Cognitive Design Studio

Encourage wild ideas

Be visual

Prototype everything
Seeing as a Designer

Jane Suri + IDEO
thoughtless acts? book

Subtle and amusing ways that people react to the world around them

Reveal how people behave in a world not always perfectly tailored to their needs.

A real-world observational approach that can inspire designers

thoughtlessacts.com
thoughtless acts

Reacting

We react automatically to the objects and spaces that we encounter
thoughtless acts

Responding

Some qualities and features prompt us to behave in particular ways
thoughtless acts

Co-opting

We make use of opportunities
thoughtless acts

Exploiting

We take advantage of physical and mechanical qualities we understand
thoughtless acts

Adapting

We alter the purpose or context of things to meet our objectives
thoughtless acts

Conforming

We learn patterns of behavior from others in our social and cultural group
thoughtless acts

Signaling

We convey messages and prompts to ourselves and other people.
thoughtless act assignment

• Before next Thursday’s class add a page under the thoughtless acts page on the wiki with an example of a thoughtless act. Include an image, brief description, and any design idea it generates for you. Be sure to also include your name.

• IAs will be the judges

• Prize for top three entries
thoughtless acts

Jade

Matt

Sante

Laura

Paul

Aaron
Objects that Delight

• This e-mail is intended for students enrolled in: COGS 102C A00 SP10 Cognitive Design Studio

For class tomorrow I would like you to spend some time selecting an object that you think is particularly well designed, one you love to use. If convenient bring it to class tomorrow. If not that is fine too. We will spend some time talking about your selections.

IAs and TA please also join in this exercise.

Professor Hollan
I just got off the phone with Brian D'Aturemont the director of parking and transportation. He is very willing to be interviewed and happy to help your project. He said that most of the information you want is on their web site. I went to blink.ucsd.edu and did a search for parking. Immediately found all kinds of useful information. For example, here are excel spreadsheets with numbers of parking spaces for different types of spaces as well as average number of empty spaces at each hour during the day.

You ask about blueprints. Not sure those are available but in a few minutes your group could sketch a rough map and number of spaces in Hopkins. My bet is that you don't need the detail of exact sizes etc. Also viewing the physical local may lead to other interesting data about the physical context.

My advice is to be sure to be appreciative of the people in the office being busy. Schedule an appointment if you want to interview him or others. Do your homework about the data that is available before taking their time. Have one person to be the contact rather than multiple people independently arranging things with them.

I got the impression that he gets a lot of angry visitors often holding him responsible for things outside the scope of his control. I would suggest taking a much more interested-in-understanding-the-complexity-of-the-operation attitude when meeting with him or others involved.

Please forward this note to other members in your group.

Professor Hollan
Advice

• When asking for people’s time or assistance
  – Make it easy for them
  – Be considerate of their schedule
  – Assign someone to be the sole contact with them
  – Do your homework so you get most value
  – Provide feedback/appreciation

  • Contacted Catherine Friedman for Neptune Design group
  • Slides for SMARTlife group. Had names of contacts on it. Asking me for this indicated had not looked at slides closely. Asked IA and she did a quick google returned contact.
General Advice

• Focus on how to keep your project moving forward
  – Don’t let lack of progress on any one issue stop progress
  – Don’t use something as an excuse to not do other things
  – Don’t get caught up in what you might have done
  – Focus on making the project successful
  – Be realistic
  – Be pragmatic

• As you decide on specific focus often more data collection can be extremely valuable

• Remember that a sizeable portion of your grade in the course will be determined by your participation. Attending and contributing to group meetings and activities is crucial.
  – 25% - Participation: as documented in your personal wiki pages, the judgment of TA's/IA's, and summary judgments of your and other group member participation.
Concerns

• Number of interviews

• Ensuring there are design opportunities
  – Half and Half: lots of problems with parking but what are the design opportunities?
    • Policy issues: Number of spaces for each permit type and how determined, change in access (maybe x stickers/quarter that allow parking in any open space, grades, …
    • How to reduce people driving (biking, car pooling, giving rides, other forms of commuting, …)
    • Information on availability of spaces
Concern: Focus

- SMARTlife: slow start but great to have real users of project results
  - application to exploit social networks to assist with health/weight management
  - access to users: study existing use of Facebook and related social networking apps, perhaps understanding existing use of badges, sites that help with calorie counting, possibly interface for new users to already existing apps that are similar to what might be designed, ...
  - coordinate with Stanford project and what they are doing, might help focus

- Planteers: important issues but what focus
  - Awareness, website, how to encourage, educational information at site, sensor readings, ...
  - focus will help decide who to interview
  - institutional policy and issues
Example Design

Designing novel interaction workspaces to support face to face consultations, Rodden, Rogers, Halloran, and Taylor
• The arrangement is socially awkward with the technology setting up a barrier to collaboration.
• Time is spent when the customer is waiting doing nothing, and is not being communicated with by the agent.
• The agent has to translate everything into a verbal form for the customer to understand what is going on.

This means that the content of the consultation – a round the world trip – is hard to ‘see’: it tends to be something imagined on the basis of talk – and of course, the customer has to remember the information from moment to moment, and with a complex product can easily get lost. This issue is compounded by the numerous representations used.
Design Implications

• *Reducing physical asymmetry by configuring the* orientation of displays to promote cooperation at the core of the consultation.

• *Reducing representational asymmetry by providing* shared informational resources that both customer and agent can refer to and make sense of.
Design Implications

• Empowering the customer, by enabling them to take a more active part in the initial stages of planning.

• Reducing social awkwardness, through designing better physical and technological arrangements and enhancing camaraderie between customer and agent.

• Reducing translation costs and, in so doing, the cognitive effort required to understand and develop a product.

• Enabling the customer and agent to plan synchronously and in a complementary way.
Designing a New Interactional Space

• Altering the physical arrangement of the technology to allow more equitable access to information by both parties.

• Providing different seating/standing arrangements to allow the customer and agent to sit or stand side by side rather than opposite each other.
Figure 3 Screen shots of the three displays from the eTable prototype showing the itinerary unfolding.
The Pill Bottle

- Standard-issue amber-cast pharmacy pill bottle has remained virtually unchanged since it was pressed into service after the second World War.
- Deborah Adler
- Young graphic designer
- Grew up in a family of doctors but took a different path: MFA
- Her grandmother accidentally took her grandfather’s meds
- Her ClearRx prescription-packaging system used by Target pharmacies.
- Also in a MoMA exhibit
• **Inconsistent labeling.** Every pharmacy’s bottle has a different style and placement of information.

• **Branding trumps all.** The first and largest piece of type on a label is often the drugstore’s logo and address—not the name of the drug and instructions on how to take it, which should be given priority.

• **Confusing numbers.** Numerals are often printed without explanation. The number 10 floating in empty space, for example, could be read as ten pills or “take ten times a day.”

• **Poor color combinations.** Color-coded warning stickers don’t contrast strongly enough with either bottles or text. Black type set against a navy background is hard to decipher. An orange sticker can hardly be read against an orange bottle.

• **Curved shape is hard to read.** Existing pill bottles have no flat surfaces and are too narrow for an entire label to be visible at once. In order for all pertinent information to be observed, the bottle must be rotated.

• **Tiny type.** The FDA requires a separate information sheet to be included with all medication. The long lines of tightly spaced type mean it’s usually discarded unread.
Adler’s Prototype

• 1) Easy I.D.  
The name of the drug is printed on the top of the bottle, so it’s visible if kept in a drawer.

• (2) Code red.  
The red color of the bottle is Target’s signature—and a universal symbol for caution.

• (3) Information hierarchy.  
Adler divided the label into primary and secondary positions, separated by a horizontal line. The most important information (drug name, dosage, intake instructions) is placed above the line, and less important data (quantity, expiration date, doctor’s name) is positioned below.
Adler’s Prototype

- (4) Upside down to save paper. Klaus Rosburg, a Brooklyn-based industrial designer hired by Target, came up with an upside-down version that stands on its cap, so that the label can be wrapped around the top. Every piece of paper in the package adds up to one eight-and-a-half-by-fourteen-inch perforated sheet, which eliminates waste and makes life easier for pharmacists.

- (5) Green is for Grandma. Adler and Rosburg developed a system of six colored rubber rings that attach to the neck of the bottle. Family members choose their own identifying shade, so medications in a shared bathroom will never get mixed up.
6) An info card that’s hard to lose. A card with more detailed information on a drug (common uses, side effects) is now tucked behind the label. A separate, expanded patient-education sheet, designed by Adler, comes with three holes so it can be saved in a binder for reference.

7) Take “daily.” Adler avoided using the word once on the label, since it means eleven in Spanish.

8) Clear warnings. Adler decided that many of the existing warning symbols stuck on pill bottles don’t make much sense—the sign for “take on an empty stomach,” for instance, looked like a gas tank to her—so together with graphic designer Milton Glaser, for whom she now works, she revamped the 25 most important
Passive Real-World Interface Props for Neurosurgical Visualization
Ken Hinckley, Randy Pausch, John C. Goble, and Neal F. Kassel
Affinity Diagram

Advantages of post-it notes

High resolution

Take pictures

Put on large paper so can roll up
Why don't more Americans commute to work by bicycle?

- The best bike routes are not usually the best car routes.
- Biking time is more than driving time for trips > 10 miles.
- Many people live > 10 miles from work.
- A decent commuter bike costs at least $500.
- Recreational bikes are not always good commuter bikes.

- Helmets give cyclists "helmet hair."
- Fixing flats requires some technical skill.
- Most workplaces do not provide secure bike storage.
- Cyclists are often perceived as eccentric.

- Cars are an expression of self for many Americans.
- On warm days, cyclists sweat.
- Cycling requires at least modest fitness.
- Carrying cargo requires extra equipment.

- Few workplaces provide locker room facilities.
- It's hard to stay comfortable on a bike in the rain.
- In the winter, it's dark on the commute home.

- Bikes locked outside are prone to theft.
- Many people don't know what kind of gear they need for commuting.
- Most locations have variable climate over the year.

- Cyclists are exposed to danger from cars when they share the road.
- Safe urban cycling requires skill.
- Riding on busy roads is scary.

- Staying comfortable in winter is tricky.
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Why don’t more Americans commute to work by bicycle?

Cycling presents the wrong image for many people.

Cars are an expression of self for many Americans.

Cyclists are often perceived as eccentric.

Looking and feeling professional requires extra effort.

On warm days, cyclists sweat.

Helmets give cyclists “helmet hair”

Few workplaces provide locker room facilities.

Secure bike parking is not always available.

Bikes locked outside are prone to theft.

The best bike routes are not usually the best car routes.

Most workplaces do not provide secure bike storage.

Safe urban cycling requires skill.

Fixing flats requires some technical skill.

Staying comfortable requires planning and gear.

It’s hard to stay comfortable on a bike in the rain.

Most locations have variable climate over the year.

Commuting by bike requires specialized skill and knowledge.

Staying comfortable in winter is tricky.

Cycling requires at least modest fitness.

Many people don’t know what kind of gear they need.

Biking presents real and perceived danger.

In the winter, it’s dark on the commute home.

Biking takes more time than driving for many people.

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Riding on busy roads is scary.

Biking time is more than driving time for trips > 10 miles.

Many people live > 10 miles from work.

Carrying cargo requires extra equipment.
Organize

Commuting by bike requires an investment in skills and knowledge, and in some cases a willingness to spend extra time and effort.

Why don’t more Americans commute to work by bicycle?

Commuting by bike may require extra time and effort.

- Looking and feeling professional requires extra effort.
- Biking takes more time than driving for many people.
- Secure bike parking is not always available.
- Cycling presents the wrong image for many people.

Commuting by bike requires specialized skill and knowledge.

- Cycling requires at least modest fitness.
- Staying comfortable requires planning and gear.
- Many people don’t know what kind of gear they need.
- Biking presents real and perceived danger.

Commuting by bike requires specialized skill and knowledge.
Transition: Data to Creative Design

- Challenge of being creative
  Draw four lines through all the points without lifting your pencil from the paper
Creativity and Dissent

Authentic dissenters – people who really disagree with group – can enhance group creativity

Their opinion needn’t be right – but they can free the group from stagnant thinking.

The originality of the minority stimulates the majority

STAND UP

Dissent IS Patriotic
Dissent and Authenticity

The benefits of dissent are weakened if Dissent is not real: A deliberate “devil’s advocate” in the group can actually stifle dissent, because the majority know the opinion is manufactured.

Dissent is not encouraged: Polite or pro-forma acceptance is not enough.
Problem Setting

From the perspective of Technical Rationality, professional practice is a process of problem solving. Problems of choice or decision are solved through the selection, from available means, of the one best suited to established ends. But with this emphasis on problem solving, we ignore problem setting, the process by which we define the decision to be made, the ends to be achieved, the means which may be chosen. In real-world practice, problems do not present themselves to the practitioner as givens. They must be constructed from the materials of problematic situations which are puzzling, troubling, and uncertain... When we set the problem, we select what we will treat as the “things” of the situation, we set the boundaries of our attention to it, and we impose upon it a coherence which allows us to say what is wrong and in what directions the situation needs to be changed. Problem setting is a process in which, interactively, we name the things to which we will attend and frame the context in which we will attend to them.

--- From “The Reflective Practitioner”
Reflective Conversation with the Materials of a Design Situation

• Donald Schön studied professionals - especially professional designers - for many years. Although his academic home was in a department of urban design, his subjects of interest have ranged from psychiatrists and social workers to architects and jazz musicians.

• After observing and interviewing practitioners in many domains, Schön was able to characterize the common elements in their practices and their ways of teaching new practitioners.

• In *The Reflective Practitioner* Schön drew on examples from these studies to outline *the basics of what it means to have and to apply expertise.*
“I had six of these classroom units but they were too small to do much with. So I changed them to this more significant layout (the L-shapes). It relates grade one to two, three to four, and five to six grades, which is more what I wanted to do educationally anyway. What I have here is a space which is more of a home base. I’ll have an outside/inside which can be used and an outside/outside which can be used – then that opens into your resource library/language thing.”
Everyday Action

• As we go about everyday life, we all exhibit knowledge in a special way.

• Although we often cannot say what it is we know, we do know how to take action. We carry out many actions, recognitions, and judgments without thinking about them.
  – This is one of the reasons we collect the type of observational data we do

• In fact, in many cases, we do not even remember how we learned them. Activities as fundamental as walking fall in this category.

• *We could say that our knowing is in our action.*
Reflection in Action

- Reflection in action has a different character: It is closely tied to the experience of surprise.

- Sometimes, we think about what we are doing in the midst of performing an act. When performance leads to surprise - pleasant or unpleasant - the designer may respond by reflection in action: by thinking about what she is doing while doing it, in such a way as to influence further doing.

- For example, when talented jazz musicians improvise together, they listen to one another and to themselves. Within the structure of the piece and a familiar harmonic scheme, they think - or perhaps feel - what they are doing. While in the process, they evolve their way of doing it. The players keep on playing while, on occasion, noting and responding to the surprises produced by other players.
Reflection in Action

• This reflection in action is something Schön saw as common to all design activities.
  – Architectural design is one example
  – Writing
  – Programming
  – Interface design
  – …

• A designer makes things.
  – Often, the thing initially is a representation, a sketch, a plan, a program, or something to be constructed by other people.
  – Many of the relevant variables cannot be represented in a sketch, formal description, or model; this limitation makes the design process inherently complex.
  – A system is complex in the specific sense that, whenever I make a move, I get results that are not just the ones that I intend. That is, I cannot make a move that has only the consequences that I intend. Any move has side effects.
A Conversation with Materials

• It is extremely rare that the designer has the design all in her head in advance, and then merely translates it.

• Most of the time, she is in a kind of progressive relationship - as she goes along, she is making judgments.

• Sometimes, the designer's judgments have the intimacy of a conversational relationship, where she is getting some response back from the medium, she is seeing what is happening - what it is that she has created - and she is making judgments about it at that level.
Backtalk

- One aspect of the conversation is what Schön calls **backtalk, where you discover something totally unexpected** - "Wow, what was that?" or "I don't understand this," or "This is different from what I thought it would be - but how interesting!"

- **Backtalk can happen when the designer is interacting with the design medium.** In this kind of conversation, we see judgments like, "This is clunky; that is not," or "That does not look right to me," or just "This doesn't work." The designer's response may be "This is really puzzling," or "This outcome isn't what I expected - maybe there is something interesting going on here."
3M Scotch Tape: Backtalk from Users

• 3M developed a transparent tape to mend books. (you could save money, hence Scotch)

• Users did bizarre things with Scotch Tape: they wrapped packages, hung posters on the wall, used it to put their hair up in rollers, …

• 3M began to observe what these consumers were doing, and their staff started rethinking the product in light of what they were getting back.

• 3M came out with a hair-setting Scotch Tape, a medical Scotch Tape used for binding splints, a reflective Scotch Tape for roads, and so on. 3M built on the order of 20 or 30 businesses through the differentiation and specialization of the basic product idea. They learned what the meaning of the product was by listening to what people said and by observing what people did.
Details become invisible

- A good designer strives to make the details work so well that they become invisible to the user.

- Michael Polanyi was a physical chemist who became a philosopher. His book *The Tacit Dimension* contains an interesting passage on “What is a machine?”

  - His argument is that a machine is an abstract system whose elements are functions, such as the function of the calculator, the function of the spark plug in the automobile engine, the function of the lever, or the function of the spring.

  - The question of the materials used in the composition of the machine is not pertinent, unless a component fails. Then the issue of what the machine is made of becomes important; until that point, unless the machine fails, its composition is not important at all.

  - Broadly speaking, we might say that an object's failure or difficulty in use makes visible its insides (how it is made, of what it is made). In a good, smoothly working artifact, materials and mechanisms of operation become, in a sense, invisible—or, as Polanyi would say, tacit.

- Breakdowns

  - Example: Pen and writing or sketching. Breakdowns such as running out of ink.
Brainstorming Fundamentals

With acknowledgements to the Stanford d.school
Brainstorming

- **Visioning as discussed in the text is a form of “grounded brainstorming.”**

- Great brainstorming is one of the most **powerful** and one of the most **misunderstood** methods in the designer’s toolbox.

  - It’s a special kind of collaboration with specific rules of behavior designed to maximize idea generation.

  - Many say they know how to brainstorm. Few do it really well. In some ways, brainstorming is like volleyball. If you know the rules, you might be able to survive a social game at the neighborhood picnic. But this is a far cry from the kind of volleyball you watch on TV. No matter what level you’re at, you can always up your game.
• **Defer judgment** – separating idea generation from idea selection strengthens both activities. For now, suspend critique. Know that you’ll have plenty of time to evaluate the ideas after the brainstorm.

• **Encourage wild ideas** – breakout ideas are right next to the absurd ones

• **Build on the ideas of others** – listen and add to the flow of ideas. This will springboard your group to places no individual can get to on their own

• **Go for volume** – best way to have a good idea is to have lots of ideas

• **One conversation at a time** – maintain momentum as a group. Save the side conversations for later.

• **Headline** – capture the essence quickly and move on. Don’t stall the group by going into a long-winded idea.
Setup

• **Recruit the best people**
  – Watch out for groups larger than 8 people.
  – Involve people with different areas of expertise and who you know to be good brainstormers.

• **Set the stage**
  – **Bring toys and props** - related and unrelated to your brainstorm. Props can give you something to play with and can jog your thinking in unexpected directions.
  – **Provide munchies** – sugar goes with new ideas
  – **Be mindful of seating and layout** – not too far apart, facing each other, ability to stand and pace or walk around.
  – **Pick a space where there’s lots of writing space on the walls** - floor to ceiling whiteboards or tons of large post-it pads are ideal.
  – **Bring lots of paper and markers** – put them on the table and encourage everyone to use them. You get to keep all the ideas on the whiteboards, the post-it pads and on all the paper on the table.

• **Review the rules** and ask group to self enforce them
  – Remind participants to use the paper in front of them. “If you have an idea stuck in your head, get it out on paper so you can move on and participate in the brainstorm at hand.”
Warmup

• Put people in the right mindset and set tone with a quick warm up activity.
  – Do something physical (e.g. barnyard animals, jumping jacks, etc.)
  – Run a 2 minute funny brainstorm (e.g. how to sell more pantyhose to men, etc.)
Ideation

• **Prepare yourself** - know what you want out of the brainstorm. Prepare a draft of initial brainstorm questions that you think will help guide the group. Have a few crazy ideas in your pocket that you can contribute when needed.
  – Be mindful of the scope and specificity of the leading brainstorm questions you use. Too broad (e.g. “How to save the world”) and the group will wander. Too narrow (e.g. “what color should I dye my hair”) and there’s no room for unexpected ideas.

• **Write fast & be visual** – practice writing and sketching fast

• **Use humor and be playful**

• **Monitor and lead the productivity of the brainstorm.** Be aware of and affect the following:
  – **Framing** – scope, specificity and scale of questions posed and how these contribute/drive ideation level
  – **Fluency** – pace, tone, and overall flow of ideas
  – **Flexibility** – range and variety of ideas
  – **Fundamentals** – the basic rules
Ideation

- **Monitor and lead the productivity of the brainstorm.** Be aware of and affect the following:
  - **Fun** – group energy level, use of humor, level of participants’ engagement, who adds energy and when.
- **Ways to affect the above and reframe the brainstorm on the fly:**
  - Pose a more specific question
  - Rephrase a question
  - Follow a thread that seems promising
  - Shift gears and offer a whole new question
  - Lob in a crazy idea
  - Encourage people to move around, pace and play
  - Say something funny
- **Know when to stop**
  - Call the match when you feel you’ve got what you need or when group runs out of steam
- **In general, think ~45-60 minutes for actual brainstorm time.** Warm up and wrap up can take ~15-30 minutes. Actual time spent can vary according to a group’s level of brainstorm proficiency and endurance.
Wrap Up

• Start the selection and synthesis step with the group. A couple of narrowing tools that are effective include:

  – Post-it voting – give every participant 4 stickers and have everyone put stickers next to their favorite ideas. Clustering of stickers indicate possible strong design directions.

  – Group review and discussion – ask everyone to review the boards of ideas, and talk about the specific ideas or directions they like and why.
Offline

• Continue the selection and synthesis step in small teams (1-2 people) offline.
  – Capture your big ideas in new sketches, one page write-ups, storyboards, headlines, etc.

• Your goal is to synthesize your ideas into concepts or concept directions that act as springboards to prototyping.
Successful Brainstorm

• Fluency: you leave with a lot of good ideas. A good brainstorm can result in ~100 ideas in an hour.

• Flexibility: you have a wide variety of different concept directions hidden in the mess of ideas.

• Springboards: you leave with a handful of great springboards that you can start to refine and prototype.

• Your room looks like the photo above