Tableau HW

- Thoughts on the system?
Casual InfoVis

Let’s start off with ideas and concepts from the paper...

A complement to the majority of ‘central’ infovis; which is a focus on analytic tasks and analysts as the idealized user.

*Infovis for the everyday person*

Spend some time looking at the ‘edges’ of the infovis domain
Definition

• *Casual Infovis* is the use of computer mediated tools to depict personally meaningful information in visual ways that support everyday users in both everyday work and non-work situations
  – Perhaps “Everyday infovis” is another reasonable term
Changes to traditional notions

- **The user population**
  - Expand to include many more kinds of people and many more situations and scenarios
  - People who are not explicit or implicit analysts
  - Non-professionals in general
  - Low(er) motivation

- **Usage pattern**
  - New patterns of use that depart from the more traditional deep-dive explorations and sensemaking
  - In a word, more *casual*
  - Fleeting awareness and monitoring tasks
  - Could also include more substantial reflections
  - Mobile and ubiquitous, not just desktop
Changes to traditional notions

- Data types also change
  - Often personally relevant (about ‘me’)
  - Tight coupling between user and the data
  - Tight coupling gets at what is meaningful about the data stream... not always what is important
    Sometimes the most minute and boring detail is still very meaningful

Changes to traditional notions

- Insight
  - Gets at one of the fundamental questions of infovis
  - But the examples on the edges show different kinds of insights
  - Maybe insights are not perfectly quantifiable in a way that’s rigorous
    (for an attempt see Saraiya & North 2005)
Areas to explore for today

- Artistic InfoVis
- Ambient InfoVis
- Social InfoVis

Artistic InfoVis

What is that?
Artistic InfoVis

- Artistic expression using visualizations of data
- They are not just generative art – they still read data, represent it, and some are interactive
- Systems often depart from the central notion of infovis that first and foremost, a visualization should be easy to read.
- Also can ‘problemitize’ the data...

Many examples
The worldwide top grossing film of all time (until 2010), Titanic, was digitized from video in its entirety and broken up into its constituent frames. Each of these was then averaged to a single color best representative of that frame and reformatted as a photograph mirroring the narrative sequence of the film. Reading from left-to-right and top-to-bottom, the narrative's visual rhythm is laid out in pure color.

http://salavon.com/work/TopGrossingFilmAllTime/
Vegas, et al.

Artifacts of the Presence Era

Flags as infographics

Foote, Cone & Belding
Flags as infographics

[Image of Colombian flag]

Flags as infographics

[Image of Brazilian flag]
New Communities

ALSRS-R Progression of Patients on Lithium

This graph shows the ALSRS-R scores of 44 patients in the PatientsLikeMe system before and after they started taking lithium. It is a growing portion that we are developing to help understand if lithium, and ultimately other treatments, can slow ALS progression. Source: http://www.patientslike.me/about consulted: March 7, 2013

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New Communities

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Objectives

- Systems so far
  - What is their purpose or objective?
    - High-level purpose or task
    - Analysis, Exploration, Learning
- Are there other high-level tasks that infovis can assist with?
  - Awareness, monitoring
Central idea

- People interpret images well
- As they say, *a picture’s worth thousand words* ... so use visualization for information awareness

Calm Technology

- Mark Weiser
  - “A calm technology will move easily from the periphery of our attention, to the center, and back.”
Ambient Displays

- Conveys low- to medium-priority information to people, while residing in the periphery of their attention
- Other terms sometimes used
  - Peripheral display, notification system

Ambient Displays

- Purpose:
  - Information awareness, perhaps monitoring
- Focus:
  - Aesthetics
    - Visually pleasing enhancement to surroundings
Other dimensions in the space

Information capacity
How much info can they transmit?

Notification level
Are they subtle or more attention-grabbing?

Representational Fidelity
Flexibility with regard to data mappings

Aesthetics
Visually pleasing enhancement to surroundings

Pousman & Stasko
AVI '06

Other dimensions in the space
Ambient InfoVis

- InfoVis off the desktop
- Still visually encoding information, but not for analytic purposes
  - Presenting the information in places where you’re not doing “desktop computing”

Examples

- Let’s look at some examples of ambient displays or ambient information visualizations
**Dangling String**

- Plastic spaghetti wire hanging from ceiling
- Hangs from motor in ceiling
- Electrically connected to ethernet cable so bits going by cause it to jiggle
- Created by artist Natalie Jeremijenko

**Ambient Room**

- Use variety of physical objects in office to communicate the state of relevant information
- Hiroshi Ishii’s group at MIT

(references: Wisneski et al, CoBuild '98)
Karlsruhe Projects

Web awareness

Gellersen & Schmidt
Personal Technologies ’99

Lumitouch

- Touch one picture frame, the other lights up

Chang et al
CHI ’01 Extended Abstracts
Information Percolator

- Fish tank with bubble controller
- Various messages can be sent in bubbles

Heiner et al
UIST '99

Busmobile, Weathermobile

A bus token

Mankoff et al
CHI '03
Ambient Orb

Monitor stock market data, weather, etc.

www.ambientdevices.com

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Ambient Trolley
Information Visualizations?

- Well, they are visually presenting information
- But perhaps not an emphasis on the *information*
  - More about peripherality, calmness, aesthetics

Other Styles

- Another set of techniques/systems focus less on aesthetics and more on the quality of information conveyance
Ticker Displays

- Animated text strings (ticker, fade, roll, blast) typically in periphery of person's monitor

Fitzpatrick et al  
CHI '99 Extended Abstracts

McCrickard et al  
IJHCS '03

What's Happening/The Buzz

Screen-saver or projected display using collages of images

Zhao & Stasko  
AVI '02

Eagan & Stasko  
CHI '08
Sideshow

• Sidebar on edge of monitor
• Provides info on weather, traffic, presence, project status, etc.
• Can author new items
• From Microsoft

Cadiz et al
CSCW '02

Scope

• Corner of the screen awareness widget to help with tasks, appts, etc.
• Glanceable awareness, more details on demand

van Dantzich et al
AVI '02
Encoding

Final Interface
Trade-off

Aesthetics  Utility

Kandinsky

- Generates aesthetic information collages
- Information Collage: Ambient information display of an object
- Aesthetic Template: Express Aesthetic concepts in visual form
System Architecture

Figure 2. Architecture of the Kandinsky System

Example Generation

Figure 3. Example Images, Aesthetic Template, and Result
Summary

- Less information conveying, more aesthetic appeal

![Example Results]

Informative Art

- Electronic paintings—Flat panel LCDs hung on the wall
- Abstract art in which aspects of the picture change to signify underlying data values
- From Future Applications Lab, Viktoria Institute, Sweden

Redstrom et al
DARE ’00

Skog et al
InfoVis ’03
Design Criteria

- Communicate useful information
- Blend in with surroundings and be appealing to look at
- Minimize animation – Don’t want to draw the eye too much

Example

Mondrian

Central Station
Towards Högbo (final stop)
The river (Göta älv)

Buses from city center
Buses towards city center

= It’s still too early to leave
= Time to leave for the bus
= Hurry, if you want to catch it!
Example

Andy Warhol

Cans gradually change from asparagus soup to tomato soup to signify upcoming event

Lessons Learned

• Find info relevant to place where display is located
• Rate of change of info should be enough to promote relevance and draw interest
• Base visualization on artistic display, may support readability and promote comprehension
• Let features of info source affect visual encoding to improve memory of mapping
InfoCanvas

- Information Art—Similar approach as in Viktoria project
- Electronic painting deployed on LCDs in the environment
- Focus: User-driven views
- II group at Georgia Tech

Stasko et al
Ubicomp ’04
Revisit Trade-off

Aesthetics

Informative art

Utility

InfoCanvas

Objectives

• Personalized
  – Display individual’s personal information

• Flexible
  – Variety of info sources and representations

• Consolidated
  – Present multiple data items on one display

• Accurate
  – Be clear, and highlight uncertainty

• Appealing
  – Fun to use, aesthetically pleasing
Hardware

LCD – bezel + picture frame

Theme
Transformations

- Slider
- Image swapper
- Appearance
- Scaler
- Populater
- Projector
Appearance

Email from Christy

Scaler

Account balance
Other Example Themes

Implementation

- Java application
- Data harvester classes
- Painting specified through XML file
- System establishes data->visual mapping and polls data sources to maintain current representation
Lessons Learned

- Ubiquitous computing technologies can operate effectively in the field
- Consolidating information is valuable
- Abstractness/symbolism can be beneficial
- “Push” technology merits reconsideration
- Personalization is important
- Better customization tools are needed
Social InfoVis

• Another growing area... let’s just scratch the surface today

Definition

• Social Visualization
  – “Visualization of social information *for* social purposes”
    ---Judith Donath, MIT
  – Visualizing data that concerns people or is somehow people-centered
Social Visualization

• “Unlike information visualization which has as its goal of helping users digest information more effectively or data visualization which has as its goal of helping users analyze and see trends in the data, social visualization has as its goal of creating awareness and catalyzing social interactions among its users.” (Alison Lee)

Example Domains

• Social visualization might depict
  – Conversations
  – Newsgroup activities
  – Email patterns
  – Chat room activities
  – Presence at specific locations
  – Social networks
  – Life histories
  Can you think of others?
On-line Communities

- PeopleGarden
  - Visualization technique for portraying on-line interaction environments (Virtual Communities)
  - Provides both individual and societal views
  - Utilizes garden and flower metaphors

Xiong & Donath
UIST ’99

Particulars

- Who – Anyone visiting online community
- Problem – Help someone gain a more rapid understanding of the community as a whole and the individual participants
- Data – Postings from past
Data Portrait: Petals

Fundamental view of an individual

His/Her postings are represented as petals of the flower, arranged by time in a clockwise direction.

Data Portrait: Postings

Time of Posting

New posts are added to the right
Slide everything back so it stays symmetric
Each petal fades over time showing time since posting
A marked difference in saturation of adjacent petals denotes a gap in posting
Data Portrait: Responses

Small circle drawn on top of a posting to represent each follow-up response

Data Portrait: Color

Color can represent original/reply
Here magenta is original post, blue is reply
Garden

Combine many portraits to make a garden

Message board with 1200 postings over 2 months

Each flower is a different user
Height indicates length of time at the board

Alternate Garden View

Sorted by number of postings
Interpreting Displays

Group with one dominating person

More democratic group

Vizster

We saw earlier

Heer & boyd
InfoVis '05
In Sum…

- Different kinds of ‘insight’
  - Analytical insights (more traditional concept)
  - Reflective insights
  - Awareness insights
  - Social insight
In Sum...

• Info Vis is moving into lots of life, not just desk work and data analysis by experts
  – News, commerce, story-telling, sociality
  – Self-reflection
  – One way to help manage information overload

• Requires a change to evaluation techniques (what matters is changing)

• Opens new design spaces

Upcoming

• Project presentations

• One group wants to swap

• Any questions?
References

• Thanks to Zach Pousman for contributions to the lecture