COSC368 eoy review - Summary Humans and Computers

Humans and Computers (University of Canterbury)

Week 1:

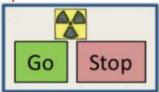## 1. Empathy – what is it and why is it important in the context of creating technology

Empathy is the ability to understand others and share feelings with others to show concern and care from those in your immediate environment.

In the context of creating technology, this is important as it means that technology must be created with the user's feelings and emotions in mind, thinking about what will best take care of the user and give them a positive experience.

2. Einstein is credited with saying "Everything should be made as simple as possible, but not simpler." Describe the relationship between Interface Complexity and Domain Complexity. Describe the conditions that lead to a poorly designed user interface.

If you were to oversimplify tasks, like the nuclear reactor example, refers to slide on complex side with Nuclear Reactor (slide 45, lecture 1-1), want to dumb down UI to make it super easy to manage
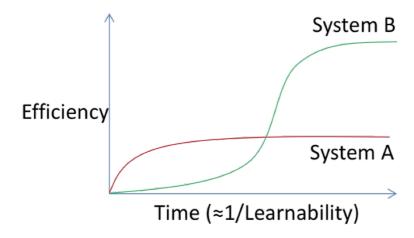
Flip side - don't want to make things more complicated than they need to be.

In the context of user-focused applications, this quote's meaning is to design the interface in such that it is simple and easy for the user to understand what actions can be taken, but also meets all the requirements of the design specification (has all the necessary functionality).

Any simpler, and the application doesn't meet all the necessary requirements of the specific domain.

3. Making a system easy to learn can make it more cumbersome to use on a daily basis. Explain the trade-offs between Learnability and Efficiency. Provide an example.

†

Opinion: If you were to make a program easier to navigate by putting all its components into separate subsections, it would be a lot easier at the start to locate what you need and to perform the task in a easy to follow method. But after you've learned it the program extensively, it would still take the same time to do the intended task by going through all the sub sections vs if you could just do what needs to be done. Eg: manual setup of a network vs step by step walk through setup??
I think it is that if a system is easy to learn you won't be very efficient at it and on the other hand a more complex system which takes more time to learn will make you very efficient at it once you learn how it works. E.g. Vim/ Emacs/ IntelliJ. All hard to learn programs, but make you super efficient when you do learn them
To extend that answer, it's about considering the domain. A public website or app should have high learnability, but specialised software used by professionals can have a higher focus on

efficiency.

4. "Know thy user for they are not you!" – explain this statement and the importance in the context of designing products and services.

I'm assuming - Users come from a vast array of backgrounds that influence how they would go about producing a desired effect with your product. If you do not understand these users your product will only be effective for those of a similar knowledge base and background. To counter this you should 'know' your user base and understand the differences between them so you can craft your product accordingly.

I think this is also warning against designing a product around your own needs and understandings rather than prioritising the experience of your intended users, who likely differ from you.

5. The International Usability Standard, ISO 9241-11 measures what three (3) things in determining how usable a system is. Name them and explain how each of them is measured.

1: **E**ffectiveness
The amount of goals a user can achieve

2: **E**fficiency
How quickly a user can achieve these goals

3: **S**atisfaction
The task that the user has completed shows positive signifiers and the behaviour of the product was predictable.

EES = the 'ees' of use of a product

6. According to Don Norman, there are 3 levels of Cognition and Emotion. What are they and how do they work?

1: Reflective
The conscious brain. This is where our thinking is done, reflecting on actions and changing our behaviour.

2: Behavioural
Part of the subconscious brain, controls learned behaviour such as how to walk.

3: Visceral
'The animal brain' - The instinctive part of the brain which generates gut feelings and is deeply subconscious.

RBV = I cant get one for this hahaha just remember ~~Reflective, Behavioural, Visceral~~ Really Big Vasectomy (or write it on your cheat sheet??) @Patrick Ma > Gimme a RBV i love u patrick <3

7. According to Don Norman, there are 7 Stages of Action. List them in order.

1: What do I want to accomplish?   Goal
2: What are the alternative action sequences?   Plan
3: What action can I do now?   Specify
4: How do I do it?   Perform
5: What happened?   Perceive
6: What does it mean?   Interpret
7: Is this okay? Have I accomplished my goal?   Compare

8. According to Don Norman, there are 7 Fundamental Design Principles. List them and provide a short description of each one.

1. Discoverability. It is possible to determine what actions are possible and the current state of the device
2. Feedback. There is full and continuous information about the results of actions and the current state of the product or service. After an action has been executed, it is easy to determine the new state.
3. Conceptual Model. The design projects all the information needed to create a good conceptual model of the system, leading to understanding and a feeling of control. The conceptual model enhances both discoverability and evaluation of results.
4. Affordances. The proper affordance exists to make the desired actions possible.

Merriam webster: the qualities or properties of an object that **define** its possible uses or make clear how it can or should be used.
5. Signifiers. Effective use of signifiers ensures discoverability and that the feedback is well communicate and intelligible.
6. Mappings. The relationship between controls and their actions follows the principles of good mapping, enhanced as much as possible by spatial layout and temporal contiguity.
7. Constraints. Providing physical, logical, se

1: Discoverability
It is possible to **determine** what **actions** are **possible.** (also the current state of the device but this sounds less integral to the overall concept)

2: Feedback
There is **continuous** information about the **results** of an **action** and the current state of the product and service. After an action has happened it is easy to determine the new state (e.g the change associated with the action is identifiable)

3: Conceptual Model
The design projects all the information needed to create a good conceptual model of the system, leading to an understanding and feeling of control.

4: Affordances
The proper affordances exists to make the desired actions possible. (just a quick recap, affordances are an object's properties that show the possible actions users can take with it.

5: Signifers
Effective use of signifers ensures discoverability and that the feedback is legible and well communicated. Signifiers can be thought of as the visual part of affordances. Signifiers communicate where the action should take place.

6: Mapping
The relationship between controls and their actions follows the principles of good mapping.
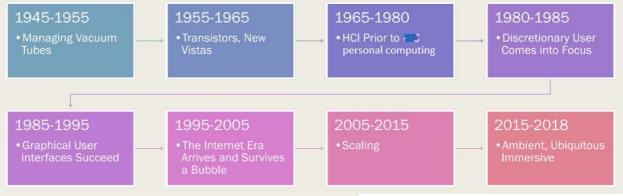
7: Constraints
Providing physical, logical, semantic and cultural constraints guides action and eases interpretation.

Week 2:

1. In looking at the History of HCI, how far back do we typically look? What was the state of art at that time? Who were the primary users (three roles)?

History of HCI lecture

1945-1955	1955-1965	1965-1980	1980-1985
• Managing Vacuum Tubes	• Transistors, New Vistas	• HCI Prior to personal computing	• Discretionary User Comes into Focus

1985-1995	1995-2005	2005-2015	2015-2018
• Graphical User interfaces Succeed	• The Internet Era Arrives and Survives a Bubble	• Scaling	• Ambient, Ubiquitous Immersive

1945-1955: Managing Vacuum Tubes

- ■ WWII – ENIAC
- ■ Three Roles in Early Computing
  - – Manager
  - – Programmer
  - – Operator
- ■ Grace Hopper: Liberating Computer Users

^^ nice :)
Basically, go back pull the earliest date from the slide
Basically had programmer, operator and manager < acronym: POM, pom file which we all love :)
State of art at the time: Cars

We look back to around 1945 - 1955.
Cars were state of the art at the time.
The primary users where
- • Manager
- • Programer
- • Operator

How do we know it was cars? Wouldn't the ENIAC have been the state of the art at the time? AGREED. The Eniac was definitely the state of the art at the time.

Isn't it actually 1965 onward. ENIAC wasn't exactly designed for user experience. I know what you are saying but why would she go back to 1945 in lectures if it wasn't relevant to HCI
?

2. Early visionary work done by Doug Engelbart took place at which research lab and in which location? What year was the video "The Mother of All Demos" aired to the public?

"On December 9, 1968, Dr. Douglas C. Engelbart and the Augmentation Research Center (ARC) at Stanford Research Institute staged a 90-minute public multimedia demonstration at the Fall Joint Computer Conference in San Francisco" < the question states which location was Doug working, not the location of the video. So it
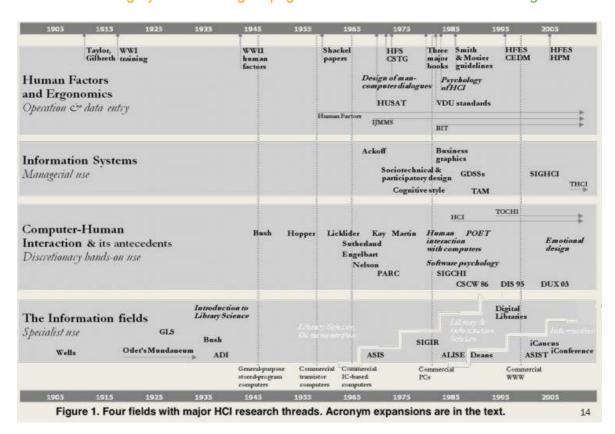
3. Which four fields does Jonathan Grudin identify as having major HCI research threads?

I can't seem to find this anywhere in the notes.
I think this is the grey timeline thing on page 14 week 2 lecture 1. ✔also what I got

Figure 1. Four fields with major HCI research threads. Acronym expansions are in the text.   14

4. How many AI (Artificial Intelligence) Summer's have we had? In what years?

There where 3 AI summers in total
1. Before 1965 - 1980, which is the first AI winter The AI winter didn't even last one year? I think it's that before 1965 was the summer, then 1965 - 1980 was the winter. But 1968 was when the video was made/presented (above) Nope the Winter was in 1974, meaning that the summer would have been prior to this but after 1965.

2. 1980 - 1985, 2nd AI summer
3. 2015 - 2018 (Today) 3rd AI summer (not happen yet, only got two) - Disagree with blue. See Lecture 1 week 2, slide 18

According to Wikipedia:

74   80   87   93

5. What is Moore's Law and what are its implications for the future?

The observation that:
- The Number of transistors per square inch on integrated circuits doubles every year.

This observation is narrowly defined and may soon be revoked. However if the trend continues we of course will benefit through very fast computing hardware. This is not however the only way the technology industry innovates, new tech and better techniques will always be created.

6. What is the relationship of UX to HCI? Explain how the fields are related.

HCI is more research based, UX is more practitioners (Implementation)
HCI often works on research that won't hit the industry for 5 or so years. However this research will be implemented by UX designers.

HCI is focused on the interaction between humans and the interfaces of computers, researchers design technologies that allow users to interact with them in a novel fashion. UX (user experience) encompasses HCI design and extends it by considering all facets of user experience including usability, accessibility and emotional responses to using the system

7. What are the Elements of the User Experience as outlined by Jesse James Garrett? List the elements and provide a brief description. Describe the interplay between the levels and how one is to ideally work through the levels in a project.

The Surface Plane
- Text
- Images
- Sound

The Skeleton Plane
- Placement of buttons, controls, images, text
- Arranged for maximum effect and efficiency

The structure Plane
- Abstract structure, Independent of specific elements.
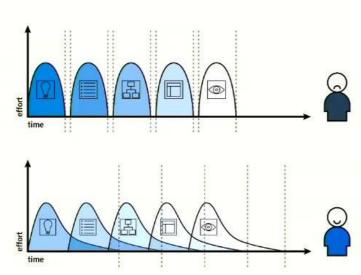- Conceptual Model is embodied at this level and reflected up

The Scope Plane
- What the features and functions are

The Strategy Plane
- Business model - what the providers of the service want and what the users want to get out of it

The choices you make on each plane affect the choices available to you on the next place above it. This ripple effect means that choosing the "out of bounds" option on an upper plane will require rethinking decisions on lower planes.

This is fairly self explanatory

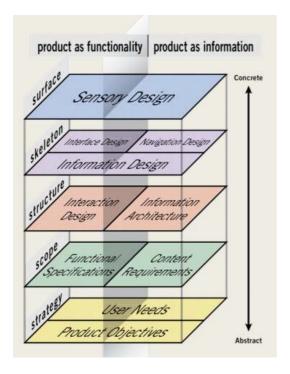# 8. When Jesse James Garrett talks about a duality what is he referring to?

Basically you can split the elements of user experience into two sections. Functionality and information (or content).
tle
Has anyone got more of an answer to this question????
The usage of a particular thing tends to be, one toward functionality - being able to do a task with it, and the other is to collect data.

On some of the planes you can tangibly separate that phase of design into design centred on functionality and design centred on the content being presented ?? (diagram on next page)

9. Describe the two (2) components of the Strategy Plane. List out the key outcomes for each area.

1. User Needs
2. Product Objectives

User needs - User Segmentation, user research, Creating personas, Task Analysis
Product Objectives - Business Goals, Brand Identity, Success Metrics

10. What are the seven (7) steps required to do user research as described for your Assignment.

1. Identify Target Users
2. Identify Context of use
3. Create a Research Hypothesis
4. Create an Interview Discussion Guide
5. Devise a Recruiting Plan
6. Create an Interview Schedule and Schedule Participants
7. Talk to users in their context of use.

Week 3:

1. Holzblatt & Beyer recommend two types of sessions for processing research data. What are they called and what do they entail?

~~Summarise??? And Consolidation~~
~~What do they entail??~~
Interpretation Sessions
- Held after each interview, within 48 hours
- Information is captured in Contextual Design Models
Consolidation Sessions

- Brings the data from all users together into a single view
- Results in an **Affinity Diagram, Consolidated Contextual Design Models** and **Personas**
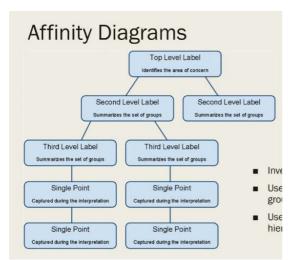
2. Describe what a Sequence Model (Holtzblatt & Beyer) is used for and what the key components are.

Sequence Model (Task Flows) is created in the Interpretation Sessions!
- A list of detailed steps the user took to accomplish a task
- Lightning bolts signify issues
- INTENT statement captures users goal
- TRIGGER statements captures event or action that precedes this sequence
- Multiple sequence models may be captured per user

Shows where users have problems - can lead to better design.

3. What is an affinity diagram and what is it used for? Describe the affinity diagramming process

Done in the Consolidation Sessions.

Uses 3 levels of labels to create hierarchy

Top Level Label: Identifies the area of concern
Second Level Label: Summarizes the set of groups
Third Level Label: Summarizes the set of groups

Takes all research findings from all participants and makes it understandable. This helps you come up with a generalised model.

Process:
1. Transfer notes from interpretation sessions to white post its and code them (e.g. U04-26 for User #4 - Finding- 26)
2. As a group, place your post its on the wall and organise them into groups of related findings, keep groups small.

3. As groups start to get large, create additional groups by finding new distinctions.
4. Create labels (blue) for the groups using the user's voice and story
5. Organise these groups into larger themes and label them (pink)
6. Finally, look for the highest level groupings and provide labels (green)

'An Affinity Diagram is a tool that gathers large amounts of language data (ideas, opinions, issues) and organizes them into groupings based on their natural relationships. The Affinity process is often used to group ideas generated by Brainstorming. The Affinity process is a good way to get people to work on a creative level to address difficult issues. It may be used in situations that are unknown or unexplored by a team, or in circumstances that seem confusing or disorganized, such as when people with diverse experiences form a new team, or when members have incomplete knowledge of the area of analysis.'

4. What does a consolidated Sequence Model show us? What is the process to create one?

Can't find anything concrete on this.

Consolidated sequence models take all of the individual sequence models created from each user action in the interpretation session and consolidates them into one sequence model to generalise a common sequence of user action. Process?? Unsure. Just put them all together?

Is there a difference between a Sequence model and a consolidated sequence model?
- Maybe it's making summary ones from all the specific ones?

It is the same format as a sequence model. The reason it is called consolidated is that you have to take the models of several users and consolidate them into one model - making decision as to what the general or consolidated model should be.

5. What is a persona as defined by Kim Goodwin? Why are they valuable to the design process?

A model of current human behavior that is
- Derived from **contextual resesarch data**
- Describes as if it were a **real person**
- Used to promote **shared understanding & empathy**
- Used in stories to **envision the future**

Personas help us understand
- Motivations
- Level of expertise
- Context of use
- Workflow
- Goals and Needs

6. Why do we need to define the scope of what we are building?

1. So you know what you are building
2. So you know what you are not building

7. Describe the two (2) components of Scope Plane

1. Functional Specifications
   Features and functionality - Products & services
2. Content Requirements
   Posts, articles, ads, images - Editorial & Marketing

8. What is a Product Vision Document and what two documents from Traditional Requirements Engineering does it replace?

The Product Vision Document describes
- Who is going to buy the product, who is the target customer?
- Which customer needs will the product address?
- Which product attributes are critical to satisfy the needs selected, and therefore for the success of the product?
- How does the product compare against existing products, both from competitors and the same company? What are the product's unique selling points?
- What is the target tals, plans and current evaluation of the system are particularly important

Product Vision Document replaced the Marketing & User Requirements Documents as the definitive document for strategy
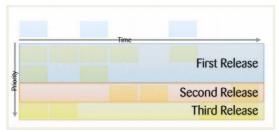
This document replaces
- Marketing Requirements Document (MRD)
- User Requirements Document (URD)

9. How do personas help you to write better users stories?

Lets you think less about features and functionality and shifts your focus to users and users needs. This creates greater empathy and context. Brings 'intent'.

10. What is a User Story Map? When and why would you use them?

Simple way to tell a story and break it down into parts.
Components:
- X-axis - Backbone - activities over time
- Y-axis - Users by priority
- Version Line - deadlines - MVP

'*A User Story Map consists of user stories that are ordered in two independent dimensions. Horizontal axis represents the order of activities from the user's point of view, and they*

describe the behavior of the system. Down the vertical axis, it represents increasing sophistication of implementation.'
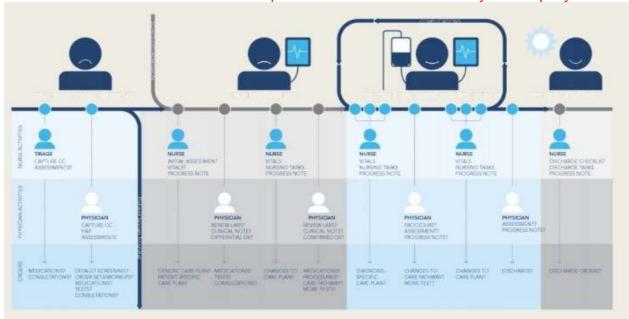
Why?
- To understand your whole product or feature experience
- To break down the big stories without losing the big picture
- To ensure cohesive feature set form the user(s) perspective
- To create a shared understanding
- To prioritize for a user value (impact)

When - The span of the whole project would make sense, so you don't lose sight of the big picture of the project.

11. What is a Customer Journey map? When and why would you use them?

A visualization that shows all of the touchpoints between a customer and your company

What a user is thinking and feeling when dealing with your product.

Components:
- X axis - touchpoints over time
- Y axis - users and what they are doing, thinking, feeling, and their opportunities
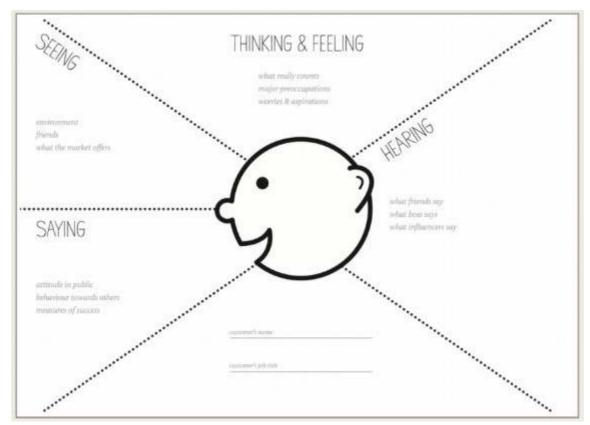
Outlines the customer's experience from initial contact, through the process of engagement and into a long-term relationship with the organisation
Outlines key interactions and customer's feelings, motivations, expectations

12. What is an Empathy Map? When an why would you use them?

Empathy maps can be used whenever you find a need to immerse yourself in a user's environment

Empathy maps are used to gain a deeper insight into customers. It involves what they think & feel, hear, see, say & do. They can be used whenever you need to immerse yourself in a users environment. E.g. to elaborate on personas.

Week 4:

1. Describe the two (2) components of the structure plane

Interaction Design
- Concerns the options involved in supporting users to perform and complete tasks. Conceptual Model, Error Handling

Information Architecture
- Concerns the options involved in conveying information to a user.

Interaction Design is a superset of Information Architecture

2. What are the key elements of Interaction Design?

1. Conceptual Models
   From the fundamental design principles - the design projects all the information needed to create a good conceptual model of the system, leading to understanding and a feeling of control. The conceptual model enhances both discoverability and evaluation of results.
   A Good conceptual model

- Allows us to predict the effects of our actions
- Helps us understand the relationship between the controls and the outcomes
- Without a good model, we operate by rote, blindly.
  2. Error Handling

3. What is a Conceptual Model as defined by Johnson & Henderson? Why are they valuable to the design process?

A high level description of an application including
- Target task domain, high level functionality of the application
- Concepts
- Relationships
- Mapping

Basis for User's Understanding
Close Relative of Information Architecture

4. List and describe the four (4) components of a Conceptual Model

1. Overall Purpose & High-level Functionality
2. Major Concepts and Vocabulary
3. Objects/Operations Analysis
   1. Objects, their attributes and their operations
b. Conceptual Scenarios
   1. Mapping from Task Domain Concept to Application Concepts
   2. Adapted from Consolidate Sequence Models & user story maps

5. How do you test a Conceptual Model?

- Test it early and often
- Validate through user interviews
  o Diagrams of the object's, attributes, operations and relationships
  o Task Flow Diagrams
  o Low-fidelity prototypes (for key interactions)

6. According to Don Norman, why do errors occur?

Usually it is because we ask people to act in unnatural ways such as:
- Staying alert for hours at one time
- Providing precise, accurate control specifications
- All while multitasking or being interrupted

7. Name and describe the three (3) approaches to handling errors.

Prevention
- Design the system so errors cannot be made
Correction
- Design the system so that it corrects errors
Recovery
- Design the system so that the user can recover from the error

8. Don Norman classified errors into types: Slips and Mistakes. Describe the difference between the two. Provide examples of each.

Slips (Intending to do one action and doing another)
- Capture
- Description-similarity - eg: pouring juice into bowl instead of glass
- Memory-lapse - eg: start going to room and forgetting why you are going there
- Mode-error - eg: pen vs mouse on tablet pc. Looking for commands that are not relevant

Mistakes (when the wrong goal or plan is set)
- Rule-based
- Knowledge-based -eg: security incident management
- Memory-lapse - eg: forgetting the task / plan

Is it just me or are the memory-lapse examples for slips and mistakes the same? What makes one a slip and the other a mistake?

9. Memory-lapses can cause both slips and mistakes. What are the design cures that address memory lapses. Provide an example.

Memory-lapse SLIP (Ex. forgetting what the goal is while performing a sequence of actions)
- If system knows goal, make it explicit
- If not, allow person to see path taken

Memory-lapse MISTAKE (Ex. forgetting the goal or plan of action - commonly caused by interruptions)
- Ensure all relevant information is continuously available
- Goals, plans and current evaluation of the system are particularly important
- Assume people will be interrupted and design to support the user's need to reestablish context.

10. Explain why mode-error slips happen and what design cures are recommended.

Definition
- Doing actions in one mode thinking one is another
- Refer to file that's in a different directory
Design cures:
- Have as few modes as possible
- Make modes highly visible

11. Dan Klyn describes Information Architecture as making the complex clear through the use of three things. Name and describe the three things

Ontology
- Discovers, defines and articulates the rules and patterns that govern the meaning of what we communicate
Taxonomy
- Developing systems and structures for what everything is called and where everything is sorted and the relationships between the labels & categories

Choreography
- The structures it creates fosters movement and specific types of interaction.
- Anticipating the way users and information want to flow and making affordances for change over time

12. Rosenfeld, et al use three circles to describe information architecture or information ecology. Describe what is contained in each circle and how the circles are independent.

1. Context
   1. Business goals, funding, politics, culture, technology, resources, and constraints
b. Content
   1. Document/data types, content objects, volume, existing structure
b. Users
   1. Audience, tasks, needs, information-seeking behavior, experience

How are they independent if the diagram we got given literally has them overlapping?
I think they are saying 'define what makes them unique' not that they are completely unique. There are overlapping aspects sure, but if they had no unique qualities there would be no point including having that category anyway. That sounds fair, I just wish she spent more time wording these questions properly, at least without spelling mistakes

13. Information Architecture is made up of four (4) components. What are they?

1. Organization Systems: Schemes and Structures
2. Label Systems: Terms, tags, metadata
3. Navigation Systems
4. Search Systems

14. What is an organizational scheme?

A system in which you are able to organize information. An example would be a phone book.
I think this definition ^ is for an organization system. An organization scheme is a method of organizing (alphabetical, numerical, topical, etc)

15. Name the three types of organizational structures. Describe how the organizational structures are used to create an information architecture.

- Hierarchy: Top Down
  - Driven by the strategy plane
- Database: bottom up
  - Driven by the scope plane - analysis of the content and functional analysis
- Hypertext: cross linked

This is where we start stuff that wasn't covered in the mid-semester test:

Week 5:

1. List and describe the components of the skeleton plane.

Information design: The ordering and chunking of information
 Structuring the information to communicate the conceptual model
Navigation design: Deciding the order in which to present access/links to functionality
 Communicating to the user the relationships between the elements it contains
 Communicating to the user their current context in relation to potential next actions
Interface design: Selecting the right interface elements for the task the user is trying to accomplish
 Arranging the components in a way that project the Conceptual Model

The structure plane defines how the product will work, the skeleton plane defines the form that the functionality will take. Addresses concrete issues of presentation as well as matters that involve a more refined level of detail. Our concerns exist almost exclusively on at the small scale of individual components.
Consists of **three components** that are divided into two spaces; *product as functionality* and *product as information*. *Interface Design, Navigation Design* and *Information Design*.
· **Interface design**: The familiar realms of buttons, fields and other interface components. Falls into the realm of *product as functionality*. It involves providing users with the ability to do things (interact). The interface is how users encounter the product.
· **Navigation design**: A specialized form of interface design that is tailored to presenting the information spaces. Falls into the realm of *product as information*. It involves providing users with the ability to go places (navigate). Navigation design aims to accomplish three goals:
 o Provide users with a means to get from one place to another in the interface.
 o Communicate the relationships between the elements that the interface contains (what do the buttons do, what are the links for etc).
 o Communicate the relationship between the page the user is on and the contents on that page.
· **Information design**: Described as the presentation of information for effective communication. Crosses into both realms of *product as information* and *product as functionality*. It involves communicating ideas to the user. Potentially incorporates aspects from the other two elements. Information design crosses the boundary between task-oriented functionality and information-oriented systems because neither interface design nor navigation design can be fully successful without good information design to support them.

2. As we design the skeleton, what role do convention, metaphor and consistency play and why?

Following conventions create consistencies. This is useful to avoid making the user think about ordinary things. Metaphors are usually bad as making the user guess whilst browsing will increase mistakes and may deter the user. They make things less consistent.
https://medium.com/@robertopesce/ux-skeleton-garrett-day-11-815d55bb8f73

Habit and reflex form the foundation for much of our interaction with the world. For efficiency our brains form habits very quickly and much of our daily activity occurs without having to think about it (walking, talking, eating, driving etc).
Convention allows us to apply our reflexes in different circumstances. An example of convention is having indicator sticks on the same side of the steering wheel in cars, when this convention is broken then we tend to turn on the windshield wipers instead. Layout is often overlooked but is in fact very important (do users have to look for the button to close a

window?), they can work a lot more efficiently and have better experience if they don't have to think carefully or look around to perform common actions. When designing a product, be cautious of breaking convention. Keep your product interface **consistent** with other interfaces your users are familiar with.

Metaphors are a set of user interface visuals (file and folder analogy icons, tree view representation of a file system seen in file manager etc). Designers should resist the urge to construct product around a series of concrete metaphors. Often metaphors don't work as well as intended. A dangerous trap to fall into is drawing interface analogies with real world interactions (turning a page in a book vs going to next page of a website etc). Effective use of metaphors really depends on reducing the mental effort required for users to get around the functionality of the product (e.g. icon of a phone book to represent a directory of phone numbers = good, coffee shop icon to represent chat area = bad).

3. What are the types of navigation found in web sites and web applications as defined by Jesse James Garrett?

Global or Main Navigation
Local or Sub Navigation
Contextual Navigation or Inline Navigation
Supplementary Navigation
Courtesy Navigation

(do we have to give more details?) The question doesn't ask for any more. But here we go:
Main/global (links to key access points)
Local/sub (links to nearby functionality)
Contextual/inline (links embedded in content)
Supplementary (quick links, e.g. log in)
Courtesy (access to information not normally needed, e.g. contact info, opening hours)

Most websites provide multiple navigation systems that each fulfil a specific function.
· **Global Navigation**: Provides access to a very broad sweep of the entire website. Global navigation brings together the key set of access points that users might need to get from one end of the site to another. An example is a navigation bar linking all the main sections of a website. (home, about us, contact us etc.)
· **Local Navigation**: Provides users with access to what is nearby in the architecture. In a strictly hierarchical architecture, local navigation would provide access to a page's parents, siblings and children.
· **Supplementary Navigation**: Provides shortcuts to related content that might not be readily accessible via the global navigation or local navigation. This scheme offers some benefits of faceted classification such as letting users shift their focus of content without starting from the beginning again.
· **Contextual Navigation (sometimes called inline navigation)**: This is embedded in the content of the page itself. Often underutilized or mis utilized. Links in text etc.
Courtesy Navigation: Provides access to items users don't need on a regular basis, but that are commonly provided as a convenience. Links to contact info, feedback forms, policy statements etc are examples of this type of navigation (bottom of the web pages).

4. Explain the slippery slope of Bespoke Design

Bespoke design can lead to:
Increase in cognitive load, errors and user frustration
Decrease in efficiency, effectiveness and user satisfaction

A **bespoke** design is a custom-made product or service design. **Bespoke** originates from bespeak, which referred to the ordering of goods (objects, elements on a screen etc). Bespoke design is a slippery slope since it increases the cognitive load for users. They need to learn and get used to your system. This can lead to an increase in user errors and thus user frustration. It has also been found that bespoke designs are less efficient and provide less user satisfaction.

5. Explain wayfinding

Enabled by a combination of information design and navigation design

Wayfinding is an important function that requires information design and navigation to work together. The goal of wayfinding is helping people understand where they are and where they can go regarding the interface of the product. Wayfinding can be accomplished by incorporating several things. For example, colour coding for people to find where they parked their car in garage.
In websites, wayfinding typically involves both navigation design and information design. The **navigation** systems need to provide access to different parts of the interface, but they also need to communicate those choices clearly. Good wayfinding lets users form a clear picture in their mind of where they are in the interface, where they can go and what choices will get them to their objective most efficiently.

The **information design** component of wayfinding involves page elements that don't perform navigation functionality. Icons, labelling systems and typography are some information design choices employed for wayfinding.

6. What are examples of standard interface components?

– Apple Mac OS
– Microsoft Windows
■ Web (desktop and mobile)
– HTML, CSS
– JS frameworks – react, bootstrap, angular, vue...
■ Mobile Apps
– Apple IOS
– Android
Arnt these interface elements and the components are things like checkboxes, text fields, ect..?■ Desktop

^ Yeah I'd have thought the answer would be *"Buttons, checkboxes, text fields, radio buttons, list boxes, dropdown lists"*

Agreed ^^ Yeah should be be checkboxes, textfields, ...

From some google searching, the words **'components'**, **'elements'** and **'controls'** seem to be used interchangeably, but 'controls' are usually used in the context of buttons, checkboxes and scrollbars, etc. and 'elements' are the higher level objects such as windows, menus, icons, the cursor, etc. This is not always the case and some sites just used any or all of the three words to describe things.
· 	**Desktop**: E.g. Apple OS, Windows, linux etc.
· 	**Web (Desktop and mobile)**: HTML, CSS, JS Frameworks (react, angular, vue, bootstrap)
· 	**Mobile Apps**: Apple IOS, Android.
· 	**Checkboxes**: Allow users to select options independently of one another.
· 	**Radio Buttons**: Allow users to select one option from a set of mutually exclusive options.
· 	**Text Fields**: Allow users to enter text.
· 	**Dropdown Lists**: Provide the same functionality as radio buttons but they do so in a more compact space allowing many options to be represented efficiently.
· 	**List Boxes**: Provide the same functionality as checkboxes. Again, more efficiently so that many options are represented efficiently.
   • 	**Action Buttons**: Can do many things. Typically, tell the system to take information the user has provided and do something with it.

7. Describe the different levels of fidelity of prototyping and what they are best suited to.

Lower fidelity prototypes tend to elicit more honest feedback as it forces the audience to focus on the concept rather than the colours.

Higher level fidelity is better for refining further interactions.
Lower fidelity more useful as it forces users/stakeholders to focus on the concepts, avoiding fruitless discussion about size/colour of buttons etc.

Need to be careful with high-fidelity as they can convince stakeholders than an idea/concept is close to completion, increasing expectations.
Also keep in mind that higher fidelity prototypes cost more, so need to find a balance between Just Enough Design (JED) vs Big Design Up Front (BDUF).

Fidelity can be viewed on a scale from low fidelity to high fidelity. On the **low end** of the spectrum we have sketches and stories. These give a low-level overview of the product and what it aims to accomplish. Stories and sketches provide insight into what users will want to do with the product.
In the **middle** of the spectrum we have wireframes. Page layout is where information design, interface design, and navigation design come together to form a unified, cohesive skeleton. A lot of balancing is required to design a workable interface. Wireframes are aimed at tackling this balancing act. It is a bare bones depiction of all the components of a page and how they fit together. They capture all the design decisions in a single document to serve as a reference for visual design work and site implementation. They can contain varying degrees of detail.
The value of wireframes is the way they integrate all three elements of the structure plane: interface design, through the arrangement and selection of interface elements; navigation design, through the identification and definition of core navigational systems; and information design, through the placement and prioritization of informational components. By bringing all three together into a single document, the wireframe can define a skeleton that builds on the underlying conceptual structure while pointing the way forward toward the surface design.
On the **high end** of the spectrum we have detailed designs. These usually involve prototypes of the actual product. They serve as a high-level view of how the product will look and how users can interact with it.

8. Explain the use of concept cars

Concept cars are very high fidelity prototypes including visual styling and sensory design elements to inspire and set a vision of the product.
As above, but also noting that they focus mainly on the blue-sky scenarios and may not be buildable today.

A concept car is a product prototype made to showcase new styling and/or new technology. They are made to inspire and set a vision for the product and they are extremely detailed, expensive, based on a best possible outcome and sometimes not viable/buildable today. They often serve to test the waters and see how people view it and whether consumers would want to buy it.

So which one is the real answer on earth??? Yes.
Trust your heart

9. What is a Vision Workshop as defined by Holtzblatt & Beyer – what is the expected outcome

Vision workshops are made up of 'The wall walk' and 'visioning session'. The wall walk involves the team walking through the affinity diagram and reviewing the consolidated contextuals models.
The visioning session consists of 'Divergent' and 'Convergent' thinking and Storytelling (from the personas perspective). The expected outcome is to have built a new idea vision.

This is very detailed summary from the textbook on the vision workshop:

The vision workshop forms part of the ideation process of design. It is a facilitated process that immerses design teams in the user's world by walking them through the consolidated data and generating scenarios exploring how the technology can enhance users' lives and work.

The first step in the visioning workshop is the **Wall Walk.** During the wall walk participants immerse themselves in the data collected from the data consolidation in preparation for design. The goal is to help designers link design ideas to the data, i.e. the real structure and challenges of the user's world. The Wall Walk is an individual, silent experience in which each participant walks the affinity diagram and thinks about design implications and notes design ideas down. After this the team makes a list of issues that need to be addressed to make a successful product. Then the team makes a list of hot ideas. After walking the affinity diagram the team walks through the consolidated contextual design models and thinks about the implications of the data and note down design ideas in response to the data. All the design ideas up to this point are spur-of-the-moment ideas and participants are encouraged not to get attached to them.
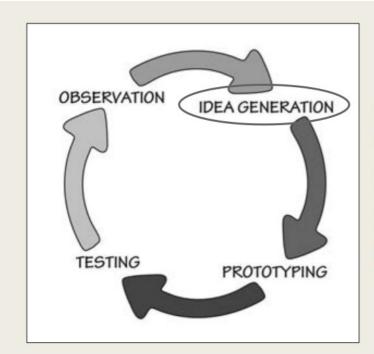
The second step is the **Visioning Session**. The Visioning Session is a facilitated workshop that generates a coherent design response to the user data. It is carefully structured to optimize a team's ability to invent creatively in the context of user data. Participants tell the story of the user's life and work, focussing on the tasks of interest and showing how the user's world will be changed and enhanced by the new invention. The team does multiple visions, telling many stories from different starting points, evaluates each vision and reconciles them to create a coherent set of product concepts. Creative design requires a balance between *divergent and convergent* thinking which is supported by this workshop by starting with disparate design possibilities from the *Wall Walk* and then settling on a single, mutually acceptable solution/approach. The *visioning session* puts off evaluation until all the stories are told so that the "yes buts…" don't interrupt the flow of creative thinking. Details are the enemy of creativity, but engineers love the details, the *Visioning Session* keeps the team operating at high level, moving down successively to more detail in later steps.
i

10. In which plane would you expect Ideation workshops to be held?

Strategy plane since they are concerned with telling the stories of user interactions with the system in a larger context. Ideation workshops would involve basic sketching (which omit the finer details of the UI) and stories, which are fast to create and good for getting high level ideas across and validating them.

Strategy plane. Ideation is concerned with data on the user needs and on telling stories of how the users will use the product. It draws from data in the *scope plane* (user story maps and contextual models) but ideation belongs in the strategy plane. The results from ideation play a large role in the structure and skeleton planes.But the strategy plane isn't dependant on the scope plane? Correct, strategy plane does not depend on the scope plane, but this isn't a waterfall process, it's iterative
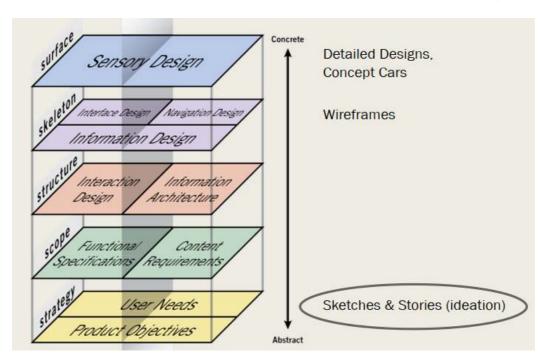
FIGURE 6.2. **The Iterative Cycle of Human-Centered Design.** Make observations on the intended target population, generate ideas, produce prototypes and test them. Repeat until satisfied. This is often called the *spiral method* (rather than the circle depicted here), to emphasize that each iteration through the stages makes progress.

Source: Don Norman

Shouldn't this be the skeleton plane? The strategy plane is concerned with the needs of the user and the product objectives without a specific concern for design. The skeleton plane is concerned with the design of the application based off the ideas raised off the other designs. It would be there that basic sketches and conceptual designs are developed. So it would be Skeleton Plane that Ideation workshops would be held. No see below image

11. Describe how levels of fidelity impact users, stakeholders and developers

Developer fidelity: cost of prototyping increases with fidelity. Different people need different levels of fidelity to work with designers, developers etc.

Stakeholder fidelity: Low-fidelity good at communicating high level functionality and concepts with stakeholders. Higher level fidelity good for discussing finer details and branding. High level fidelity may make stakeholders believe product is further to completion than really is and raises expectations on delivery time.

User fidelity: Low-fidelity good for testing high level functionality. High fidelity good for testing overall interactivity and flow.

Question 7?

Users: Low fidelity prototypes tend to elicit more honest feedback from users, they are not distracted by the choices of colour pallets, icons and other high-level details. Instead the low fidelity prototypes relay the ideas and concepts across. Higher fidelity prototypes are better for testing how users interact with the product and you can refine these finer details based of their responses.

Stakeholders: Fidelity has a similar impact on stakeholders as with users. Low fidelity prototypes can focus the audience on the concept and avoid discussions and distractions regarding colour pallets and icons etc. Higher fidelity prototypes can lead key stakeholders to believing that an idea or concept is closer to completions and this could cause expectations around delivery to increase.

Developers: Level of fidelity can have many different impacts on the development team. A careful balance needs to be maintained. The cost increases with as the fidelity of prototypes goes up. While higher fidelity might ensure developers have the same image for the final product it is expensive and time consuming to create. Lower fidelity gets the concept across but might increase the risk of inconsistencies between teams. Different levels of fidelity are also needed depending on the organization and the developer's role in the project.
There are two approaches that can be taken regarding the level of fidelity for developers. **Just Enough Design (JED)** uses agile methodologies. Designs need to be just enough detail to clearly communicate the vision and scale of the project and bring confidence of delivery but without so many details that the concept gets obscured. It needs to closely involve members of the team that are going to be producing the product. Taking the JED approach developers can avoid wasting time trying to predict things that might never happen or work in real life.
On the other hand, there is the **Big Design Up Front (BDUF)** approach. BDUF is an approach where the product's design is completed and perfected before any implementation has started and is often associated with the waterfall model of software development. The idea is that it is much easier to fix a requirement bug in the requirements phase of the project than to fix it in the implementation phase. With going the BDUF route there is a large risk of hedging bets too early that the design is perfect, but when usability testing occurs this is not the case and a lot of time and resources has been wasted on refining the small details. BDUF is also very difficult to adapt to changes in requirements.

Week 6:

1. Describe the Surface Plane and what type of design ~~we deal with?~~

Sensory design, designing for the senses. Is the most concrete plane of JJG's model, since it is concerned with the specific content and its layout/structure. Consists of interaction and visual design

On the surface plane we deal with **Sensory Design** and the presentation of the logical arrangements that make up the skeleton of the product. Through attention to information design, we determine how we should group and arrange the information elements of the page. Through attention to visual design, we determine how that arrangement should be represented visually.

2. Explain what visual design is

Visual design enhances user experience through imagery, typography, layout and color. Visual design aims to shape and improve the user experience through considering the effects of illustrations, photography, typography, space, layouts, and colour on the *usability* of products and on their *aesthetic appeal*. Visual design as a field has grown out of both user interface (UI) design and graphic design. A successful visual design ensures that content remains central to the page or function and enhances it by engaging users and helping to build their trust and interest in the product (and, consequently, the brand). The realm of visual design houses a wealth of issues for designers to bear in mind, ranging from the differences in cultural interpretations of the colour red, to proper use of whitespace, to universal taboos such as the setting of red elements against blue backgrounds. It draws on a rich and lengthy history of the production of aesthetically pleasing, successful work.

3. How is visual design different from Interaction Design?

Visual design draws the eye to the correct components and helps prioritise tasks/content through the use of visual elements and visual design principles.
Interaction design is the functionality that supports the tasks (skeleton)

Interaction design is related to how the user interacts with the system. It focuses on how the system information should be shown to the user in a way that the user can fully comprehend what is the information is conveying. Interaction design doesn't focus on how the product will look, it just focuses on ensuring the program is working in a way that makes it easy for the user to navigate and interact with.

Visual design on the other hand doesn't focus on how the product works, instead it focuses on making the product look good. More attention is paid to aesthetic appeal such as looking at the design of buttons, icons, the layout of the web page etc. Anything visible to the user's eye falls into the realm of visual design.

4. List and describe the seven (7) elements of visual design and how they are used?

- Line
  - Strokes connecting two points used to create shapes and patterns
    - Shape
  - Self contained areas useful for quick and effective communication
    - Figure and Ground
  - Relationship between the shape and the space. By designing positive shapes we are also designing negative space
    - Volume
  - Adds height, width and depth to elements
    - Value
  - Describes lightness and darkness and can be used to create clarity and subtlety.
    - Colour
  - Colour theory is a branch of design focused on the mixing and usage of different colours in design and art.
    - Texture
  - Repeated patterns or lines to create surface quality of an object

Any product, from toasters to web applications, can be broken down into fundamental elements of visual design.

· **Line**: Lines are strokes connecting two points, and the most basic element of visual design. They can be used to create shapes, and when they are repeated, to create patterns that form textures. Although the simplest they can possess properties that allow us to convey a range of expressions. They can be thick or thin, straight or curved, have uniform width or taper off, be geometric or organic. Lines can also be implied.

· **Shape**: Shapes are self-contained areas, usually formed by lines. Shapes have two dimensions; width and length. We tend to identify objects by their basic shapes, and only focus on the details (lines, values, colours) on closer inspection.

· **Negative/White Space**: Negative space is the area around a shape. The relation between negative space and the shape is known as the *figure/ground*, where the shape forms the *figure*, and the negative space around the shape the *ground*. When designing a shape, we are also designing negative space around it. Negative space is just as important as the positive space (shapes), it helps to define the boundaries of the positive and bring balance to a composition. Some designers make use of negative space to create interesting visual effect such as the WWF (World Wildlife Fund) logo.

· **Volume**: Volume applies to visuals that are three-dimensional and have length, width, and depth. It is rarely used in visual design because most digital products end up being viewed on a 2D screen.

· **Value**: Value describes light and dark. A design with a high contrast of values creates a sense of clarity, while a design with lower contrasting values creates a sense of subtlety. Value can also be used to simulate volume in 2D.

· **Colour**: Colour is an element of light. Colour theory is a branch of design focussed on mixing and usage of different colours in design and art. Colours are used in design to convey emotions and add variety and interest to the design.

Texture: Texture is the surface quality of an object. As a designer you can work with two kinds of textures: *tactile texture*, where you can feel the texture, and *implied textures*, where you can only see the texture. Most visual designers work with implied textures.

5. List and describe the seven (7) principles of visual design?

Unity
- Visually or conceptually arranging elements on a page. Creating a sense of harmony between all elements on the page.

Gestalt

- Create a distinction between sections
- refers to our tendency to perceive the sum of all parts as opposed to the individual elements. Is important to separate sections by making distinctions.

Hierarchy
- Shows the difference in importance of the elements in a design using color and size for example highlighting buttons or using larger fonts for headings.

Balance
- Symmetry within the design distributing elements evenly to make the design appear calm, stable and natural.

Contrast
- Used to make elements stand out by manipulating differences in colour, value, size and other factors.

Scale
- Relative sizes of elements within a design. Enlarging scale adds certain levels of interest to them.

Dominance
- Creates focus on a single element using colour, shape, contrast, scale, and/or positioning to achieve this

6. What are grids and how are they used?

Didn't find any materials from lecture slide 31 is as close as we can get

A Grid is a structure made up a design if intersecting straight or curved guide lines used to structure content.

For mapping content to mobiles (resizing) etc

A grid is a structure comprising of a series of lines that divide a page into columns or containers. This structure helps designers to arrange content on the page. The grid serves as a framework for the pages layout. Think of it as a skeleton on which a designer can organise graphical elements in an easy to absorb way.

There are four types of grid: manuscript, column, modular and baseline

Manuscript, essentially a large rectangle, is used for continuous blocks of content (text, images or other large elements). Typically, the design used in books

Multicolumn grid, has multiple columns, and follows the rule: the more columns you add the more flexible your grid becomes. Useful for layouts that contain discontinuous information. Can also be used to create zones in the layout.

Modular grid, subdivides a page both vertically and horizontally. Useful for exerting more complex control over a layout than just columns can offer. A modular grid provides flexible formats for pages and allows you to create a complex hierarchy. Each module in the grid can contain a small chunk of information, or adjacent modules can be combined to form blocks.

A baseline grid is an underlying structure that guides the vertical spacing in a design. It's used primarily for horizontal alignment and for hierarchy. Similar to how you would use columns and modules as guides in your design, you can use a baseline grid to build consistency in your layout. Using this type of grid is akin to writing on a ruled piece of paper — the grid ensures that the bottom of each line of text (its baseline) aligns with the vertical spacing. This makes a baseline grid not only an excellent typographic tool, but also extremely helpful when you're laying out elements on the page because you can quickly check whether something on the page is missing a row of space.

This is from the website mentioned on the lecture notes
https://www.smashingmagazine.com/2017/12/building-better-ui-designs-layout-grids/

7. Why should you not underestimate the value of visual design?

If the interaction design is good enough then visual design is a key differentiator

If the underlying interaction design is bad, then visual design is like putting lipstick on a pig ; but if it is good, then visual design is a key differentiator for producing an interface users like. "The degree of a system's aesthetics affected the post-use perceptions of both aesthetics and usability, whereas the actual usability had no effect." - Don Norman, Emotional Design. Regardless of how usable and terrific the functionality of an interface is, if it is not aesthetically sound then this will leave a sour taste in the user's mouth when they use it.

Week 7:

1. Where do design guidelines come from?

Based on human psychology – on Cognitive Psychology

2. How well do design guidelines work?

- It depends
    - On who applies them.
    - How well they understand the thinking behind them.
- The process is not always straightforward and requires
    - Applying potentially conflicting rules.
    - Making tradeoffs.
- Understanding the human psychology behind the guidelines will enable you to better understand the guidelines and how to apply them.

3. In what ways is our visual perception biased?

(7-1 P20)

- Based on repeated exposure
- Result in users not scrutinizing details
- Users don't see what is actually on the screen
If you do not think these are certain plz find your own answers and paste or type. Do not just change the color okay? This will confuse others.

Adult perception and attention focuses almost entirely on our own goals therefore we tend not to notice things that are unrelated to our goals

Visual perception can be biased in several ways.
   Perceptual Priming: Priming is known as exposure to one stimulus influencing the response to a subsequent stimulus. For example, the word *nurse* is recognized more quickly following the word *doctor* than if it is following the word *bread.* Perceptual priming is based on the form of the stimulus and is enhanced by the match between the early and later stimuli. An example of perceptual priming is the identification of an incomplete word in a word-stem completion test.

- **Perceptual Patterns**: Perceptual patterns are innate to all behaviour and meaning making. We sub consciously create a set of underlying principles of what has been successful during the course of our life. They are formed by repeated exposure. An example of a perceptual pattern is instinctively looking at top right of the screen to close a window (on windows computer).
- **Habituation**: The more we encounter something, the less likely we are to react. Habituation is the decrease in response to a stimulus after repeated exposure. For example, a new message tone initially draws your attention, but after being exposed to the ringtone over a long period you become accustomed to the sound and may not even hear incoming messages anymore. Visual example: Windows or some program popup requesting an update, eventually you just ignore them.
- **Attentional Blink**: Attentional blink is the phenomenon that the second of two targets cannot be detected or identified when it appears close in time to the first (0.15s – 0.45s). THE HUMAN EYE ONLY SEES 30FPS!
- **We perceive what we expect**

;4. Explain the 7 gestalt principles that are most relevant to UX and UI Design.

- **Proximity: Items that are closer appear grouped**
- **Similarity**: When things appear to be similar to each other we group them together and we also tend to think they have the same function.
- **Continuity: We tend to see continuous forms**
- **Closure: We tend to see whole, closed objects, not collections of fragments**
- **Symmetry: We tend to see simple figures rather than complex ones**
- **Figure/ground**: We tend to perceive objects as either being in the foreground or the background
^ is this not about positive and negative space being used -Yes, but this refers to the psychological side of it. A white dot on a black background is perceived exactly as that, we don't think it's a white background with a black blob on it.
- **Common fate: Items that move together appear grouped**

The explanation for Similarity and Figure/ground was found here: https://www.usertesting.com/blog/gestalt-principles/

5. Explain why structured/chunked information is more easily understood than unstructured.

Visual hierarchy gets people to goal faster
Structured info is easier to perceive
Structured Numbers are easier to scan and read

Week 8:

1. Name and describe the Review/Inspection methods for evaluating designs

Design Critique/Review
- Based on a set of guidelines or standards checking gestalt principles

- Good for finding issues with consistency

Cognitive Walkthrough
- Performed by experts in cognitive psychology and evaluates the design based on how well it supports the user in performing a set of tasks

Heuristic Evaluation
- Performed by designers where they get people to review the software and report the usability problems they find.

Expert Review
- Hybrid approach combining heuristic evaluation and cognitive walkthrough

2. Describe in detail the process of doing a Heuristic Evaluation

- Each evaluator works alone with the interface.
- Evaluator traverses interface several times:
  - Has a scenario/task in mind
  - Inspects UI components and workflow
  - Compares them with the heuristics
  - Looks for non-compliance/problems – Notes and rates each problem
- Two pass approach
  - First pass: focus on specific UI elements
  - Second pass: focus on higher integration and flow

To perform a Heuristic Evaluation several steps and guidelines need to be followed.
- Each evaluator needs to work alone with the interface.
- The evaluator must traverse the interface several times:
  - They need to have task/scenario in mind.
  - Need to inspect UI components and workflow and compare them with the Nielsen heuristics.
  - Note down and specify severity of any noncompliance/problem that they encounter.
- The evaluator needs to follow a two-pass approach
  - On the first pass they focus on specific UI components.
  - In the second pass they need to focus on higher integration and flow of the interface.
- Once evaluators have completed their evaluations the results are synthesized. The overlap in problems reported by evaluators is assessed, the severity rankings are reviewed, and the problems are then ranked in order of importance.
- Evaluators may not be part of the designers or implanters since their perception is warped by being too close and invested in the project. Instead other designers/developers, other employees or friends can be used as evaluators.
- Regarding the number of evaluators, it has been found that a single evaluator can find around 35% of the usability problems in a design. Different evaluators also pick up on different issues, but the sets overlap. Having additional evaluators increases the number of problems found, but the benefits diminish, as more evaluators are used the number of new problems found decreases. For these reasons it is recommended to have at least three evaluators but no more than seven.

3. Name and describe the Evaluation Methods that involved users.

Heuristic Evaluation (Pretty sure) Defs not, slide 8-1 page 32 specifies that cognitive walkthrough and heuristic evaluation both do not involve users.

Yea i think this is the only one ^

Surveys
A/B Testing
Usability Testing

Pre sure this is what they want ^
^^

I agree with Green! *3

Surveys
- Specialist crafts questionnaires
- Sent to the users via an automated system
- Relies on self reporting - miss automated and reflexive actions
- Difficult to follow up

A/B Testing
- Run online with real users
- Alternative designs are tested typically for conversion rates
- Data shows what users did, but not why
- No possibility of follow up

Usability Testing
- Performed by a user researcher with a target end user
- Considered the 'gold standard' of evaluation

4. Describe the traditional way of doing a usability study

1. Write rationale for test
2. Prepare test script, system and materials
3. Decide how to reward participants
4. Decide participant criteria; prepare participant "screener"
5. Recruit & schedule test participants
6. Choose testing site
7. Pilot-test tasks, script, consent form
8. Revise tasks, script, consent form
9. Conduct test sessions
10. Analyze findings
11. Report findings

Yup, pretty sure the question is asking for these 11 steps. Keywords to memorise:

1. Why
2. Setup
3. Reward
4. Participant criteria

5. Recruit/schedule

6. Location
7. Pilot test 8. Fix 9. Test
10. Analyse 11. Report

(i guess this is probably ask you what is traditional way rather than the specific steps, but i can't find any descriptions)

- Write Rational, Prepare test scripts + system and materials, decide reward
- Decide criteria for users, Recruit & schedule, Choose Testing site
- Pilot test, script & consent form - revise
- Conduct test, Analyze & report findings

Traditionally, usability studies are performed in a usability lab setting but can be done remotely or at the user's site. It is considered the 'gold' standard of evaluation. (From week 8-1 lecture notes page 37). Usability testing is sometimes called "user testing" or "usability studies"

5. Describe the DIY method of usability testing (Steve Krug)

Three users – You'll find more than you can fix
■ No lab or mirrors – Set up a monitor in another room so the development team and stakeholders can watch
■ Record with Camtasia – or Morae (Techsmith.com) or CamStudio or various Mac products
■ No stats, no exit questions, no faux validity
■ No big honkin' report – 2 page email
■ Debrief over lunch
Do it one morning per month.

6. What are important tips to keep in mind as moderator of a usability study?

Keep'em Talking
aren't sure? ask
Stay Neutral
biases and work to steer clear
can't tell users what to do or give them clues
can't answer their questions. Instead, ask them what they think it is.
shouldn't express your opinions of the product
avoiding signaling emotional responses to the users reaction

(how to remember this fucked up phpthing) yup

7. What does Krug mean when he says "Make it a spectator sport"

Getting everyone to watch and telling them what to look for.

You can observe a lot by watching.

Week 9:

1. What is a design system?

Single source of truth for an organisation who design and develop products, which portray key design/brand principles, so that teams are able to design and develop products that are consistent and on-brand, with maximum reuse potential

They allow for consistency across the various products put out there and for reinforcement of brand identity. The teams' motivations, goals and interpretation of products' purpose are aligned. Also allows for better scaling, since merging of features is more seamless.

2. What are the key components of a design system?

- Purpose and shared values
- Design principles
- Brand Identity and Language
- UI components and design patterns

https://uxdesign.cc/everything-you-need-to-know-about-design-systems-54b109851969
Looks to be the website that Carola got some of her notes and images from

3. Who creates Design Systems?

Does anyone find some clues about this question? (Lecture 9-2 Page 44)
Just questions no answers…

Almost Everyone. Where the core ones being Developers and Designers.
^From echo (Thursday 27 Sept 43:13-44:42)

Also two types of design system creation methods distributed (everyone contributes with reviewers reviewing contributions) and centralized (small dedicated team works on design system)
Graphic and visual designers at background
Interaction designer
Developers to create UI components.

4. How do you make time for creating a design system?

Does anyone find some clues about this question? (Lecture 9-2 Page 45)
Adding extra funds? Bonus?
^Not very clear on echo (Thursday 27 Sept 44:42-45:48)

Hard to make time without funding. Could be working on real functional product instead with time. Need small separate project with its own funding.

Make it a funded project with designated resources
It's better to separate the backing as a product, set up, committed and funded.

5. What are some examples of prominent design systems?

1. Atlassian – ADG
2. IBM – Living Language
3. Google - Material Design
4. Salesforce.com – Lightning Design
5. Trello – Nachos
6. AirBnB
7. Firefox Photon
8. Microsoft Fluent
9. Apple
10. Shopify - Polaris

Week 10:

1. What are the two things we do to train our visual system to read?

- We learn to recognise patterns based on basic visual features (lines and shapes)
- We learn how to control our eye movement (left to right)

2. What new research was found and how did it impact a long-standing visual design (typography) guideline?

■ The long held, widely accepted and often repeated model of recognizing words first by shape and from that determining which letters are present has been debunked.
– Word shape is no longer considered a viable model of word recognition.
■ The bulk of scientific evidence says that we recognize a word's component letters, then use that visual information to recognize a word.
– Reading consists mainly of context-free, bottom-up, feature-driven processes.
1. Keep The Number of Fonts Used At a Minimum
2. Use Standard Fonts Where Possible
3. Choose a Typeface That Works Well In Various Sizes

Capital letters aren't harder to read. This made redundant the rule that you shouldn't use capital letters.

3. What are the differences in how skilled and unskilled readers go about reading. How do their cognitive processes differ?

Skilled Readers
■ Default mode of reading is feature-based because they have learned this to the point where it is automated.
■ Resort to context-based reading when feature-based reading is disrupted by poor presentation of information
Unskilled Readers
■ Since feature-based reading is not automatic – it is still conscious and laborious – their involuntary default mode for reading is context-based.

■ Most of their cognitive capacity is used for deciphering streams of words, leaving little capacity for comprehension

4. What are the design implications for design knowing that reading is not natural for us.

- Ensure that text in user interfaces allows for feature-based processing
  - *Avoid difficult or tiny fonts, patterned backgrounds, centering text etc.*
- Use restricted, highly consistent vocabularies
  - *Create a conceptual model with a limited set of teams without synonyms*
- Format text to create visual hierarchy
  - *See sections on information architecture, information design and visual design for more info.*
- Minimize the need for reading
  - *Minimize the amount of prose, use the least amount of text to get your point across*

5. How have the models of short- and long-term memory systems changed over time?

Traditional (antiquated) view of memory:
- Short-term and Long-term memory are separate stores. They are categorized based on frequency of usage, e.g saying hello to a stranger vs remembering your mother's name.

Modern View of Memory:
- More like a dark warehouse full of stuff (long term memory) with spotlights on a few items (short term memory).

6. What happens to items in short term memory as we bring more items in or get distracted?

- New items 'grab' attention from old
- Easy to forget goals or info
- Capacity of our attention: 3-5 unrelated items

7. What are the attributes and limitations of long-term memory? How stable is long term memory?

Attributes:
– Experiences trigger patterns corresponding to features
– Similar experience triggers same pattern (recognition)
– Internal neural activity triggers pattern (recall)
Limitations:
– error-prone, impressionist, free-associative, easily biased
– Memories change when features are dropped or added
– Seldom-followed routines hard to recall

8. Explain the impact our goals have on what we pay attention to.

We focus on our goals and pay little attention to our tools. Users are focused on achieving the goal. They prefer familiar paths over exploration.

We notice things more when they are related to our goals.
- **Inattentional blindness** - not seeing something that is there because your attention is on something else.
- **Change blindness** - not seeing changes to features that don't pertain to your goals

We track only features crucial to our tasks and are blind to other changes.

(Lecture 2, p. 9-12)

9. What do we mean by the "scent" of information.

On this screen, which option would you select to:
1. Pay a bill
2. Transfer money to your savings account
3. Pay your dentist by funds transfer
4. Change your PIN #.
5. Open a new account.

We guess, based on the connotations of the information provided, where functionality is in the application.

(Lecture 2, p. 13)

An information scent is found when an element within the design suggests the user is moving towards their goal, for example, the visual cue of a basket gives the scent of purchasing.
(source)

10. Recognition is easy, recall is hard. What are the design implications of this?

- Because our visual **recognition** is relatively insensitive to scale, use thumbnail images to depict images
- To aid **recognition**, make widely used features more prominent
- Use a distinctive style with visual cues to enable users to **recognize** where they are
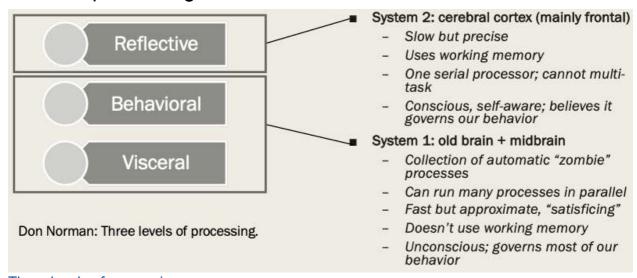- Make authentication info easy to **recall**

11. Define and explain the term cognitive load.

Cognitive load refers to the effort being used in our working memory. It is divided into three types:

· **Intrinsic**: Intrinsic cognitive load is the inherent level of difficulty associated with a task (2 + 2 vs determine the limit of an equation).

· **Extraneous**: Extraneous cognitive load is generated by the way information is presented. It is under the control of the instructional designers (not related to this courses design stuff, here it means the instructions). This load is increased by unclear or overly complex instructions. (if something is well explained it is easier to understand e.g. ELI5 vs university level explanations)

· **Germane**: Germane cognitive load is the processing, construction and automation of schemas (pattern of thought that organizes categories of information and the relationships between them).

12. Map the terms System 1 and System 2 to Don Norman's levels of processing

Don Norman: Three levels of processing.

System 2: cerebral cortex (mainly frontal)
– Slow but precise
– Uses working memory
– One serial processor; cannot multi-task
– Conscious, self-aware; believes it governs our behavior

System 1: old brain + midbrain
– Collection of automatic "zombie" processes
– Can run many processes in parallel
– Fast but approximate, "satisficing"
– Doesn't use working memory
– Unconscious; governs most of our behavior

Three levels of processing:
* Reflective
* Behavioral
* Visceral

Behavioral, Visceral -> System 1
Reflective -> System 2

System 1: old, subconscious, automatic
System 2: new, conscious, slow but precise
(Lecture 2, p. 23)

13. What are the design implications for designing for system 1 and 2

- Don't make users think about your software, instead enable them to learn and automate routines
- Don't make people deduce things, explain explicitly what to do or what happened
    - E.g. "It wants my 'member ID'" -- is that the same as my 'username'?
- Don't make people do things we know they are not good at
    - E.g. debug complex computer malfunctions
- Minimize the need for people to do calculations

(Lecture 2, p. 33)

14. What contributes to or enables faster learning?

We learn faster when practice is **frequent**, **regular** and **precise** .

- Therefore, if a system is used infrequently, the user must be reminded or guided through how to use them e.g. ATM machines
- If you want your software to become habitual and automatic, design it to encourage regular use.
- Train with precision

We learn faster when the operation is **task-focused**, **simple**, and **consistent**.
- Task analysis - understand user's goals and tasks
- Conceptual model - create a streamlined model (as simple as possible, but not simpler)
- Conceptual consistency - consistent mapping between object and actions
- Keystroke consistency - consistent mapping between keystrokes and actions (consider past learning and standards)
- Use words from the user's domain and use one and only one name for a particular object
- Avoid technical jargon

(Lecture 2, p. 37-39)

Also, we learn faster when the vocabulary is **task focused**, **familiar** and **consistent.**

15. Why do we say human decision making is not rational?
- We are biased by how choices are worded
    - <u>Losses mean more to us than gains</u>
    - We are generally risk-averse (System 1 > System 2 in risk decisions)
- We are biased by our vivid imaginations and memories
    - We overestimate the probability of improbable events (System 1)
    - Visceral reactions to vivid events associated with unpleasant topics
    - Give more weight to story than statistical evidence
    - Make decisions based on current perceptions and strong memories

(Lecture 2, p. 41-44)

Also loses mean more to us than gains. That's already in there ^. I reorganized the points for clarity.

16. Define and explain the terms decision support system and persuasive system

Decision support system -- "Systems that help users make better decision [sic] by making up for the weak points and limitations of our decision making"

Examples:
- Charity navigator helps donors make decisions based on a clear set of criteria

Persuasive systems -- "Systems that convince and persuade us to take some action (or take advantage of weaknesses"
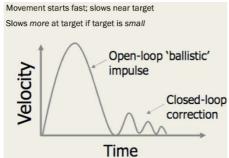
Examples:
- Clickbait
- Website convincing you to buy
- Charities convincing you to donate
- Political action committees

(Lecture 2, p. 45-46)

Week 11:

1. Explain Fitt's Law and Steering Law and their implications for design

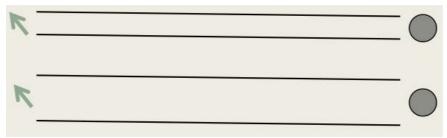**Fitt's Law** is an equation which determines the amount of time it takes for a user to "hit a

target with a pointer"

Implications:
- Make click targets big
- Targets at the top and the edge of the screen are fast to hit
  - Essentially have infinite size
  - E.g. Mac vs Windows top menu

- Pop-up and pie menus are faster than pull down menus
  - Less movement is required
  - All faster than pull-right menus

Steering Law is derived from Fitt's Law and says:
- Wider paths allow for faster movement

2. Why is timing important in user interfaces?

Based on cognitive science we know achieving responsiveness in the UI is important. For example, humans have a certain time averages for things like comprehending words, determining cause and effect, etc. We as designers must use that knowledge to create a better experience for the user.

Responsiveness is a design issue not a system issue. A slow backend is not an excuse for lack of feedback. Furthermore UI design is a skill (i.e. it is not something just anyone can do by following guidelines); it requires UX knowledge to be able to recognize what rules to follow in each design situation.

(Week 11 Lecture 1, p. 13-18)

3. What is a Design Sprint?

GV/Jake Knapp: The sprint is a five-day process for answering critical business questions through design, prototyping, and testing ideas with customers (Week 11 lecture 1, p, 40).

Design sprints are very flexible and many businesses have formed their own processes suitable to their own development processes.

- 4-5 day, facilitated workshop
- Co-located (or not)
- Starting with a problem
- Generating solutions (divergent thinking)
- Deciding what to build (convergent thinking)
- Trying things out with users (convergence)
- Deciding how to move forward (convergence)

(Week 11 Lecture 2, p. 5)

"Making design a contact sport." (Week 11 Lecture 2, p. 6)

4. What are the key parts of a design sprint?

6 stages:
• Understand

• Define
• Diverge
• Decide (converge)
• Prototype
• Validate
(p. 41)
<needs more explanation>

5. When would you run a design sprint?

- Before a product is created, so we can test if the business plan makes sense.
- When trying to pitch to a team or financial stakeholder. Then you can show them what you are thinking of doing.
- If you already have a product but want to drastically improve one area of it.
- When company or team can't align on a vision.

(source)

6. What is an air sandwich?

Couldn't find this in the lecture notes, but found this which seems to fit the theme in question 8 below:
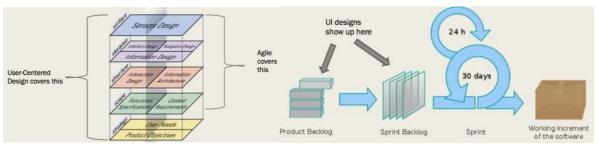
"An Air Sandwich is a strategy that has clear vision and future direction on the top layer, day-to-day action on the bottom, and virtually nothing in the middle—no meaty key decisions that connect the two layers, no rich chewy filling to align the new direction with new actions within the company." (source)

Is this question a joke?
✓ ✓
At least we aren't being asked to explain a splunk dunk lol

This will not be in the exam, Carola wrote this question before deciding not to include it the lecture. Source? She never mentioned in lectures and she said that the final exam doesn't cover anything not covered in lectures. I also emailed her about this. An air sandwich is effectively a communication gap, but as it wasn't mentioned in lectures, it will not be in the exam.

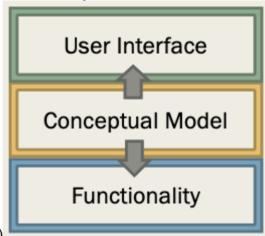# 7. Explain how the Elements of the User Experience fit into an Agile Development Process.

(Week 11 lecture 2, p. 33-34)

UX design appears in the creation of user stories as well as backlog grooming. They occur before the implementation begins.

8. What is the lynchpin of the design process?

Conceptual model (Week 11 lecture 2, p. 46).

The conceptual model is what connects functionality to the user interface:

(Week 11 lecture 2, p. 46)

Week 12 (N/A):

Topics from the lectures on Machine Learning and Designing the Future will not be on the Final Exam.

I really doubt the relevance of this exam. ✓✓✓✓✓✓✓✓✓✓✓✓ Yeah I just went through and highlighted all the stuff I thought was irrelevant; I highlighted everything but question 1a.

2017 exam

"The exam will be similar in format [to previous years' exams]. Since the course focused more on UX vs HCI, expect the topics to reflect that." - Carola in a Learn forum post

In other words I'm going to change the entire course and let you know what's in the exam on that Monday morning

Highlight stuff in red if you think it's irrelevant.

^^ Shouldnt it all be relevant?? Wow it is all red that's great

1. User interface modes and Norman's model of interaction.

(a) (3 points) What is a user interface mode?

A state the program can be in. Performing a set of steps in one mode can have a different outcome than performing them in another mode.

(b) (6 points) Sketch Norman's Model of Interaction and briefly explain the meaning of each of the elements in your sketch.

(c) (4 points) With reference to your sketch of Norman's Model of Interaction, explain the cause of mode errors.

(d) (4 points) With reference to your sketch of Norman's Model of Interaction, explain why designers are often blind to the usability of their designs.

2. Design and formative evaluation.

(a) (2 points) What is a user interface storyboard?

(b) (4 points) What are the key characteristics of a 'task scenario' (also known as a 'task description') in Task-Centred System Design?

(c) (6 points) Explain in detail, possibly with use of a clarifying figure, the process that is used to evaluate a user interface storyboard design with respect to a task scenario.

(d) (8 points) Imagine that you have been employed by TradeYou (a company that hosts online auctions) to help in the design of a mobile app for accessing their facilities, and that they have asked you to provide two task scenarios for the task of purchasing a car. Write the two task scenarios that you would provide to TradeYou.

3. Some HCI terminology.

(a) (2 points) Identify two key differences between saccadic and smooth pursuit eye movements.

(b) (2 points) Provide an example of a user interface activity that involves smooth pursuit eye movement.

(c) (2 points) What is proprioception, and provide an example user interface activity that involves proprioception.

(d) (3 points) In iterative user interface design, explain the key differences between elaborative and reductive design.

4. Formal evaluation.

(a) (2 points) Clearly describe the difference between within-subjects and between-subjects assignment to experimental conditions.

(b) (4 points) State two key reasons that experimenters often choose within-subjects assignment to experimental conditions rather than between-subjects.

(c) (1 point) Provide an example situation in which between-subjects assignment to experimental conditions is required.

(d) (3 points) What is the main experimental concern associated with within-subjects assignment, and how is the concern normally mitigated?

(e) (3 points) What is a null hypothesis?

(f) (3 points) As precisely as possible, state what the p value represents when calculated as part of a null-hypothesis significance test?

(g) (4 points) What is the 'file drawer eject' (a.k.a. 'bottom drawer eject') and how can it influence scientific knowledge?

5. Quantitative models of interaction.

This seems to come up every year but I don't ever remember seeing it this year? Can someone confirm? Most of the content in this test we didn't cover - as Carola said, "Since the course focused more on UX vs HCI, expect the topics to reflect that".

In this question, the following a and b parameters may be useful for some of your calculations.

	a	b
Visual search time	150 ms	250 ms/item
Choice reaction time	200 ms	100 ms/bit
Pointing time	300 ms	200 ms/bit
Tunnel dragging time	200 ms	50 ms/unit

Note that $log_2(2) = 1$, $log_2(4) = 2$, $log_2(8) = 3$, $log_2(10) = 3.32$, $log_2(16) = 4$, $log_2(20) = 4.32$

(a) (1 point) Name the performance law that would normally predict the average time taken when using a mouse to move a cursor to a target of width W pixels at a distance A pixels away from the cursor's starting location.

Fitt's Law

(b) (3 points) Write the equation(s) predicting this pointing time. Identify all variables in the equation(s).

$$T = a + b\log_2\left(1 + \frac{2D}{W}\right)$$

(c) (3 points) According to the values shown in the table above, on average, how long would it take a user to point to a 100 pixel wide target that has its centre 900 pixels from the cursor's starting location? Show all working.

(d) (1 point) Name the performance law that would normally predict the average time taken when using a mouse to drag a cursor through a tunnel of constrained amplitude and width (while keeping the cursor within the bounds of the tunnel).

Steering Law

(e) (3 points) Write the equation(s) predicting this constrained dragging time. Identify all variables in the equation(s).

(f) (2 points) According to the values shown in the table above, on average, how long would it take a user to drag a cursor through a tunnel that is 10 pixels wide and 300 pixels long? Show all working.

(g) (2 points) Name the empirical law that encapsulates the notion that some data items (commands, urls, applications, etc.) are used much more frequently than others.

(h) (3 points) Write the equation corresponding to this empirical law (i.e., the equation that explains what proportion of commands will be associated with the nth ranked command). Identify all variables in the equation. (i) (2 points) Assuming that a command-set strictly conforms to this frequency law, and that the most frequently used command in the set occurs 1000 times, how many times would the fourth most frequently used command occur in the command-set? (j) (2 points) Name the performance law that predicts the amount of time taken to make a choice between a set of options when the user is optimally prepared. (k) (3 points) Write the equation(s) predicting this choice reaction time when all choices are equally probable. Identify all variables in the equation(s). (l) (2 points) Write the equation(s) predicting this choice reaction time for item i with probability pi in a set of items that are not equally probable. (m) (3 points) According to the values shown in the table above, when optimally prepared, on average how long would it take a user to choose between 16 equally probable items? Show all working. (n) (4 points) If a user needs to conduct a visual search to

Misc.

Planes