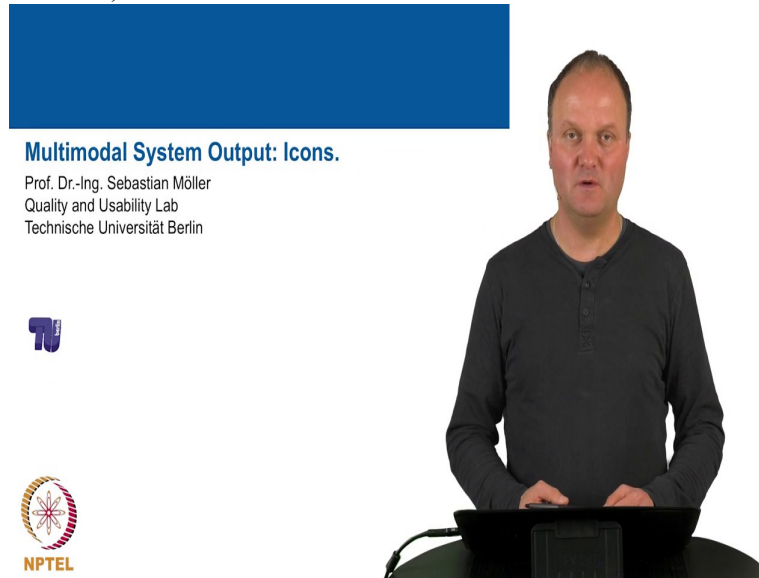



Multimodal System Output
Professor Doctor Sebastian Moller
Quality and Usability Lab
Technische Universität Berlin
Icon

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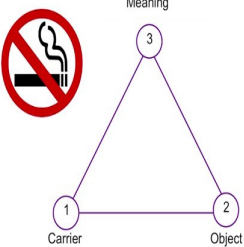
Multimodal System Output: Icons.
Prof. Dr.-Ing. Sebastian Möller
Quality and Usability Lab
Technische Universität Berlin



In this video I would like to explain you some characteristics of icons.


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Icons. Signs (Peirce, 1993):



- Icon
- Index
- Symbol

(Nish, 2000)



Actually icons is a very general term which refers to icons in a strict sense, index and symbol.

An icon is a sign that relates to an object through its similarity whereas index is a sign that relates to an object through direct causal relationship. For example smoke relates to fire due to causal relationship.

And then there are so-called symbols which are signs that relate to an object through an arbitrary or conventional relationship, like the letter to a certain sound.

All these are signs and signs can be described in terms of a semiotic relationship. This is usually illustrated as a triangular relationship which you see in the triangle here between a carrier, an object and a certain meaning. In the case which you see depicted here,

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Icons. Signs (Peirce, 1993):

- Icon
- Index
- Symbol

(Nash, 2000)

The diagram shows a semiotic triangle with vertices labeled 1, 2, and 3. Vertex 1 is labeled 'Carrier' and contains a 'no smoking' icon. Vertex 2 is labeled 'Object'. Vertex 3 is labeled 'Meaning'. The icon is a red circle with a diagonal slash over a black silhouette of a hand holding a lit cigarette. The man in the background is wearing a dark long-sleeved shirt and is looking down at a laptop screen.

the carrier would be the physical piece of paper or the physical

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Icons. Signs (Peirce, 1993):

- Icon
- Index
- Symbol

(Nash, 2000)

The diagram shows a semiotic triangle with vertices labeled 1, 2, and 3. Vertex 1 is labeled 'Carrier'. Vertex 2 is labeled 'Object'. Vertex 3 is labeled 'Meaning' and contains the 'no smoking' icon. The icon is a red circle with a diagonal slash over a black silhouette of a hand holding a lit cigarette. The man in the background is wearing a dark long-sleeved shirt and is looking down at a laptop screen.

sign which holds this graphical display.

The carrier relates to an object, here to a cigarette which is burning and producing smoke. And it has a certain meaning and the meaning is that you should not smoke at that particular occasion, at that particular location. This triadic relationship may also be expressed in other ways but the semiotic triangle which you see here is the most popular way to describe sign.

Signs are not only of visual nature but there are also

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Icons. Auditory icons and earcons:

- Earcons
- Auditory icons

(Nish, 2009)

The diagram shows a purple triangle with vertices labeled 1, 2, and 3. Vertex 1 is labeled 'Carrier', vertex 2 is labeled 'Object', and vertex 3 is labeled 'Meaning'. A man in a dark shirt is standing behind a podium in the background of the slide.

auditory equivalence to signs. We can talk about auditory icons or earcons. An earcon is considered as an abstract syntactic tone that can be used in structured combinations to create sound messages to represent part of the interface.

And that is the definition given by Brewster in 1993. Whereas the auditory icon is an everyday sound recorded, for example from nature that conveys information about events in the computer or in remote environments by its analogy with everyday sound producing events. Both auditory icons and earcons provide certain functions in a multimodal interactive system.

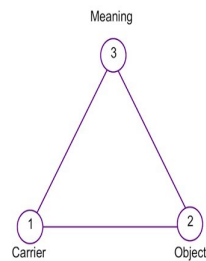
For example earcons can provide feedback, functional feedback, alarm feedback. They can create attention, they can incite emotional responses, they can incite behavioral responses and accelerate learning whereas auditory icons are usually used to accelerate user interactions and learning.

There are some

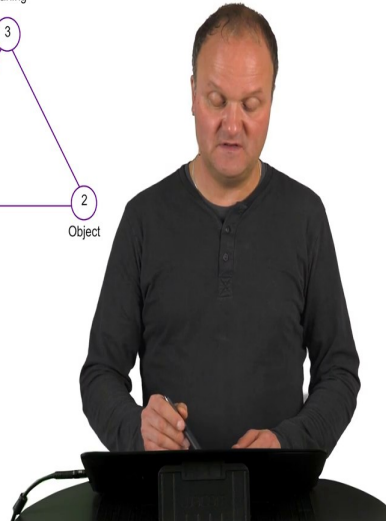
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Icons. Earcons:

- ✓ Parameters can be used to **design** and **control** the desired effect
- ✗ **No association** with everyday events (sometimes less effective)



(Nöth, 2000)



advantages and disadvantages of using earcons. In earcons, as they are synthetic sounds you have lots of parameters which can be used in order to design on control desired effects. That is you can create families of earcons which belong to a certain family of sounds and which can provoke different meanings in the different levels, hierarchies of a multimodal interface.

The disadvantage is that there is no natural learnt relationship and association with everyday events and this is why they are sometimes less effective, less effective than auditory icons.

(Refer Slide Time: 03:58)

References.

- W. Gaver (1994). *Using and Creating Auditory Icons, Auditory Displays*, Reading MA: Addison-Wesley.
- W. Nöth (2000). *Handbuch der Semiotik*. 2. Auflage, Verlag J.B. Metzler, Stuttgart.

