

# User Interface Design: Simplicity & Elegance

## Goals:

- Understand elegance and simplicity in design
- Outline *principles* to achieve "understatement"
- Show examples of bad design (inelegant, busy, etc.)



**16:** Circle and star are fused together in the classic identity symbol for Mercedes-Benz. Image courtesy of Daimler-Benz, Stuttgart.

# Elegance

Elegance: from Latin “eligere”, meaning to choose or select  
"Elect" and "select" come from the same root.

More recently, elegance => refinement, grace, good taste.

## **Visual Design – A selection process**

- formal elements
- refined elements for perceptual salience

# Simplicity

Simplicity: economy of expression, which is the heart of elegance

**Benefits of Simplicity** (both functional and aesthetic):

- ***Approachability:*** supports immediate use or invites further exploration
- ***Recognizability:*** easily assimilated, understood, remembered
- ***Immediacy:*** recognized and understood with a minimum of conscious effort
- ***Usability:*** easy to use; hard to imagine using improperly

# Underlying Principles

- **Unity**

- design elements must be unified to produce a coherent whole

- **Refinement**

- design elements (and whole) must be refined to focus attention on essential aspects

- **Fitness**

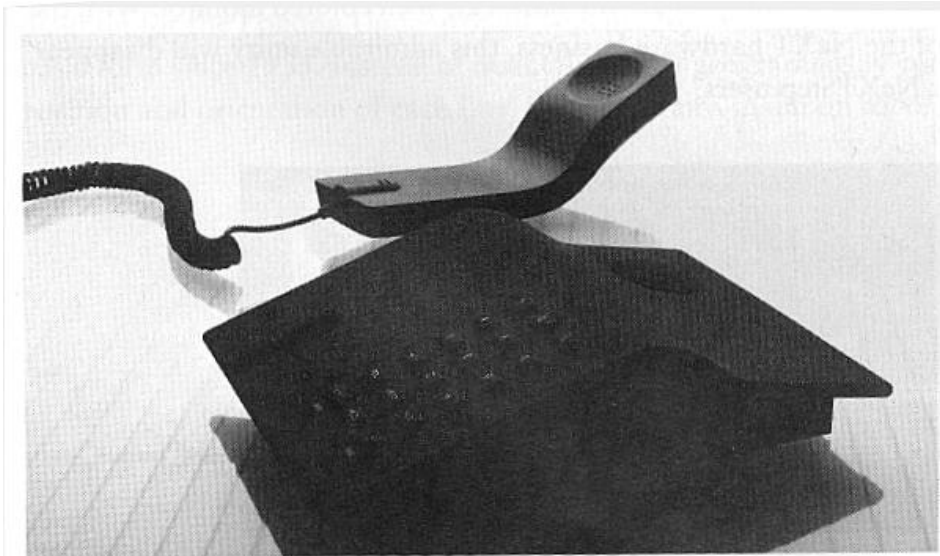
- fitness of solution to problem (communication problem) must be ensured at each level

# Unity

- Single part plays more than one role
- Attempt to "maximize meaning" with "minimum means" (leads to elegance and simplicity)



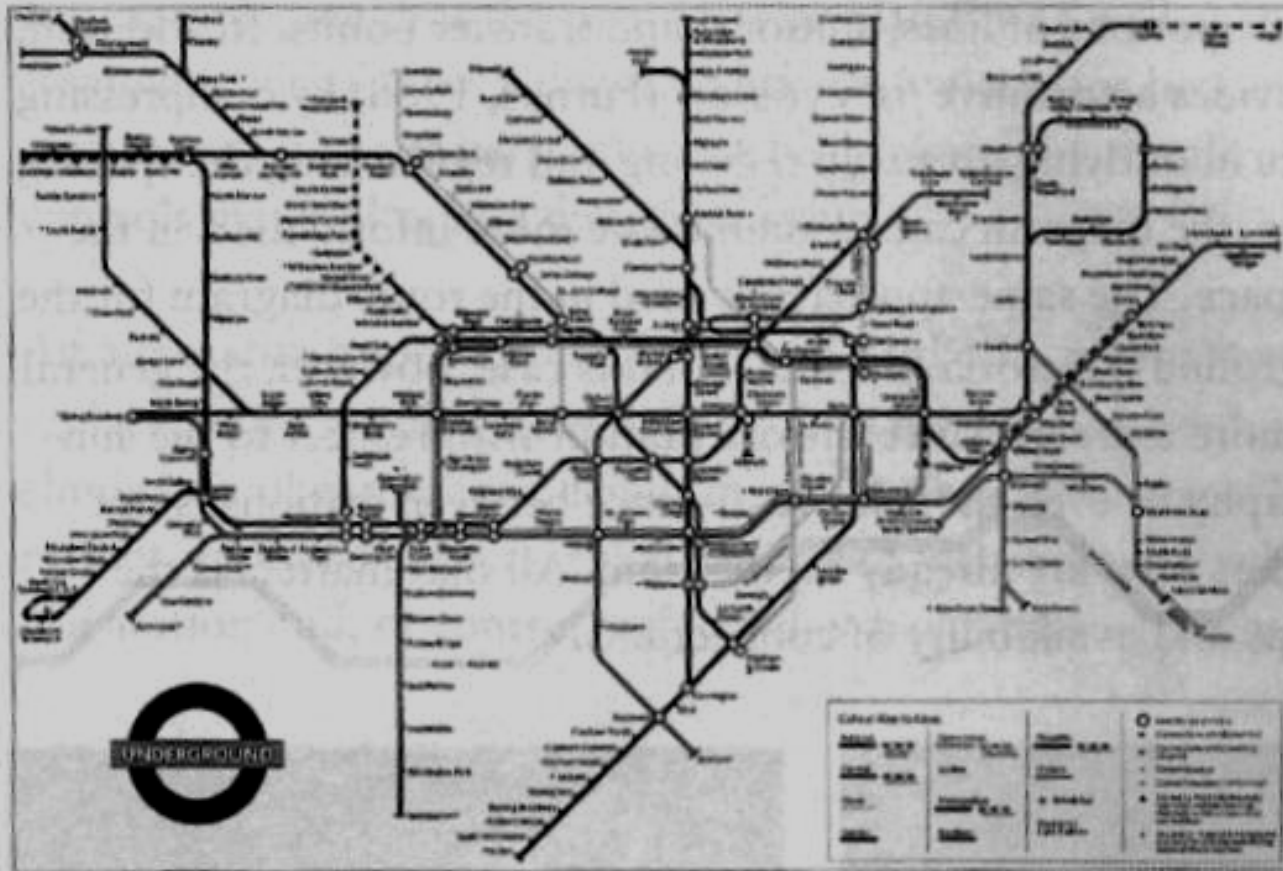
**16:** Circle and star are fused together in the classic identity symbol for Mercedes-Benz. Image courtesy of Daimler-Benz, Stuttgart.



**17:** The unified form of the EC 2 Phone from ECCO Design Inc. is most apparent in the shared contour of handset and cradle. The mechanism is designed-in not tacked on as an afterthought. (See also color plate 1).

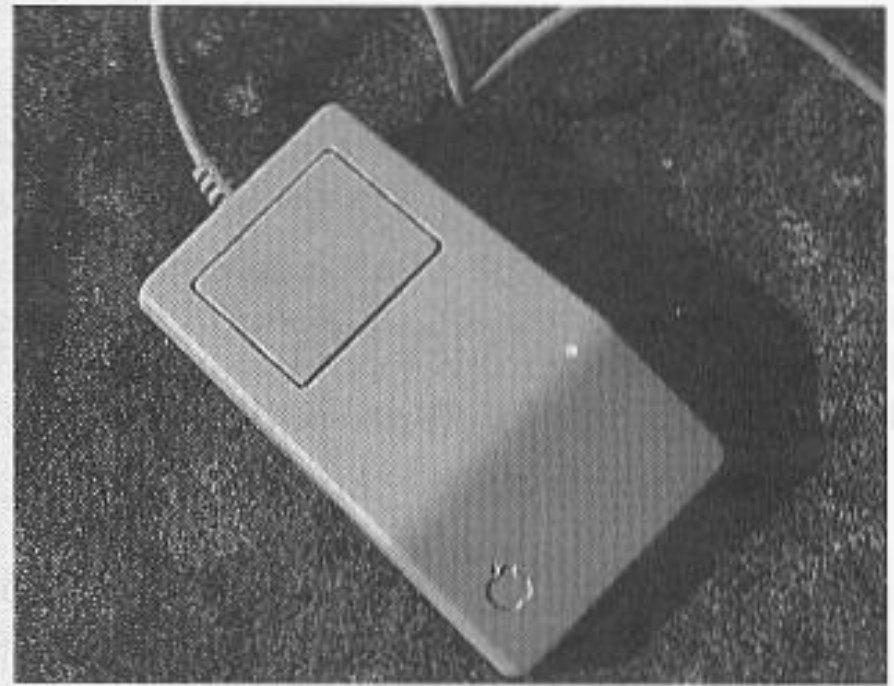
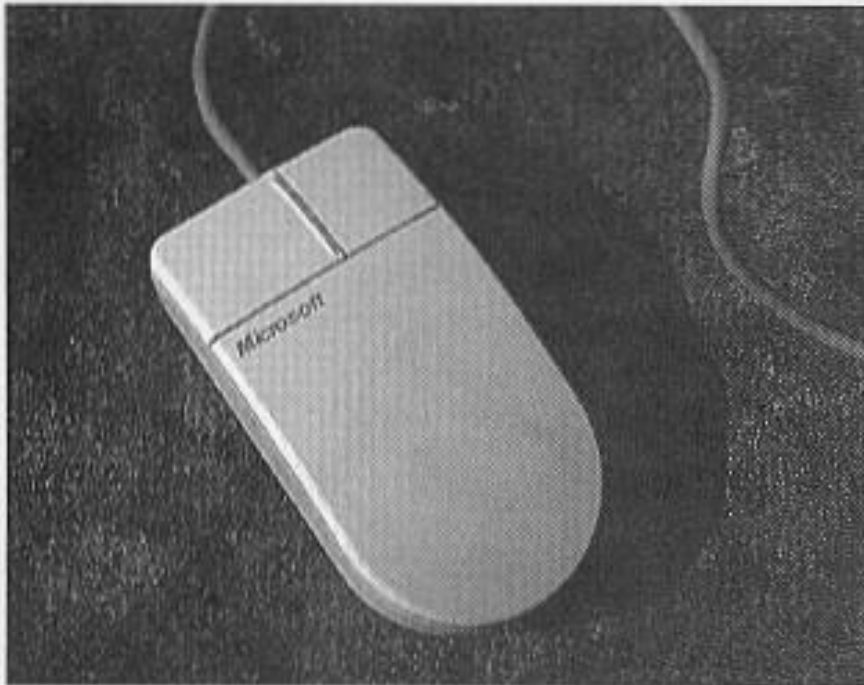
# Refinement

- All non-essential elements (non-essential to the communication task) are removed
- Regularization, symmetry, and compactness of information in small physical space



**20:** The network diagram for the London Underground reflects a problem-oriented refinement of the area's physical geography. By radically compressing the distances between outlying stations, this diagram became the first "fish-eye" view. Design by Henry C. Beck, 1935. (See also color plate 2).

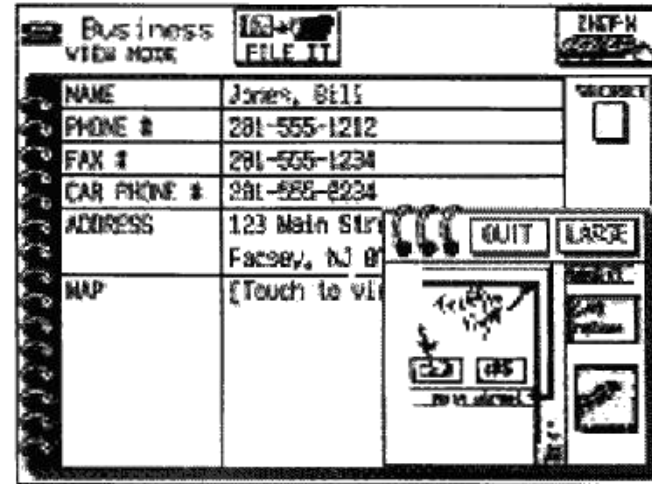
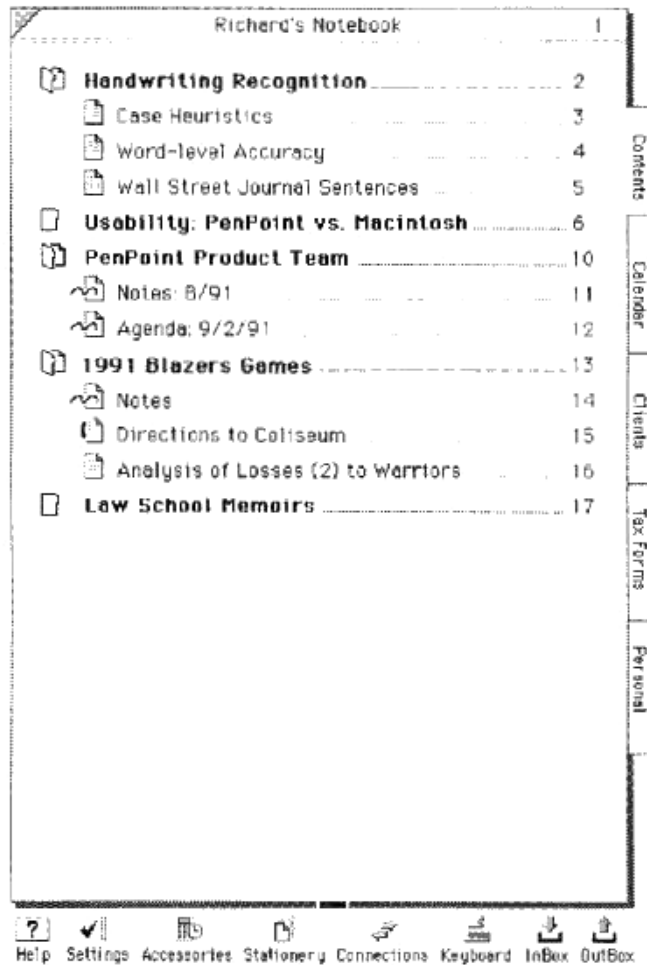
Map of the London underground removes Euclidean distance; only topology is kept. Exhibits symmetry and compactness; this is a refined design



**22:** Simple, refined, forms convey the basic functionality of these pointing devices from Microsoft (a) – (design by IDEO Product Associates) and Apple Computer (b). The aesthetics and ergonomics of each design are superior to their recent replacements.

Mouse design is refined to yield tightly integrated functional designs.

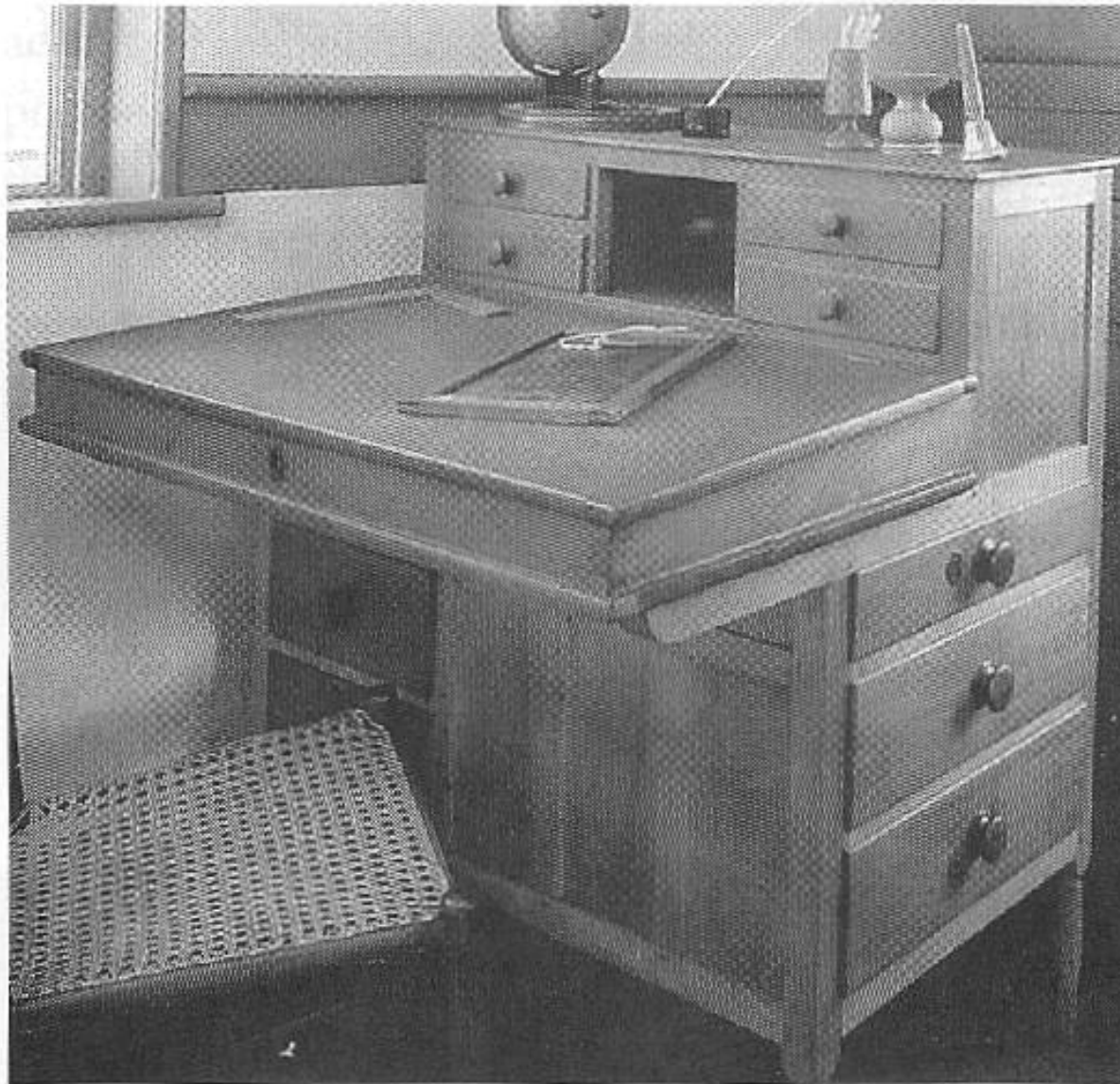




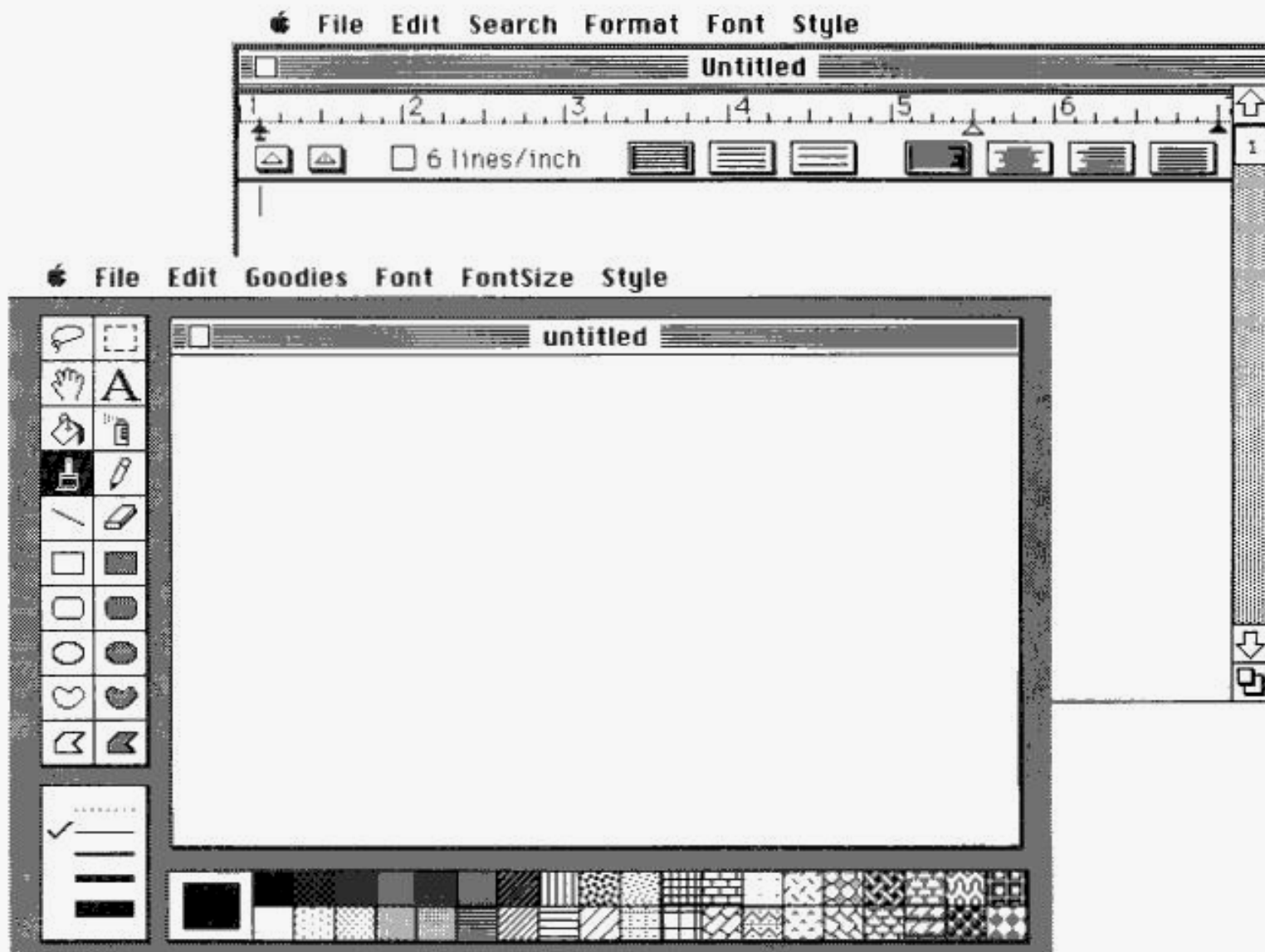
**23:** The elegant, highly refined interpretation of a paper notebook in the PenPoint user interface (a) contrasts sharply with the intrusive, overly literal “notepad” cues provided by the Sharp Wizard (b). The former conveys a global impression of notebook-ness, while the latter depends on crude “labels.”

# Fitness

- Designs succeed/fail based on how well they solve a concrete, particular problem
- Fitness can be evaluated in a design loop using testers and feedback



**24:** The frugal design of this Shaker sewing desk makes full use of the many small enclosed spaces while providing constant access to the work surface. Photo by Michael Freeman.



**26:** The modest design goals and focus on core functionality apparent in the original MacWrite and MacPaint applications reflect the commitment to an appropriate balance between capability and complexity seen in the first wave of software created for "the rest of us."

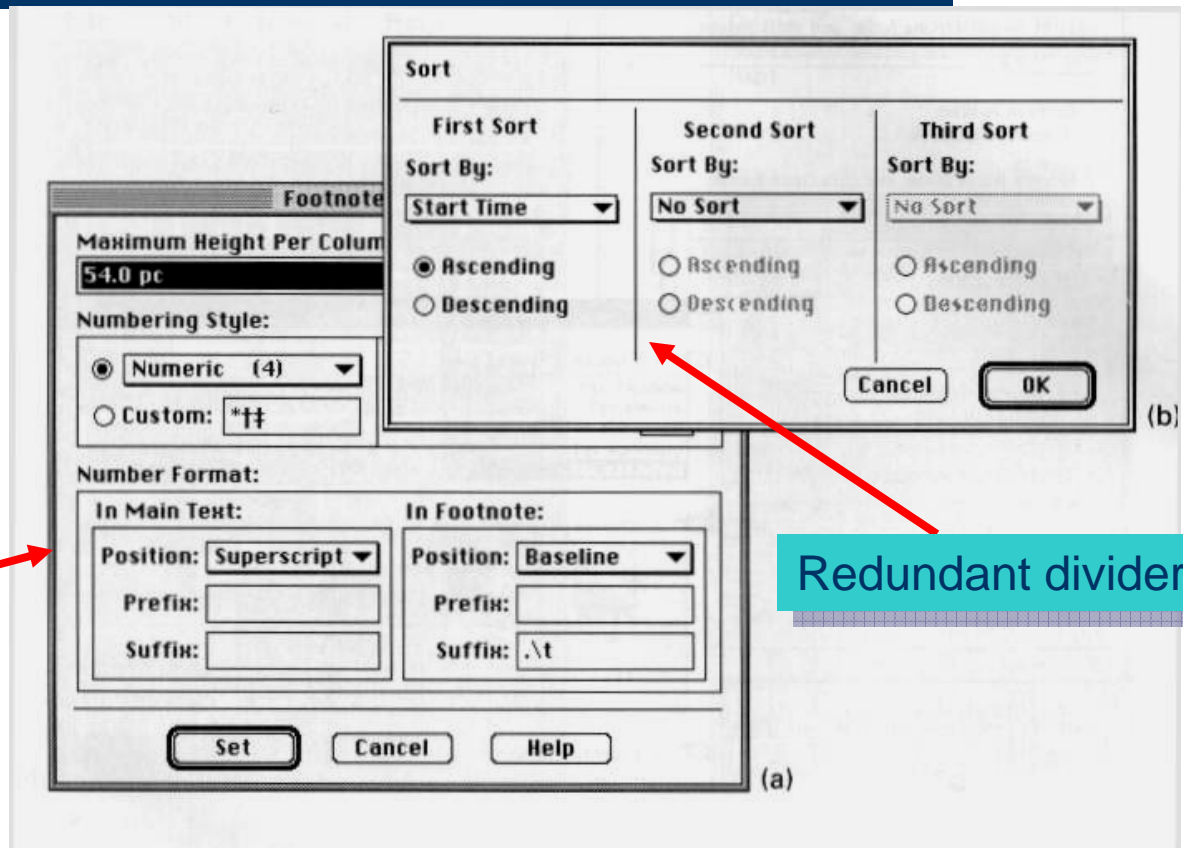
# Common Errors: Examples

Distracting white area

Clutter and visual noise

The image shows a screenshot of a 'Recurring Tasks' dialog box. The dialog box is titled 'Recurring Tasks' and contains several fields and controls. A red arrow points from the text 'Distracting white area' to a white rectangular area in the 'Notes' field. Another red arrow points from the text 'Clutter and visual noise' to the 'Weekdays' and 'Weeks' sections. The dialog box includes fields for 'Description', 'Default Priority', 'Est. Time Blocks', 'Start', 'End', 'Category', 'Day', 'Month', 'Every', 'Weekdays', 'Weeks', 'Req', 'Comp', and '%'. There are also buttons for 'Save', 'Exit', 'New', 'Delete', 'End', and 'Help'. A calendar grid is visible on the right side of the dialog box.

# Using explicit structure as a crutch



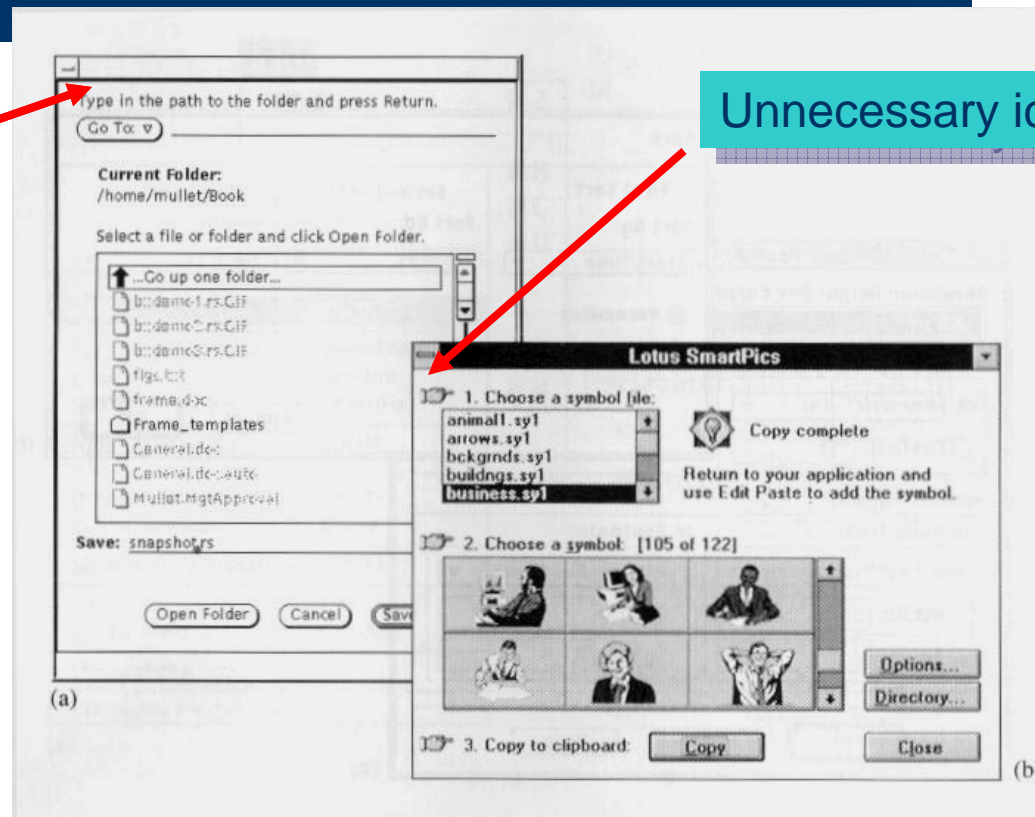
Nested Bounding boxes

Redundant dividers

# Belaboring the obvious...

Unnecessary text tips

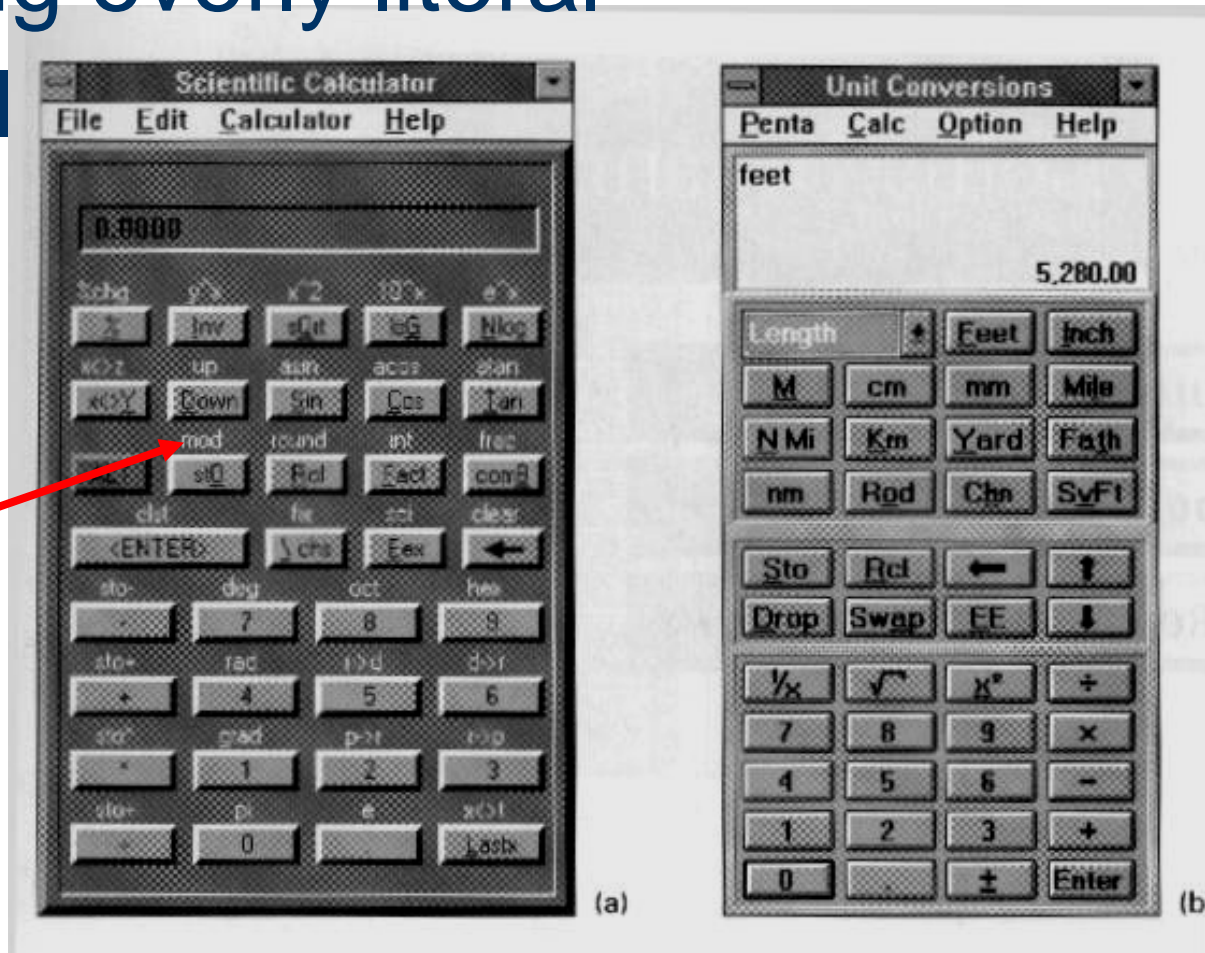
Unnecessary icons



(a)

(b)

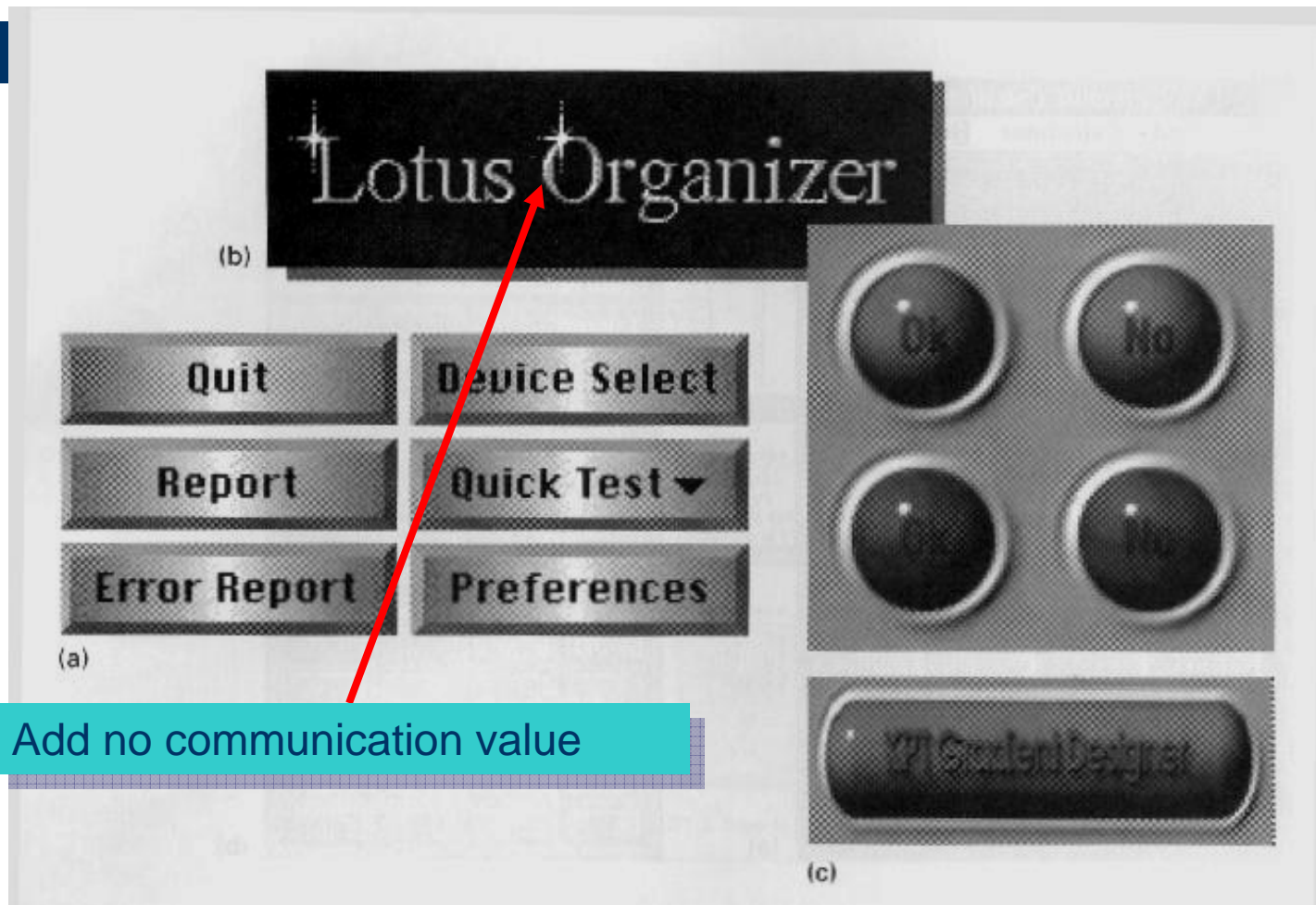
# Being overly literal



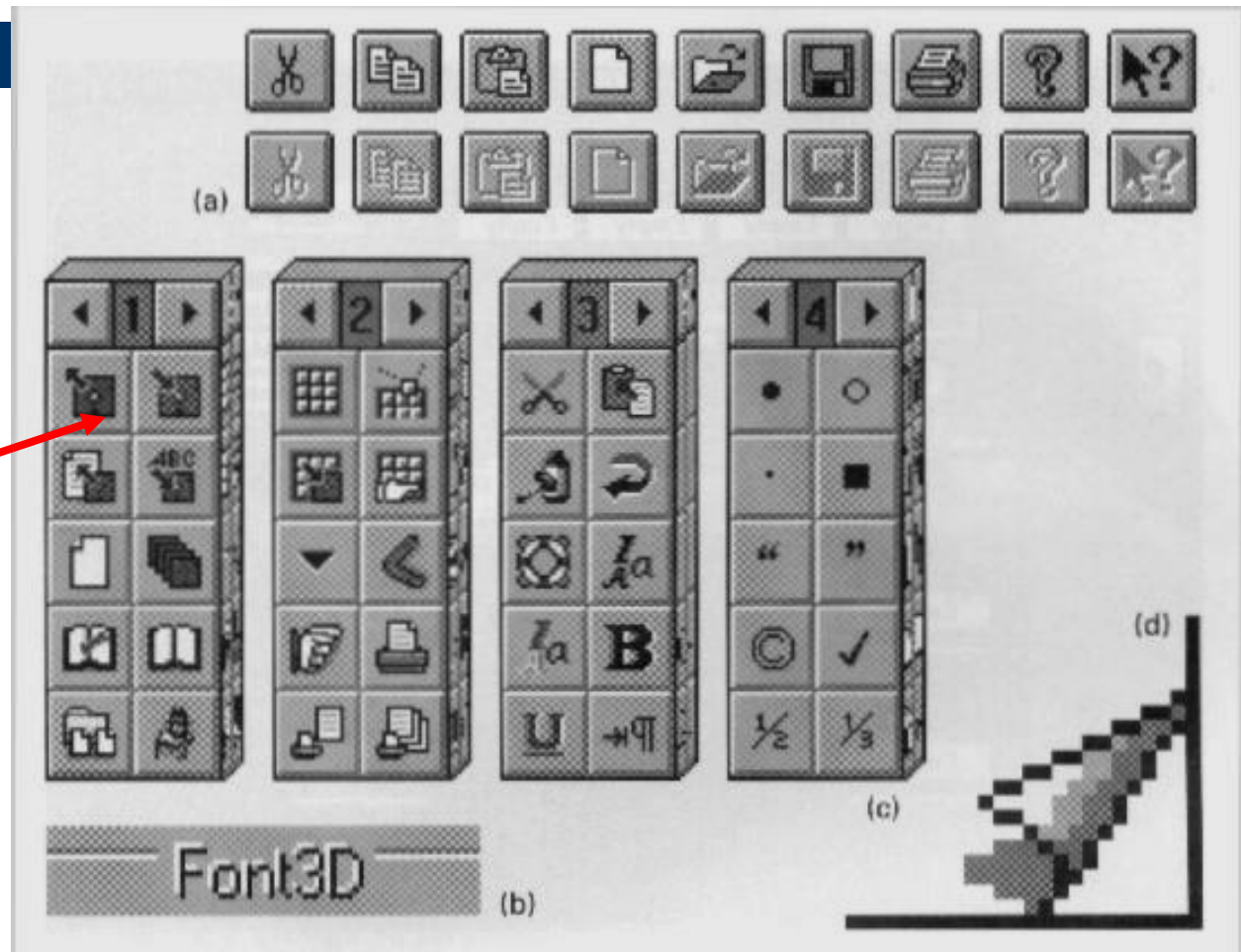
Shift



# Excessive detail and embellishment

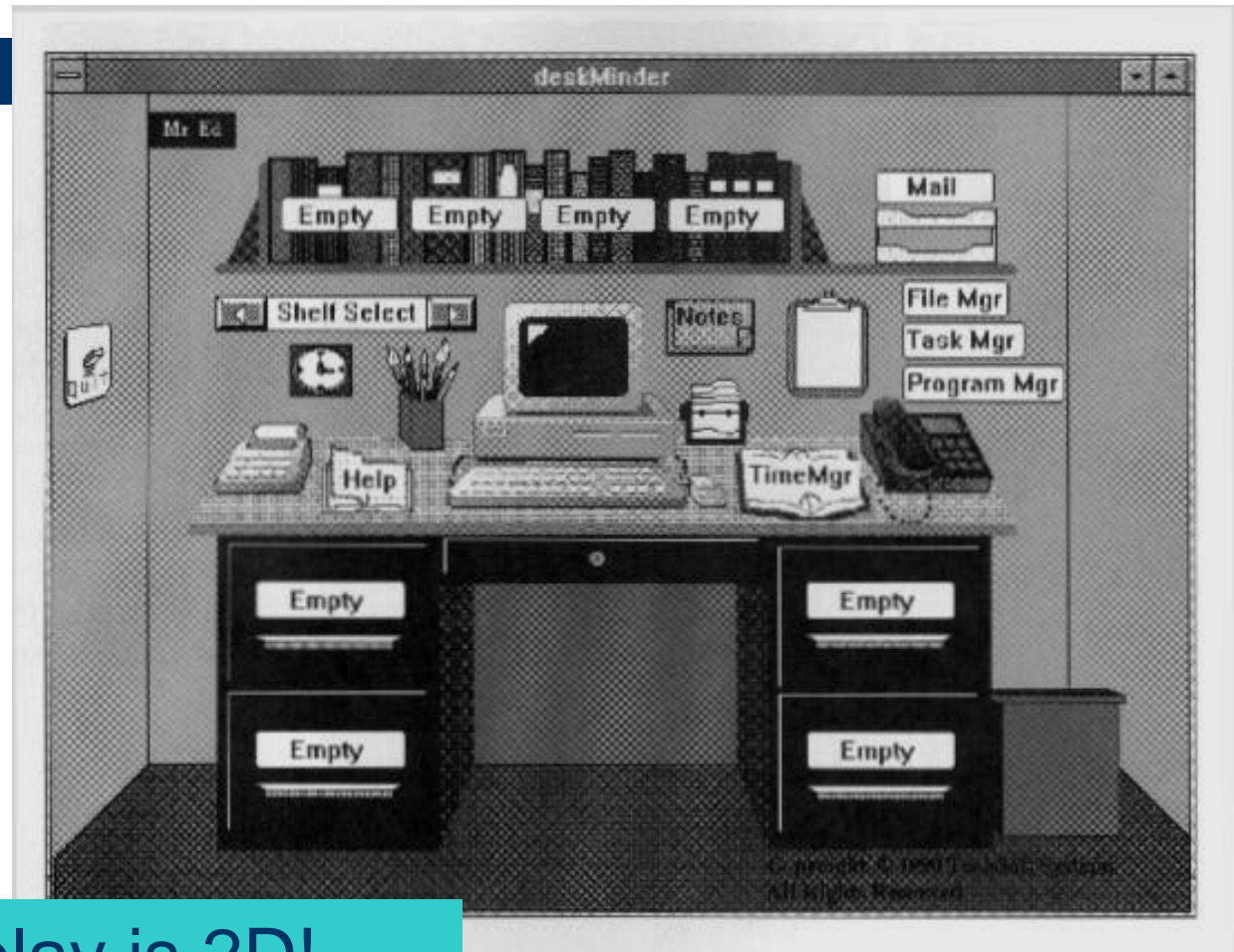


# Gratuitous dimensionality



What is this?

All of the above...



Your display is 2D!

# The office of the Future



# Design Techniques to Apply

- Elegance
  - An “acquired taste”
  - Experience
- A few tips
  - Reduce the design to its essence
  - Determine the essential functional qualities
  - Visualization
  - Remove something?



**37:** Reduction plays the critical role of emphasizing canonical features in these public information icons developed for the U.S. Department of Transportation (DOT) by the American Institute of Graphic Arts (AIGA). Design by Cook & Shanosky Associates.

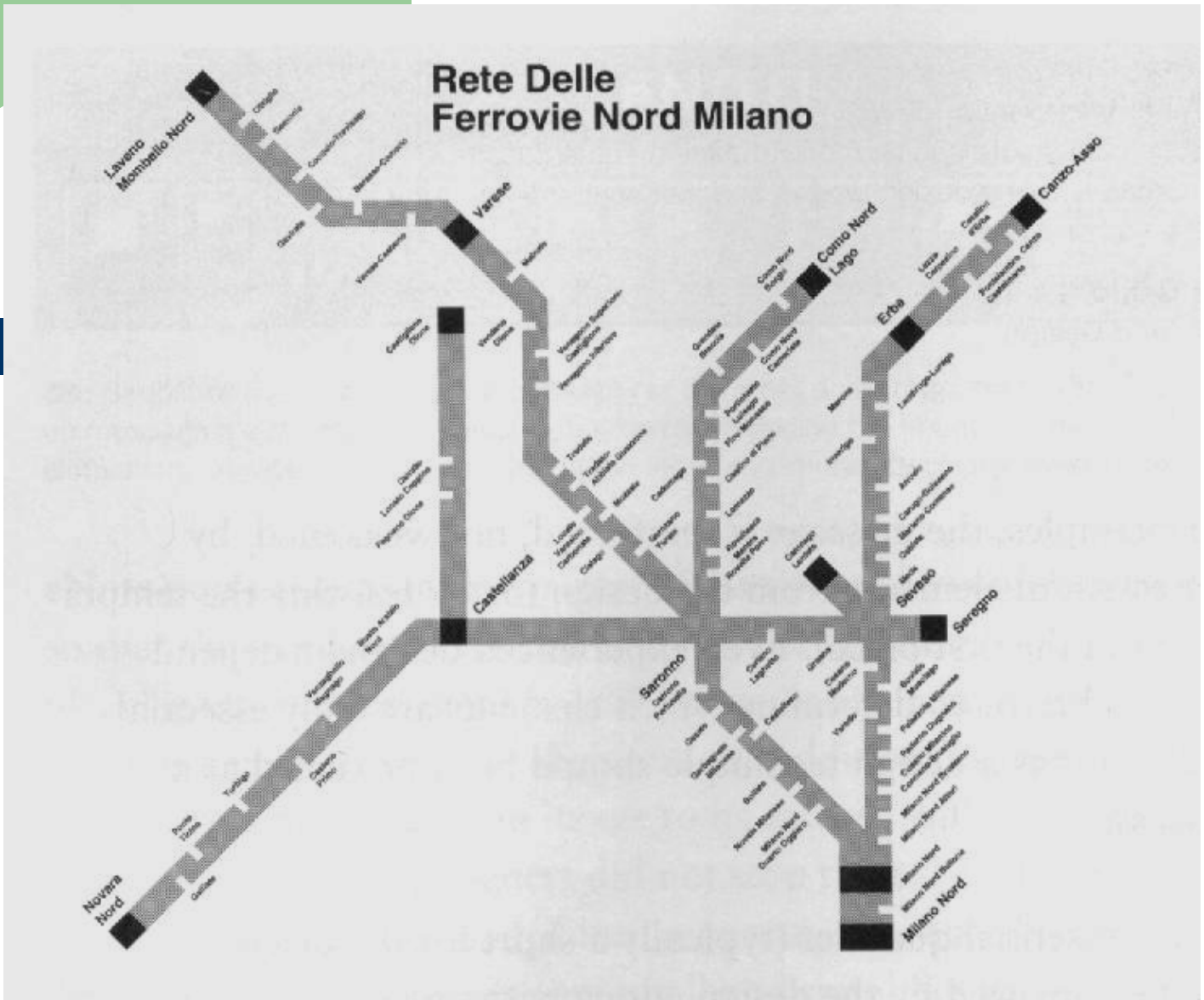
V&A



**38:** Even basic contour information can sometimes be removed without impeding communication. When the overall form is clear, the eye is quite willing to supply missing details, as in this identity for the Victoria and Albert Museum, London (a) – design by Pentagram – and the DOT's access icon (b).

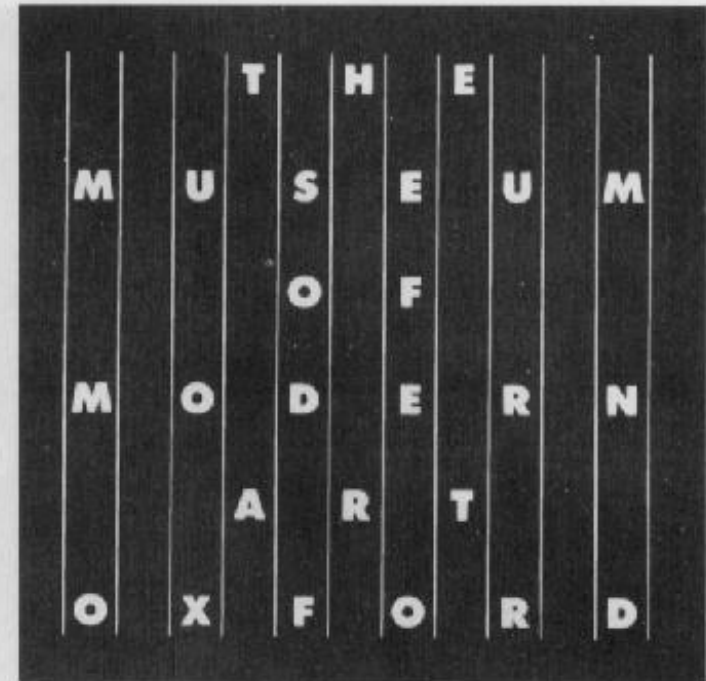
# Techniques for Regularization

- Use regular geometric forms, simplified contours, and muted colors whenever possible.
- If multiple similar forms are required, make them identical (if possible) in shape, size, color, texture, orientation, alignment, spacing.
- Limit variation in typography (fonts) to a few sizes from one or two font families.
- Make sure critical elements stand out and are not regularized (exploit salience in breaking the regularity).

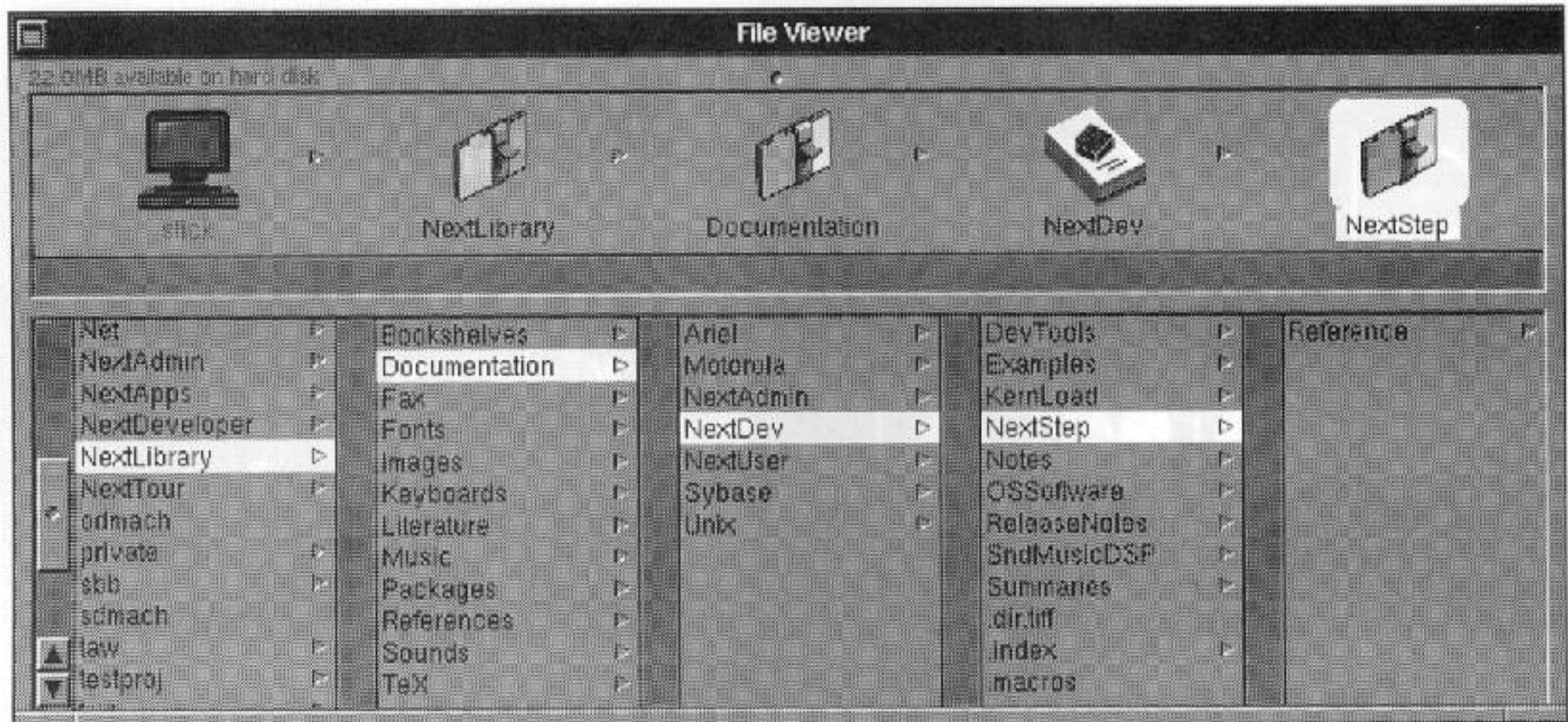


**41:** In this elegant route diagram for the commuter rail system north of Milan, the orientations of the station labels are regularized along the same diagonal used to govern the placement of the lines themselves.

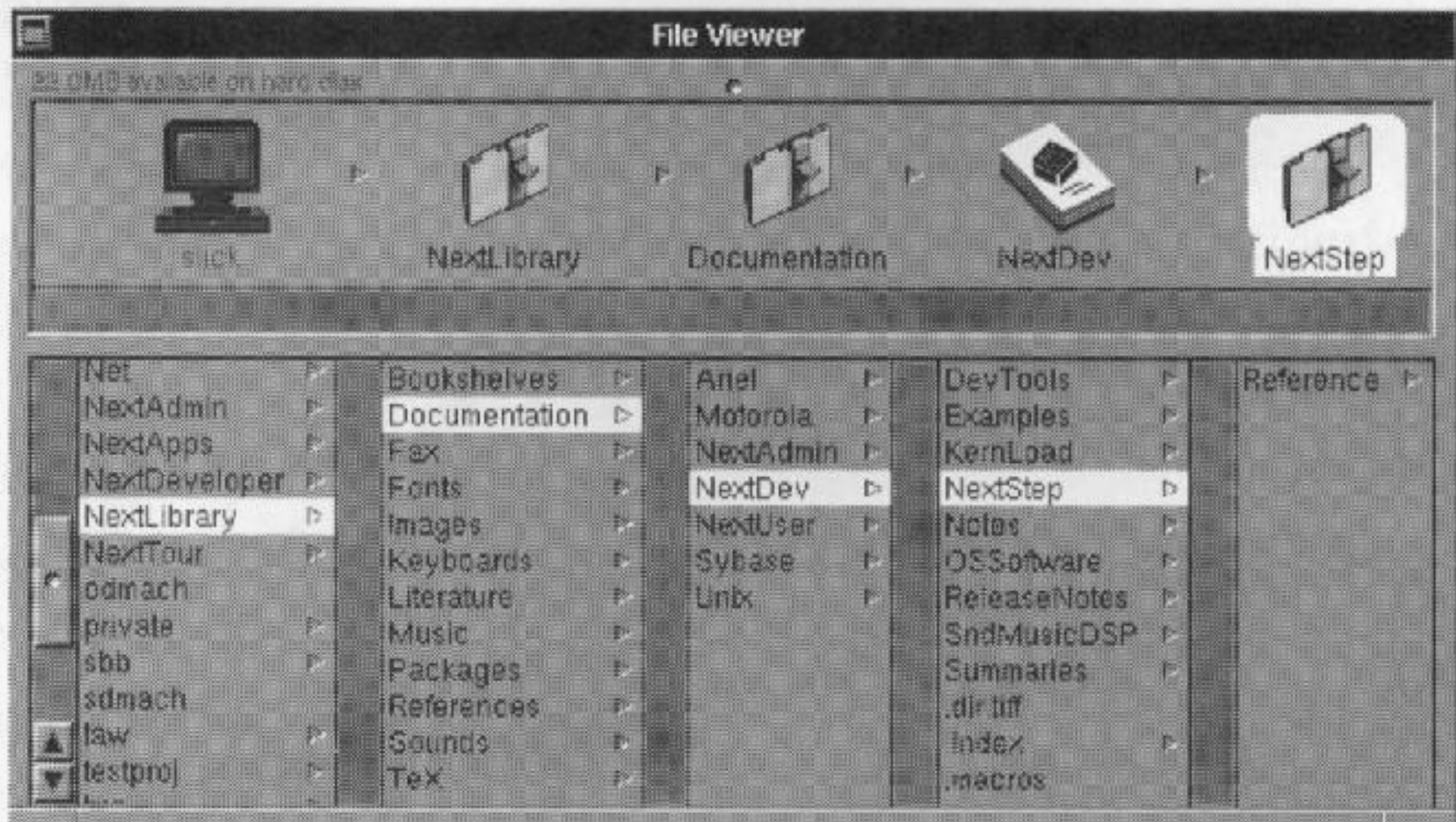




**42:** The signage program designed by Pentagram for the Oxford (England) Museum of Modern Art utilizes the regular spacing of its vertical rules to modulate the sharp contrast between thick and thin elements in order to create a sense of stability in the dynamic visual identity.



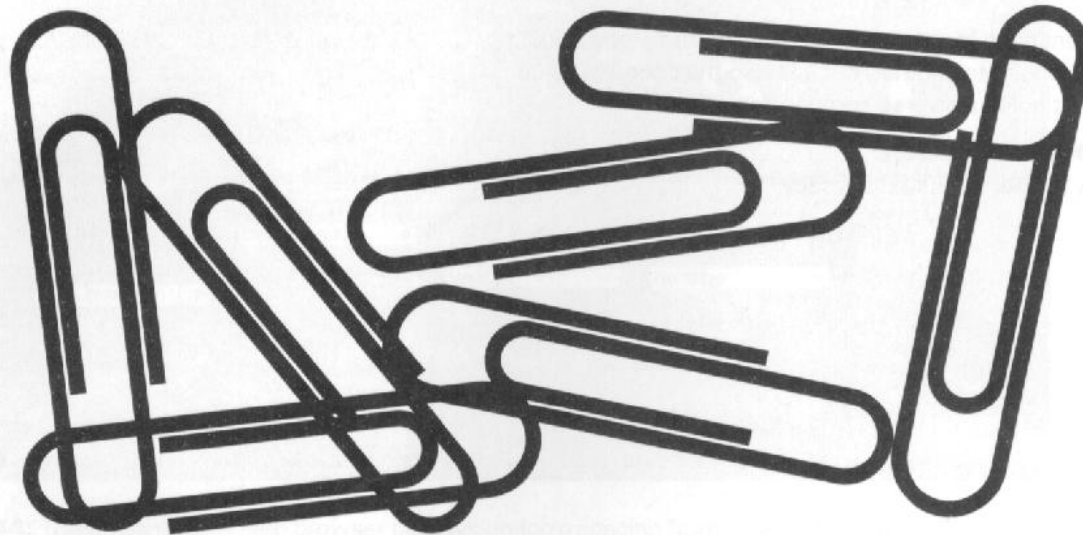
**44:** The elegant NeXTStep browser displays uniform spacing from column to column. As the window is resized, it “snaps” to the modular dimension to maintain constant spacing.



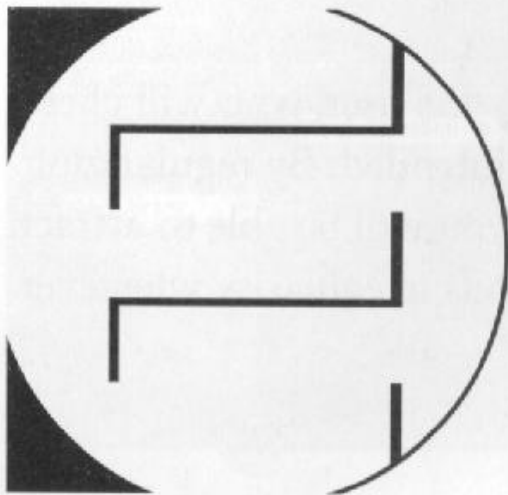
**45:** Reducing column widths to the minimum needed to display the widest item may seem like a good idea, but the irregular pattern that results is visually disorienting. The impact on the readability of the resulting display more than offsets the minor savings in terms of screen real estate that results.

# Combining Elements

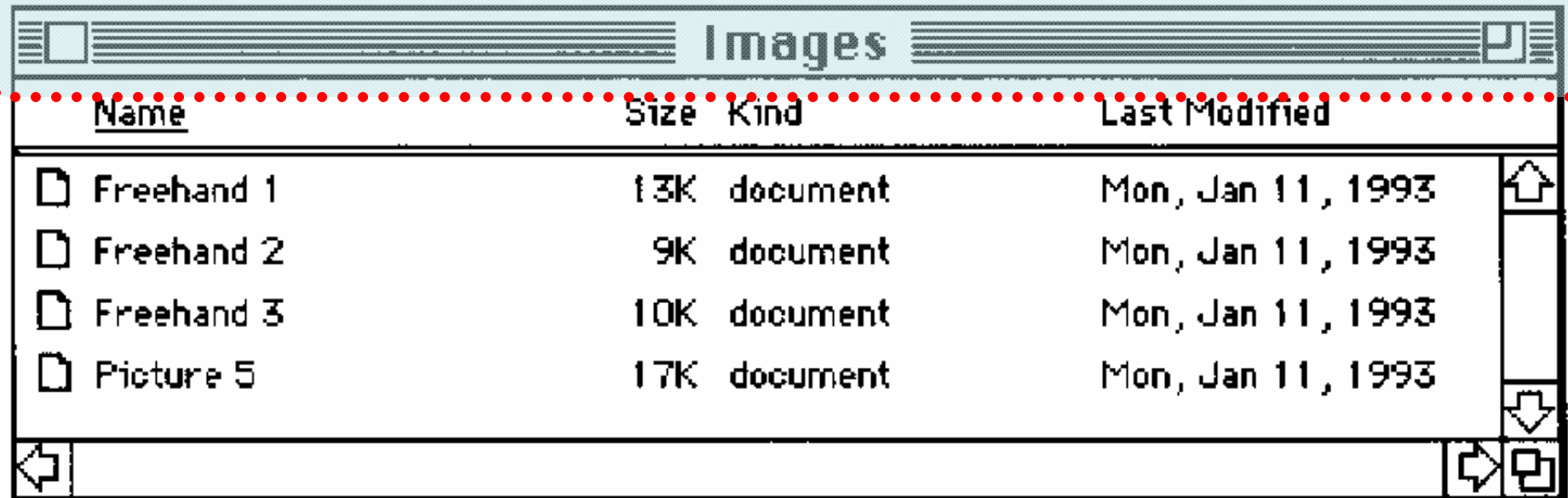
- Review functional role played by each element in a design.
- Find/look for situations where multiple elements are filling the same role.
- Question whether a role could be filled by an adjacent component (possibly after modifications).
- Combine redundant elements into a single, simpler unit.
  - Alternatively, replace it all with a common, unifying higher-level "idiom" designed for the situation.



**46:** The ubiquitous paper clip achieves its marvel of simplicity by combining the tensioning and grasping functions needed by any clipping device within a single wire element. The Norwegian inventor Johann Valer is credited with the original design in 1899.

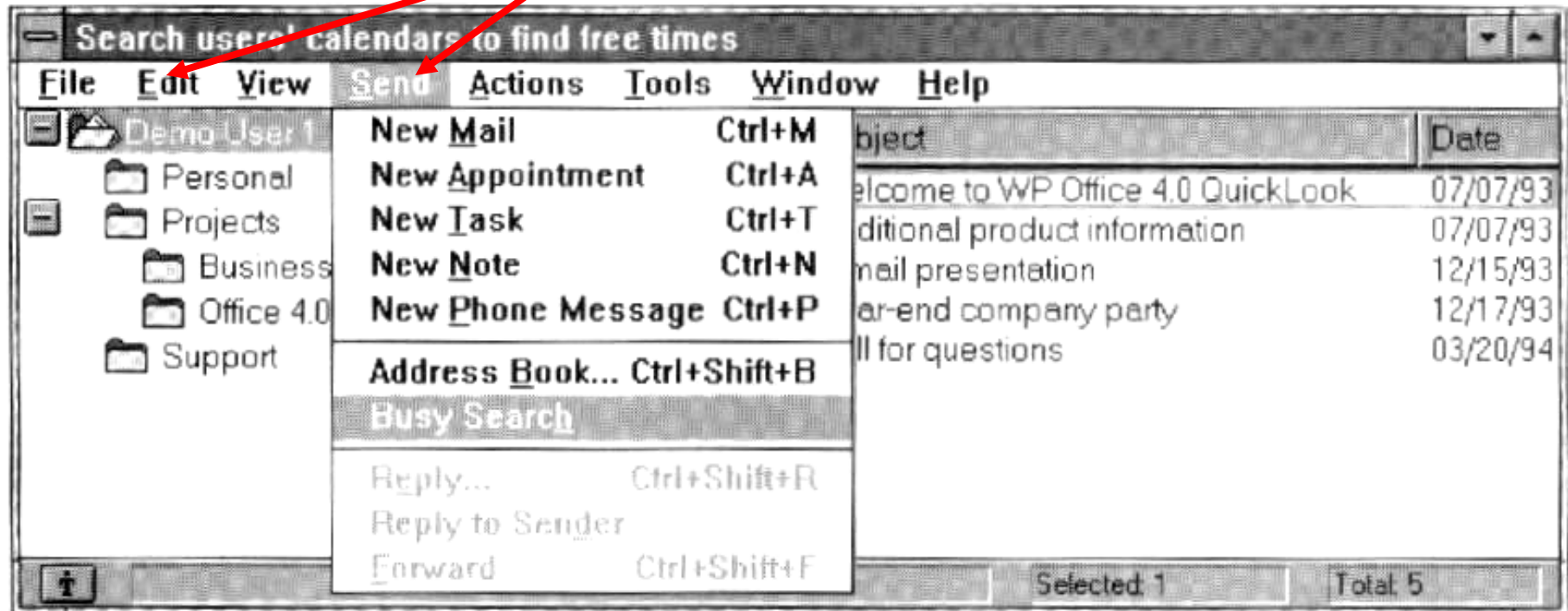


**47:** Individual design elements play multiple roles in these identity marks for the Ohio Department of Education – Office of Sex Equity (a), and the Floral Images florist service.



**48:** Leverage abounds in a window header, which is at once a label, a drag area, and a space within which to present window management controls. The lines used to highlight the active window provide further leverage by affording druggability even as they increase the window's prominence.

## Mutual Exclusiveness



**49:** Leverage in a GUI presentation is often made possible when two aspects of the user's task are mutually exclusive. In this window from WordPerfect Office, the window title is replaced with a string describing the current function as the user browses through a menu.

**Size:**  Dimensions  Scaling  inches

**Uniformity:**  Preserve Proportions

**Height:**    % of original

**Width:**    % of original

**Position:**  Center  Offset  cm

**Left Offset:**    cm

**Top Offset:**    cm

**Size:**  Dimensions  Scaling  inches

Preserve Proportions

% of original height

% of original width

**Position:**  Center  Offset  cm

cm from left

cm from top

**50:** Leverage can often be achieved by exploiting contextual information provided by the display itself. Visual interference between adjacent labels (a) can be reduced by allowing each bold label in the left-hand column to set the context for several subordinate controls on the right (b).



# No Distractions

- Maximum leverage is difficult to obtain and should not detract from the elegance, simplicity, and aesthetics.
- Example: digital watch with too much functionality attached to just two buttons.