Before we get started ...
pass the around the attendance sheet boustrophedontically “like an ox plowing a field” back-and-forth
locating today’s talk ... 

• HCI & CS
  – “The interface is the application.”

• CS & Engineering
  – “We’re all software engineers.”
Creative Computing or the Art of Innovation

Steve Harrison

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Where does innovation come from?
The 4 creative disciplines:

- art
- science
- design
- engineering

from Rich Gold’s *The Plenitude*
The 4 creative disciplines:

- art
- design
- science
- engineering
Goals, values, methods, aesthetics, personalities, language, norms

art | science
---|---
design | engineering
Goals, values, methods, aesthetics, personalities, language, norms

How to collaborate across these axes?
What forms of collaborations work? What sorts of results do these forms deliver? What sorts of knowledge are created?
Some forms of cross-disciplinary work

Support
Inspire
“Riff” and co-produce
Blurring the boundaries
Engineers supporting artists
Engineers supporting artists:

Billy Kluver

- research engineer
- Bell Labs
- 1950’s & 60’s
Bell Labs

- A few things from the research lab of the phone company:
  - sound motion pictures
  - transistors
  - photovoltaics
  - information theory
  - the bit

- unix ("linux" and OS X on the Mac)
- C programming language
- verified the Big Bang
- the laser
- CCD’s (digital cameras)
- 6 Noble prizes
Kluver’s Collaborations

- Jean Tinguely
  - “Homage to NY”

- Claes Oldenberg

- Jasper Johns
  (battery powered neon light)

- Merce Cunningham, Nam Jun Paik, Stan Vanderbeek, & Yvonne Rainer
  (first wireless FM mic)

- Andy Warhol
  (mylar balloons)

- Robert Rauchenberg
  - EAT ”Experiments in Art & Technology”

  - 9 Evenings of Theater and Engineering

- Pepsi Pavillion - Osaka Worlds Fair
Engineers supporting artists:
Billy Kluver / 9 Evenings of Theater and Engineering

- Open Score
  - Robert Rauschenberg
  - Bell Labs research engineers
- 3 parts:
  - Augmented reality tennis game
  - night vision audience participation event
  - musical performance
Art inspiring technology
Art inspiring technology:

**Hole in Space** and Media Space

- Hole in Space
  - *Mobile Image* (Rabinowitz and Galloway)
  - 1980
  - Real-time open link from Century City to Lincoln Center
  - Life-size images in store fronts
Art inspiring technology:
Hole in Space and Media Space
Art inspiring technology:

Hole in Space and Media Space

- Xerox PARC
- Media Space
  - Stults and Harrison
  - 1985-1989
  - Real-time open link from PARC to Portland satellite office
  - see *HCI Remixed* for story of HIS+M/S
Xerox PARC

- Industrial research lab
- Offices and documents
- Two research traditions:
  - Academic-style science
  - Edison-style tinkering
- “Build what you use; use what you build.”
- “Best way to predict the future is to invent it”
Laser printing

Personal computing (BUT NOT THE MOUSE!)

Object-oriented languages

Ethernet (used to network personal computers)

the prototypes that became Adobe Illustrator and Photoshop
Art inspiring technology:

Hole in Space and Media Space

Using always-on video, audio, and computing to fold time and space

Before there were any cellphone cameras, webcams, Skype or even that media had any legitimacy in CS
Art inspiring technology:

Hole in Space and **Media Space**

- lessons from living in *representational* space
  - The architecture of communicative surfaces
  - People, events, places
  - Appropriate behavioral framing
  - Interaction managed in social space
- see *Media Space: 20+ Years of Mediated Life* to learn more about M/S
“riffing” and co-producing
Engineers and artists “riffing” off one another: Artist/researcher collaborations

- Examples from Xerox PARC:
  - Bit mapped graphics editor
  - Ubiquitous computing / ambient displays
  - PARC Artist In Residence Program
  - XFR
Engineers and artists “riffing” off one another:
The first bit-mapped editor

• Bob Flegal (computer scientist)
• Bill Bowman (graphic designer)
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Engineers and artists “riffing” off one another:

Natalie Jeremijenko

• Came to PARC as part of PAIR program
• LiveWire, Park-ing Lot Project
• “riffing” as a method: re-framing, appropriating
PAIR: the PARC Artist in Residence Program

- Modeled after Bell Labs/EAT
- Goal of learning from each other
  - better questions
  - better researchers
  - better artists
- 20+ artists over 8 years
Engineers and artists “riffing” off one another:

Natalie Jeremijenko

- LiveWire (Weiser)
- Spinning string, ethernet traffic
- Ambient display
- Awareness

- Park-ing (Harrison and Minneman)
- Everyday life as art
- Ubi comp
Engineers and artists "riffing" off one another:
Blurring the boundaries
Using the ideas and ways of seeing of art to drive research

• PARC and Xerox agenda: Document research
  – in this model, CS is a tool
  – PARC research >>> “inventing things that make things that people read”
  – Xerox business >>> “making things that make things that people read”

• Art method: Critical theory:
  – Genre as a method of research
  – Investigation of systems of meaning
**XFR: eXperiments in the Future of Reading**

A research project and an installation exploring the relationship between reading and technology

Steve Harrison
Are these product prototypes, entertaining diversions, research demos, or what?

The exhibits are like concept cars. They set ideas into an accessible context. They speak to people who set strategic direction inside companies, knowledgeable opinion leaders and the public.
Some research questions raised by XFR:

- Are we becoming an epigraphic culture and what would it mean if we are?
- Is reading silently to one’s self, the highest and best form of reading?
- If the environment is covered in text, how will it all be read?
- In the future, will only the poor be required to know how to read?
- Is dynamic text the basis for a new form of symbolic interaction?
How to apply this?

art

design

science

engineering
Art+Engineering as Pedagogy: What can be learned

• Collaboration practices between disciplines
• Comparative aesthetics
• Comparative problem solving
• Methods as a door to designing design (aka “It’s Just a Method”)
Art+Engineering as Pedagogy:
Creative Computing Capstone Studio (cs 4644)
(aka “CyberArt”)
Art+Engineering as Pedagogy: Creative Computing Capstone Studio (aka “CyberArt”)
Art+Engineering as Pedagogy:
What can be learned

• Collaboration practices between disciplines
• Comparative aesthetics
• Comparative problem solving
• Methods as a door to designing design (aka “It’s Just a Method”)
Art+Engineering as Research:
Research Themes

• Technology in Place
• Architectural Scale Display
• Meaning
Architectural Scale Display: Meaning:

SenSpace

- Kunmi Otitoju
- Meaning of interaction
Architectural Scale Display: Meaning:

SenSpace

- Kunmi Otitoju
- Meaning of interaction

Steve Harrison
Meaning: Cheats

- Rob Hardy
  - multiplayer games
  - effect on player and other players

- Bobby Beaton
  - cheating in single-player experiential games like GuitarHero, Rock Band, and MarioKart

- What is a “cheat”?
- Why use a cheat?
- What makes a good cheat?
Technology in Place:
Meaning:
PlaceMark

• with Deborah Tatar and Jen Boyle @ Hollins U
• (aka Vivid Embodiment)
• Joon Lee, Bobby Beaton, Matt Schaefer and Ali Crandall/Hollins U

• writing in place(s)
Technology in Place:
Meaning:
PlaceMark

Thursday, February 26, 2009
What art can bring to collaboration

• does not need a “problem” to be solved
• art “problems” are always on the table
• no stopping rule
  –to project
  –to boundaries
• an emphasis on “seeing” (often through doing)
What art can bring to collaboration
- entrepenurial energy

- does not need a “problem” to be solved
- art “problems” are always on the table
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  - to project
  - to boundaries
- an emphasis on “seeing” (often through doing)
Eewwww
QuakeView
Body Lapse
Body Lapse
Body Lapse
Body Lapse

- Chiquita apple bites: 11:30 am
- Several items: 11:30 am
- Buffalo meat: 11:30 am
- Special K bar: 02:30 pm
- Dijon, spinach salad: 05:30 pm
- Several items: 06:10 pm
Body Lapse

**BodyLapse**

**Total Dimensions:**

- Length (back of display to front control pedestal): 21'
- Width (behind display): 10'
- Width (in front of display): 15'
- Height (total): 8'

**Lighting considerations:** We are aiming to use a 2500-4500 lumen projector so an area with lower ambient light would be preferable.

**Note:**

- We are trying to reduce this distance by using a mirror configuration or short throw lens.
- Screen dimensions are 10' x 8'.
- These side panels highlight the food and exercise tracking system.
• What is research?
• Art, science, design and engineering
• Some modes of cross-disciplinary collaboration
  • Support
  • Inspire
  • “riff” and co-produce
• Blurring the boundaries
  • Genre-based research
  • XFR: research project and installation
• Post 20th Century collaborations
Thank You

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