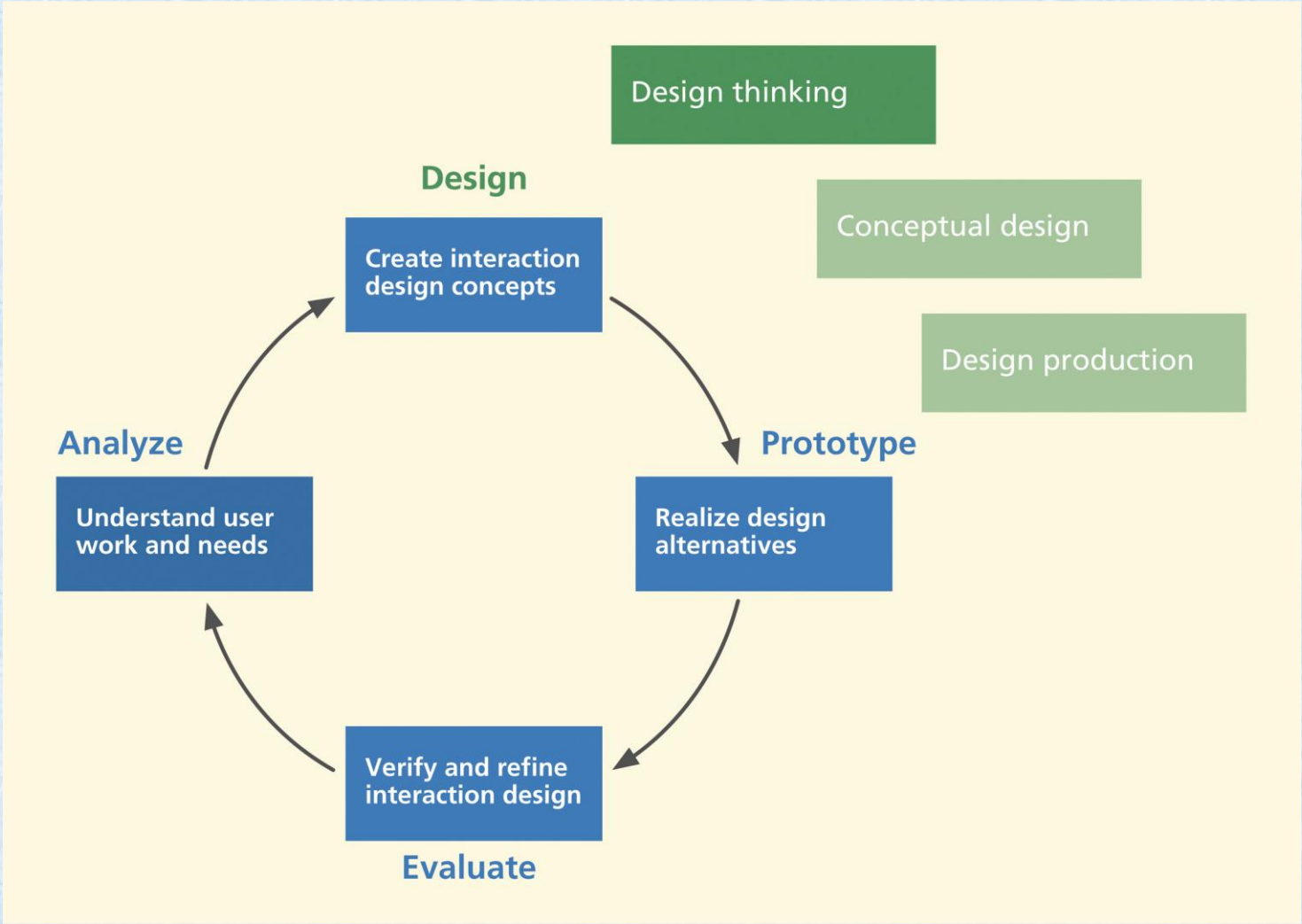
User experience design

Chapter 7. Design Thinking, Ideation, and Sketching

Introduction



Introduction

- **Possibly confusing terminology**
  - **“Design” is often used broadly to refer to whole lifecycle process**
  - **For many, “development” refers to programming or software implementation**

Use of term "design"

- We mainly use "design" narrowly to refer to creative human activity
  - How new ideas are synthesized and put together
- Usually meaning will be obvious from context
- And, of course, it is about *interaction design*

Design paradigms

- **Engineering paradigm**
- **Human Information Processing (HIP) Paradigm**
- **Design-Thinking Paradigm**

Design paradigms

- **Engineering paradigm**
  - **Roots in software engineering, human factors engineering, and usability engineering**
  - **Focus on reliability, user performance, user productivity, avoiding errors**
  - **Diagnostic view: emphasis on evaluation and iterative refinement**

Design paradigms

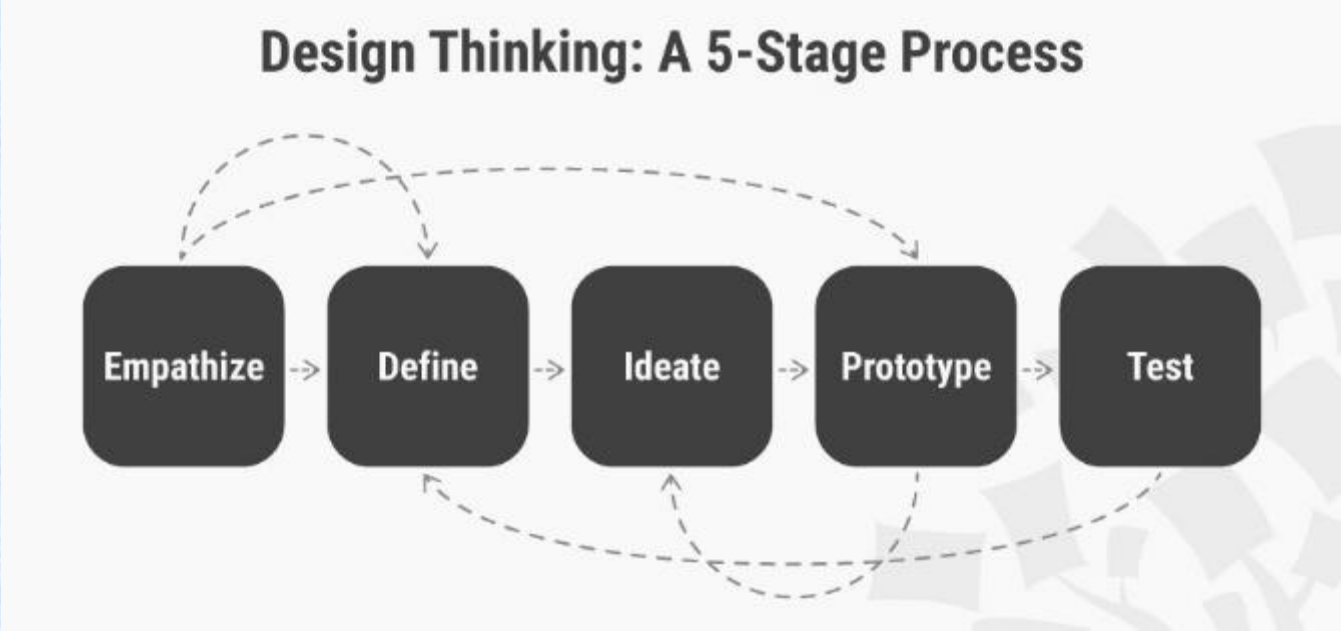
- **Human Information Processing (HIP) Paradigm**
  - **Focus on metaphor of mind and computer as symmetrically coupled information processors**
  - **Based on study of how information is sensed, accessed, and transformed in human mind**

Design paradigms

- **Design-Thinking Paradigm**
  - **Reframe interaction design practice**
  - **Bring UX in earlier**
  - **Focus more on getting right design than on refining design later**
  - **Includes emotional and phenomenological concerns**

Design paradigms

- **Design-Thinking Paradigm**



Design paradigms

- **All three paradigms have a place in design and development**

Example, car design

- **Engineering view**
  - **Functionality**
    - **Features**
    - **Reliability**
    - **Performance (speed and acceleration, fuel economy)**

Example, car design

- **Human factors engineering view**
  - **Steering wheel thickness so it "fits" an average human's hand size and strength**
  - **Seat height**
  - **Fit of the curve on the seat to fit lower back shape**
  - **Safety restraints**

Example, car design

- **HIP view (overlaps with usability engineering view)**
  - **Presentation of critical information needed for driving**
    - **Meets limits of human signal detection**
    - **Modalities used to communicate a problem (e.g., low tire pressure): tactile via steering wheel, audio cue, blinking visual cue**

Example, car design

- **Design-thinking view**
  - **Appeal and coolness of ride**
  - **The joy of driving**
  - **The thrill of speed**
  - **Pride of ownership**
  - **How a car can become an integral part of one's lifestyle**

Design-thinking paradigm is about phenomenological concerns

- **Long-term emotional impact**
  - **Not just snap-shots in time**
- **About how technology takes on "presence" in user's life**
- **About embodied interaction, involving our whole bodies and spirit**
  - **Not just fingers on keyboard and mouse**

Design-thinking paradigm is about phenomenological concerns

- About making meaning within our interaction
- About situated interaction
  - The notion of place has new importance

Design thinking

- **Design is now more than just a box in lifecycle**
  - **A separate discipline on its own**
- **Designers are called upon to create a new vision**
  - **Seeking a profound and satisfying user experience**

Design thinking

- **Design thinking is immersive**
  - **Everything is about design**
- **Design thinking is integrative**
  - **Brings together contextual inquiry and analysis, modeling, creativity, innovation**

Design thinking

- **Design thinking is market oriented (think Apple iPad)**
  - **When I got my iPod Touch, label didn't say "Made by Apple"**
  - **It said, "Designed by Apple!"**

Design perspectives

- **Filters to guide thinking, scoping, discussing, and doing design**
- **These perspectives are easy to understand**
  - **Ecological perspective**
  - **Interaction perspective**
  - **Emotional perspective**

Ecological Perspective

- About how system or product works within its external environment
- About how system or product is used in its context
- How system or product interacts or communicates
  - With people and systems in its environment

Interaction Perspective

- About how users operate system or product
- A task and intention view
- Where user and system come together
- Where users look at displays and manipulate controls
  - Doing sensory, cognitive, and physical actions

Emotional Perspective

- About aesthetics and joy of use
- About emotional impact and value-sensitive aspects
- About social and cultural implications

Emotional Perspective

- **Buxton: A product is not just a product; it is an experience**
- **People use products as part of a larger activity**
  - **Starts with out-of-the-box experience**
  - **Continues throughout usage**
  - **Persists in a fond memory afterward**

User personas

- **A persona is not an actual user**
  - **It's a pretend user or a "hypothetical archetype"**

Clark Andrews

AGE 26
OCCUPATION Software Developer
STATUS Single
LOCATION San Jose, CA
TIER Experiment Hacker
ARCHETYPE The Computer Nerd

Friendly | Clever | Go-Getter

"I feel like there's a smarter way for me to transition into a healthier lifestyle."

Motivations

- Incentive
- Fear
- Achievement
- Growth
- Power
- Social

Goals

- To cut down on unhealthy eating and drinking habits
- To measure multiple aspects of life more scientifically
- To set goals and see and make positive impacts on his life

Frustrations

- Unfamiliar with wearable technology
- Saturated tracking market
- Manual tracking is too time consuming

Bio

Aaron is a systems software developer, a "data junkie" and for the past couple years, has been very interested in tracking aspects of his health and performance. Aaron wants to track his mood, happiness, sleep quality and how his eating and exercise habits affects his well being. Although he only drinks occasionally with friends on the weekend, he would like to cut down on alcohol intake.

Personality

Extrovert — Introvert
Sensing — Intuition
Thinking — Feeling
Judging — Perceiving

Technology

IT & Internet
Software
Mobile Apps
Social Networks

Brands

Jill Anderson

"I'm looking for a site that will simplify the planning of my business trips."

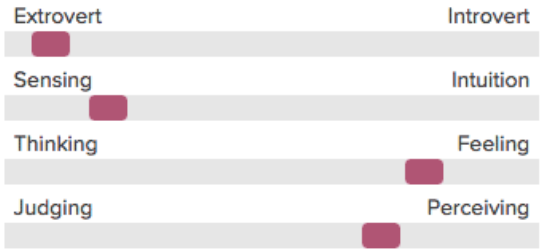
AGE	29
OCCUPATION	Regional Director
STATUS	Single
LOCATION	Portsmouth, NH
TIER	Frequent Traveler
ARCHETYPE	The Planner

Organized	Practical
Protective	Hardworking

Bio

Jill is a Regional Director who travels 4-8 times each month for work. She has a specific region in which she travels, and she often visits the same cities and stays in the same hotel. She is frustrated by the fact that no matter how frequently she takes similar trips, she spends hours of her day booking travel. She expects her travel solutions to be as organized as she is.

Personality



Brands

KAYAK

Basecamp

Outlook

enterprise

IHG
InterContinental Hotels Group

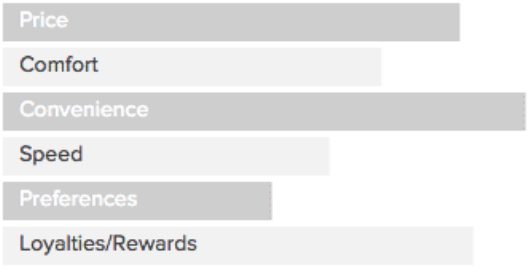
Goals

- To spend less time booking travel
- To maximize her loyalty points and rewards
- To narrow her options when it comes to shop

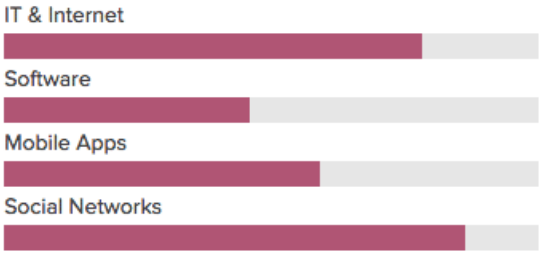
Frustrations

- Too much time spent booking - she's busy!
- Too many websites visited per trip
- Not terribly tech saavy - doesn;t like the process

Motivations



Technology



Example project persona story One

FRANCIS (Hunter/Quality Seeker) is a moderate user of the home computer used to accessing learning, banking, and making purchases of services and products.

Forms frustrate: errors, roadblocks, and general hard effort. FRANCIS has limited working memory or time to spare. Capacity is taken up with the children, running the home, and busy work schedule.

FRANCIS is less bothered about how many features an app has than whether the app has the features needed. It just has to work when it needs to work with contextual support available when required. Learning new gestures and processes or following multi-step instructions is a challenge always avoided.

A mobile banking app is useful to FRANCIS as working full hours, accessing accounts during breaks rather than at home where life is a distraction is preferred.

User persona

- **Represents a specific (but imaginary) person in a specific work role**
  - **A story and description of specific individual who has**
    - **A name**
    - **A life**
    - **A personality**

User personas

- **Built up from contextual data**
- **Offer concreteness**
- **Offers personal engagement**
- **Ideal for sharing visualization of design target**

Without personas

- Designing to “meet needs of users” is a vague and ill-defined
- Designers make it up as they go, thinking of themselves as users
- No way to control instinct to cover everything in design
- Special cases end up dominating discussion

With personas

- Can overcome struggle to design for conflicting needs and goals of
  - Different user classes
  - User classes too broad or too vaguely defined
- Condition for applying personas:
  - People from different user classes all have to take on same work role

Focusing on just one person

- **Persona lets us focus on designing literally for a single person**
- **Liberates designers from having to sort through all conflicting details of multiple user classes**

Focusing on just one person

- **Personas can help end feature debates**
  - **What if user wants to do X?**
  - **Sorry, but Noah will not need feature X**
  - **But someone might**
  - **Perhaps, but we are designing for Noah, not “someone”**

Make your personas rich

- **Rich, relevant, believable, specific, and precise**
- **Give your persona a personality**
- **Give your persona a life surrounded with detailed artifacts**

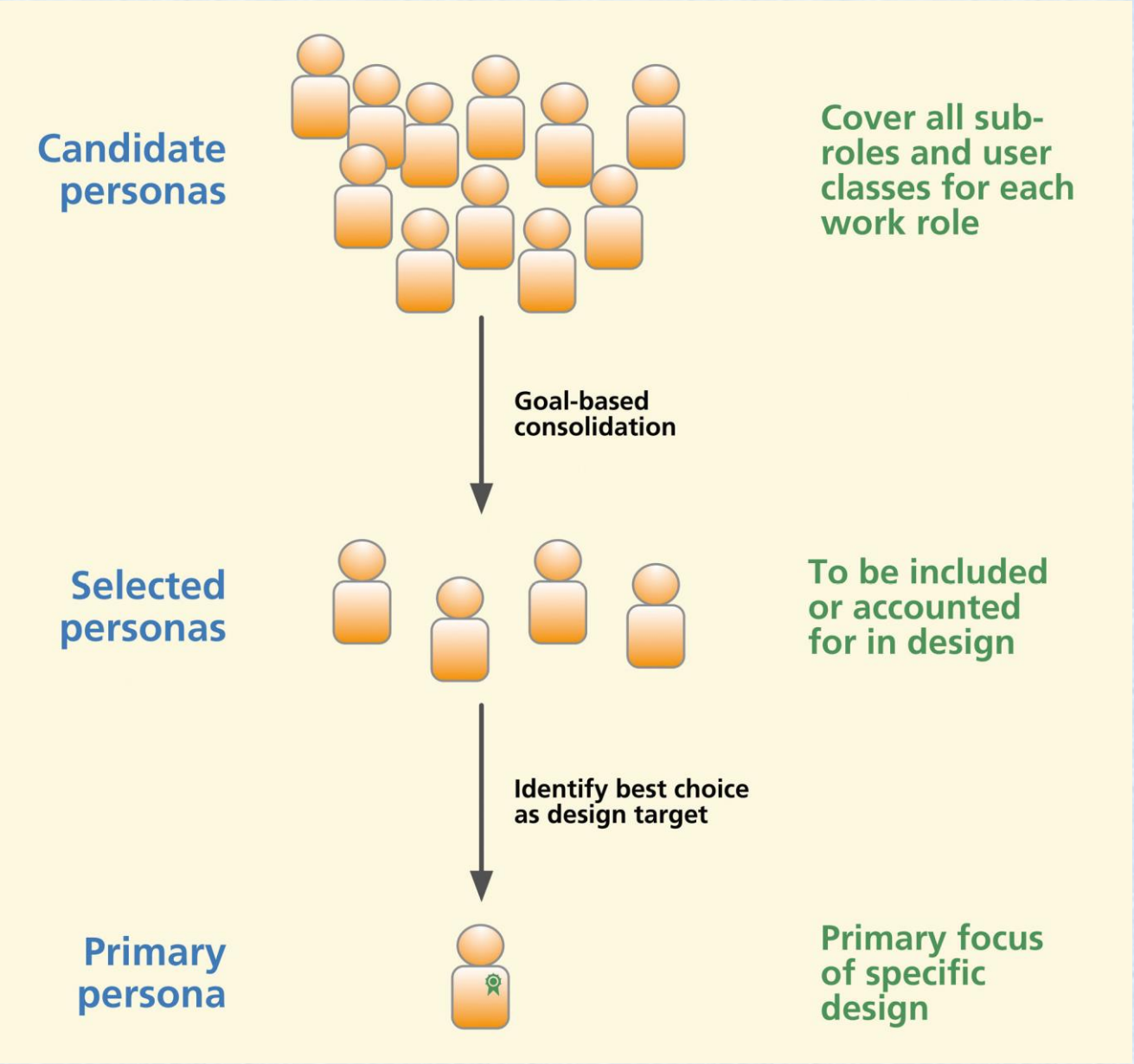
Make your personas “sticky” (memorable)

- **Give them exposure, visibility**
  - **Posters**
  - **Coffee mugs**
  - **T-shirts, screen**
  - **Full-sized cardboard standups**
  - **Action figures**

Where personas work best

- Commercial products
- Systems with relatively simple work domains
  - For example, a certain kind of person may always carry a phone
  - But does not always carry a camera
  - This might help in design discussions about whether to combine a camera in a cellphone design

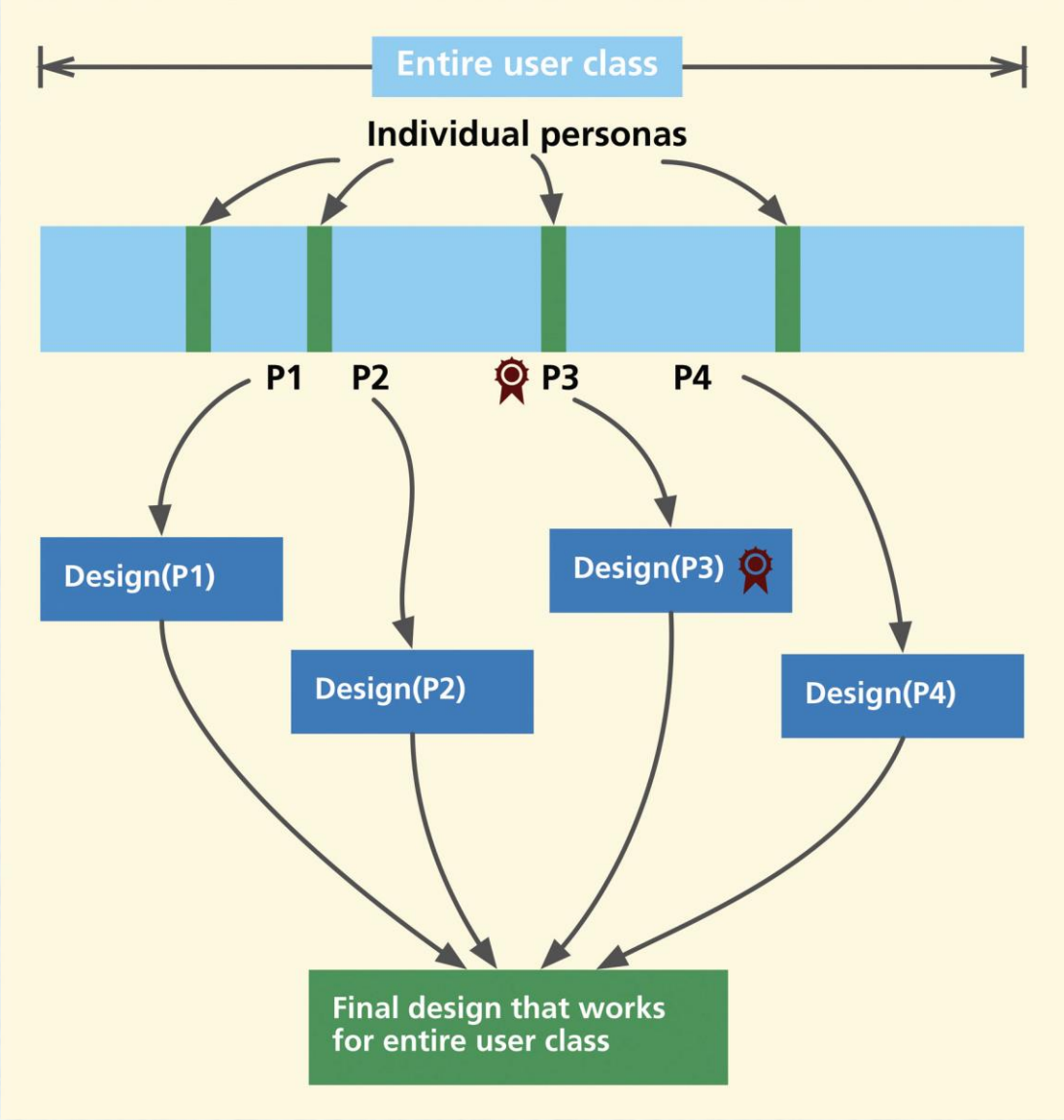
Choosing a persona



Using personas in design

- From among entire user class, find some personas candidates
- From candidates, select a few individual personas
- From selected personas, narrow it down to one primary persona

Using personas in design



Designing for primary persona

- **Start by making your design as though Rachel, your primary persona, is only user**
- **Adjust as needed to make design *suffice* for the other selected personas**
- **Primary persona wins all conflicts and tradeoffs, other selected personas get *coverage***

Ideation

- **Ideation is applied design thinking**
- **Active, fast-moving collaborative group process for forming design ideas**
- **Where you start your conceptual design**
- **Iterate to explore**
  - **Fast, furious, and freewheeling**
  - **Comparison of many alternatives**

Two modes of thinking

- **Idea creation and critiquing**
- **Idea creation**
  - **Generation of new ideas for exploration and inspiration**
- **Critiquing**
  - **Review and judgment**

Keep the modes separate

- **Interweave these modes**
- **But always know which mode you are in**
  - **Don't interrupt one mode with other**
  - **Especially don't interrupt idea creation with critiquing**

Creation mode especially sacred

- You can be radical, play outside safe zone
- No one can shoot you down
- No buzz-killer critiquing
  - "That will never work"
  - "They have already tried that"
  - "It will cost too much"
  - "It will not work on our implementation platform"

A space for doing ideation

- **Set up work spaces**
- **Best: dedicated ideation work space**
- **Can leave artifacts and notes posted**

Example, the Kiva

- **Collaborative ideation studio**
- **In VT Dept of Industrial Design**

The Industrial Design Kiva

- **Kiva: A space used by Hopi, Pueblo, and other American Indians**
  - **For spiritual thinking and meditation**
- **Enough space for seating and work tables**
- **Interior is one large white board**
  - **Metallic to hold magnetic "push pins"**

Getting started in ideation

- **Assemble a team**
  - **Invention is no longer a "lone genius" thing**
  - **Broad, cross-disciplinary, creative, open-minded people**

Getting started in ideation

- **Decide how you will operate**
  - **Establish background, major issues, goals**
  - **Including basic rules of courtesy**
  - **Maybe select a group leader, but there is no rank in ideation**

Brainstorm in groups

- **Use small break-out groups to create lots of ideas**
- **Make annotated sketches**
- **Only getting a few ideas?**
  - **That means it's not working**
- **Keep trying; throw in tons of ideas**

Then work as a team

- Reconvene full team
- Each sub-group reports on ideas
  - Explain ideas
  - Hang sketches around room
  - Entertain rich discussion

Make it immersive

- **Surround yourselves with working artifacts**
  - **Sketches, annotations, models**
- **For physical devices or products, make physical mockups**

Alternate idea creation with critiquing

- **Invite team discussion**
  - **Elaborate on ideas**
  - **Still focus on essentials, not details**
- **When idea creation runs dry, switch to critiquing mode**
  - **Talk about downsides, problems**

Sketching

- **Bill Buxton is champion for sketching**
- **Rapid creation of freehand drawings**
  - **Expressing preliminary design ideas**
  - **Focusing on concepts rather than details**

Sketching

- **Sketching is essential to ideation and design**
  - **When you are designing, you must be sketching**
- **Adds “cognitive supercharging”**

Sketching

- **Brings more human senses to task**
- **Embodied cognition to aid invention**
  - **Involves feedback loop of head, hands, and senses**

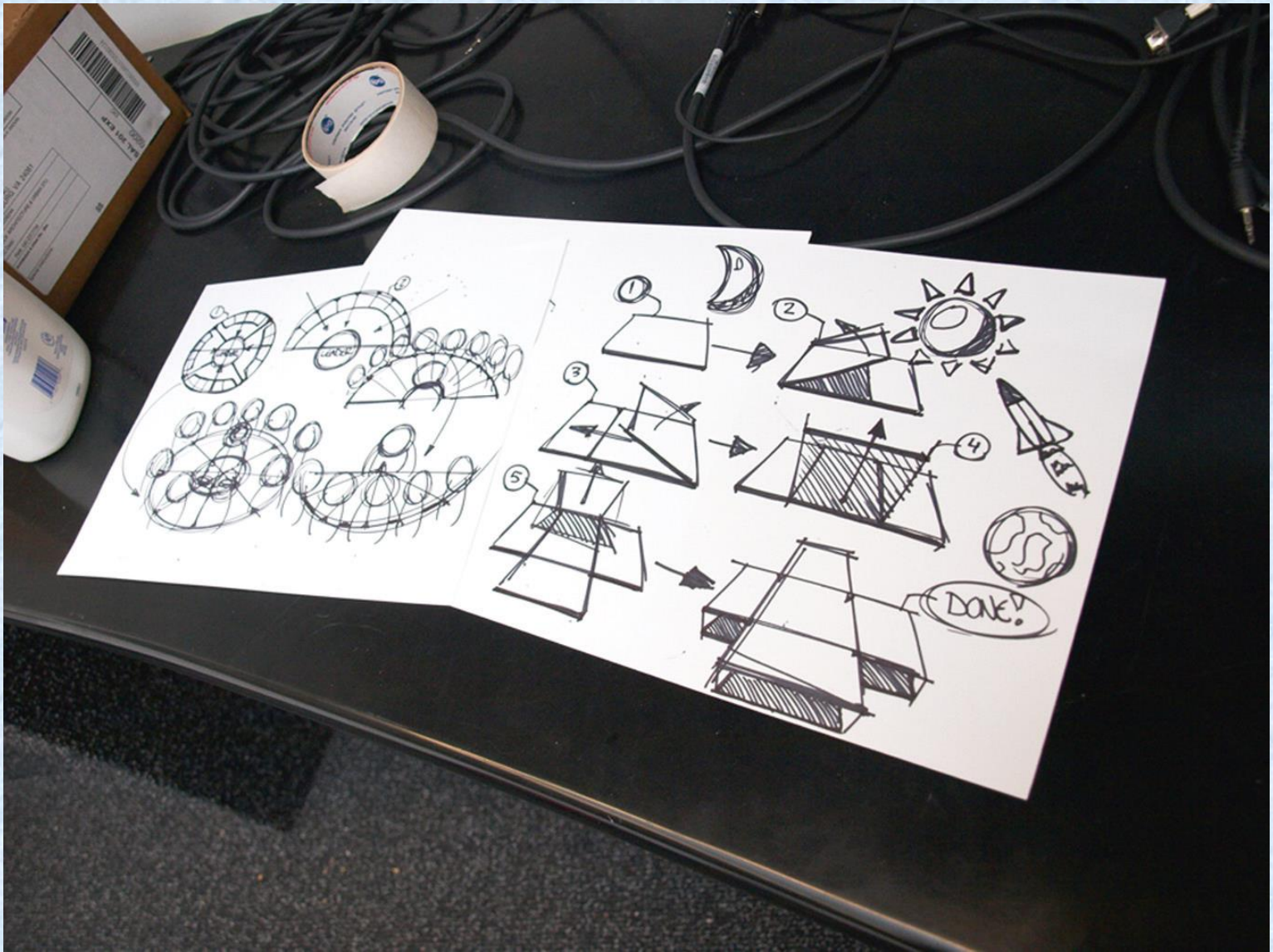
Sketching

- **Augments communication within ideation**
- **Documents history of the thinking**
- **A sketch is not (just) a picture you draw**
  - **It's a conversation**

Sketching

- **Sketches are not prototypes to refine a design**
- **Sketches are for exploring design ideas and expanding them**
- **Buxton: think of difference:**
  - **Sketch of a mobile phone design**
  - **Sketch of *the experience of using it***

Example, a sketch to think about a design



Doing sketching: Stock up on materials

- Whiteboards
- Blackboards
- Corkboards
- Flip chart easels
- Post-its™ of all sizes
- Tape
- Marking pens

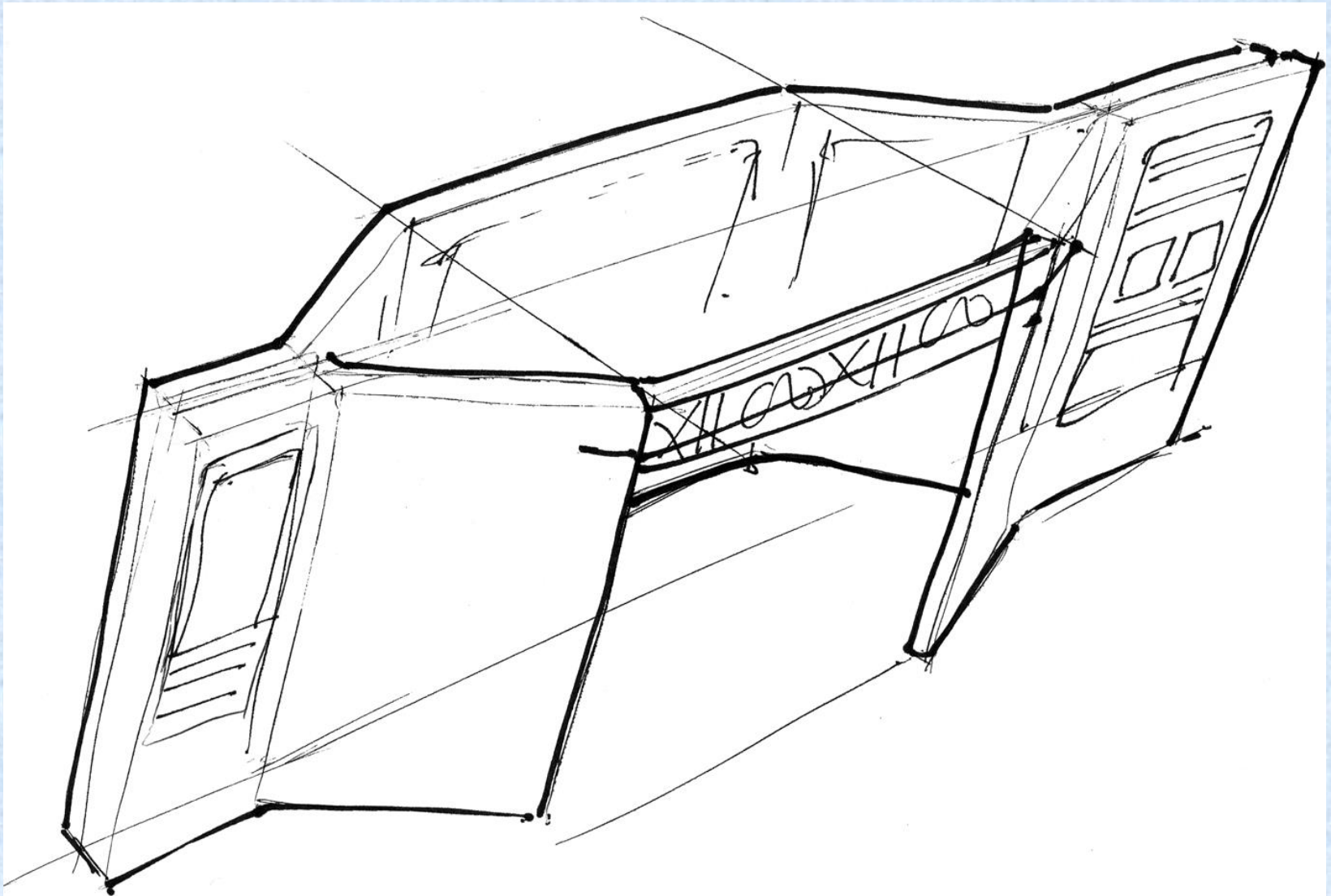
Include supplies for making physical mockups

- Scissors and hobby knives
- Cardboard and foam core board
- Duct tape and Scotch™ tape
- Wooden blocks
- Push pins, thumb tacks, and staples
- String
- Bits of cloth, rubber, other flexible materials
- Crayons and spray paint

Use language of sketching

- The vocabulary of lines
  - Freehand “open” gestures
  - Roughed in, not connected precisely
  - Overlap, often extending a bit beyond corner
  - Sometimes they “miss” intersecting

Example, free-hand sketch of Ticket Kiosk System design



Use language of sketching

- **Sketches are deliberately ambiguous**
- **Sketches are abstract, leaving “holes” for interpretation, imagination**

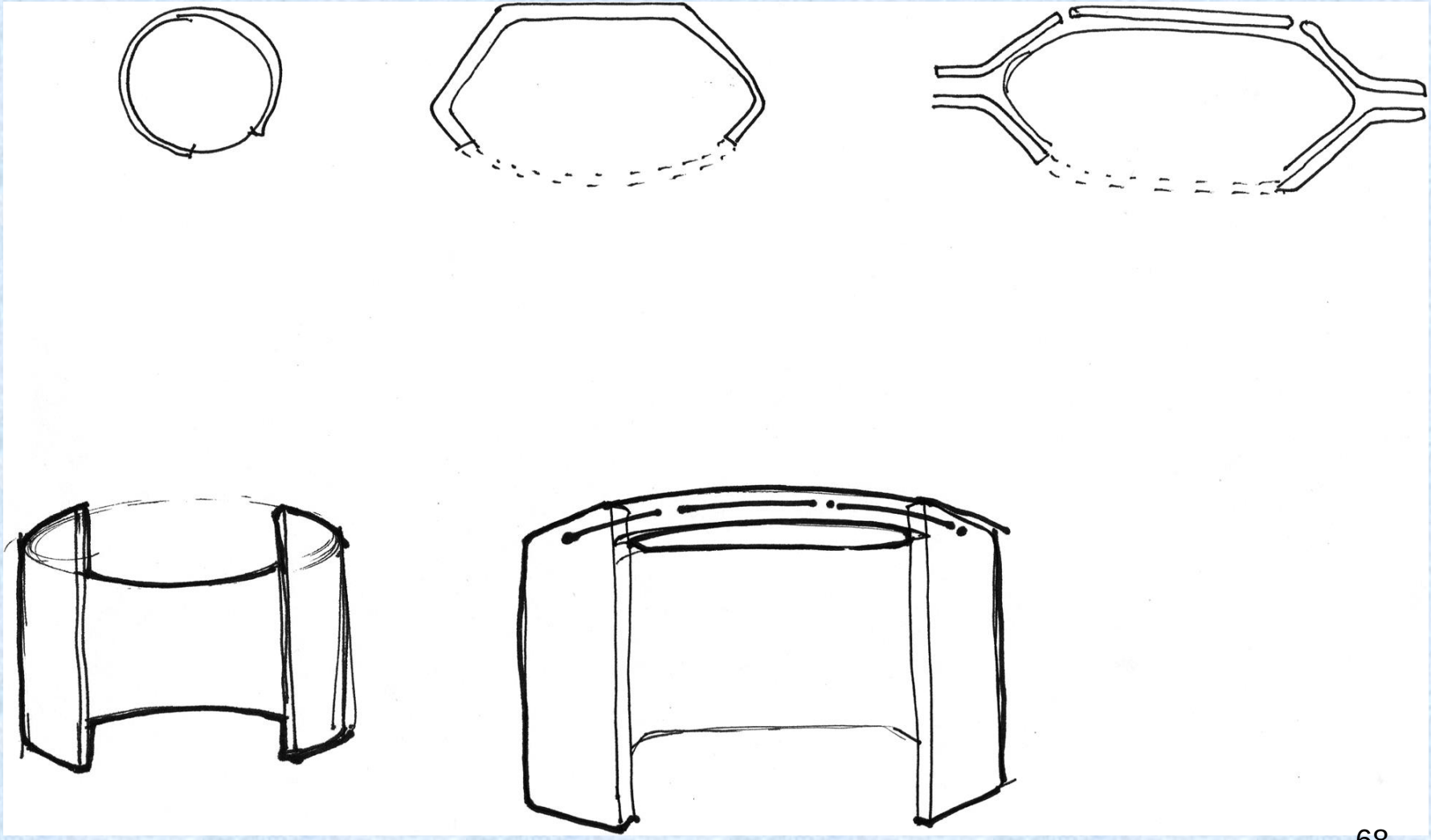
Buxton's defining characteristics

- Everyone can sketch; you do not have to be artistic
- Most ideas are conveyed more effectively with a sketch than with words
- Sketches are quick and inexpensive to create; they do not inhibit early exploration
- Sketches are disposable; there is no real investment in sketch itself

Buxton's defining characteristics

- **Sketches are timely**
  - **Can be made just-in-time**
  - **Done in-the-moment**
- **Sketches should be plentiful**
  - **Entertain large number of ideas**
  - **Make multiple sketches of each idea**
- **Textual annotations play essential support role**

Example, freehand sketches for Ticket Kiosk System



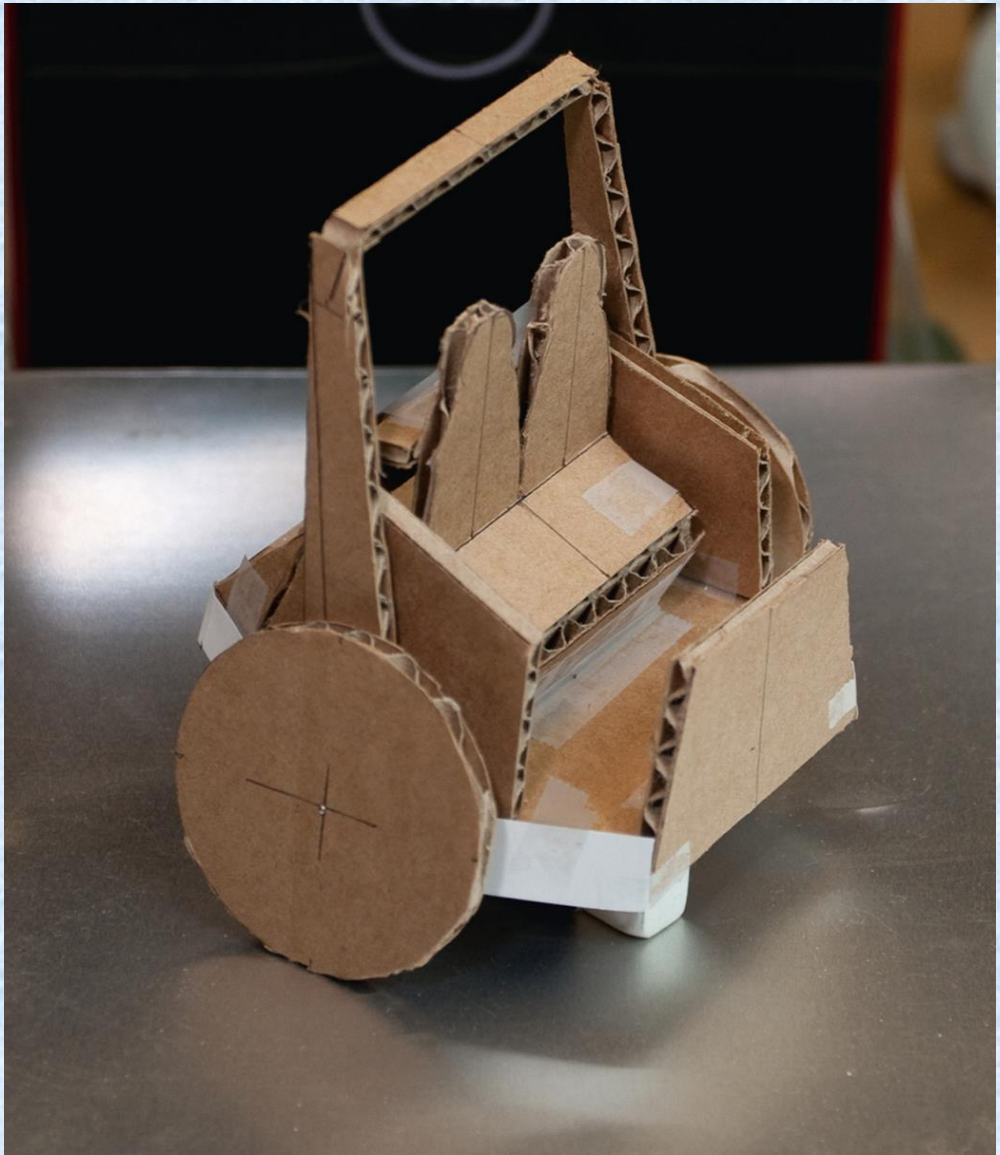
Example, freehand sketching

Example, freehand sketching

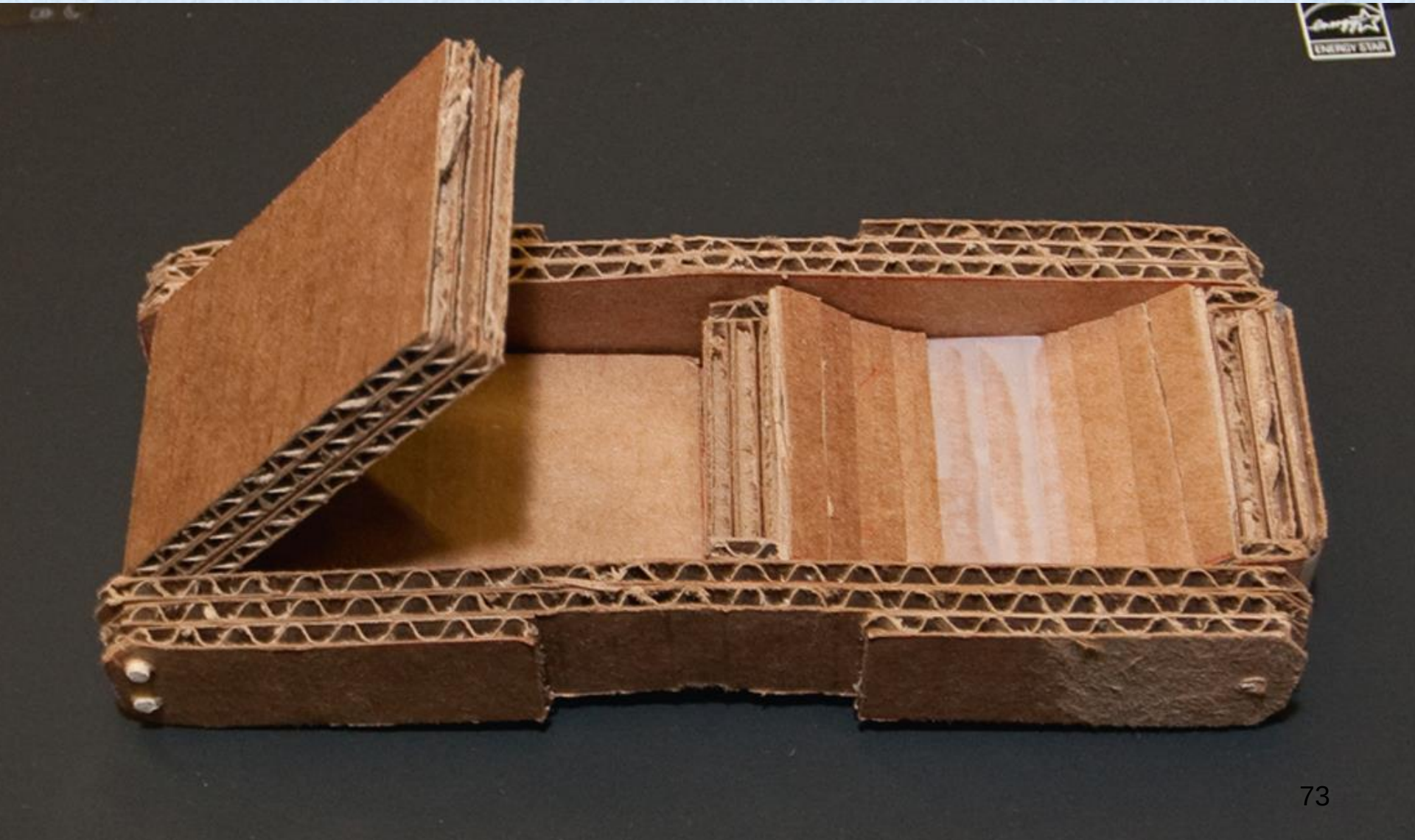
Physical Mock-Ups as Embodied Sketches

- A three-dimensional sketch
- Like all sketches
  - Made quickly
  - Highly disposable
- Made from at-hand materials
- To create tangible props for exploring design visions and alternatives

Example, physical mockup



Example, physical mockup



Example, a more finished physical mockup