User Interfaces

EECS 3461 – Sections A & B
Fall 2021

Resource Pack: Design III
UX Design and User Experience

Intellectual Property Notice

Dependencies

This resource pack assumes that you are already familiar with:

- R-Knowledge-I

Inquiry

1. What is design?

2. What is UX design?

3. What is user experience?

1. What is design?

The Term 'Design'

- the term *design* refers both to artefacts and a process

- *design*
  - the way that something is made so that it works in a certain way or has a certain appearance
  - design as a **countable** noun
  - e.g., "here is the new design, which we're about to deploy within the company"

- *design*
  - the process of deciding how something will be made, including how it will work and what it will look like
  - design as an **uncountable** noun
  - e.g., "design can be difficult to do, but is so important"

Design as a basic human activity

- design activity is traceable back to the earliest humans, who manufactured the first tools

- "the practice of design [is] making things to serve a useful goal, making tools"

  [Friedman and Stotlerman, 2012]

- in this view, "a designer is as designer does"

'Interventions' vs 'Solutions'

- Herbert Simon writes in 'The Sciences of the Artificial' (1996, 111), that to design is to *"[devise] courses of action aimed at changing existing situations into preferred ones."*

  - "At a highly abstract level, Herbert Simon's definition covers nearly all imaginable instances of design."
  - Design, defined in this way, is *the entire process across the full range of domains required for any given outcome.*
    [Friedman and Stotlerman, 2012]

- at this level of abstraction, design creates *interventions*

- a *design intervention* is more general than a *design solution*

Deficit Thinking

- a way of thinking organized around deficits

- needs driven

- problems focused

- what is missing that we must address?

- design as *finding solutions*

- example: MyFitnessPal
    - people want to lose weight/be healthy and find it difficult to do so, how can we solve the problems they encounter?
    - tech innovation; start-up

Asset Thinking

- a way of thinking organized around assets

- strengths driven

- opportunity focused

- What is present that we can build upon?

- can lead to new, unexpected responses

- design as *creating opportunity*

- example: Jeremijenko's Live Wire (Dangling String), 1995
    - how can we make visible what is invisible?

Natalie Jeremijenko

- an artist and engineer whose background includes biochemistry, physics, neuroscience and precision engineering

- works in the field of experimental design, calls herself as a "thingker", a combination of thing-maker and thinker

- her work primarily explores the interface between society, the environment and technology

- was artist-in-residence at Xerox PARC, worked with Mark Weiser (widely considered to be the father of ubiquitous computing, a term he coined in 1988)

- currently associate professor at New York University (Visual Arts, Computer Science)

Live Wire (Dangling String), 1995

- an art installation created Natalie Jeremijenko, created while artist-engineer was artist-in-residence at Xerox PARC

- no video available, was an 8 foot piece of plastic spaghetti that hung from a small electric motor mounted in the ceiling, which was electrically connected to a nearby Ethernet cable

- for each bit of information that went past the cable, the motor was activated for a short time, which caused a tiny twitch in the string
    - network traffic very busy -> caused string to madly whirl, made characteristic noises
    - network traffic very quiet -> caused a small twitch every few seconds

- it was placed in an unused corner of a hallway of an office space, was visible and audible from many offices without being obtrusive

- this interactive system was a piece of 'experimental design', recognized as one of the first pieces of 'calm technology'

Asset+Deficit

- sometimes both frameworks come together:

- example: reCAPTCHA:
    - how can we leverage the human capacity that is already deployed in CAPTCHA tasks? (asset)
    - given that we want to digitize the archives of The New York Times and books from Google Books in 2011 and this material is too illegible to be scanned by computers, how can we get this done? (deficit)

"un-dreamed-of" needs

- you can't simply ask people "What do you need?"and then supply it, because people don't necessarily know what is possible

- Suzanne and James Robertson (2013) refer to "un-dreamed-of" needs, which are those that users are unaware they might have.

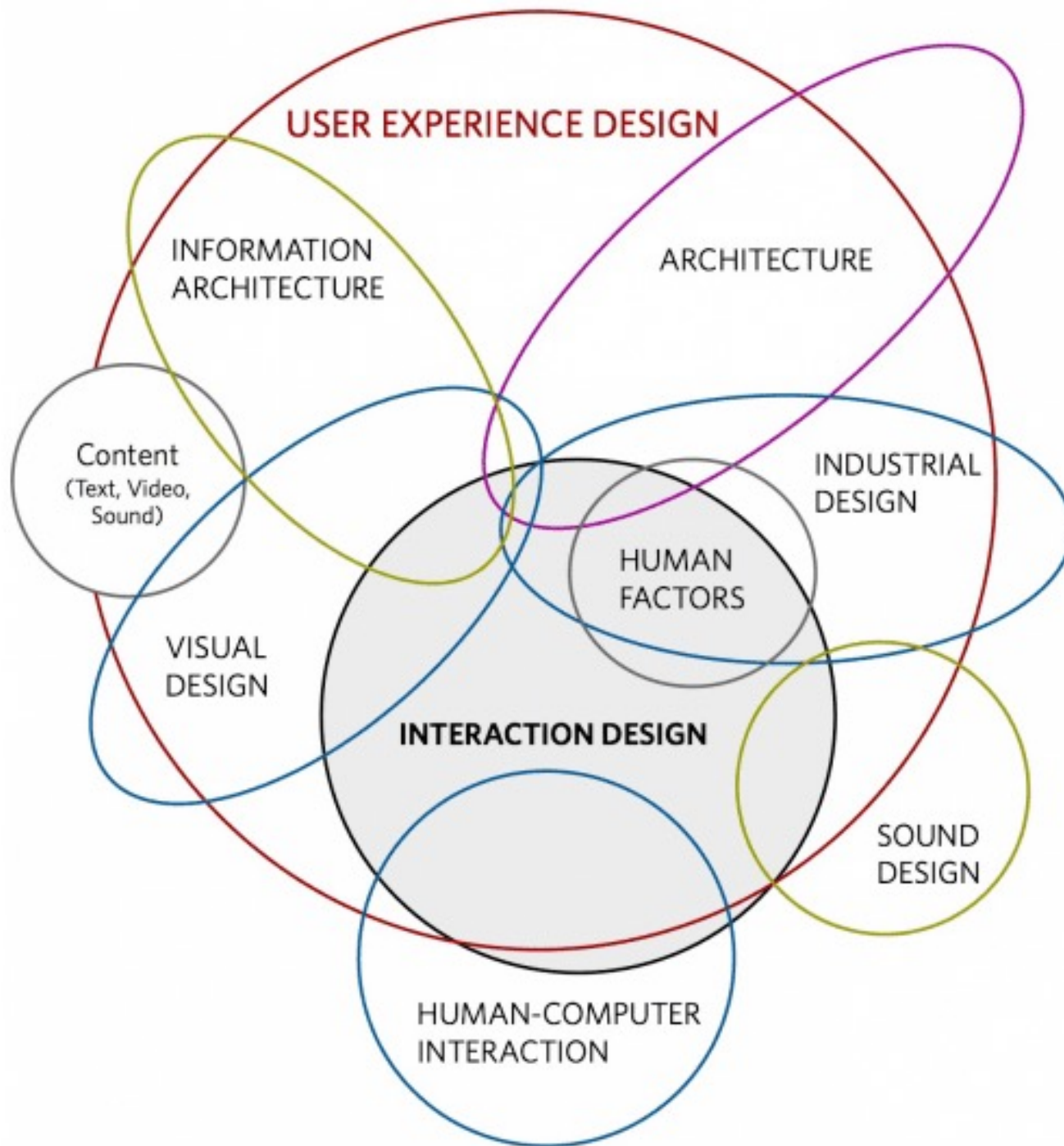2. What is UX design? What is UI design? etc…

UI vs UX vs IxD Design

- User Interface (UI) design - focuses on an interface's look and function

- Interaction Design (IxD) - focuses on the interactive experience

- User eXperience (UX) design - focuses on the user's entire experience with something
  - can apply to anything can be experienced

UX Designer

- also known as Interaction Designer; UI/UX Designer; and Experience Designer

- conducts user research and analyses experience from the users' perspective

- generates ideas through ideation techniques; refines ideas through criteria

- prototypes designs (range from low to high fidelity; reflects on and critiques design prototypes)

- conducts evaluation (usability testing and types of evaluation approaches)

USER EXPERIENCE DESIGN

INFORMATION ARCHITECTURE

ARCHITECTURE

Content (Text, Video, Sound)

INDUSTRIAL DESIGN

HUMAN FACTORS

VISUAL DESIGN

INTERACTION DESIGN

SOUND DESIGN

HUMAN-COMPUTER INTERACTION

Interaction design is a part of UX design. Image by **Dan Saffer**.

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UX Design as a Practice/Profession

practicing UX design can mean different things…

- you can work as a *paid* or *unpaid* practitioner

- you can work with or without a specific job title

- you can work within or outside of an organizational context

- if you work in an organizational context, it can be in the public sector, the private sector, or the "third sector"

- some organizations (e.g., design consultancies, agencies, studios) focus on providing UX design as a service to clients

UI Designer

- is concerned with how the product is laid out

- ensures that the product logically flows from one step to the next

- ensures the UI visually communicates the path that has been laid out by the UX designer has laid out

- ensures a consistent design language is applied across the product

- develops preliminary designs: wireframes, flows, mock-ups

- tools: Sketch, Illustrator, InVision, etc

Front-End Developer (UI Developer)

• creates functional implementations of a product's interface, working from a specification such as a prototype (consisting of wireframes and flows)

• uses tools such as… React.js, Angular, JavaFX, html5, Ruby on Rails, etc *constantly changing and evolving*

Consultancies, Agencies, and Studios

- many large, established companies

- a small sample:
  - Designit (formerly Cooper), https://www.designit.com/
  - NielsenNorman Group, https://www.nngroup.com/
  - IDEO, https://www.ideo.com
  - uxstudio, https://uxstudioteam.com/

3. What is user experience?

Humans are Sense-Makers

- as humans, we are all about *making sense of our experiences*

- **sensations**, **emotions**, and **meaning** are all part of this sense making

- sense-making is omnipresent

- sense-making can be nebulous

- the experience of sense-making can be difficult to capture

- sense making is 'interior'
    - sense-making takes place in the body and the mind of the sense maker

- sense-making is not directly observable

Emotion is Central

"Emotion is the moving and cementing force. It selects what is congruous and dyes what is selected with its color, thereby giving qualitative unity to materials externally disparate and dissimilar. It thus provides unity in and through the varied parts of experience."

[Dewey, 1934]

User Experience

[Sharp et al, p. 13-14, 2019]:

- Jesse Garrett (2010, p. 10) "Every product that is used by someone has a user experience: newspapers, ketchup bottles, reclining armchairs, cardigan sweaters."

- User experience *"is about how people feel about a product and their pleasure and satisfaction when using it, looking at it, holding it, and opening or closing it. It includes their overall impression of how good it is to use, right down to the sensual effect small details have on them, such as how smoothly a switch rotates or the sound of a click and the touch of a button when pressing it."*

User Experience

[Sharp et al, p. 13-14, 2019]:

- An important aspect of user experience is the *quality* of the experience someone has, be it a quick one, such as taking a photo; a leisurely one, such as playing with an interactive toy; or an integrated one, such as visiting a museum (Law et al., 2009).

- "Jack Carroll (2004) stresses other wide-reaching aspects, including fun, health, social capital (the social resources that develop and are maintained through social networks, shared values, goals, and norms), and cultural identity, such as age, ethnicity, race, disability, family status, occupation, and education." [Sharp et al, p. 15, 2019]

Design User Experience?

It is important to point out that one cannot design a user experience, only design *for* a user experience.

[Sharp et al, p. 13-14, 2019]:

- In particular, one cannot design a sensual experience, but only create the design features that can evoke it.

- For example, the outside case of a smartphone can be designed to be smooth, silky, and fit in the palm of a hand; when held, touched, looked at, and interacted with, that can provoke a sensual and satisfying user experience. Conversely, if it is designed to be heavy and awkward to hold, it is much more likely to end up providing a poor user experience—one that is uncomfortable and unpleasant.

User Experience ≠ Usability

- *user experience* is different than *usability*

- there are different frameworks to capture user experience
  - for instance, McCarthy and Wright's Technology as Experience framework proposes 4 strands

- there are different attributes of *usability*
  - observable behaviours relating to: effectiveness, efficiency, safety, utility, learnability, memorability

- we will return to *user experience* and contrast it with *usability*

In Sum

- design is a basic human activity

- UX design is an umbrella term for design practices that seek to (positively) intervene in user experience

- user experience captures sense-making; it is about 'inner' experience