribute Apple II microcomputers to children in a suburb of Dakar, Senegal.	Constructionist program that includes the training of a dozen Costa Rican teachers at MIT	20 children in a remote Cambodian village are provided with connected laptops	The idea and first prototypes of OLPC is presented

http://www.laptop.org/en/vision/project/index.shtml

Academic HCI

Content of HCI field

Nature Of HCI	Use and Context of Computers	Human Characteristics	Computer System and Interface Architecture	Development Process
(Meta-)Models of HCI	Human Social Organization and Work	Human Information Processing	Input and Output Devices	Design Approaches
	Application Areas	Language, Interaction, Communication	Dialogue Techniques and Genre	Implementation Techniques
	Human-Machine Fit and Adaptation	Ergonomics	Dialogue Architecture	Evaluation Techniques

Hewett; Baecker; Card; Carey; Gasen; Mantei; Perlman; Strong; Verplank. "ACM SIGCHI Curricula for Human-Computer Interaction". ACM SIGCHI.

J. Amores et al. [“Essence: Olfactory Interfaces for Unconscious Influence of Mood and Cognitive Performance”](), CHI'17

Academic HCI

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Hewett; Baecker; Card; Carey; Gasen; Mantei; Perlman; Strong; Verplank. "ACM SIGCHI Curricula for Human-Computer Interaction". ACM SIGCHI.

Week 9 take-away

Concepts:
- Definition of HCI
- HCI fields
- Input and Interaction Techniques
- Ubiquitous computing
- Computer-Supported Cooperative Work and Groupware
- Human-Computer Interaction for Development
- One Laptop Per Child project

Names:
- Mark Weiser
- Irene Greif
- Trudy and Peter Johnson-Lenz
- Indrani Medhi Thies
- Nicholas Negroponte and Seymour Papert