



CS 160: Graphic Design

Professor John Canny
Spring 2006

Administrivia

-  Hi-Fi prototype assignment is being handed out today, due in two weeks.
-  MS Smartphones will be handed out today.

Design is...

📄 About function:

- * Good designs support user tasks



📄 About form:

- * Good designs should be a pleasure to use



Design is...

- 📄 About communication, not just about the medium
- 📄 Its not abstract expressionism:



History

📄 Russian Constructivism between the wars



Bauhaus (1919-33)

- 📄 3 Principles that shaped modern design:
 - * Form follows function



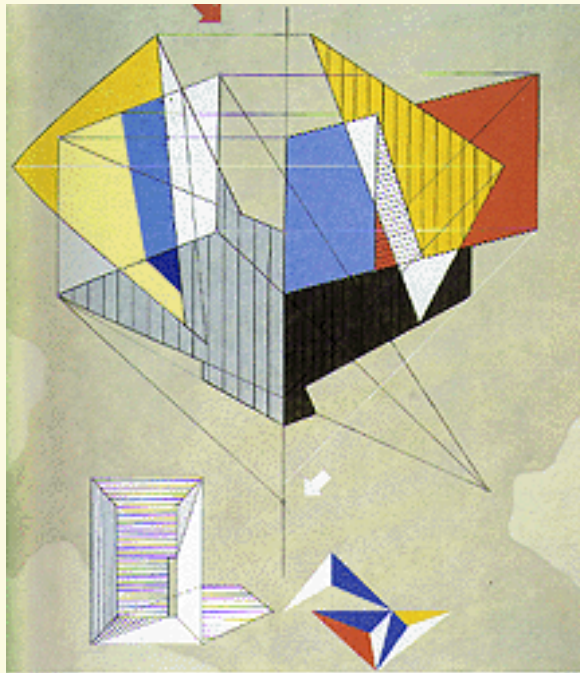
Bauhaus

- 3 Principles that shaped modern design:
 - * Economy of form (limited shape vocabulary)



Bauhaus

- 3 Principles that shaped modern design:
 - * Integrity of materials



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Simplicity

- Simple designs are usually the most effective
- "Form ever follows function"
- Louis Sullivan



Simplicity

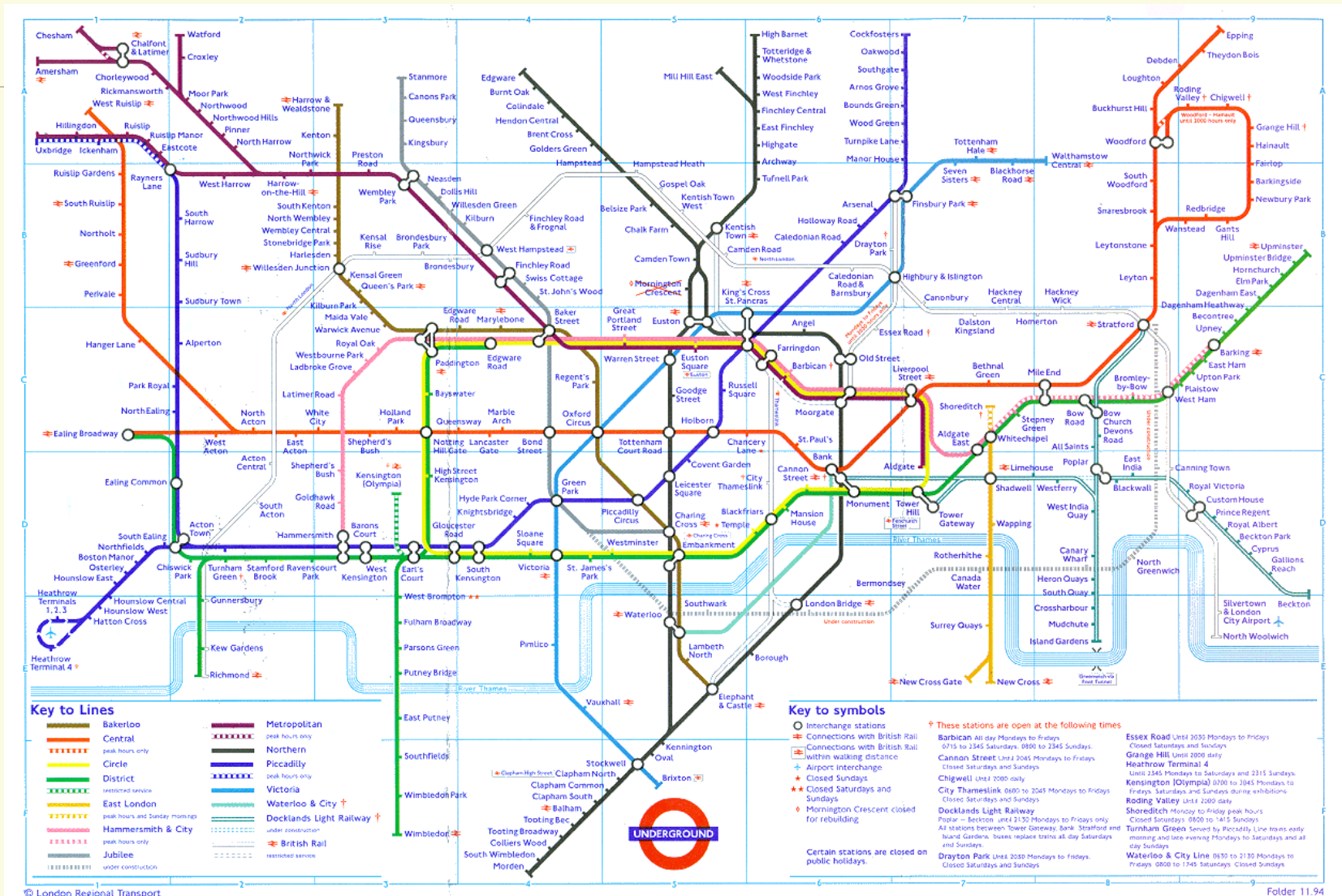


Simplicity - Unity

- 📄 One path to simplicity is through unifying themes:
 - * Forms, colors, components with like qualities



Simplicity - Refinement



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12

Simplicity - Fitness

☞ Match the design to the capabilities of the technology and the user

Why not use Roman fonts ?

Sans-serif fonts fit the medium

Be careful of slant



Simplicity - Common Mistakes

- ❏ Clutter and noise
- ❏ Interference between competing elements
- ❏ Using explicit structures as a crutch
- ❏ Belaboring the obvious
- ❏ Overly literal translation
- ❏ Excessive detail
- ❏ Gratuitous Dimensionality
- ❏ Match the design to the capabilities of the technology and the user

Welcome to Microsoft Bob!



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15

Simplicity - Common mistakes

Clutter and noise



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16

Simplicity - Common mistakes

☞ Interference between competing elements



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17

Simplicity - Common mistakes

Using explicit structure as a crutch



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18

Simplicity - Common mistakes

📄 Belaboring the obvious



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19

Simplicity - Common mistakes

Overly literal translation



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20

Simplicity - Common mistakes

Excessive Detail



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21

Simplicity - Common mistakes

Gratuitous dimensionality




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22

Break

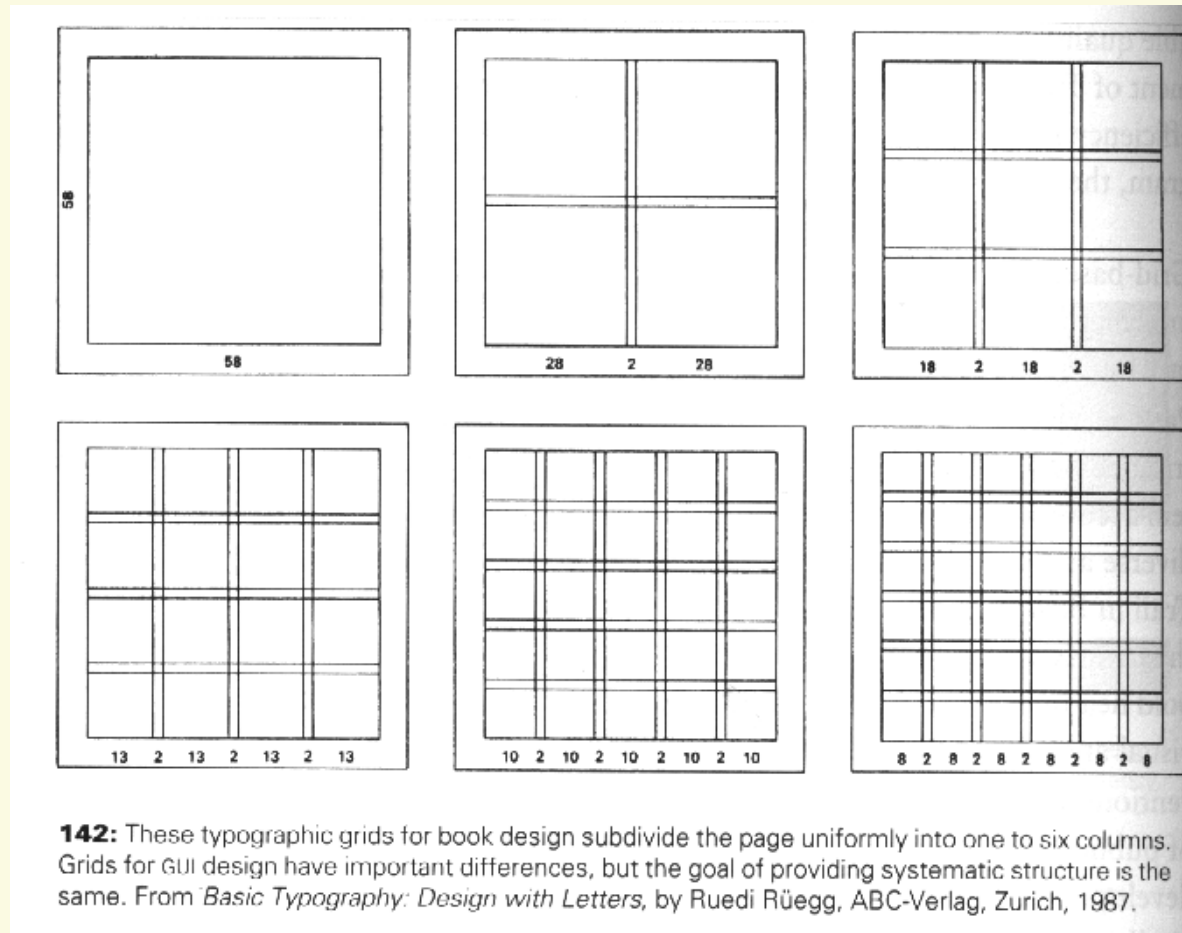
Module and Program

 A systematic approach to the design of many artifacts:

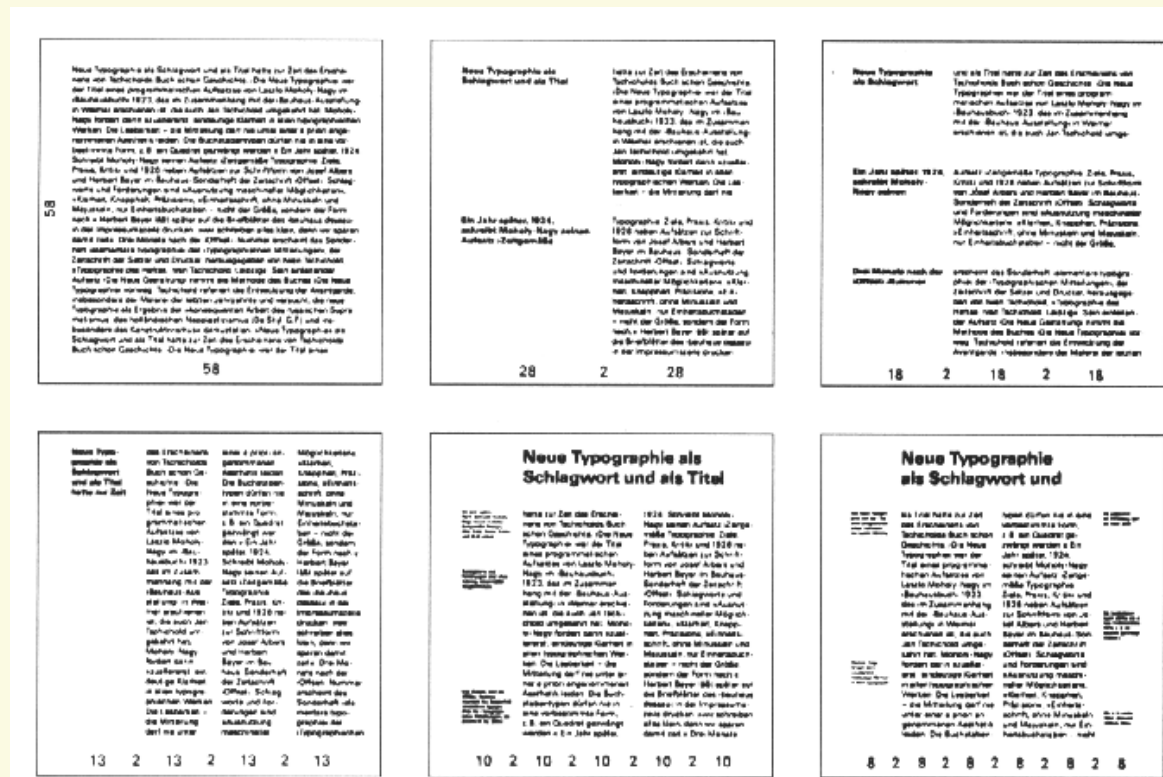
- * web pages on a site
- * documentation pages
- * devices in a family

 Programs describe how to build designs from modules.

Grid-based Design



Grid-based Design



143: Each of the grids in Figure 142 leaves a distinct imprint on the resulting layout. When the same grid is used throughout a book – or GUI application – this imprint becomes a unifying element for the entire work. From *Basic Typography: Design with Letters*, by Ruedi Rüegg, ABC-Verlag, Zurich, 1987.

Grid-based Design



Principles - Focus

- Focus: the design should highlight one or a small number of modular elements



e^+e^- physics at INTERMEDIATE ENERGIES workshop

STANFORD LINEAR ACCELERATOR CENTER • Stanford, California • April 30 – May 2, 2001

To Explore the Physics Potential of an Asymmetric High Luminosity e^+e^- Collider of Energy $M_\phi < E_{CM} < M_{J/\psi}$

DISCUSSION topics:

- R Measurements with Application to Hadronic Corrections to g-2 and Higgs Mass Prediction
- Baryon and Meson Time-Like Form Factors
- Precision QCD Tests
- Vector Meson Spectroscopy
- Two-Photon Physics
- Potential Uses of Initial-State Polarization
- Dimuonium and Ditauonium Formation and Detection
- Accelerator/Detector Requirements

ADVISORY committee:

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This is the second workshop in a series, following the meeting held at the Budker Institute of Nuclear Physics, Novosibirsk, Russia, March 1-5, 1999.

Principles - Flexibility

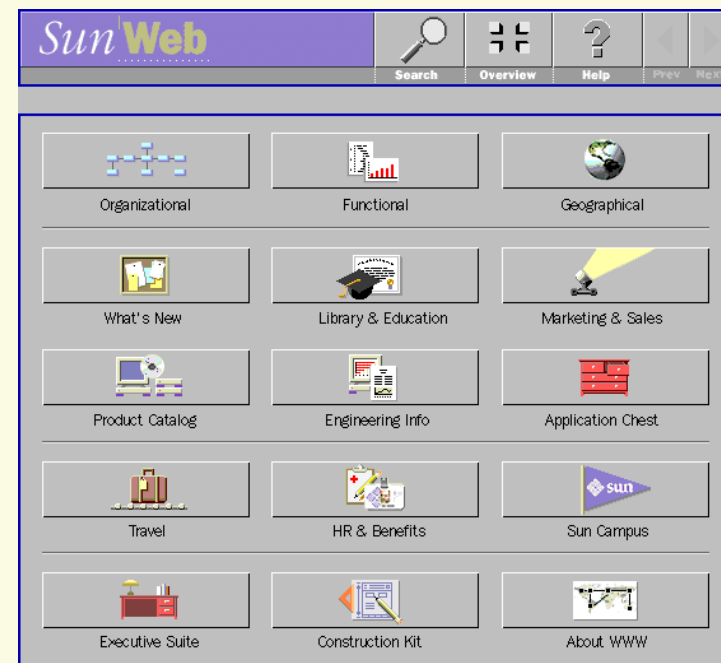
- Flexibility: The program should allow variation from a theme



Univers Font

Principles - Consistency

- Consistent application: The program should maximize consistency in size, position, texture...



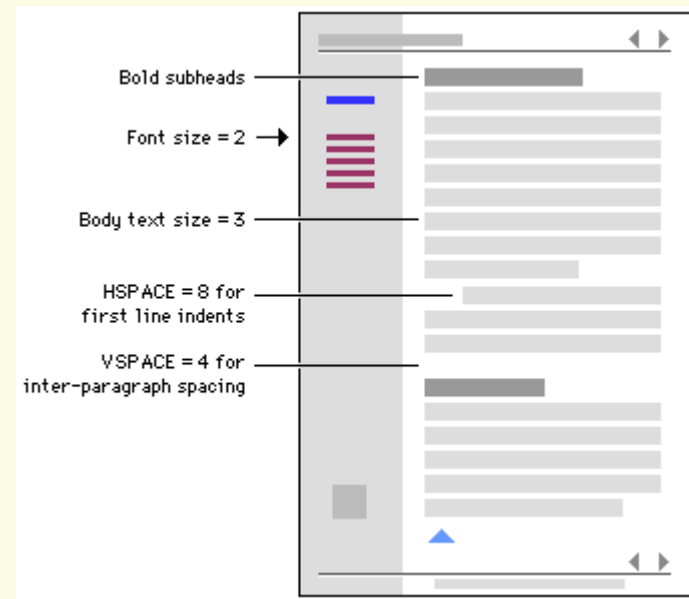
Common mistakes

- ❏ Arbitrary component positions
- ❏ Arbitrary component dimensions
- ❏ Random window sizes and layouts
- ❏ Unrelated icon sizes and imagery
- ❏ Inconsistent control presentations
- ❏ Inconsistent visual language

Techniques

Reinforcing structure through repetition: Repeat design elements across the program

Stylesheets can help



Techniques

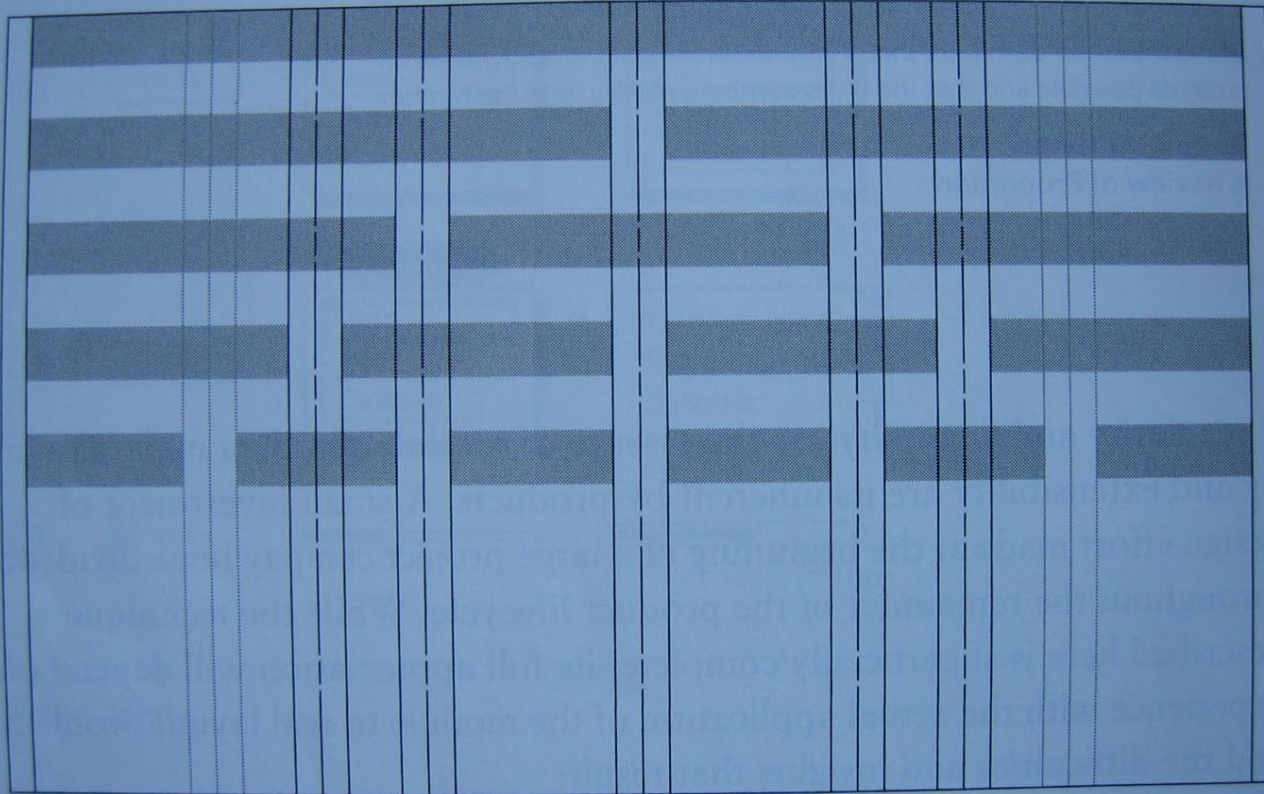
📄 Establish modular units



Techniques - Canonical grid

- 📄 The canonical grid
- 📄 An six-column basic grid with column separators and label templates
- 📄 Can be implemented with HTML tables
- 📄 Frontpage is pretty good for this:
 - * Build a regular grid as a table
 - * Merge cells to eliminate some of the boundaries

The canonical grid



176: This *canonical grid* supports two-, three-, four-, and six-column layouts in any graphical user interface (the $1/6$ and $5/6$ divisions are implicit). The gray bars reflect the widths of components spanning (from top to bottom) 6, 3, 1.5, and 1 column-units, respectively, on the basic 6-column grid. The grid can be used with any vertical module, depending on the widget set and type size.

Canonical Grid

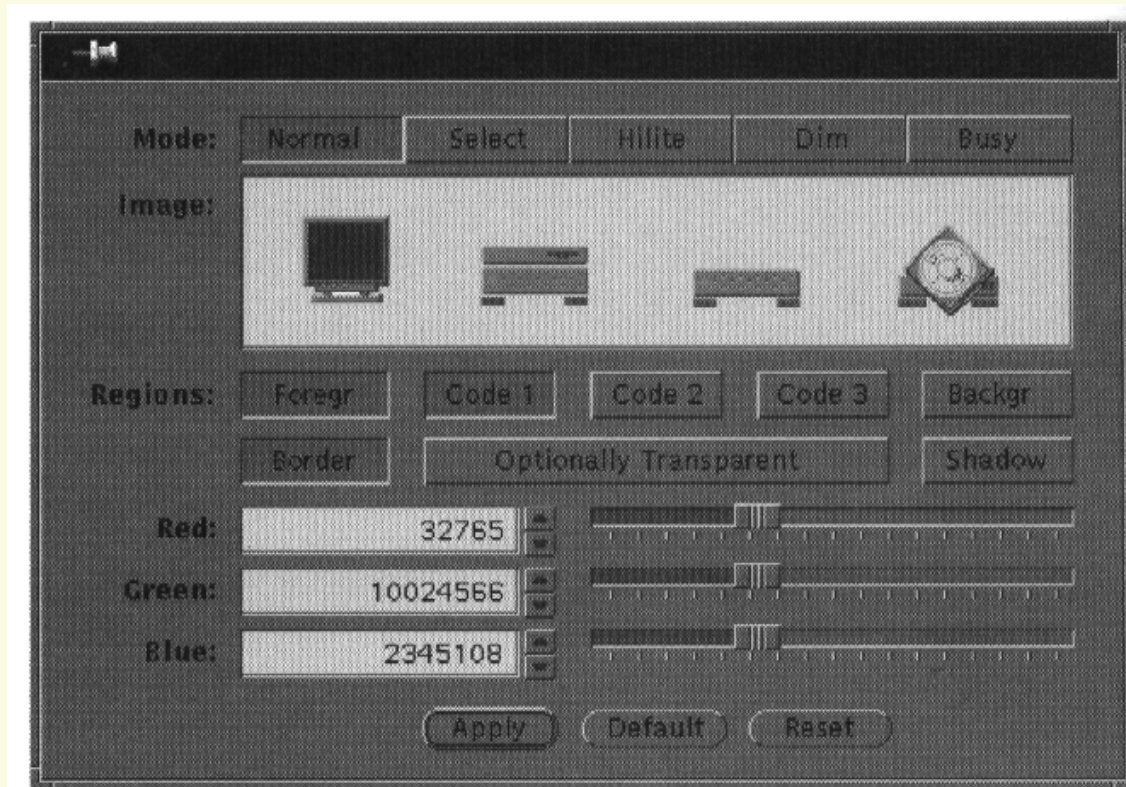
- ☞ Determine any size restrictions
- ☞ Define horizontal and vertical modules
- ☞ Develop a rough sketch of sizes, positions, orientations
- ☞ Use the canonical grid to adjust sizes and positions of control elements
- ☞ For dynamic layouts, figure out the minimum workable size.

Canonical Grid

The image shows a software dialog box with a two-column layout. The left column contains labels for 'Mode:', 'Name:', 'Type:', 'Vendor:', and 'Note:'. The right column contains corresponding input fields. The 'Mode:' field has two buttons: 'Search on Query' and 'Filter on Query'. The 'Name:' field contains the text 'SQLmaster™'. Below these fields is a 'Progress:' indicator with a progress bar and the text 'schema:/usr/dist'. At the bottom, there are two columns of checkboxes under the label 'Scope:'. The first column has 'Current Library' (checked), 'Referenced Libraries' (checked), and 'Additional Libraries' (unchecked). The second column has 'Local Machine' (checked), 'Network Storage' (unchecked), and 'Unlicensed Components' (unchecked). At the very bottom are two buttons: 'Search' and 'Clear'.

177: This two-column layout is based on the canonical grid (in our first three examples, the grid is not used for the labels in the left-hand column). To visualize this grid, ignore all but the middle three lines of Figure 176. The Name, Type, Vendor, and Note fields span both of the columns that remain, while the items in the Mode setting, Progress indicator, and Scope options span one column each.

Canonical Grid



180: In this example, the full six-column grid is used to lay out the left-most label column as well as five columns of controls. Note the presence of controls spanning one, two, three, and five columns. Note too that elements of different widths can be placed in the same row without problems.

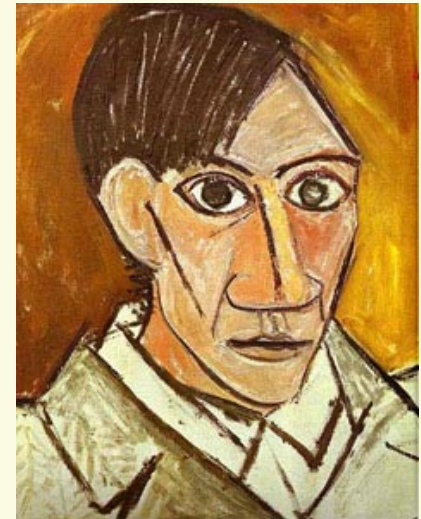
Plagiarism

Remember Picasso's quote:

"Good artists borrow (from other artists),
but great artists steal!"

Compelling visual design takes
practice and experience -

A natural part of which is study
and critique of other's work.



Places to go

- MetaDesign: www.metadesign.com
- IDEO: www.ideo.com
- Frog Design: www.frogdesign.com
- Swim studio www.swimstudio.com
- Cooper Interaction Design www.cooper.com
- Aaron Marcus and Associates www.amanda.com
- Icarian www.icarian.com

Summary

 One design strategy follows Bauhaus principles

- * Form Follows Function
- * Economy of Form
- * Integrity of Materials

 General design principles

- * Simplicity
- * Grid-based Design

 Inspection and critique of other sites