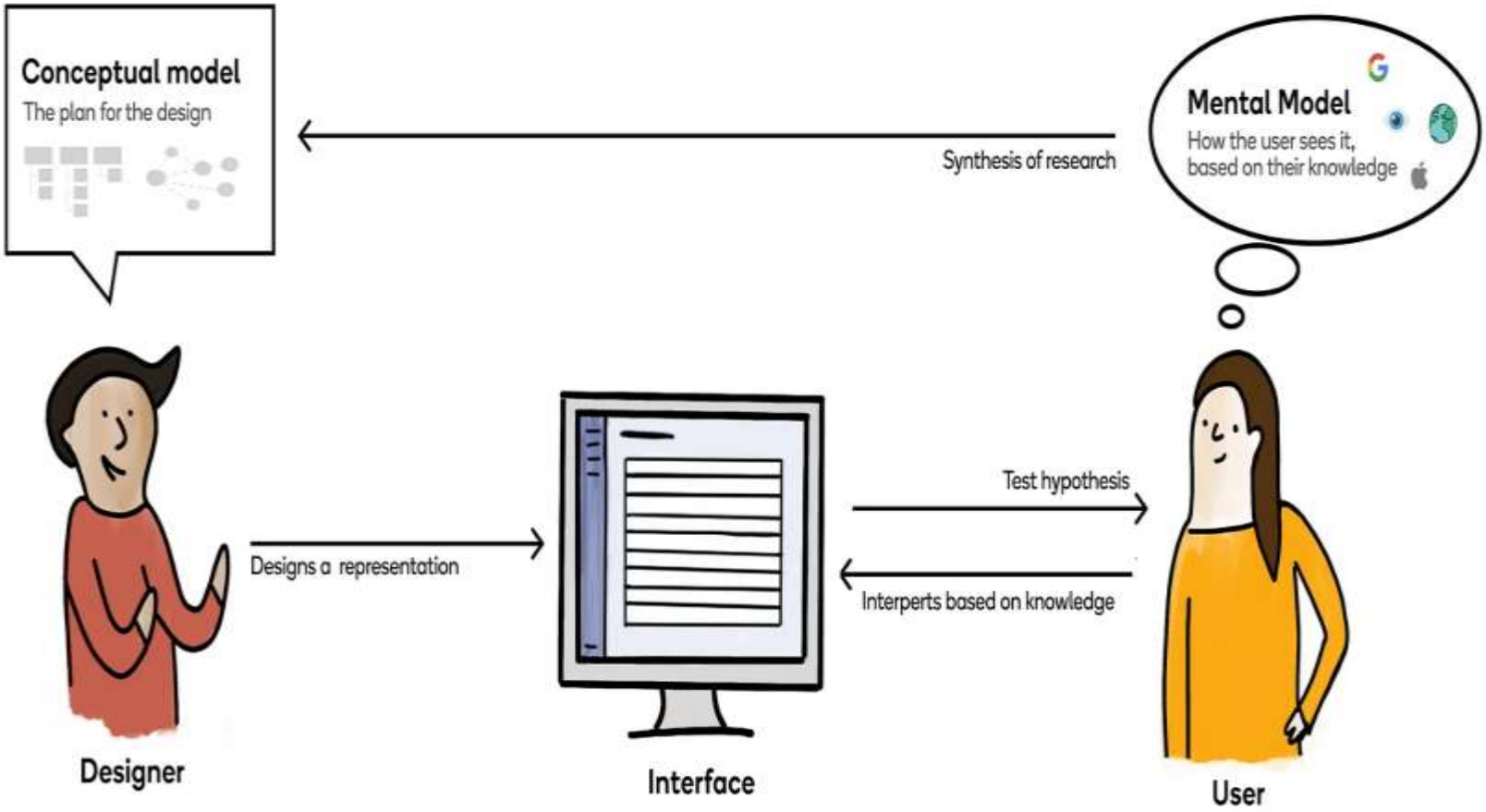
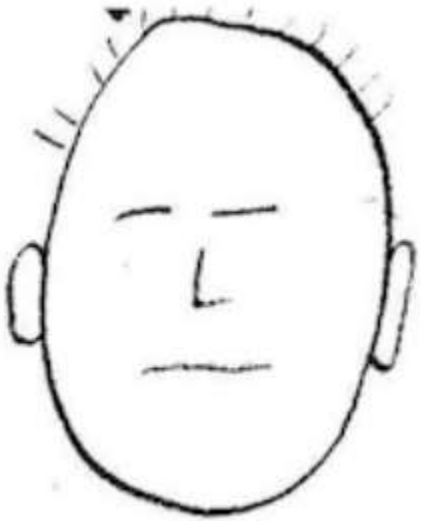
Unit 3

Mental Models and
Conceptual Design


Conceptual model
The plan for the design
Synthesis of research
Mental Model
How the user sees it,
based on their knowledge
Designs a representation
Test hypothesis
Interperts based on knowledge
Designer
Interface
User


Book



Mental model

- **Jakob Nielsen from the Nielsen Norman Group** defines mental models as, **“what the user believes about the system at hand.”**
- People have unique mental models generally formed by education, experience, age, and culture.
- A mental model is what a user thinks they know about how to use a website, mobile phone, or other digital product.
- Mental models are built in a user’s brain and people reference them to make their lives easier.
- Weather app, for example, the user can streamline their interactions with a new weather app.

Mental model

- For example, if a person is going to a new website to buy something, they will have a mental model of how the check out experience on the new website will work based on their past experiences with online shopping.
- If the new check out sequence is consistent with their mental model, the user will smoothly navigate through it and feel satisfied with their experience.

Mental model

- UX designers should conform to users' existing mental models to ensure their expectations are met and their experiences with your latest design are as smooth as possible.
- That's why understanding users' existing mental models is essential when designing a new UI.
- Users' mental models enables designers to create more intuitive and satisfying user experiences.
- For example, if users repeatedly overlook a vital button because of its placement, move the button to the place they look for it.
- **User testing** can help shed light on users' pain points.

Mental model

- Ecommerce software: shoppers have an expectation of optional registration based on previous experiences and prefer not to spend their time filling out forms but check out as a guest.
- According to a survey by E-consultancy, 25% of shoppers abandon their purchases when forced to create an account before going through the checkout process.

Mental model

- Some tips:
  - Links will be underlined or be written in a different color text
  - Buttons will appear in a colored box
  - Search boxes will appear in the upper right hand corner of a website
  - Logos will appear in the upper left hand corner of a website
  - Site-wide navigation will appear at the top or left-hand side of a website.

Mental model

- Twitter introduced hashtags, which were then copied by Facebook and Instagram.
- Tagging was introduced by Twitter (2007) and then copied by Facebook, LinkedIn, Instagram(2011), and others.
- Instagram introduced stories, and then Facebook implemented those.
- Snapchat introduced photo filters and manipulation, and then Facebook copied those.

Mental model

- Recent statistics show that Facebook has more than 2.2 billion monthly active users.
- The application is so popular that it has influenced many designs today because users have expectations around the paradigms that familiar products like Facebook have established.
- For example, due to Facebook's design influence today, it's pretty standard to find the notification icon in the top right corner near the login area on many different desktop applications.
- Status updates, news feeds, and likes are also increasingly common patterns in other applications.

Mental model

- The following are essential elements of a good mental model:
- Clarity: A UX mental model should be clear and easy to understand. It should not be confusing or require extensive explanation to be understood.
- Consistency: A UX mental model should be consistent with the user's past experiences and expectations. It should not contradict or be in conflict with the user's actions.
- Predictability: A UX mental model should be predictable. Users should be able to anticipate the outcome of their actions based on their mental model.
- Flexibility: A UX mental model should be flexible and adaptable. It should be able to accommodate changes in the user's behavior and expectations.
- Usability: A UX mental model should be usable. It should be practical and functional, and users should be able to apply it to achieve their goals.

MENTAL MODELS VS. CONCEPTUAL MODELS

- Mental models: something the user has (forms)
  - users “see” the system through their own mental models
  - users rely on mental models during usage
  - there are various forms of mental models
  - mental models can support or impede users’ interaction
- Conceptual models: articulation of designer’s (i.e. your) mental model
  - what users will be able to do
  - what concepts or knowledge users will need, in order to interact
  - how they will interact with system (at a very high level)

A CONCEPTUAL MODEL

- Conceptualization comes into play as we approach the creation of the first wireframes. Here, we make decisions regarding whether to build upon existing frameworks or start from scratch.
- A concept serves as a blueprint, which is evaluated by the team responsible for executing product design, leading to the realization of a final product.

A CONCEPTUAL MODEL

- Conceptual model includes:
  - concepts – objects, actions you can do to them; user roles; attributes of both. e.g., files and folders; both can be opened, have names;
  - relationships among concepts e.g., files are contained in folders
  - mappings from concepts to the user experience envisioned; e.g., the users can browse files, and mark favorites
  - terminology that will be used (consistently) to tie it all together
  - interaction types; how will they interact with it? e.g. give commands, perform operations, explore
  - interface types; is it/should it be constrained? how would different interfaces affect result?

A Conceptual model

- Looks like
  - lists and tables
  - Diagrams
  - storyboards and sketches
  - written descriptions
  - mood boards
  - physical ‘sketches’

1. INTRODUCTION

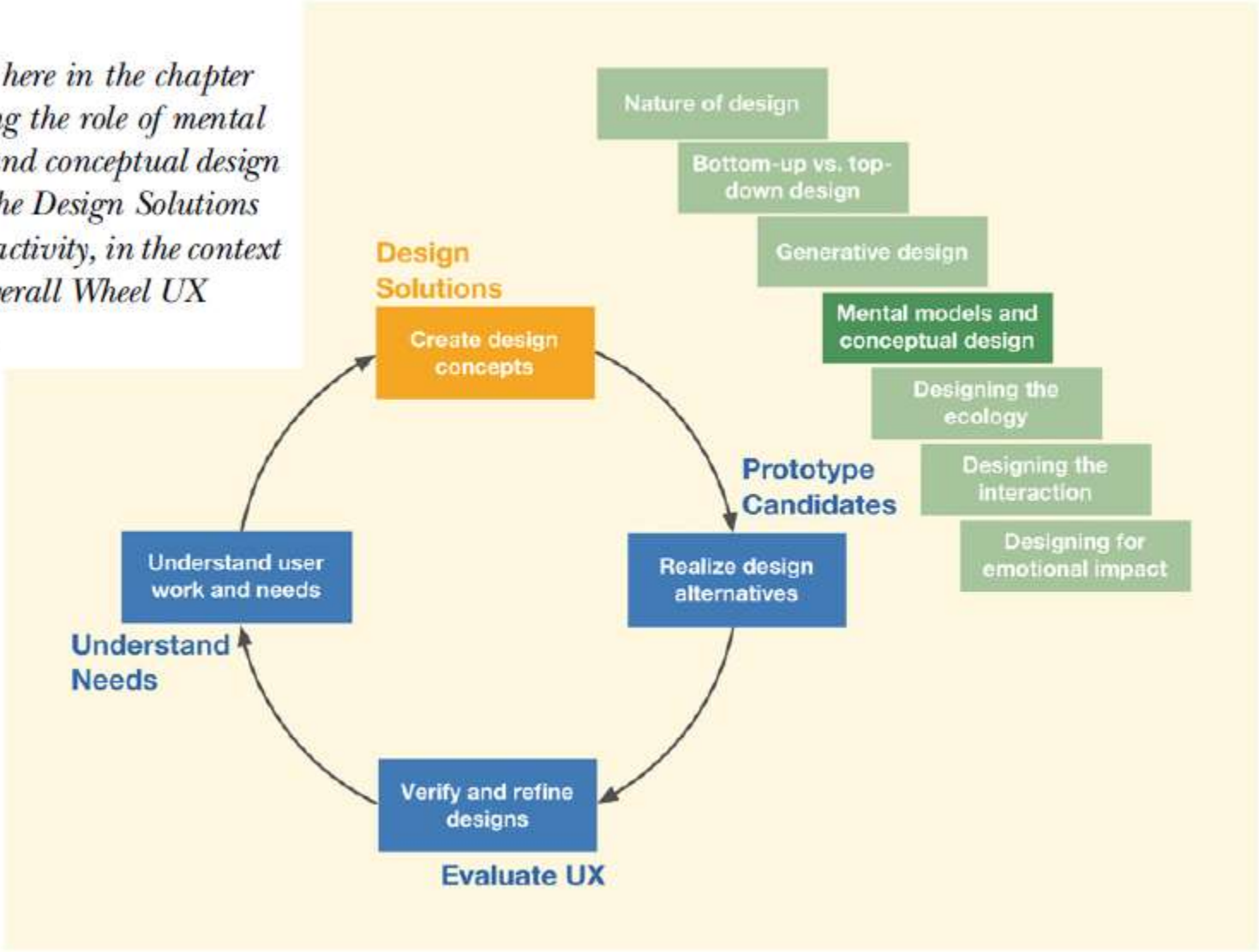
15.1.2 Mental Models

A mental model is a description, understanding, or explanation of someone's thought process about how something works. As applied in UX, a mental model is how someone (e.g., designer or user) thinks a product or system works.

- If the user's mental model is correct, the user will know how to use the system. It is up to the designer to create a conceptual design capable of conveying a correct mental model to users.

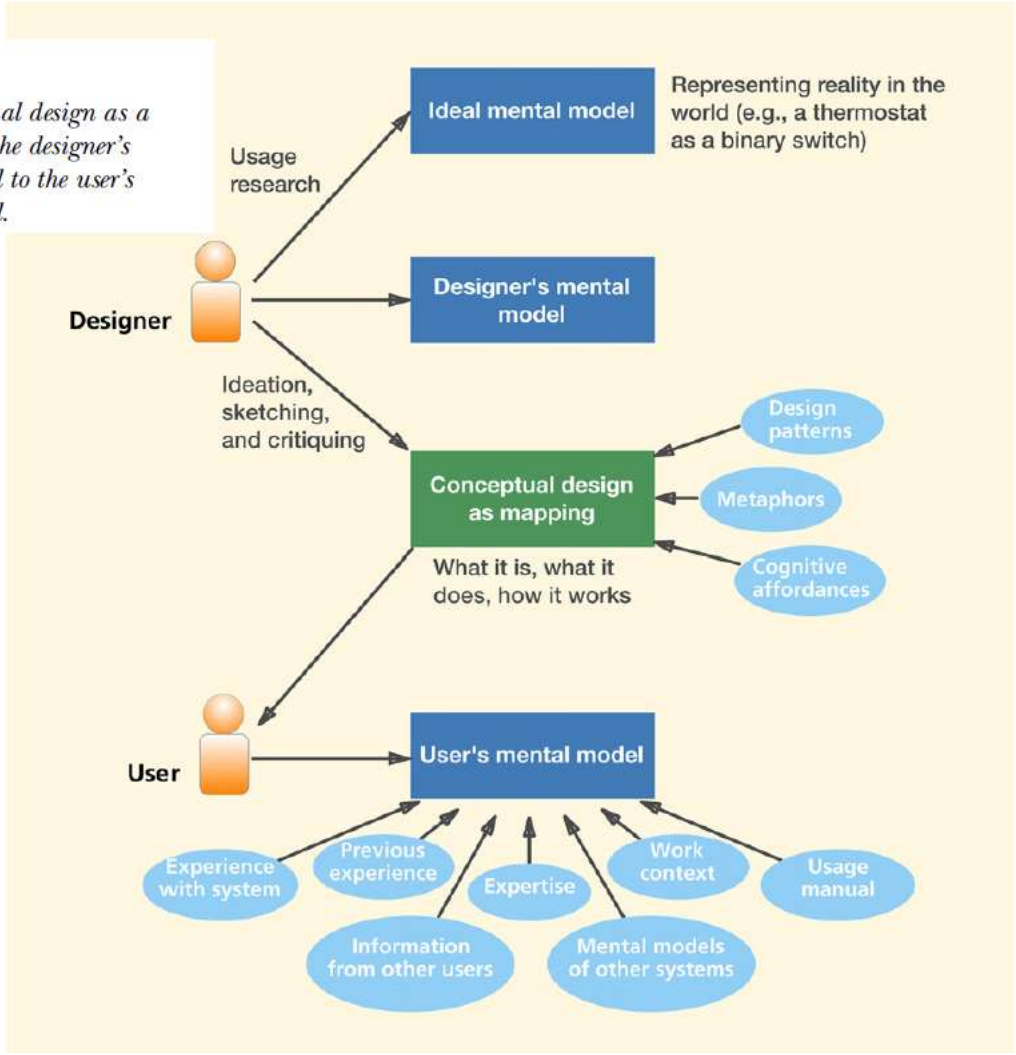
Fig.

You are here in the chapter describing the role of mental models and conceptual design within the Design Solutions lifecycle activity, in the context of the overall Wheel UX lifecycle.



2. HOW A CONCEPTUAL DESIGN WORKS AS A CONNECTION OF MENTAL MODELS

Fig.
The conceptual design as a mapping of the designer's mental model to the user's mental model.



2. HOW A CONCEPTUAL DESIGN WORKS AS A CONNECTION OF MENTAL MODELS

- Here's how it works:
  - 1. The ideal mental model represents the reality of how something like a thermostat works "out there" in the world.
  - 2. The designer studies this reality via usage research, interactions with subject matterexperts (SMEs), analysis, etc.
  - 3. The designer develops a (possibly partial and/or not quite correct) mental model based on understanding of the reality thus captured.
  - 4. The designer builds this mental model into the conceptual design.
  - 5. The conceptual design conveys that knowledge of the designer's understanding to users.
  - 6. If users had some a priori understanding of the reality, the conceptual design can either affirm or challenge that understanding. Otherwise, the user (hopefully) learns how this system or product works from the conceptual design.

2.1. The Ideal Mental Model in Context

- The ideal mental model is a hypothetical abstraction of knowledge in the world and includes subject matter expertise and complete knowledge about the work domain.
- This complete knowledge will be held by a backend system designer or shared among the system design team, and for most domain simple systems, the UX designer may have this knowledge too.

2.2 The Designer's Mental Model in Context

- The designer'smental model, sometimes called a conceptual model, is the designer's understanding of the how the envisioned system is organized, what it does, and how it works.

2.3 The User's Mental Model in Context

- User's mental model as the "mental representation that reflects the user's understanding of the system."
- It's an internal explanation a user has built about how a particular system works.
- Each user's mental model is a product of many different inputs.
- Knowledge in the head comes from mental models of other systems, user expertise, and previous experience.
- Knowledge in the world comes from other users, work context, shared cultural conventions, documentation, and the conceptual design of the system itself.
- This latter source of user knowledge is the responsibility of the UX designer.

2.4. The Conceptual Design as Mapping Between Mental Models

- A conceptual design is the part of a design containing a theme, metaphor, notion, or idea with the purpose of communicating a design vision about a system or product.
- The goal of a conceptual design is to communicate the designer's mental model to users.
- A conceptual design must convey the designer's mental model in a way that the user can acquire or form a similar mental model and, thereby, know how to use the system.
- Without an effective conceptual design, users cannot leverage any experience they gain from interacting with one part of the system while interacting with another.

3. DESIGN STARTS WITH CONCEPTUAL DESIGN

- It’s a general rule in creating a conceptual design that the designer’s mental model must be articulated clearly, precisely, and completely in the conceptual design.

3.1 Need for a Conceptual Design Component at Every Level in the User Needs Pyramid

- An ecological component that helps users understand how the product or system fits into its ecology and works together with other products and systems in that ecology.
- An interaction component that helps users understand how to use the product or system.
- An emotional component that conveys the intended emotional impact.

Fig.

Designer workflow and connections among the three layers of the user needs pyramid.