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Improving Visual Communication - The importance of Metaphors for User Interaction with Mobile Devices

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Definition of metaphor

- The word 'metaphor' derives from the Greek μεταφορά (metaphora), which literally means "transferring" or "conveying".
- Aristotle's definition of metaphor is still highly applicable today. He wrote that a "metaphor consists in giving the thing a name that belongs to something else".

About metaphors

- Lakoff and Johnson's view of metaphor has largely dominated the field since the 1980s. They argue that "...the way we think, what we experience, and what we do every day is very much a matter of metaphor."
- Hackos and Redish point out that the term "metaphor" describes the overall concept used to organize all the objects and the actions in a coherent whole.

Motivation and background

- As our devices get smaller and more ubiquitous, the desktop metaphor seems too unwieldy to move to handheld devices, mobile phones, and mobile environments.

Motivation and background

- The usage of metaphor is essential to user interface design, particularly for the mobile landscape as visual environment continues to be augmented with mobile electronic devices.

- Metaphors are effective tools in providing mutual understanding for communication.

Motivation and background

- We use metaphor to talk about the world in both familiar and innovative ways, and in contexts ranging from everyday conversation to literature and scientific theorizing.
- The metaphors' role in the user interface is to assist learning, orientation, and the forming and maintaining of the concept about software i.e. the mental model.

Motivation & background

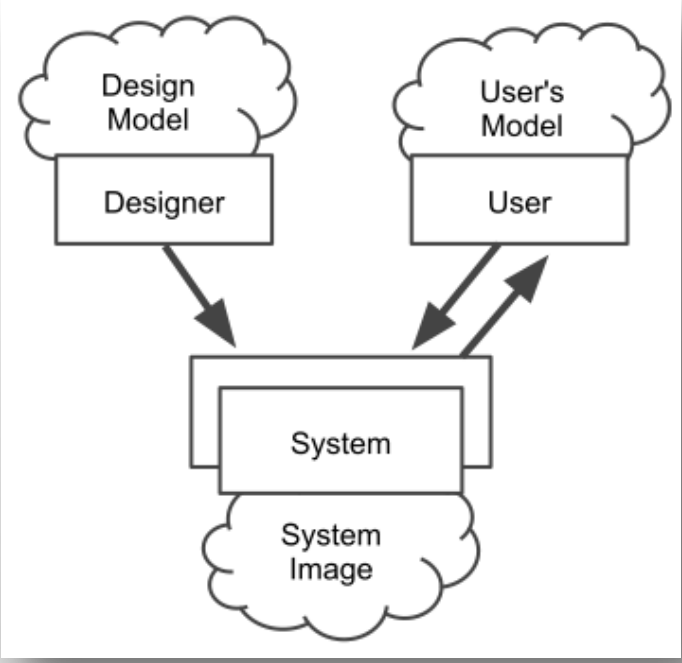
- Not all users perceive technology as beneficial and helpful.
- According to Hassenzahl, there is no guarantee that users will actually perceive and appreciate the product in the way designers desire it to be perceived and appreciated.
- Not all metaphors are created equal or are equally useful. It is therefore important to understand why metaphors work, in order to judge the usefulness of the metaphor.

Visual Cognition

- The user's perception and interpretation of representational graphics is the key to discovering how such graphics are to be used effectively.
- An understanding of perception can significantly improve both the quality and the quantity of information being displayed.
- Pettersson states that the concept of “perception” is a collective designation for the processes in which an organism obtains information on the outside world.

Mental Models

- Norman structures the concept of mental models into three different areas: the design model, the user's model, and the system image.
  - The design model is a conceptual model that the designer possesses of the system.
  - The system image is the actual physical structure of the system.
  - Finally, the user model is the user's conceptual view (or mental model) of the system.



Visual Metaphors

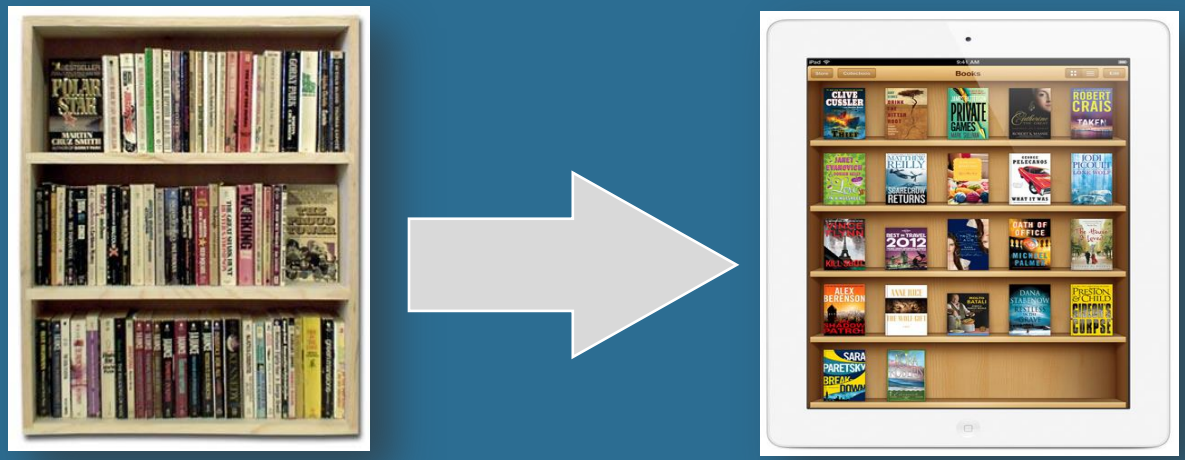
- Visual Metaphors have to be considered in the context of interface design mainly in regard to the communication of mental models.
- Visual interface metaphors draw heavily on culturally specific knowledge and practices.

Interface metaphors

- Closer examination of user-interface metaphors reveals that metaphors can often both create and solve serious problems of use.
- Gaver points out that interface metaphors allow one to create relations between attributes of function and attributes of appearance for interface objects by means of a conceptual mapping.

Interface Metaphors

- Interface metaphors employed in the interface is to convey to the user directly knowledge on how to interact with the interface.



Why metaphors are important

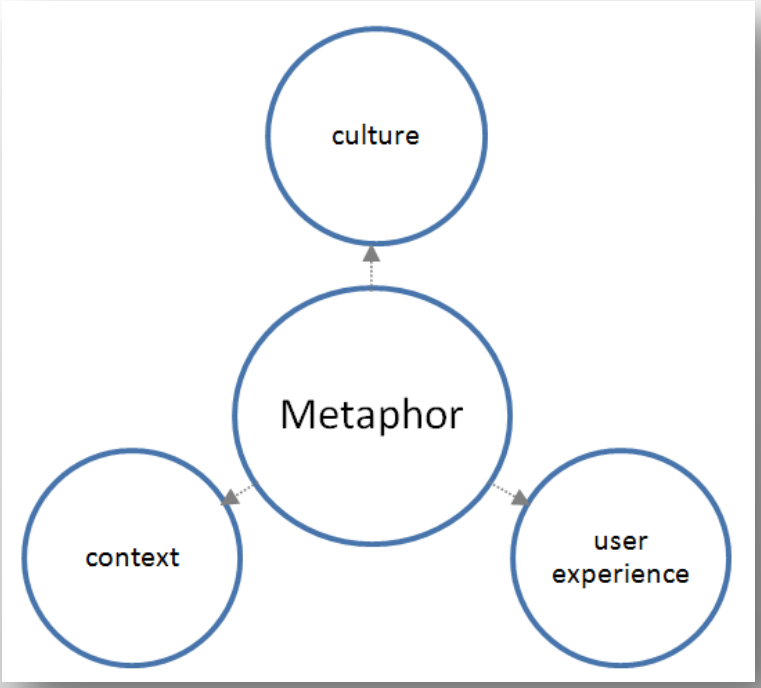
- In the development of interactive systems we are constantly trying to describe a new domain (a new application, a different design, new interactive facilities) to people.
- So we have to use metaphor to explain this new domain in terms of something that is more familiar.

Classification of metaphors

George Lakoff and Mark Johnson classify metaphors as either:	Hutchins proposed three types :	Condon and Keuneke based their classification on :
• Ontological Physical experiences	• Activity users' high - level goals	• Spatial define 2D or 3D spaces
• Orientational spatial organization	• Mode of interaction concern the user's opinion of the computer	• Activity-based define the actions that can be performed
• Structural One concept in terms of another	• Task domain structure for helping user understand interface objects	• Interactional support specific forms of communication

Factors affecting visual communication of metaphors

- Culture
- Context
- User Experience



A framework of factors influencing metaphors' comprehension

Cultural differences and metaphors

- Cultural differences may make basic metaphors used in an interface design incomprehensible to some users.
- The cultural environment of the user is made up from their ethnicity, their range of experience, which is related to their socioeconomic background.

Cultural differences and metaphors

- Cultural differences may also be defined by age.
- “Culture” could mean anything from broad country based cultures, to religion, to specific social groups, and so on.
- These differences should become apparent during requirements gathering.

Context

- In different contexts a metaphor can have different associations
- Multiple contexts can interact with each other in unpredictable ways

User Experience

- Stone et al., argue that there is no point in using a metaphor if the physical analogue is outside the user's experience.
- Ideally, the link between the representamen and object should be obvious to all users of the interface and should lead to one interpretant.
- This should activate the appropriate mental model that allows the user both to understand the action and to interact appropriately.

Limitations of metaphors

- It can be hard to find the appropriate metaphor.
- According to Cooper "metaphors rely on associations perceived in similar ways by both the designer and the user.
- In many cases the metaphor fails to explain all of the functionality of the interface, leading designers to abandon or stretch the metaphor and creating confusion in users.

Selecting a visual metaphor

- The first and most decisive feature of a good visual metaphor in the context of the interface must be its comprehensibility.
- Different cultures have different conceptual frameworks, especially in regard age.
- If a metaphor is not comprehensible to its users, then it is no metaphor at all.
- What may work well in one medium or domain may not in another.

Conclusions

- The use of metaphors in mobile devices gives potential users' a means for apprehending possibly unfamiliar phenomena by making associations with familiar objects and feelings.
- First we discussed visual perception, mental models and their relation to metaphors. Second we classified metaphors and identified three factors that influenced metaphors' comprehension of mobile interfaces, and third we present recommendations for selecting a good visual metaphor.
- We present a framework of factors influencing metaphors' comprehension .
- I want to believe that the outcomes of this study offer a foundation for future research in the area of interface mobile metaphors.

THANK YOU!

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