



# Outline

- What is an Icon?
- What is a Cartoon?
- How do they work?
- How to design a good icon?

# What is an Icon?

# What is an icon?

An image that represents an entity.

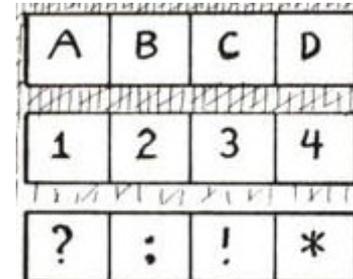
- Concrete

- Person, place, thing



- Abstract

- Idea, concept, philosophy



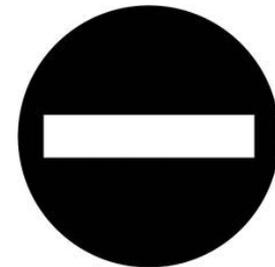
# What is an icon?

## Two types of icon:

- Representational
  - Appearance  $\approx$  Perceived meaning



- Symbolic abstractions
  - Appearance  $\neq$  Perceived meaning
  - Requires learning



# What is a cartoon?

## Collection of icons

- Character icon
- Speech bubble
- Alphabets
- Sound icons
- Other conventions



**SPLAT!**

# How does it work?

# How does it work?

- Amplification through simplification
  - 'Stripping down to its essential meaning'
  - 'all but the most characteristic elements are removed'
  - free of interference and background clutter
  - reduce signal-to-noise ratio

# How does it work?

Simplification results in:

- Effective imagery
  - Possesses perceptual immediacy
    - Recognizing at a glance
    - Less (or no) training

# How does it work?

## Abstraction:

- A sign of intelligence
  - Human race
  - Children learning
- Computer interface & interaction
- Expands class of artifacts referred

# How does it work?

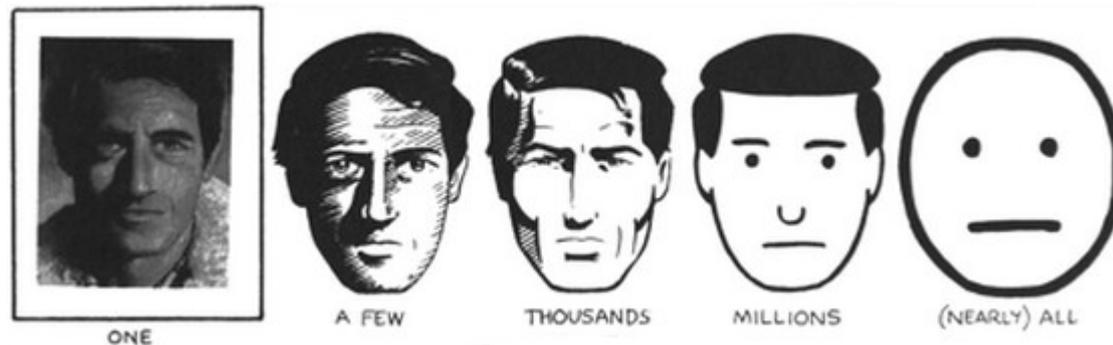
## Representational forms:

- Less learning
- Fast processing
- Take priority over abstract forms
- Low cost of consumption



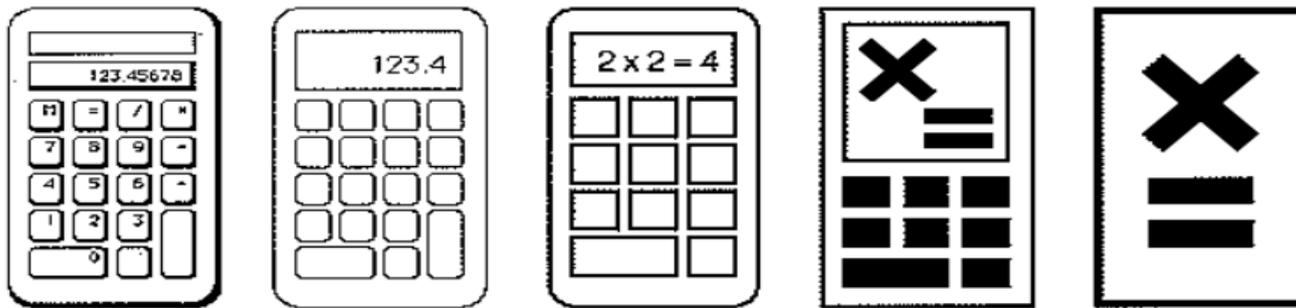
# How does it work?

## Universality



# How does it work?

## Universality



Details



Number of objects represented



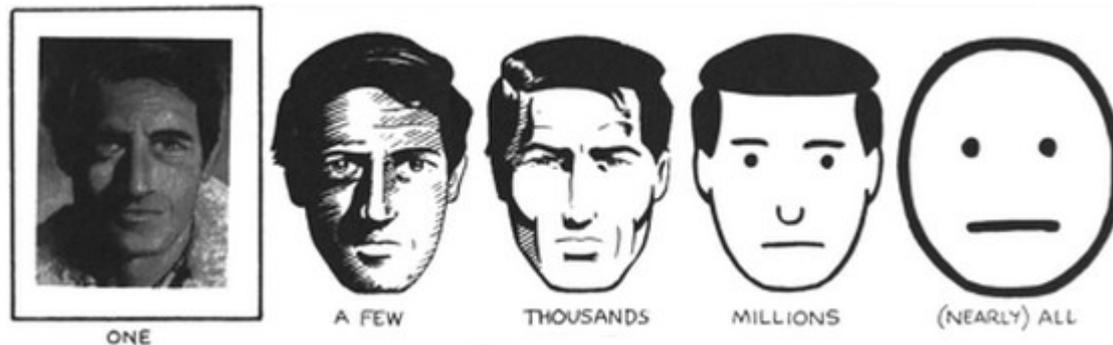
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## Universality



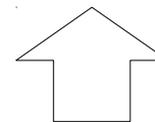
# How does it work?

## Over simplification



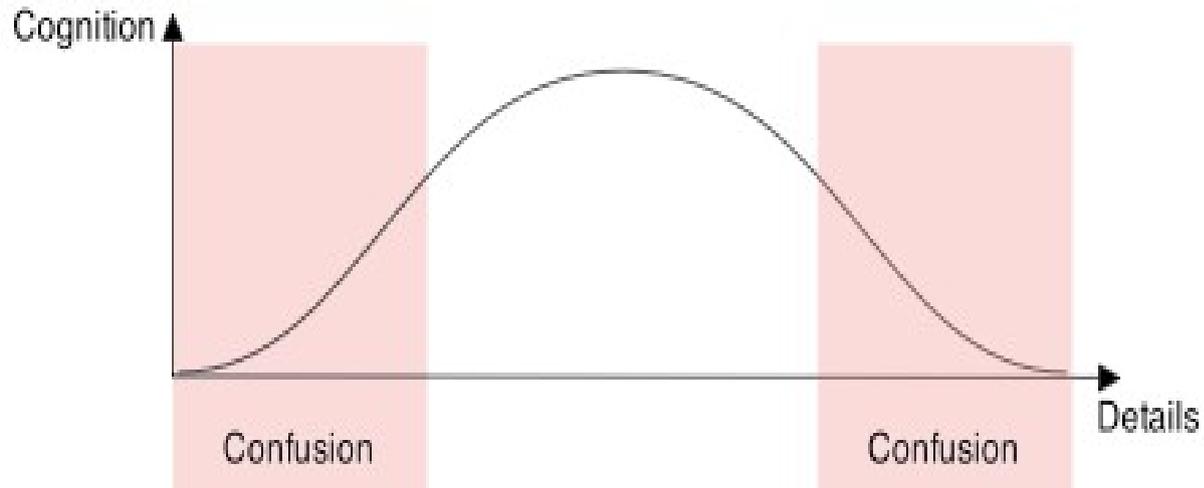
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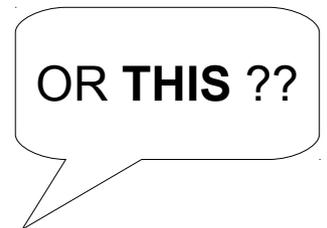


# How does it work?

## Reflection

- A way of seeing
- Mould into which we pour life
- We see ourselves
- Roles vs Goals
  - 'icons demand participation to make them work'

# How does it work?



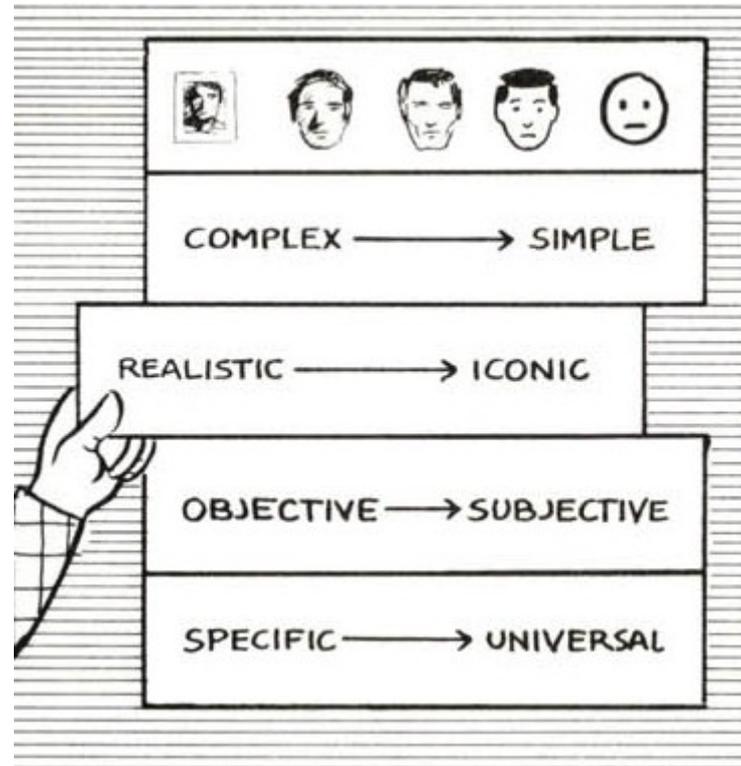
# How does it work?

Internal representations



# How does it work?

## Simplification

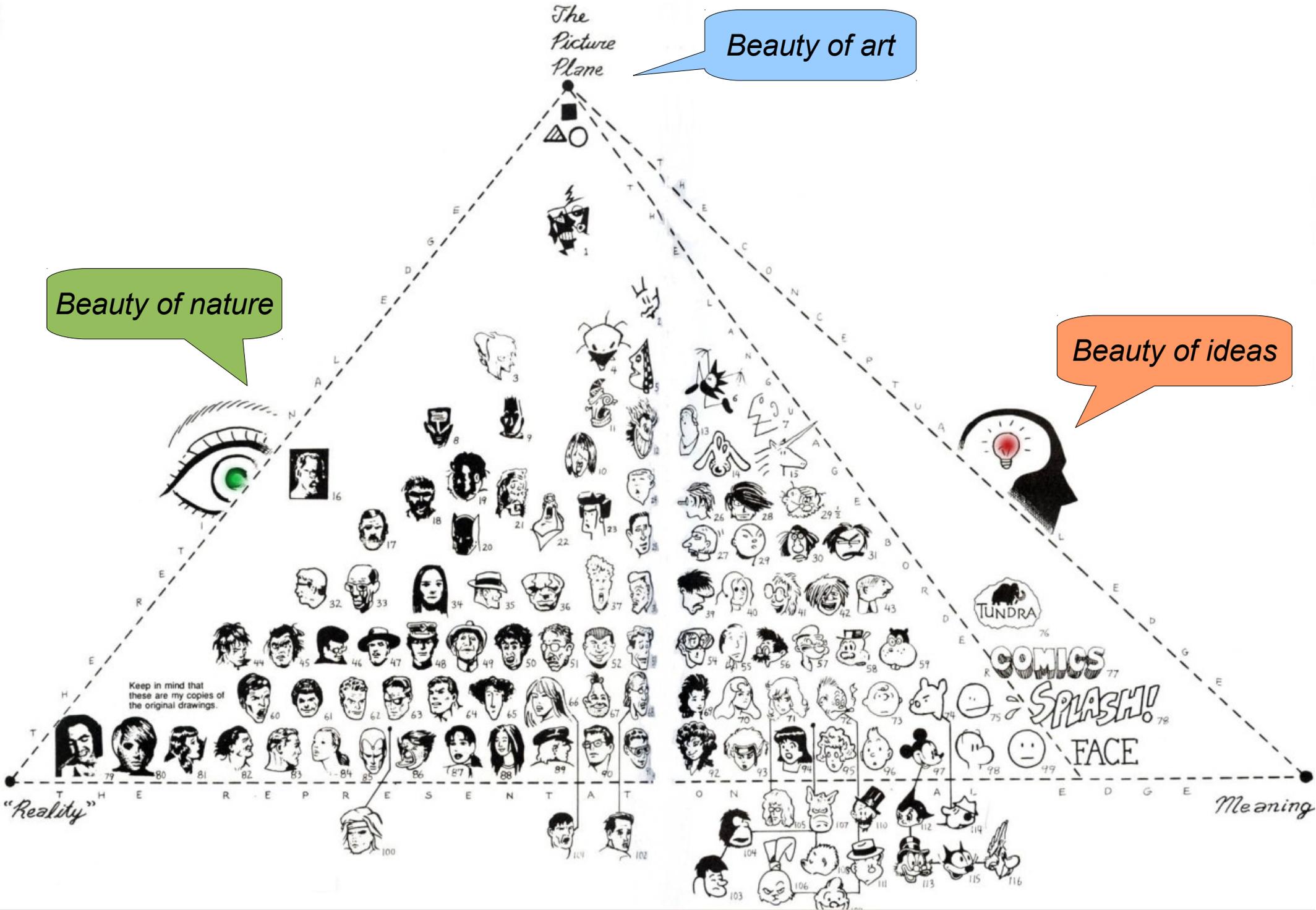


The Picture Plane

Beauty of art

Beauty of nature

Beauty of ideas



# How to design a good icon?

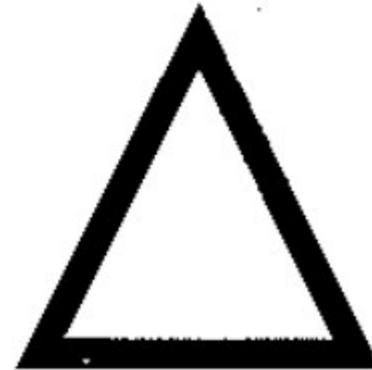
# How to design?

## Three-way relation

- Syntactics
  - sign itself
- Semantics
  - that which it represents
- Pragmatics
  - Intelligence which connects both

# How to design?

Syntactics – Semantics - Pragmatics



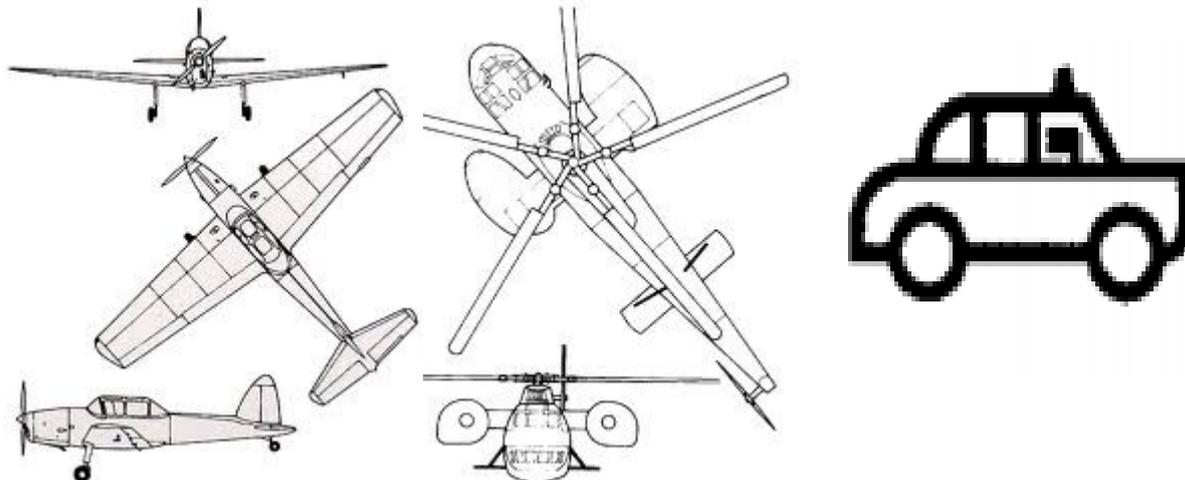
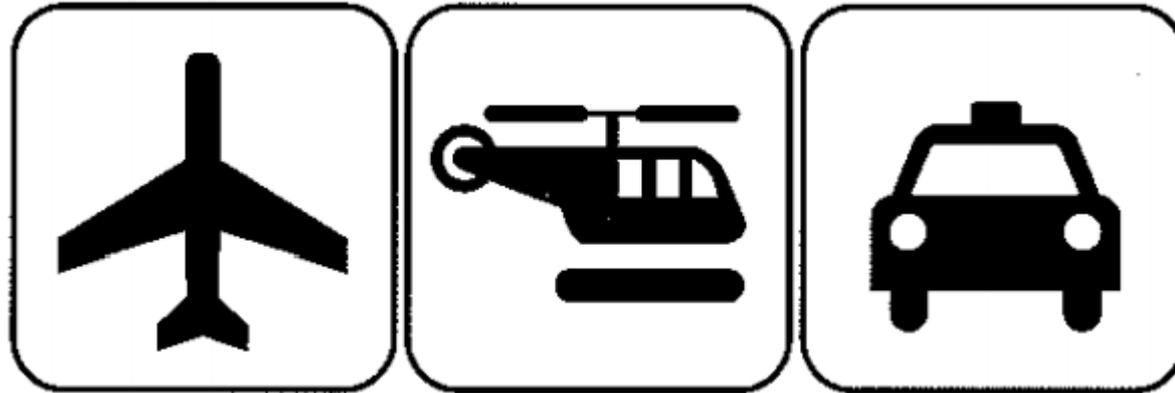
# How to design?

## Syntactics

- Choose attributes that fit the communicative goal
- Keep number of attributes to low
- Shared rules
  - Strong contrast (solid forms)
    - Complete absence of internal details
  - Neutral contours
  - Orientation

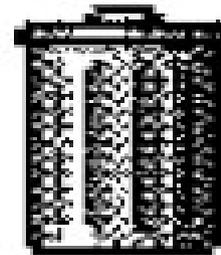
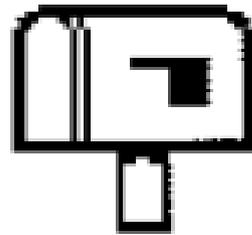
# How to design?

## Syntactics - Orientation



# How to design?

## Pragmatics

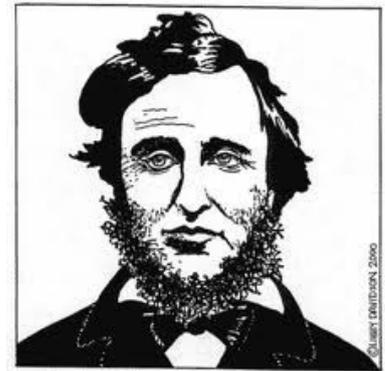


# Summary

## Icon and Cartoons:

- Simplified abstract representations of objects
- Simplification —→ Universality
- Universality —→ Reflection
- Reflection —→ \$\$\$ :)
- Syntactics – Semantics – Pragmatics

*“Our life is frittered away by detail. **Simplify, simplify, simplify!** I say, let your affairs be as two or three, and not a hundred or a thousand; instead of a million count half a dozen, and keep your accounts on your **thumb-nail.**”*



Thoreau, Henry David

# Bibliography

- Lukas Mathis, Realism in UI Design  
[http://ignorethecode.net/blog/2010/01/21/realism\\_in\\_ui\\_design](http://ignorethecode.net/blog/2010/01/21/realism_in_ui_design)
- << *Course Readings* >>

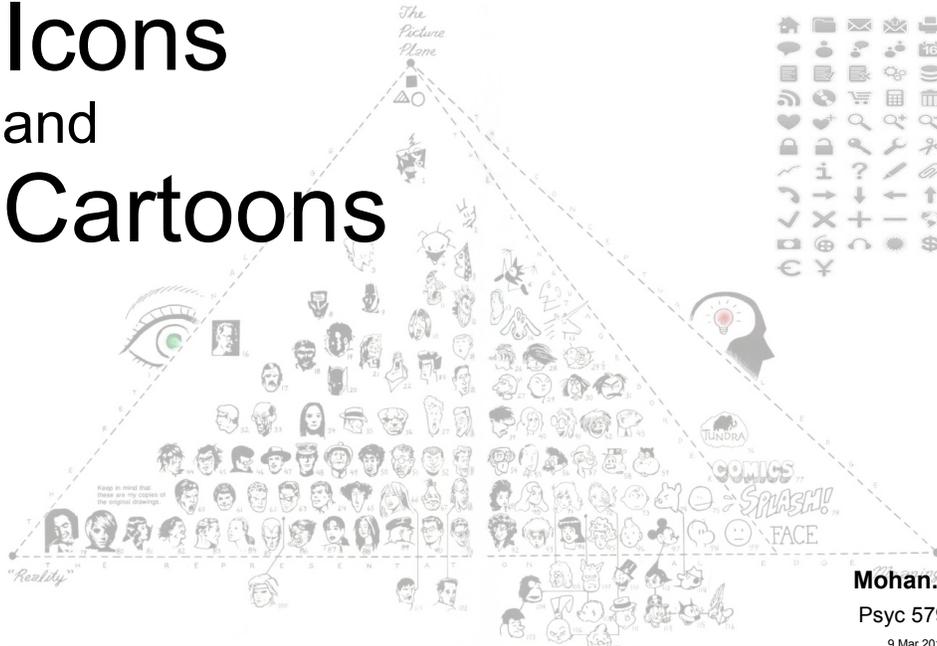
# Humour

*Context!*



Thank you

# Icons and Cartoons



# Outline

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# What is an Icon?

# What is an icon?

An image that represents an entity.

- Concrete

- Person, place, thing



- Abstract

- Idea, concept, philosophy



A	B	C	D
1	2	3	4
?	:	!	*

Icons and Cartoons

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An entity = an object. Pictorial representation of an object.

something that stands for something else.

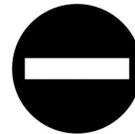
I like to see the icon as a pointer to a higher level abstraction. Sort of like a visual macro – a “visual shorthand” that expands in your mind.

'by calling to mind one or more essential characteristics of the sign object'

# What is an icon?

## Two types of icon:

- Representational
  - Appearance  $\approx$  Perceived meaning
- Symbolic abstractions
  - Appearance  $\neq$  Perceived meaning
  - Requires learning



Representational icons can have varying levels of resemblance (which we will see in detail later)

Concepts, ideas – typically symbolic  
Abstractions can be of varying levels of standardization: strictly standardized e.g alphabets, traffic signs, loosely standardized e.g restaurant signs.

Strictness of standardization depends on cost of miscommunication.

(note that both the equal to signs are themselves symbolic abstractions).

# What is a cartoon?

## Collection of icons

- Character icon
- Speech bubble
- Alphabets
- Sound icons
- Other conventions



Structured collection of iconic representations:

Other visual conventions: such as depiction of time  
..etc

# How does it work?

## How does it work?

- Amplification through simplification
  - 'Stripping down to its essential meaning'
  - 'all but the most characteristic elements are removed'
  - free of interference and background clutter
  - reduce signal-to-noise ratio

I think of Simplification as the same as abstraction, or the result of abstraction

'careful abstraction in which all but the most characteristic elements are removed'

Signal = message to be communicated

Noise = all irrelevant details

=> There is a Study that showed cartoons were recognized more rapidly than images

## How does it work?

Simplification results in:

- Effective imagery
  - Possesses perceptual immediacy
    - Recognizing at a glance
    - Less (or no) training

less or no training

based on shared tacit knowledge

lesser the knowledge required the more useful it is

## How does it work?

### Abstraction:

- A sign of intelligence
  - Human race
  - Children learning
- Computer interface & interaction
- Expands class of artifacts referred

human race

Started with representational symbols for communication moved on to more abstract forms to handle more complexity (evolution of symbols from the earlier class)

Children learning:

start associating representational images with labels  
move on to more and more symbolic abstractions through school, univ (alphabet, math, science)

computers interface & interaction

from more abstract to representational – to reach the common user. From interacting using abstract metaphors such as programming & command line to representational metaphors such as desktops & touch interface.

Object – class abstraction – instantiation  $\Rightarrow$  icon –

## How does it work?

### Representational forms:

- Less learning
- Fast processing
- Take priority over abstract forms
- Low cost of consumption



What about representational forms. They have their own advantages.

take priority over abstract forms

We process image before 'This is not a pipe'

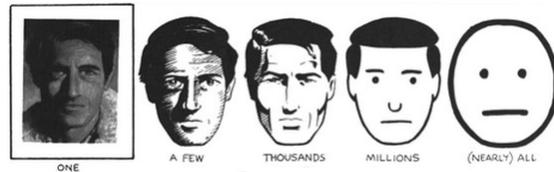
low cost of consumption:

we skim pictures first, might be the reason why graphic novels and cartoons are popular

But, they are not as flexible for manipulation as abstract forms

# How does it work?

## Universality



Icons and Cartoons

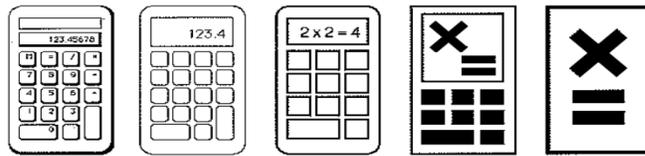
Now lets switch back to abstraction. Abstraction & simplification lead to Universality.

From a particular face to a class of faces – object to class.

A particular house to the concept of home (in UI).

# How does it work?

## Universality



← Details

Number of objects represented →

Focusing on the functionality rather than the form –  
can now be used to represent any class of  
calculating devices

# How does it work?

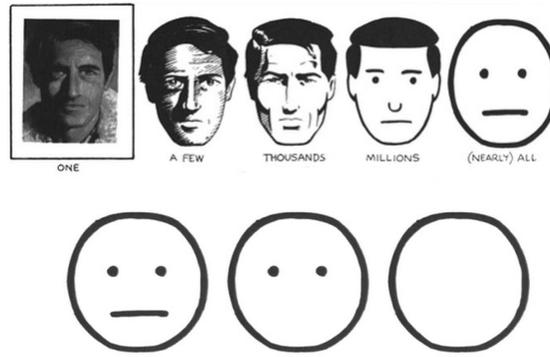
## Universality



Icons and Cartoons

# How does it work?

## Over simplification



Icons and Cartoons

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If simplification is so good, why don't we keep on simplifying.

The result is \*

Balance of simplification, too much simplification = loss of message

# How does it work?

Over simplification

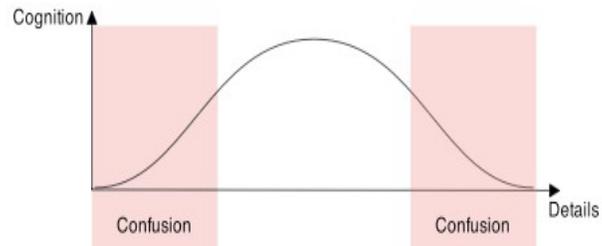


House or arrow ?

Too much simplification -> loss of 1:1 mapping

# How does it work?

## Over simplification



# How does it work?

## Reflection

- A way of seeing
- Mould into which we pour life
- We see ourselves
- Roles vs Goals
  - 'icons demand participation to make them work'

Universality leads to 'a way of seeing' – reflection. Cartoons/icons in them become moulds into which we pour our life using imagination. We see ourselves, self-identification: "where we interpret a sign, we become part of it for the time of that interpretation"

## How does it work?



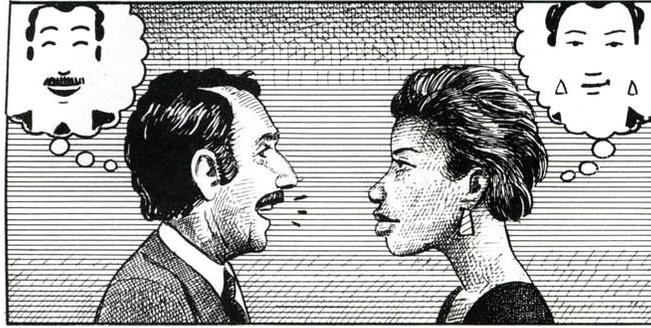
Icons and Cartoons

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I think that this is one of the reasons why book adaptations typically suck for those who have read the book. When reading the book/comic, you are rendering the scenes inside your head. Whereas in the movie it is rendered for you – less flexible – representational. Whereas inside your head it is more flexible and hence more enjoyable / engaging.

# How does it work?

Internal representations



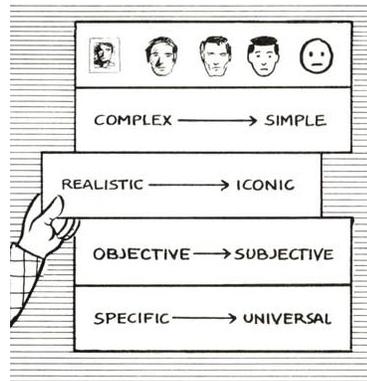
Icons and Cartoons

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I also think that the simpler vector like representations of cartoons resemble our internal representations - which could then triggers similar neural responses. This might be one of the reasons that they are so effective.

# How does it work?

## Simplification



Summarizing: simplification from complex to simple, makes it more universal and hence more involved in interpretation



# How to design a good icon?

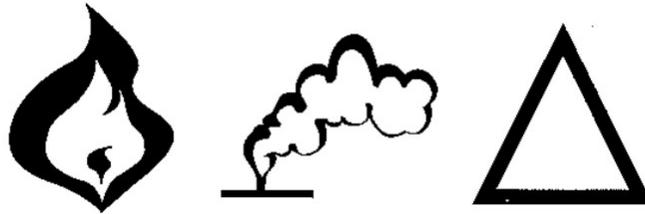
# How to design?

## Three-way relation

- Syntactics
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  - that which it represents
- Pragmatics
  - Intelligence which connects both

# How to design?

Syntactics – Semantics - Pragmatics



Icons and Cartoons

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- 3 ways of designing a sign
  - represent the actual object
    - loose 1:1 mapping
    - works at syntactic level
  - represent something that reminds us of the actual object <#ID\_1449530856>
    - no 1:1 mapping
    - works at semantic level
  - purely agreed upon convention <#ID\_649488931>
    - strict 1:1 mapping
    - works at pragmatic level

# How to design?

## Syntactics

- Choose attributes that fit the communicative goal
- Keep number of attributes to low
- Shared rules
  - Strong contrast (solid forms)
    - Complete absence of internal details
  - Neutral contours
  - Orientation

## how to design

choose attributes that best fit the communicative goal while minimizing cognitive effort

so as to reduce the time for processing

context helps

as with any object identification

sort of primes for the interpretation of the icon

thus number of attributes must be kept low

carefully selecting attrs that have greater

diagnostic power

e.g birds of flight -> feathers

shared rules

neutral contours

drawn with mechanical aids

strong contrast

black on white background

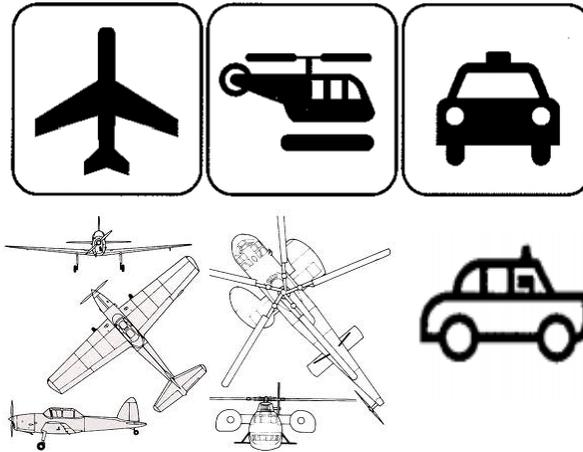
orientation shows the most informative side

avoid depth cues

except when necessary for informative needs

# How to design?

## Syntactics - Orientation



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- 1) Choosing **Canonical** point of views is important.
- 2) The pov that will bring out the most effective recall:
  - 1) Based on viewer's experience
  - 2) Showing the parts that most effectively characterize the image (& that has less resemblance with other images)
  - 3) Sometime exaggerating some parts (ratio) to achieve desired effect (e.g sign on taxi, blades of the heli-copter)
- 3) (comparison images for aeroplane / helicopter are not icons but line drawings)

# How to design?

## Pragmatics



effect of syntactic/semantic aspects w.r.t to the interpreter in their social/cultural/personal-psychological context

Depends on the culture, familiarity of these notions with the viewer.

when metaphors are used, its a 2 way translation. The user has to understand to understand the metaphor to understand the reference.

# Summary

## Icon and Cartoons:

- Simplified abstract representations of objects
- Simplification —→ Universality
- Universality —→ Reflection
- Reflection —→ \$\$\$ :)
- Syntactics – Semantics – Pragmatics

\$\$\$ for the artists and studios

*“Our life is frittered away by detail. **Simplify, simplify, simplify!** I say, let your affairs be as two or three, and not a hundred or a thousand; instead of a million count half a dozen, and keep your accounts on your **thumb-nail.**”*



Thoreau, Henry David

I think of his reference to thumb-nail as reference to cartoon/icon :)

# Bibliography

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[http://ignorethecode.net/blog/2010/01/21/realism\\_in\\_ui\\_design](http://ignorethecode.net/blog/2010/01/21/realism_in_ui_design)
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*Context!*



# Thank you