

Stanford University

Communication 169/269
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Computers and Interfaces: Psychological and Social Issues

Winter, 2006-2007

Monday and Wednesday, 11:00 A.M. - 12:15 P.M.

Section TBA

Instructor

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Overview

This course explores the relationship between (computer-based) interfaces and human attitudes and behaviors. There are two organizing questions for the course:

- (1) What are the causes and consequences that link various aspects of interfaces to the social psychology and culture of individuals and groups?
- (2) How should the answers to question (1) influence interface design?

The goal of the course is to provide *tools* for answering these questions, rather than simply answering them. You can think of the course as built around three types of activities:

a) *Consuming*. The readings and lectures will present you with theories of interfaces from both social science and design perspectives. We will often read authors who strenuously disagree with each other. Instead of focusing on who's right and who's wrong (although that's certainly not irrelevant), we will be concerned with the theoretical and/or empirical approaches by which they reached their conclusions. This part of the course is designed to give you a set of ideas with which to analyze and create. Your skills in this area will be assessed via the midterm, final, and section (and secondarily by the projects).

b) *Analyzing*. An excellent way to reinforce an understanding of a theory is to apply it rigorously. In class lectures and in the exams, you will be asked to apply what you consumed to interfaces. That is, you will be asked to critique interfaces (drawn from past, present, and future products), from the variety of perspectives presented in readings, lectures, and section. The goal here is to exercise general ideas by analyzing how they play out in real interfaces drawn from PC-based software, the Web, voice portals, handheld devices, etc. Your skills in this area will be assessed via the midterm, final, and section (and secondarily by the projects).

c) *Creating*. It's easier to be a critic than a creator. If you *really* understand interfaces, you should be able to create one of your own! Hence, the third type of activity in the course will be a group project in which you will be asked to create a storyboard for a new product or service and provide arguments that explain why your design is wonderful! The emphasis here is on creativity, ingenuity, and playfulness constrained by meeting the needs of your target user. Because the most interesting and educational design projects are those that involve users that are different from you, and because there is tremendous demand for information technology and services for the developing world, the design projects will focus on developing countries. There will be opportunities to make your projects a reality for developing countries via a number of different opportunities which I'll discuss in class. Your skills in creating interfaces will be assessed via the projects (and secondarily by the midterm, final, and section).

Requirements

1. Take-home midterm
2. Take-home final examination
3. Design project (storyboard and supporting document)
4. Section participation
5. Participation as experimental participants (a maximum of eight hours total)

Attendance at lectures is not required, but it is essential for passing the course: The lectures introduce a great deal of material that is not covered in the readings.

Required Books

Hofstadter, D. R. & Dennett, D. C. (1981). *The mind's I*. New York: Bantam Books.

Nass, C. (2000). *Computers and interfaces: Reading packet*.

Nass, C. & Brave, S. (2005). *Wired for speech: How voice activates and advances the human-computer relationship*. Cambridge, MA: MIT Press.

Website for the Course

You can find the website for the course on Coursework (<http://coursework.stanford.edu>). The website will have the syllabus, the email mailing list for the course, the lecture notes, selected readings, class announcements, etc. The website will only be accessible to students who sign up for the course via Axess. Hence, please make sure to register for the course ASAP. If you decide to drop the course (an impossible thought!), you will be removed from the email list and the website. This syllabus is posted at <http://syllabus.stanford.edu>.

Sections

Section sign-ups, via Coursework, will occur early in the quarter. Sections will start on January 23. Section grades will be based on quality of performance on section requirements, quality and quantity of participation, and attendance.

Because the projects will be based in section, you **MUST** sign up for the same section as your project partners (you will generally have two partners). If you do not choose a partner(s), we will be happy to assign you to someone else in your section. You should not be afraid of this: Students who were randomly assigned partners did better on average than students who chose partners (although there certainly was variance), which is consistent with the research literature.

Support of Research

All students will be required to provide up to ten hours of activities in support of research (it will likely be much less). This process will be initiated by signing up with the Sona System (this will be explained in class). From that point onward, support of research will generally involve being an experimental participant in experiments studying interface design. I have found this participation to be a consistently valuable way to learn about another aspect of interface research. Indeed, many students have gotten so excited about experimental research on interfaces that they have pursued research projects in this area (a wonderful thing!).

If some students are unable to do experiments for any of a host of reasons (e.g., consistent scheduling conflicts, ethical objections to participating in experiments, individual characteristics that make one inappropriate for particular experiments, etc.), I will work out a mechanism to meet their requirement in a different way (e.g., running subjects, coding data, etc.).

Design Project

The group design projects have been featured in the Stanford admissions materials, and have been an incredible hit! Many students said that it was their best experience at Stanford, and 95% of the students had positive feelings about the projects.

Each group will consist of three members. Everyone will be doing a project focusing on an individual or group in a developing country. Of course, there is an enormous variety in the problems and opportunities in every developing country, so there will be incredible room to explore. The project groups will be based in section; that is, if you wish to be in the same group as someone else, you *must* be in the same section.

Key Dates

Wednesday, January 10 — First day of class

Wednesday, January 17 — First day of sections

Monday, February 12 — Midterm will be posted on the Web

Friday, February 16 — Midterm due at 4:30 P.M.

Friday, March 9 — Design projects due at 4:30 PM

Tuesday, March 13 — Final exam will be posted on the Web

Wednesday, March 21 — Final due at 11:30 A.M.

Grading

Some students best demonstrate their understanding of course material through exams; others, through projects. In recognition of this, we use two different formulas to calculate your grade (see below) and assign you the *higher* grade.

Grading Formula 1

<i>Aspect of Course</i>	<i>Weight</i>
Final Exam	35%
Midterm	20%
Design Project	25%
Sections (including experiment participation)	20%

Grading Formula 2

<i>Aspect of Course</i>	<i>Weight</i>
Final Exam	25%
Midterm	15%
Design Project	40%
Sections (including experiment participation)	20%

Detailed Readings and Lecture List

1. Introduction to the Course (Wednesday, January 10)

No Readings

2. Martin Luther King Day – No Class (Monday, January 15)

No Class

3. Fundamentals of Interfaces I (Wednesday, January 17)

Johnson, S. (1999). *Interface culture: How new technology transforms the way we create and communicate*. San Francisco: HarperEdge. Pp. 1-26.

Weiser, M. (1991). The computer for the twenty-first century. *Scientific American*, 94-100.

Norman, D. A. (1988). *The design of everyday things*. New York: Doubleday. Chapter 1.

4. Understanding Information Products and Services in Developing Countries (Monday, January 22)

To be announced

5. Fundamental of Interfaces II (Wednesday, January 24)

Parker, I. (2001, May 28). Absolute PowerPoint. *The New Yorker*, 76, 78-80, 85-87.

Beniger, J.R. (1987). Personalization of mass media and the growth of pseudo-community. *Communication Research*, 14(2), 352-371.

Nelson, T.H. (1990). The right way to think about software design. In B. Laurel (Ed.), *The Art of Human-Computer Interface Design*. Reading, MA: Addison-Wesley, 235-243.

6. Fundamental of Interfaces III (Monday, January 29)

Nass, C. I. & Mason, L. (1990). On the study of technology and task: A variable-based approach. Pp. 46-67 in J. Fulk & C. Steinfeld (Eds.), *Organization and communication technology*. Newbury Park: Sage.

Steuer, J.S. (1992). Defining virtual reality: Dimensions determining telepresence. *Journal of Communication*, 42(4), 73-93.

Reeves, B. & Nass, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. New York: Cambridge University Press. Chapter 1-2.

7. Computers as Humans (Wednesday, January 31)

Turing, A. (1981). Computing machinery and intelligence. In Hofstadter, D. R. & Dennett, D. C. (1981). *The mind's I* (pp. 53-68). New York: Bantam Books.

Hofstadter, D. (1981). The Turing Test: A coffeehouse conversation. In Hofstadter, D. R. & Dennett, D. C. (1981). *The mind's I* (pp. 69-95). New York: Bantam Books.

Searle, J. R. (1981). Minds, brains, and programs. In Hofstadter, D. R. & Dennett, D. C. (1981). *The mind's I* (pp. 353-373). New York: Bantam Books.

Optional Readings

Nass, C. & Brave, S. (2005). *Wired for speech: How voice activates and advances the human-computer relationship*. Cambridge, MA: MIT Press. Chapter 11-12.

8. *Language and Voice in Interfaces (Monday, February 5)*

Clark, H. (1996). *Using language*. New York: Cambridge University Press. Chap. 1.

Olive, J. P. (1997). "The talking computer": Text to speech synthesis. In D. Stork (ed.), *HAL's legacy: 2001's computer as dream and reality* (pp. 101-130). Cambridge, MA: MIT. Chap. 6.

Kurzweil, R. (1997). When will HAL understand what we are saying? Computer speech recognition and understanding. In D. Stork (ed.), *HAL's legacy: 2001's computer as dream and reality* (pp. 131-170). Cambridge, MA: MIT. Chap. 7.

9. *Social Responses to Communication Technology I (Wednesday, February 7)*

Nass, C. & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. *Journal of Social Issues*, 56(1), 81-103.

Nass, C. & Brave, S. (2005). *Wired for speech: How voice activates and advances the human-computer relationship*. Cambridge, MA: MIT Press. Chapter 1.

10. *Social Responses to Communication Technology II (Monday, February 12)*

Nass, C. & Brave, S. (2005). *Wired for speech: How voice activates and advances the human-computer relationship*. Cambridge, MA: MIT Press. Chapter 2-8.

11. *Computers and Other Human Abilities (Wednesday, February 14)*

Cassell, J. (2002). Nudge nudge wink wink: Elements of face-to-face conversation for embodied conversational agents. In J. Cassells, J. Sullivan, S. Prevost, & E. Churchill (Eds.), *Embodied conversational agents* (pp. 1-27). Cambridge, MA: MIT Press.

Brave, S. & Nass, C. (2002). Emotion in human-computer interaction. Pp. 251-271 in J. Jacko & A. Sears (Eds.), *Handbook of human-computer interaction*. New York: Lawrence Erlbaum Associates.

12. *Presidents' Day (holiday – no classes, Monday, February 19)*

13. *Computers and Agents (Wednesday, February 21)*

Johnson, S. (1999). *Interface culture: How new technology transforms the way we create and communicate*. San Francisco: HarperEdge. Pp. 173-205.

Jameson, A. (2002). Adaptive interfaces and agents. Pp. 305-330 in J. Jacko & A. Sears (Eds.), *Handbook of human-computer interaction*. New York: Lawrence Erlbaum Associates.

Laurel, B. (1993). *Computers as theatre*. Reading, MA: Addison-Wesley. Pp. 141-149.

14. *Computers and Identity (Monday, February 26)*

- Borges, J. L. (1962). Pierre Menaud, author of the *Quixote*. D. A. Yates & J. E. Irby (Eds.), *Labyrinths* (2nd ed.) (pp. 36-44). New York: New Directions.
- Borges, J. L. (1981). Borges and I. In Hofstadter, D. R. & Dennett, D. C. (1981). *The mind's I* (pp. 19-22). New York: Bantam Books.
- Dennett, D. (1981). Where am I? In Hofstadter, D. R. & Dennett, D. C. (1981). *The mind's I* (pp. 217-231). New York: Bantam Books.
- Dennett, D. C. (1997). When HAL kills, who's to blame? Computer ethics. In D. Stork (ed.), *HAL's legacy: 2001's computer as dream and reality* (pp. 351-366). Cambridge, MA: MIT. Chap. 16.

15. *Humans as Computers (Wednesday, February 28)*

- Nass, C. & Brave, S. (2005). *Wired for speech: How voice activates and advances the human-computer relationship*. Cambridge, MA: MIT Press. Chapter 10.
- Bolter, J. D. (1984). *Turing's man: Western culture in the computer age*. Chapel Hill: U. of North Carolina Press. pp. 3-14; 24-32; 37-42.
- Turkle, S. (1984). *The second self: Computers and the human spirit*. Cambridge, MA: MIT Press. Pp. 11-25.
- Turkle, S. (January, 1996). Who are we? In *Wired Magazine* (pp. 149-152, 193-199).

16. *Macro-social Scholar's Take on Interfaces (Monday, March 5)*

- Fisher, C. S. (1985). Studying technology and social life. In M. Castells (Ed.), *Technology, space, and society: Emerging trends*. Beverly Hills, CA: Sage.
- Winner, L. (1977). *Autonomous technology*. Cambridge, MA: MIT Press. Pp. 306-335.

17. *Economists' Take on Interfaces (Wednesday, March 7)*

- Lessig, Lawrence. (2004). *Free culture: How big media uses technology and the law to lock down culture and control creativity*. New York: Penguin Press. Pp. xiii-xvi, 1-13.
- Shapiro, C. & Varian, H.R. (1999). *Information rules: A strategic guide to the network economy*. Pp. 1-18, 83-102.

18. *Most Exciting Results out of the CHIME Lab (Monday, March 12)*

To be announced

19. *Tying It All Together (Wednesday, March 14)*

No Required Readings