Principles of Visual Design
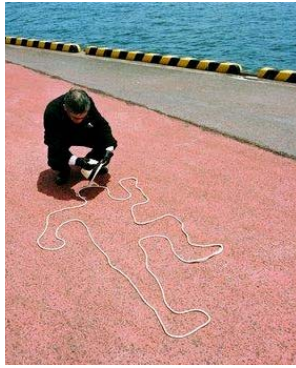
Lucia Terrenghi

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Talk about rules in design

- No fixed rules
- Just guidelines, principles

- Where do they come from? How can I apply them?

Outline

- Origins of the principles
- The world as information display, the foraging theory of information
- Strategies of visual design for effective and efficient communication
- Principles and tools of visual design

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Scientific basis for design guidelines
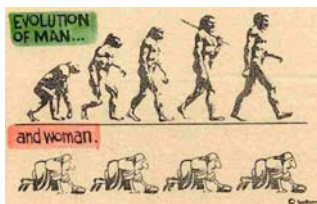
- Perception
- Evolution of perception system
- What is perception good for?

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Ecological approach to visual perception

- Gibson, 1979
- Visual system has survival value
- Is a skill for navigation, food seeking and use of tools
- Surfaces and textures

Textures

- Shape
- Orientation
- Location
- Size
- Mechanical behavior and properties of materials

Affordances

- Aspects of an object which suggest how the object should be used; a visual clue to its function and use
- Essentials for understanding the potential for interaction and manipulation in the environment

World as information display

- An affordance is something of both actual and perceived properties (perception and action based on human attributes)

Design as a language

- Communication of a message
- Implies understanding the audience
- Implies confidence with grammar, logic, vocabulary, expressions
- Varies depending on the medium

Playing with the „World Display"

Cavallucci o peperoncini?   Polpo o cipolla?   Riccio o castagna?

„dall' orto all'arte", advertising campaign by Armando Testa 1995

Visual Communication

- Support users to find your information
- Support users to find their information
- Strive for efficiency of perception

Foraging theory of perception

- Information seekers as food seekers *informavores:* organisms that hunger for information about the world and themselves (George Miller, 1983)
  - humans seek, gather, share, and consume information in order to adapt
- Information scent
  - Proximal cues perceived by the user that indicate the value, cost of access, and location of distal information content

How to use visual design effectively?
Refer to human survival strategies

- Organize

- Economize

- Communicate

Graphic Design in the „World Display"
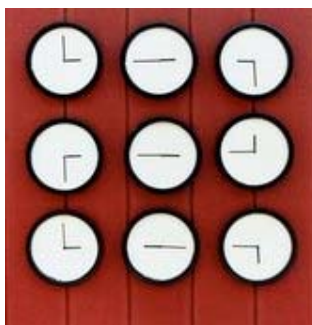

- Organize
- Economize
- Communicate

Organize

- Provide the user with a clear and consistent conceptual structure

Economize

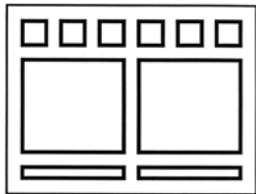- Maximize the effectiveness of a minimum set of cues
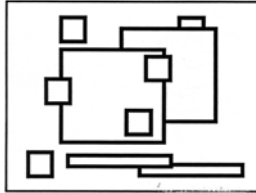
Communicate

- Match the presentation to the capabilities of the user

Entities of a visual language

- Layout
- Typography
- Color and texture
- Imagery
- Animation
- Sequencing
- Sound
- Visual identity

Organization

- *„To Design is to plan and organize, to order, to relate, and to control"*
  Joseph Albers, 1975

- ### Sub-principles
  - Consistency
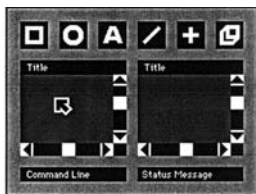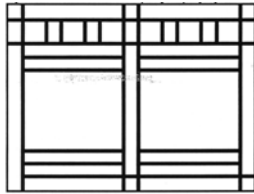 - Screen layout
  - Relationships
 - Navigability

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Consistency

- Establish and observe conventions and rules for all the elements of the GUI
- Consider already existing conventions
- Consider consistency with the real world
- Break rules to direct attention (surprise, alert, novelty)

Screen layout

- Structure the display by clarifying the relation of windows, menus, dialogue boxes, control panels
- Isolate control, data, status or feedback regions with the display
- Ensure that frequent but transient objects appear in a predictable location

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Grids: purpose
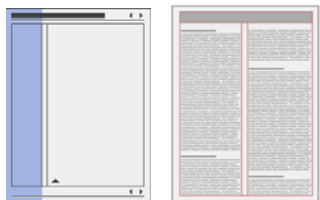
- Unify design by imposing a structure
- Provide a basis for controlled variation in layout components
- Simplify development by reducing uncertainty about object location, extent, and orientation

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Grid development
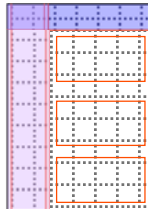
- Identify objects to be arranged
- Identify display constraints
- Determine measuring units (e.g., text size)
- Explore relation of objects
- Define semantic areas
- Draw guidelines
- Develop single basic layout scheme
- Align major object groups with major grid subdivisions

Grids
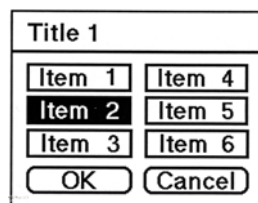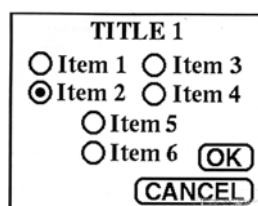
- Incorporate complex rhythms and indicate spaces between objects
- Define how objects are related
- Ensure that comparable objects are placed consistently across displays

Navigability

- Provide initial focus for viewer's attention
- Direct attention to important or changing periphery item
- Animation attracts attention
- Highlight keywords
- Use bullet lists

Relationships

- Define a hierarchy of information
- Design a visual hierarchy
  - Order
  - Proximity
  - Scale
  - Color code

Economize

- *People are information rate maximizers of benefits/costs*
  - Pirolli, Card, Van der Wege 2001
- Foraging theory of information

$$R = \frac{G}{T_B + T_W} = \frac{Gain}{T_{Between-patch} + T_{Within-patch}}$$

- Sub-principles
  - Simplicity
  - Distinctiveness
  - Clarity

Simplicity

- Fewer controls/choices to be taken make the interface easier
- Minimize number of controls (Miller's law ±7)
- Include only elements that are essential for communication

Distinctiveness

- Make most important elements easily perceivable
- Saliency

Clarity

- Avoid ambiguity

Communicate

Mexico City subway pictograms

- *Communication is a social process within a specified context in which signs are produced, transmitted, perceived and treated as messages from which meaning can be inferred.*

- Sub-principles
  - Legibility
  - Readability
  - Typography
  - Symbolism
  - Multiple views
  - Color/texture

Legibility
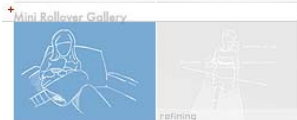
- Design characters, symbols, and graphic elements to be easily noticeable and distinguishable

- Select visualization techniques that are appropriate for the output display technology

- Use color with high contrast between the text and the background

Readability

It is important to design a
readable display. This
improves the navigability of
the page and increases
perception efficiency.

It is important to design a
readable display.

This improves the navigability
of the page and increases
perception efficiency.

- Design a comprehensible display, i.e. easy to identify and interpret
- Use concise writing
- Use summaries

Typography

Arial
Helvetica
Times New Roman
Courier

Arial
Helvetica
Times New Roman
Courier

Arial
Helvetica
Times New Roman
Courier

- At most 3 fonts in a page
- choose suitable legibility, clarity and distinctiveness to differentiate classes of information
- Consider the media
  - in print: usually sans serif for titles and serif for body text
  - on a monitor: sans serif is easier to read

Typography

i. **Topic 1**
 i. *Subtopic 1.1*
ii. **Topic 2**
 i. *Subtopic 2.1.*
iii. **Topic 3**
 i. *Subtopic 3.1.*

❑ **Topic 1**
 ▪ *Subtopic 1.1*
❑ **Topic 2**
 ▪ *Subtopic 2.1.*
❑ **Topic 3**
 ▪ *Subtopic 3.1.*

- Select appropriate alphanumerics, punctuation, and symbols for each typeface
- Adjust character, word and line spacing and paragraphing, to enhance readability of critical information

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Typography

Set text flush left   Set numbers flush right

Avoid centered text   Avoid short justified text

Avoid dangling words after line breaks

AVOID CAPITALIZED LINES OF TEXT

- Use 1-3 sizes
- Set text flush left
- Set numbers flush right
- Avoid centered text
- Avoid short justified text
- User upper and lowercase characters
- Avoid all capitalized lines of text

Symbolism

- Use appropriate bullets, rules, charts, maps, diagrams, pictograms, and ideograms to communicate clearly the intended meaning

Thank you.

Questions?