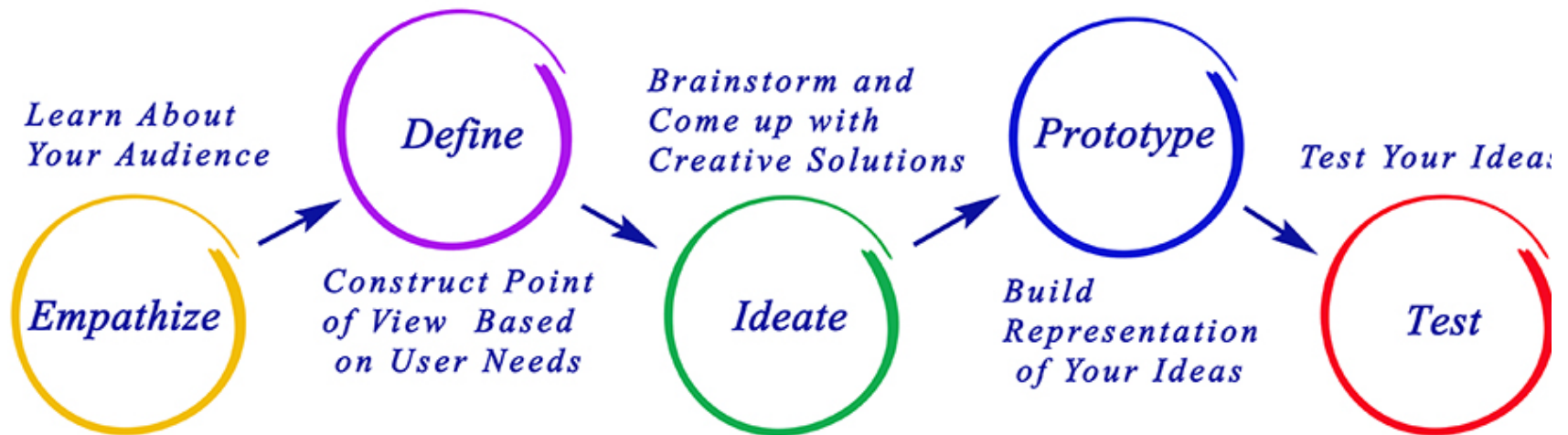# CT318 LECTURE 4

Design Thinking: Empathise

- Design Thinking 1: Empathise

- User Diversity

- User Research

- Technique: Empathy Mapping

Design Thinking Process
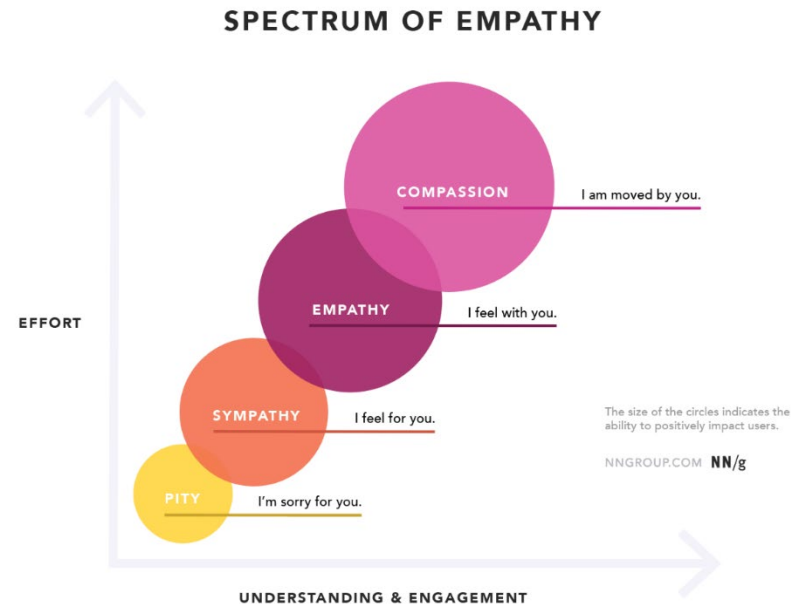

Learn About Your Audience — Empathize

Construct Point of View Based on User Needs — Define

Brainstorm and Come up with Creative Solutions — Ideate

Build Representation of Your Ideas — Prototype

Test Your Ideas — Test

DESIGN THINKING 1: EMPATHISE

UNDERSTANDING USERS

*"**Sympathy** is the acknowledgement of the suffering of others."* (Gibbons, NNg)

Distance between you and the other person, their adversity is not something you personally relate to or expect to share.

*"**Empathy** is the ability to fully understand, mirror, then share another person's expressions, needs, and motivations."* (Gibbons, Nng)

SPECTRUM OF EMPATHY

EFFORT

COMPASSION — I am moved by you.

EMPATHY — I feel with you.

SYMPATHY — I feel for you.

PITY — I'm sorry for you.

The size of the circles indicates the ability to positively impact users.

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UNDERSTANDING & ENGAGEMENT

UNDERSTANDING USERS

➢ Good interaction design typically involves principled approaches to understanding users

➢ Considering what people are good and bad at

➢ Considering what might help people with the way they currently do things

➢ Thinking through what might provide quality user experiences

➢ Listening to what people want and getting them involved in the design

HUMAN DIVERSITY

➢ Human diversity evident in:

    ➢ Perception / Attention

    ➢ Cognition

    ➢ Physical: Ergonomics

    ➢ Emotional: Affect

    ➢ Personality; Behaviour

    ➢ Culture

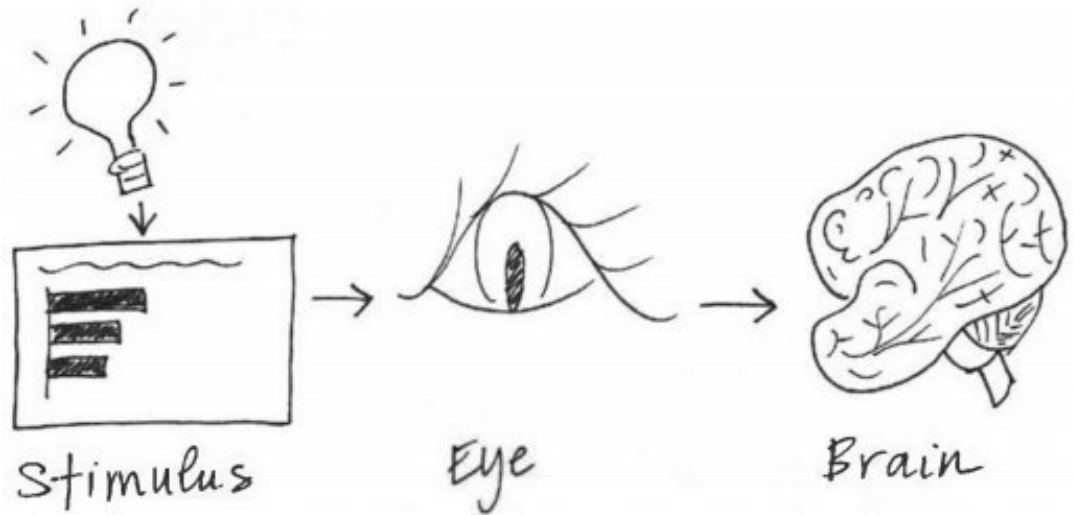   ➢ Language

PERCEPTION: VISION

Figure 4.1 A simplified picture of how you see

PERCEPTION: RESPONSE

➢ Response time:

    ➢ Auditory in 150ms

    ➢ Visual in 200ms

    ➢ Pain in 700 ms

➢ Combined signal will result in quickest response

➢ Taste and Smell? – Tillotson aromatic output

➢ Multimodality – improves the accuracy of the system recognising what user wants to do

➢ Novel interactions: why?

ATTENTION

"Everyone knows what attention is. It is the taking possession of mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought … It requires withdrawal from some things in order to deal effectively with others."

W. James, 1890

COGNITION

➢ Need to take cognitive processes and cognitive limitations of users into account

➢ Knowledge about what users can and cannot be expected to do

➢ Contributes to understanding the nature and causes of problems users encounter

➢ Supplies theories, modelling tools, guidance and methods that can lead to the design of better interactive products

COGNITION

➢ Origins: comes from the Latin verb *cognosco* (**con** 'with' + **gnōscō** 'know'), derived from Ancient Greek verb meaning 'I know, perceive'

➢ Cognition: all mental abilities and processes related to knowledge: attention, memory, judgement, reasoning, problem solving, decision making & comprehension

➢ Both conscious and unconscious, intuitive (like knowledge of a language) and conceptual (like a model of a language)

➢ Cognitive processes use existing knowledge and generate new knowledge

COGNITION: REPRESENTATION

➤ Representation of problem at different levels of abstraction: higher is more cognitively taxing: EG: Card Number Game:

  ➤ Numbers on a grid

  ➤ Cards on a table

  ➤ Numbers in our head

➤ Physical representation of problem in line with constraints:

  ➤ Carkeys by door

  ➤ *Proteus Ingestible Networked Pill*: natural interface

  ➤ Word processing "Print": World in miniature: WYSIWYG

COGNITION: REPRESENTATION

- ➤ Representation of information at UI: impact on UX
- ➤ Good representation: offload and relieve pressure on STM
  - ➤ shows only the information needed
  - ➤ enables comparison, exploration, problem solving
  - ➤ fitness to task (UID vs. Game design)
  - ➤ visual / textual (perception / reasoning, London UG)
  - ➤ leverages intuitions from real world (brown "earth", blue "sea")
- ➤ Poor representation:
  - ➤ "Password is not valid: please change": change what?
  - ➤ "You must fill out all required fields": what's missing?

DISTRIBUTED COGNITION

➢ Enable people to think more fluidly & effectively by distributing cognition into artefacts in world:

- ➢ Encourages experimentation: Tetris
- ➢ Scaffold learning & reduce errors through redundancy: Montessori blocks
- ➢ Show only differences that matter: London UG Map
- ➢ Convert slow calculation / reasoning into fast perception: Coloured map
- ➢ Support chunking: Chess
- ➢ Increase efficiency: diagrammatic representations
- ➢ Facilitate collaboration (cockpit)

LONDON UNDERGROUND (TUBE):

EXTERNAL COGNITION

➤ Externalising to reduce cognitive load

➤ Remind us we **need** to do something, **what** we need to do and **when** we need to do it

  ➤ Diaries, reminders, calendars, to-do lists, notes

  ➤ Post its, Piles, marked e-mails

➤ Use of a tool in conjunction with an external representation to carry out a computation

➤ Annotation: modifying existing representations

➤ Cognitive Tracing: manipulating items into different orders and structures (scrabble, cards)

➤ *ID Implication*: external representations at the UI to reduce memory load and facilitate offloading

EMOTION

➢ Affect and emotion not as well understood as cognition

  ➢ **Affective** system: judgmental

  ➢ **Cognitive** system: interpretive

➢ Evidence to show pleasing things work better, are easier to learn and produce a more harmonious result

➢ Affect & cognitive task performance: walking plank

➢ Positive and Negative Affect: concentration (depth first), creativity (breadth first)

➢ In pleasant, positive situations people are more tolerant of minor difficulties and irrelevancies

➢ Principles of good human-centred design are especially important in stressful situations

HCI DESIGN CHALLENGE: ANALOG / DIGITAL (NORMAN)

➤ Norman identifies key problem in ID as distinction between *analogue* humans and *digital* computers

➤ Biological animals – compliant, flexible, tolerant

➤ Machines – rigid, fixed, intolerant

➤ **But**: Digital design: what we are "bad at" matters, and "good at" is ignored

➤ Noise: the world is not neat and tidy

➤ "The real problem with being digital is that it implies a kind of slavery to accuracy": precision doesn't matter in the natural world – approximation

➤ Need to UNDERSTAND human: empathise

NEEDS? USER RESEARCH

• Users rarely know what is possible: can't tell you what they 'need' to help them achieve their goals

So?

• Need to "find out" or uncover user needs

• Multiple methods

• NNG: 3-Dimensional framework:

  • Attitudinal vs Behavioural

  • Quantitative vs Qualitative

  • Context of Use

USER RESEARCH TECHNIQUES

- Data gathering techniques differ in:

  - Amount of time, level of detail and risk

  - Knowledge the analyst requires

- The choice of technique is also affected by the kind of task

  - Sequential steps or overlapping series of subtasks?

  - Complex or simple information?

  - Support the process with props such as prototypes

BEHAVIORAL

WHAT PEOPLE DO

WHY &
HOW TO FIX

HOW MANY &
HOW MUCH

WHAT PEOPLE SAY

ATTITUDINAL
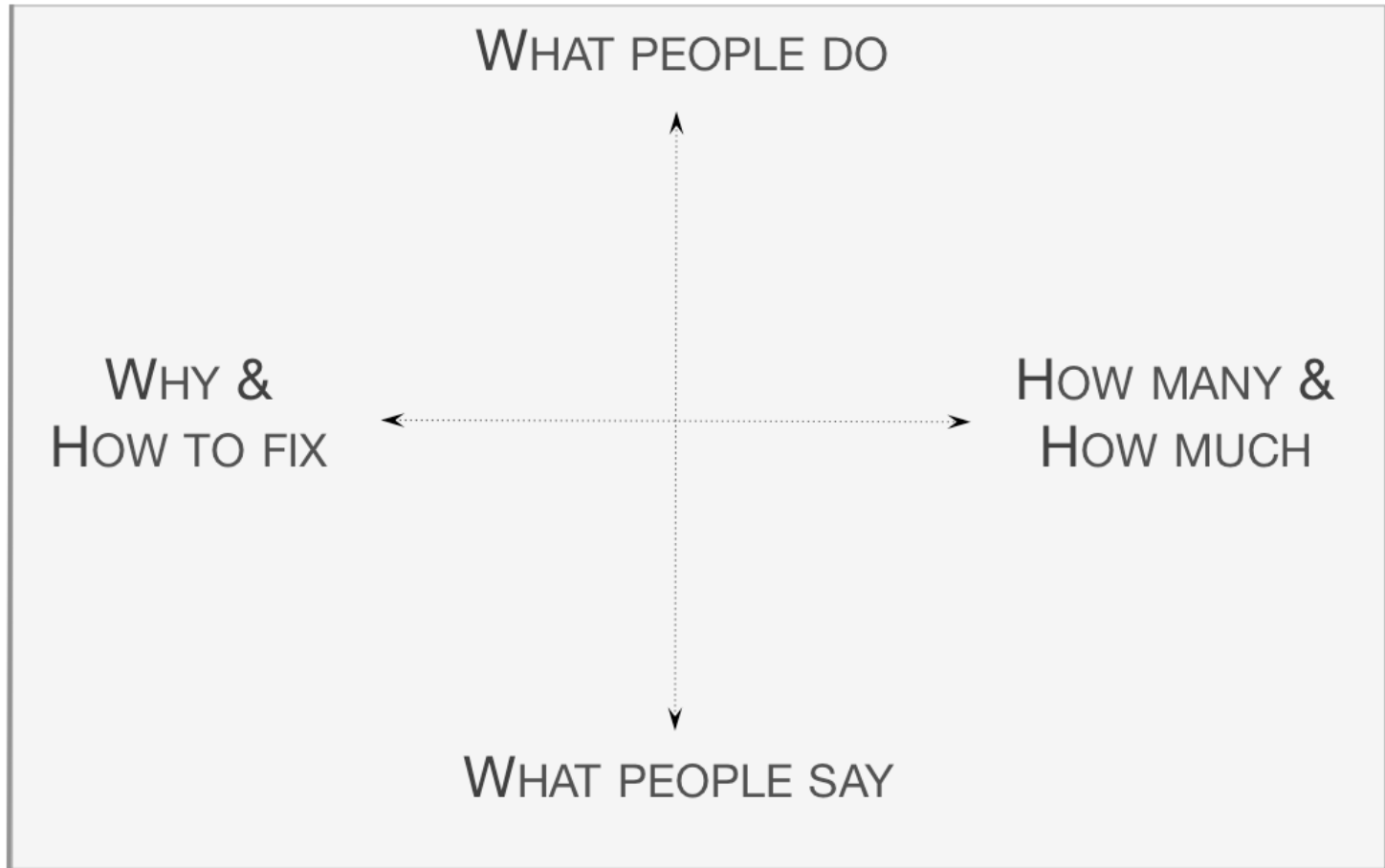
QUALITATIVE (DIRECT)

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QUANTITATIVE (INDIRECT)

A LANDSCAPE OF USER RESEARCH METHODS

BEHAVIORAL

● / ◼ Eyetracking   ● Clickstream Analysis
                                               ● A/B Testing

◼ Usability Benchmarking (in lab)

◼ Usability Lab Studies   ◼ Moderated Remote Usability Studies

                           ◼ Unmoderated Remote Panel Studies   ◼ Unmoderated UX Studies
● Ethnographic Field Studies   ● True Intent Studies

◆ ← Concept Testing →
● Diary/Camera Studies

◆ Participatory Design   ● Customer Feedback
▲ Focus Groups   ◆ ← Desirability Studies →   ● Intercept Surveys
▲ Interviews   ▲ ← Card Sorting →   ▲ Email Surveys

ATTITUDINAL

QUALITATIVE (DIRECT)   **QUANTITATIVE (INDIRECT)**

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KEY FOR CONTEXT OF PRODUCT USE DURING DATA COLLECTION

● Natural use of product   ▲ De-contextualized / not using product
◼ Scripted (often lab-based) use of product ◆ Combination / hybrid

DATA GATHERING TECHNIQUES

➤ Once you know what questions you want to answer, establish a search strategy:

  ➤ Questioning:

    ➤ Interviewing: preparation, planning

    ➤ Surveys: preparation, design

  ➤ Observation

  ➤ Ethnography

  ➤ Analytics:

    ➤ Task Analysis & Scenario Based Analysis

    ➤ System logging

  ➤ Prototyping

INTERVIEWS

➢ Process:

➢ Select people to interview & create a schedule

➢ Design interview questions (open-ended, closed-ended, & probing types of questions): good questions? Ask users about their own lives/goals (*Walmart*)

➢ Prepare for the interview

➢ Conduct the interview (top-down vs. Bottom-up)

➢ Follow-up after the interview

DATA GATHERING: SURVEYS

Select the participants

Identify the population

Use representative samples for large populations

Design the questionnaire

Careful question selection

Remove ambiguities

Administer questionnaire

Working to get good response rate

Offer an incentive

Questionnaire follow-up

Send results & a thank-you to participants

SURVEY RATING SCALES

Number?
➢ Use a small number (e.g. 3) for limited possibilities: *yes/no/maybe*
➢ Use a medium-sized range (e.g. 5) for judgments that involve *like/dislike, agree/disagree* statements
➢ Use a longer range (e.g. 7 or 9) when asking for subtle judgments, e.g. a UE dimension

Order?
➢ Positive end of the scale comes first and the negative end last, matches the logical way people think about scoring
Even or odd number of points?
➢ An odd number provides a clear central point
➢ An even number forces participants to make a decision - no sitting on the fence!

DATA GATHERING: SURVEYS

Begin with non-threatening and interesting questions

Group items into logically coherent sections

No important items at the very end

Do not crowd a page with too many items

Avoid abbreviations

Avoid biased or suggestive items or terms

Number questions to avoid confusion

Pretest to identify confusing questions

Provide anonymity to respondents

OBSERVATION

"You can observe a lot just by watching" (yogi berra):

➢ Insights into stakeholders' tasks

➢ Good for understanding the **nature** and **context** of the tasks: broader activity context (e.g. Taking a bus, truckers' mobile devices, police mobile devices)

➢ Requires time and commitment
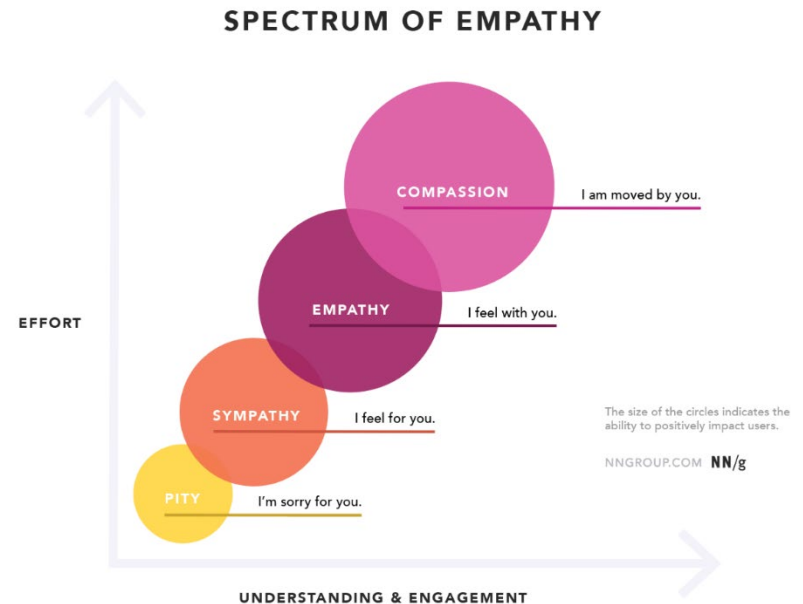
➢ Can result in huge amount of data

OBSERVATION

➤ Attunes designer to users' needs: what people say and what they do

➤ Participant observation: get beyond surface "said" to deeper "done"

➤ Jack Whalen & colleagues, Xerox PARC: photocopying support apprenticeship model

➤ Errors as source of design insight: Lucy Suchman & George Seely Brown: Xerox PARC: double sided copy of 50 pages video
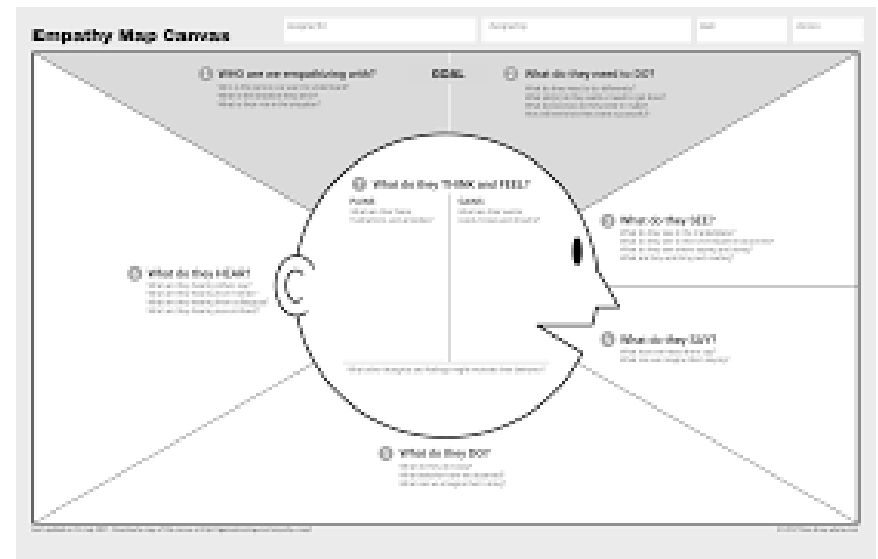
EMPATHY & UX

EMPATHY IN UX?

➢ Qualitative research methods

➢ Invest in a diverse team

➢ Consider diverse users

➢ Watch real users / watch videos of users

➢ Incorporate empathy into design guidelines

➢ Make Empathy Maps

SPECTRUM OF EMPATHY

EFFORT

COMPASSION — I am moved by you.

EMPATHY — I feel with you.

SYMPATHY — I feel for you.

PITY — I'm sorry for you.

The size of the circles indicates the ability to positively impact users.

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UNDERSTANDING & ENGAGEMENT

EMPATHY MAPS

➢ Collaborative visualization to articulate what is known about users (one or an aggregation)

➢ Push our knowledge about users

➢ Informed by qualitative research

➢ Externalises knowledge about users in order to:

    ➢ Create a shared understanding of user needs

    ➢ Aid in decision making

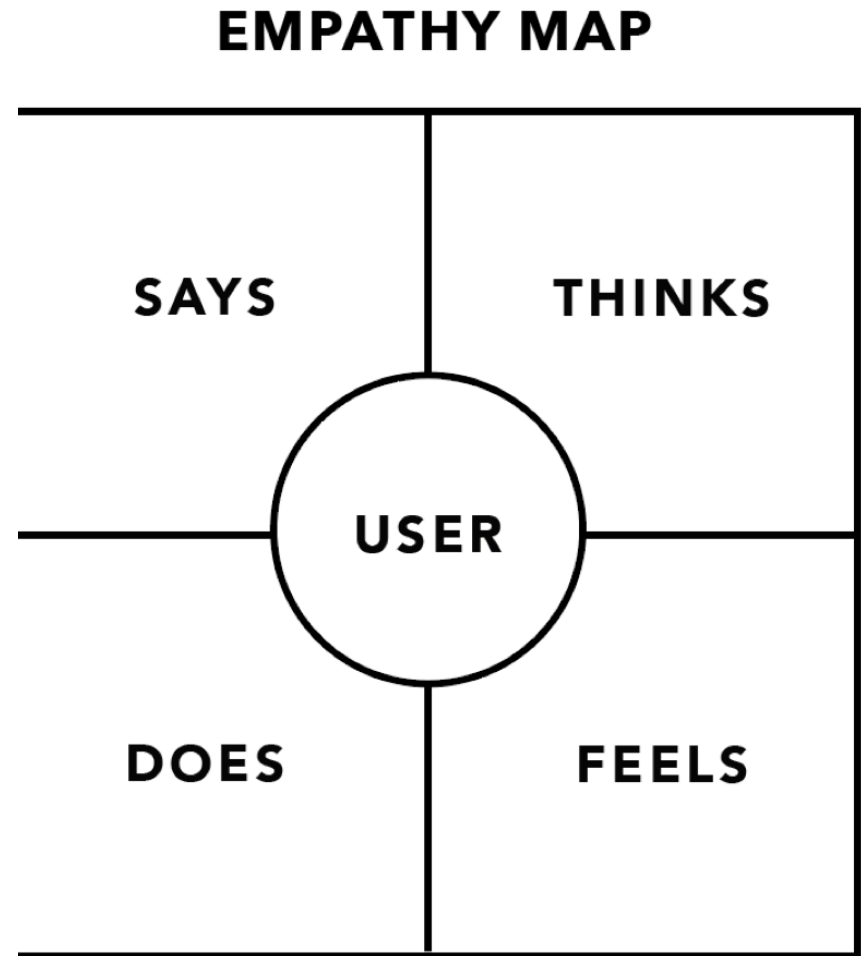➢ Gaps highlight need for more user research

EMPATHY MAP

Says: ideally verbatim, direct quotes from research

Thinks: what occupies users' thoughts, try to **understand** (says and thinks could have same content)
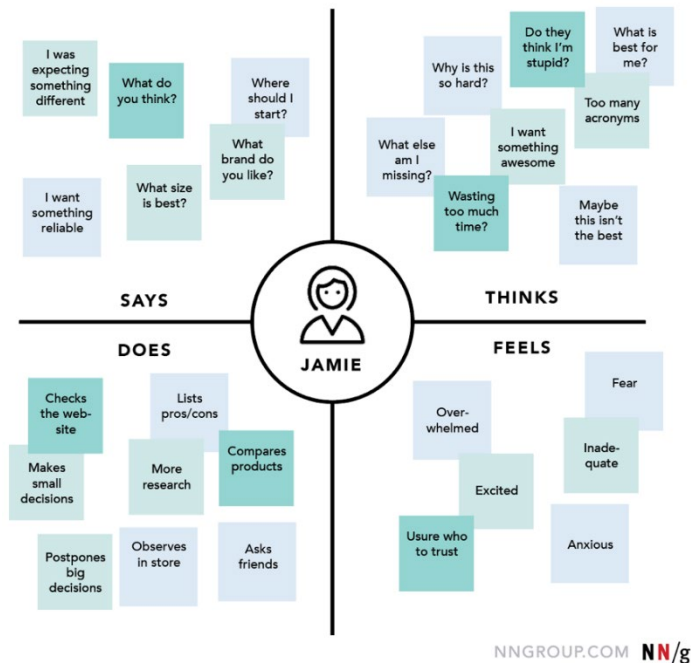
Does: the actions the user takes, what the user physically does and how they go about doing it

Feels: what worries / excites user? How does the user feel about the experience?

EMPATHY MAP

SAYS | THINKS

USER

DOES | FEELS

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EMPATHY MAPPING PROCESS

EMPATHY MAP *Example (Buying a TV)*

I was expecting something different

What do you think?

Where should I start?

What brand do you like?

What size is best?

I want something reliable

SAYS

Why is this so hard?

Do they think I'm stupid?

What is best for me?

Too many acronyms

What else am I missing?

I want something awesome

Wasting too much time?

Maybe this isn't the best

THINKS

DOES

Checks the web-site

Lists pros/cons

Makes small decisions

More research

Compares products

Postpones big decisions

Observes in store

Asks friends

JAMIE

FEELS

Fear

Over-whelmed

Inade-quate

Excited

Usure who to trust

Anxious

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➢ Define scope and goals

➢ Gather research & materials

➢ Assign notes in each quadrant

➢ Collaborate & review: cluster & synthesise

➢ Extend with additional information e.g. Goals

EMPATHY MAP

➤ Aggregated empathy maps summarize qualitative data

➤ An empathy map can be used to communicate a persona, instead of the traditional 'business card' approach

EMPATHY MAPPING BENEFITS

- ➢ Remove **bias** from designs
- ➢ Discover weaknesses in research
- ➢ Uncover **implicit** user needs
- ➢ Understand what drives users' behaviors
- ➢ Guide towards meaningful innovation

USER STORIES

➢ Using storytelling in UX design: Account of events from user's perspective

➢ Shared vocabulary, focus on common goal, ignite imagination and persuade stakeholders: compelling

➢ Current (as-is) or Future

➢ User & user goals are building blocks upon which empathy, context, plot and insight are built

➢ User, User's goal & motivation, Context, Plot, Insight, Spectacle
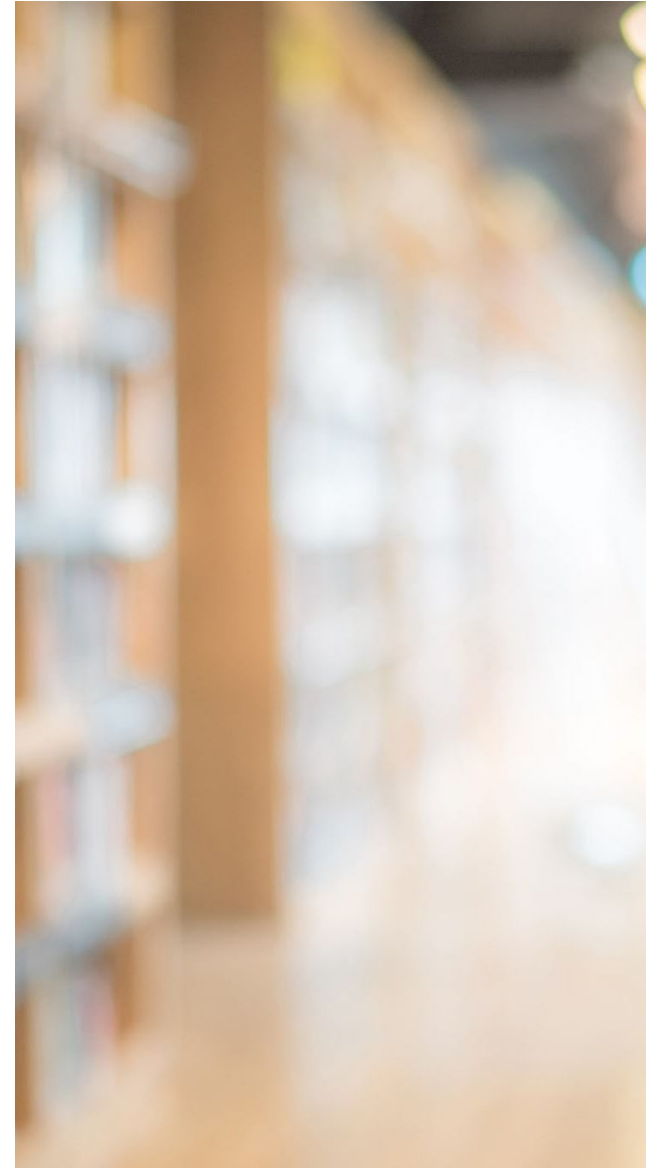
DESIGN PROJECTS:

DESIGN PROJECTS

- Approx 7 Week Design Project
  - Design Challenge: Week 5 Monday 02/10/2023
  - User Needs: DT1&2
  - Prototype Design: DT 3&4
  - Evaluation: DT 5

CT318 LECTURE 4 REVIEW

Design Thinking 1

- Design Thinking 1: Empathise

- User Diversity

- User Research

- Empathy Mapping