MIS 5403
Fall 2015

Design Inquiry and Research

Week 5
Today:
- Design process
- Iterations
- Introduction to mapping and visualizing complex systems
- Visualizing information and understanding your market as a system
To begin a project, we need a working PROCESS.
A WARM-UP exercise
How DESIGNERS work
Action:
act on a piece of paper +
each person needs seven sheets of paper.
do something with a piece of paper to make it stand.
do this four more times.
each one must be different
choose the best one.
why is it best
make it **better**.
is it better? why?
act on + one more
Lesson learned: design process
What is DESIGN PROCESS?
DESIGN PROCESS

1: Define the problem
2: create and consider many options
3: refine selected directions
3.5: repeat (optional)
4: pick the winner, execute
Lesson learned: learning by doing
Lesson learned: designers iterate
THINK 3X
Google’s 8 Pillars of Innovation:

**Strive for continual innovation, not instant perfection**

"Our iterative process often teaches us invaluable lessons. Watching users ‘in the wild’ as they use our products is the best way to find out what works, then we can act on that feedback.... Iterating has served us well."

- Susan Wojcicki, Google's Senior Vice President of Advertising

From: http://www.google.com/think/articles/8-pillars-of-innovation.htmls
Lesson learned:
fail to succeed
Google’s 8 Pillars of Innovation:

*Never fail to fail*

"It’s okay to fail as long as you learn from your mistakes and correct them fast. Trust me, we’ve failed plenty of times. Knowing that it’s okay to fail can free you up to take risks."

- Susan Wojcicki, Google's Senior Vice President of Advertising

From: http://www.google.com/think/articles/8-pillars-of-innovation.htmls
"We love to invent. We love to pioneer. We even like going down alleys that turn out to be blind alleys,"

... "Every once in a while those blind alleys turn into broad avenues. And that turns out to be lots of fun.”

- Jeff Bezos, Amazon

From: Amazon announces new wave of Kindle
DRAWING is part of the design PROCESS
diagram noun

Greek diagramma, from diapraphein to mark out by lines, from dia- + graphein to write

First Known Use: 1619

1: a graphic design that explains rather than represents; especially : a drawing that shows arrangement and relations (as of parts)

2: a line drawing made for mathematical or scientific purposes

diagram verb

: to show or explain (something) in a diagram

From: http://www.merriam-webster.com/dictionary/diagram
How would you **DIAGRAM** the **DESIGN PROCESS and OUTCOMES**?
Think visually
“… human life is not grounded in precision, but in the grasping of connections, facts, relationships, links, analogies…”

— Otl Aicher
I need a DIAGRAM that explains the Paper Exercise we just completed. It must include the instructions, the process, the outcomes, and actions (physical and mental).

As a team, DIAGRAM the Exercise:

How will you begin?

What will you include?

How will you show it?
Lesson learned:
design process
PRESENTATIONS + DISCUSSION
Lesson learned from artists:

10 BUSINESS REASONS TO DRAW
"When I see a white piece of paper, I feel I've got to draw. And drawing, for me, is the beginning of everything."

Ellsworth Kelly

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LYI1Ywt.99s
"If you have an idea, you have to move on it, to make a gesture. Drawing is an immediate way of articulating that idea - of making a gesture that is both physical and intellectual."

Jeff Koons

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LYi1Ywt.99s
"But usually I begin things through a drawing, so a lot of things are worked out in the drawing. But even then, I still allow for and want to make changes."

Roy Lichtenstein

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LYI1Ywt.99s
"I prefer drawing to talking. **Drawing is faster, and leaves less room for lies.**"

Le Corbusier

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LYI1Ywt.99s
"Photography is an immediate reaction, drawing is a meditation."

Henri Cartier-Bresson

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LY1Ywt.99s
"I've been fifty thousand times to the Louvre. I have copied everything in drawing, trying to understand."

Alberto Giacometti

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LYt1Ywt.99s
"A drawing is simply a line going for a walk."

Paul Klee

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LY1Ywt.99s
"Drawing is a way of coming upon the **connection between things**, just like metaphor in poetry reconnects what has become separated.”

John Berger

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LY1Ywt.99s
"Drawing makes you see things clearer, and clearer and clearer still, until your eyes ache."

David Hockney

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LYI1Ywt.99s
"It is only by **drawing often, drawing everything, drawing incessantly**, that one fine day you discover to your surprise that you have rendered something in its true character."

Camille Pissarro

From: http://www.brainyquote.com/quotes/keywords/drawing.html#o5vx6m5G4LYI1Ywt.99s
Now we need to use our research and insights to understand the SYSTEM
Mapping a **system** or an **experience**.
Making the **COMPLEX** more CLEAR.
Let’s look at mapping.
maps show where you have been.
maps show where you are.
maps show where you are going.
Retrospective

As it was.
As it is.
As it will be.
Map a process/system.
Map an experience.
Map a strategy.
map
diagram

Medieval Latin *mappa*, from Latin, *napkin, towel*

First Known Use: 1527

*verb*
: to plan the details of (something)

*transitive verb*
1a : to make a map of *<map the surface of the moon>*
b : to *delineate* as if on a map *<sorrow was mapped on her face>*
c : to make a *survey* of for or as if for the purpose of making a map
d : to assign (as a set or element) in a *mathematical or exact correspondence* *<map picture elements to video memory>*
2: to plan in detail —often used with *out* *<map out a program>*
3: to *locate* (a gene) on a chromosome
Maps help to **explore**.
explore
*transitive verb*

1a : *to investigate, study, or analyze* : look into <explore the relationship between social class and learning ability> —sometimes used with indirect questions <to *explore* where ethical issues arise — R. T. Blackburn>

b : to become familiar with by testing or experimenting <explore new cuisines>

2: to travel over (new territory) for adventure or discovery

3: *to examine especially for diagnostic purposes* <explore the wound>

*intransitive verb*

: *to make or conduct a systematic search* <explore for oil>

**Origin of EXPLORE**

Latin *explorare*, from *ex-* + *plorare* to cry out

First Known Use: 1585

From http://www.merriam-webster.com/dictionary/explore
Explore
etymology:

1580s, "to investigate, examine," a back formation from exploration, or else from M.Fr. explorer (16c.), from L. explorare "investigate, search out, examine, explore," said to be originally a hunters' term meaning "set up a loud cry," from ex- "out" (see ex-) + plorare "to cry." But second element also explained as "to make to flow," from pluere "to flow." Meaning "to go to a country or place in quest of discoveries" is first attested 1610s.

Maps examine.
Maps “cry out”.
Maps “make flow”.
Tableaux Graphiques et Cartes Figuratives de M. Minard, 1845-69

From The Visual Display of Quantitative Information
Edward Tufte
FIGURATIVE MAP of the successive losses in men of the French Army in the RUSSIAN CAMPAIGN OF 1812-1813

DRAWN BY M. MINARD, INSPECTOR GENERAL OF BRIDGES AND ROADS IN RETIREMENT, PARIS, 30 NOVEMBER 1869. The numbers of men present are represented by the width of the colored zones in a ratio of one millimeter for ten thousand men; these are also written beside the zones. Red designates men moving into Russia, black those on retreat. — The informations used for drawing the map were taken from the memoirs of M. Croix, de Ségur, de Fersen, de Chambry and the unpublished diary of Jacob, pharmacist of the Army since 28 October. In order to facilitate the judgment of the eye regarding the diminution of the army, I supposed that the troops under Prince Jérôme and under Marshal Davout, who were sent to Moscow and Atholl and who rejoined near Orescha and Wѣrbѣ, had always marched with the army.

GRAPHIC TABLE of the temperature in degrees of Réaumur thermometer

"Minard map of napoleon" by Iñigo Lopez - Own work. Licensed under CC BY-SA 4.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Minard_map_of_napoleon.png#/media/File:Minard_map_of_napoleon.png
This is an exploration
Your NEXT Assignment:

VISUALIZING A SYSTEM

INDIVIDUALLY prepare a visual representation of your project as a system. SHOW HOW THIS SYSTEM WORKS.

Use Powerpoint (or other graphic software that enables you to generate a jpeg or pdf file) to create your representation. You may use any graphic tools, animations or effects to communicate your idea – but they must enhance communicating your ideas.

THE ENTIRE MAP MUST BE VISIBLE WHEN COMPLETE.

You may only use 1 slide.

THIS IS A VISUAL REPRESENTATION, NOT A PRESENTATION.

Conduct any additional research to understand you persona’s unmet needs and fill any gaps in the general research identified by the team.

Review the samples on the course blog.
MAP or DIAGRAM your RESEARCH

As a team, DIAGRAM/MAP the RESEARCH you have done.

1. Show what you have DONE
2. What have you DISCOVERED?
3. What are the GAPS in your research?
4. What do you need to do next?
Library

- Library material
- Website
- Delivery system

Central Library

Visitor to CPH
(not hotel guest)

- Increased visitors to the library
- User generated recommendations

Hotel

- $$$$ potential business model

Hotel guest

- Direct access to books, music and DVD’s
- Personalised hotel experience

Opportunity

Visitor to CPH
(not hotel guest)

All the information about Danish culture on the library website

From http://www.servicedesigntools.org/sites/default/files/res_images/SYSTEM_MAP_03.jpg
If my employees cared a little more about stopping theft, it would be a big help. I can't be held responsible for what falls off the back of my truck.

Meet me out back.

I buy for the lowest price I can get. I do everything I can to give my kids as much as I can.

I'll flip this in no time...easy money.
Counterfeit Designer Shoe Map

**Manufacturing**
- Designer’s Manufacturing
- Designer Shoe Blueprints
- Counterfeiters
- Counterfeit Manufacturing

**Distribution**
- Import Locations
- Vendors Purchase Inventory

**Retail**
- Vendors set up displays at local flea markets
- Vendors & customers haggle over prices in a very competitive market
- A transaction is completed once both parties needs are fulfilled
Retail

Vendors set up displays at local flea markets

Vendors & customers haggle over prices in a very competitive market

A transaction is completed once both parties needs are fulfilled

Distribution

Import Locations

Vendors Purchase Inventory

MANUFACTURING

Designer’s Manufacturing

Designer Shoe Blueprints

Counterfeiters

Counterfeit Manufacturing

TRADITIONAL SUPPLY CHAIN

ONLINE SUPPLY CHAIN
Tokens are minted and sold to SEPTA - Cost for mint and material

If I need a ride home I sometimes snag a token of two - Token Booth Operator

Tokens packaged in plastic bags - Plastic bag cost - Employee cost

Packaged tokens are distributed to stations - Employee Cost

Tokens are sold via teller or machine - Cost to maintain machine - Employee Cost

Tokens purchased by customer - Access to tokens a challenge - Interview with tourist indicated complexity in system

Tokens are returned to Revenue Services and sorted - Employee cost

2006 – MBTA phases token for electronic pass (Boston)

Philadelphia state worker steals $16k of tokens

Tokens collected by armed guards on “money train” - Armed guard cost - Money Train cost - Negative customer experience - Physically Demanding High Threat job

“I thought the station was being locked down and I just wanted to buy tokens” - Man in Walnut-Locust Train station

TriMet System in transition right now to electronic fare - Initial cost will be ~$30 bill

I find it ironic that they say “go green” on the plastic bag the tokens come in. It almost contradict the goal of public transportation - Girl on bus route 21

What is the benefit of a Token Booth Operator or Machine?

“Due exchanges being made in cash, I have seen my coworker skim some off the top” - Token Booth Operator

Tokens purchased by customer - Access to tokens a challenge - Interview with tourist indicated complexity in system

Note: Customer receives 25% discount when using token

“I thought the station was being locked down and I just wanted to buy tokens” - Man in Walnut-Locust Train station

TARC system uses new fare system as a way to vary the price to ride the bus

Token used for fare by customer

2006 – MBTA phases token for electronic pass (Boston)

Note: SEPTA Bus can be ridden with pass, cash or token payment.

Token lost

“Due exchanges being made in cash, I have seen my coworker skim some off the top” - Token Booth Operator

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What is the benefit of a Token Booth Operator or Machine?
Input

Federal Funding
- $230m (40%)
- Bus and Bus Facilities Program: Funding to replace, rehabilitate, and purchase buses and equipment

State Funding
- $330.7m (58%)
- PA Pennsylvania

Local Funding
- $1.1m (2%)
- City of Philadelphia

Ticket Sales
- 330.1m rides in FY15
- $476m Annual Revenue

Advertising Revenue

Output

Organization

Capital Budget
- $561.8m

SEPTA

SEPTA Buses

Jobs

- Employment for:
  - Bus drivers: $49-59K/YR (Glassdoor)
  - Bus dispatchers
  - Bus mechanics

Transportation

- 118 routes
- 1355 vehicles
- 162,433,480 riders (FY 2015)
- BusView Program for real time service information under development
- New Payment Technology Project for electronic fares under development
- Community interaction
  “It’s nice to be on the same schedule and have that extra time together in the morning”- Caitlin on riding bus with husband
- 33rd and Dauphin Bus Loop Improvement Project: serves 2115 riders over 5 routes, reduces storm water runoff and improves urban environment
- Articulated Hybrid Bus: 185 new 60’ buses increase ridership, have better fuel efficiency, reduce greenhouse gas emissions
- Public Service Ads: on littering and recycling, public health; no gun or tobacco ads are allowed

Environment

Advertising

Customer Service:
City busses saw greatest decrease in customer satisfaction, 2010-2012

“It's great for SEPTA in terms of getting revenue to help cover costs that will bring improvements.”-SEPTA Public Information Manager on SEPTA-Verizon Technology Partnership
Team WORK session

USE YOUR RESEARCH and PERSONAS to think of your market as a SYSTEM

1. Begin mapping your project information as a system.

2. What are all of the COMPONENTS and how do they work together?

3. Plan + coordinate your team research for next week.
Any questions – contact me

jamescm@temple.edu
Quickly clean up:

place all tools in your bins and return them to the stack.

return all other materials to supply tables