

# Visual Design



SWE 432, Fall 2016

Design and Implementation of Software for the Web

**With at least 30 new things you won't believe!**

**#10 will shock you!**

(actually we hope you believe it all)

# Show and Tell: More Airplanes

**A DAY IN THE LIFE OF  
AIR TRAFFIC OVER  
THE CONTINENTAL U. S.**

**ANIMATION CREATED USING**

**FUTURE ATM CONCEPTS  
EVALUATION TOOL  
(FACET)**

**FOR  
AVIATION SYSTEMS DIVISION  
(AF)  
NASA AMES RESEARCH CENTER**

# Today

- Importance of visual design: solving communication problems
- Some guidelines
- A lot of example and anti-examples

**Plus a ton of practical visual guidelines!**



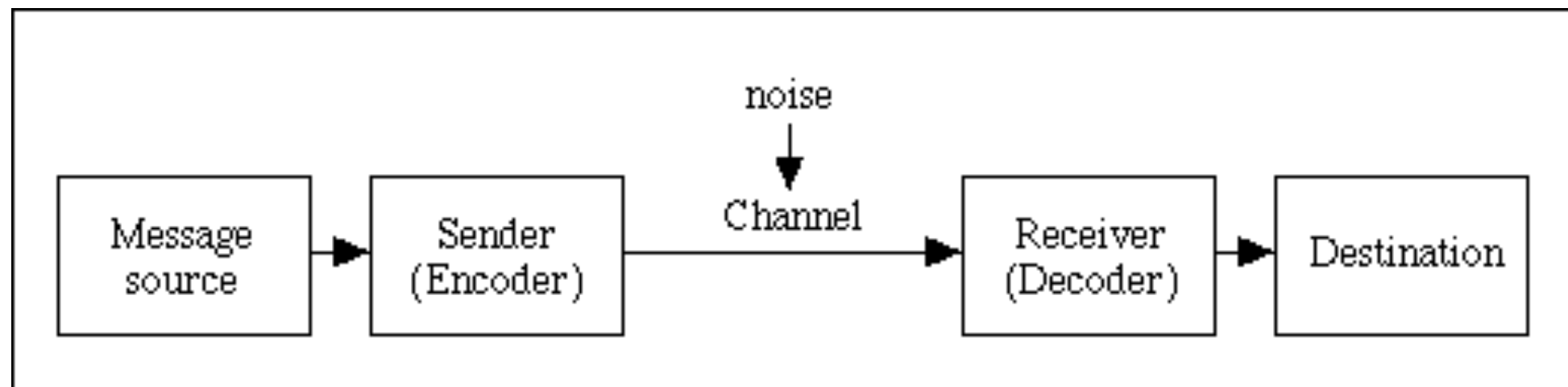
# Visual design

- Solving **communications problems** in ways that are both functionally effective and aesthetically pleasing.
- Creating a visual language containing a vocabulary of design elements characterized by
  - Visual variables—shape, size, position, orientation, color, texture, ...
  - Organizational relations—balance, structure, proportion, ...
  - Visual syntax—rules for assembling elements w/in design language



# Visual design as communication

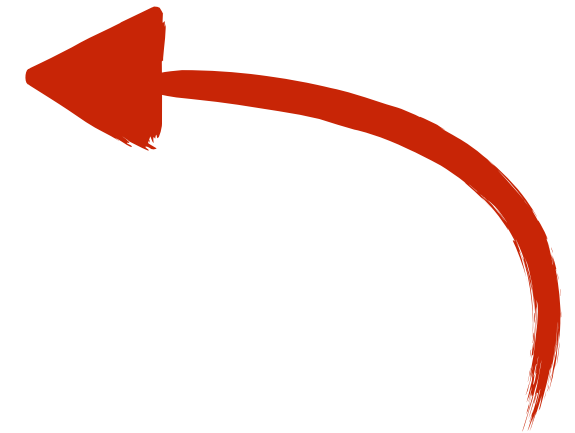
- Goal: **efficiently** & accurately transmit information from system to user
- Visual variables & organization encode information



# Goals for visual design

- Successfully **transmit** information
- Reduce visual **search** time through layout & organization
- Create desired **emotional** reactions through aesthetic choices
- Present coherent & consistent design that reduces ambiguity and potential confusion

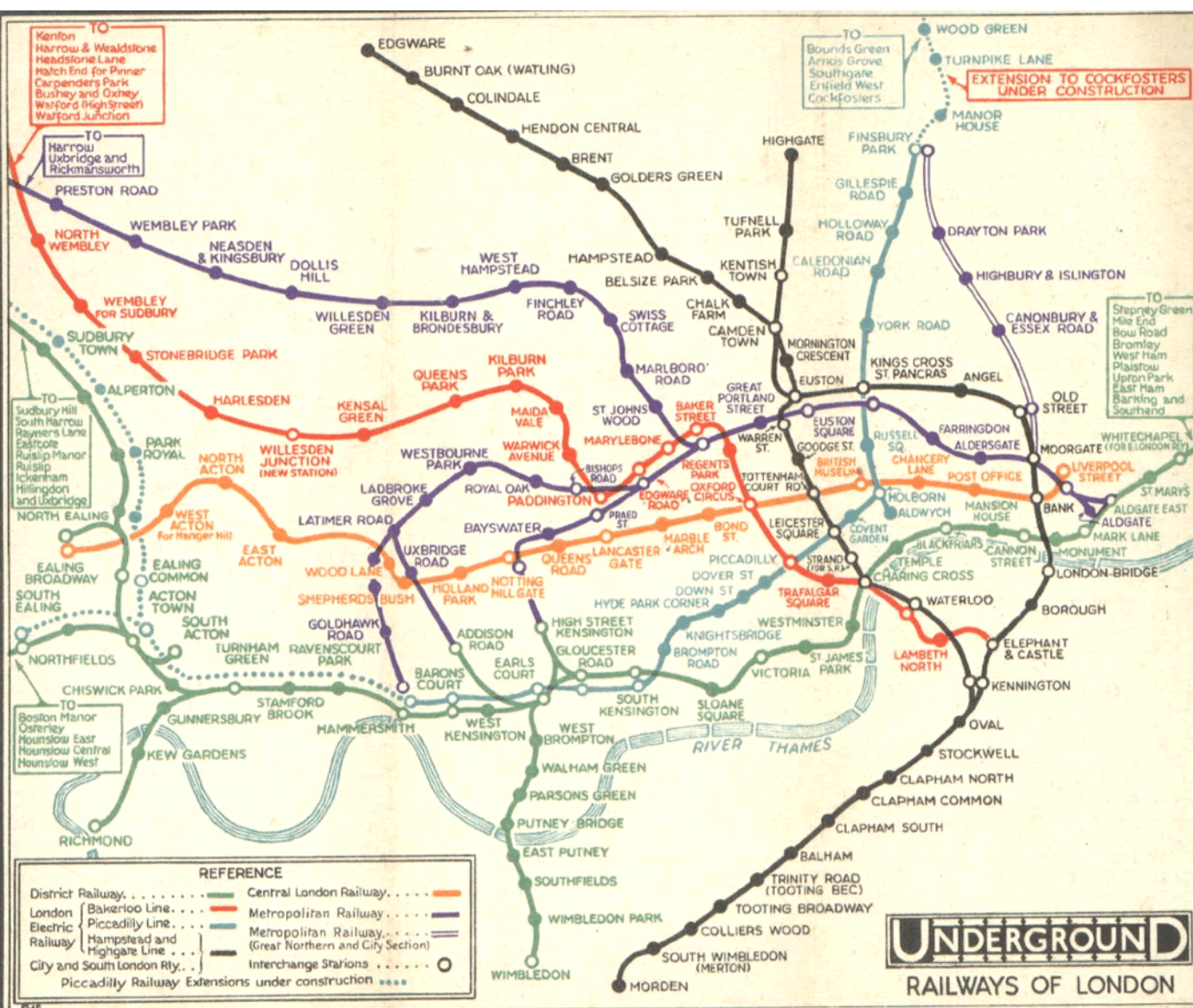
# Guidelines for Visual Design



**Besides using “Marker Felt thin” for callouts!**



# Guidelines for Visual Design



Consider: Two Subway Maps



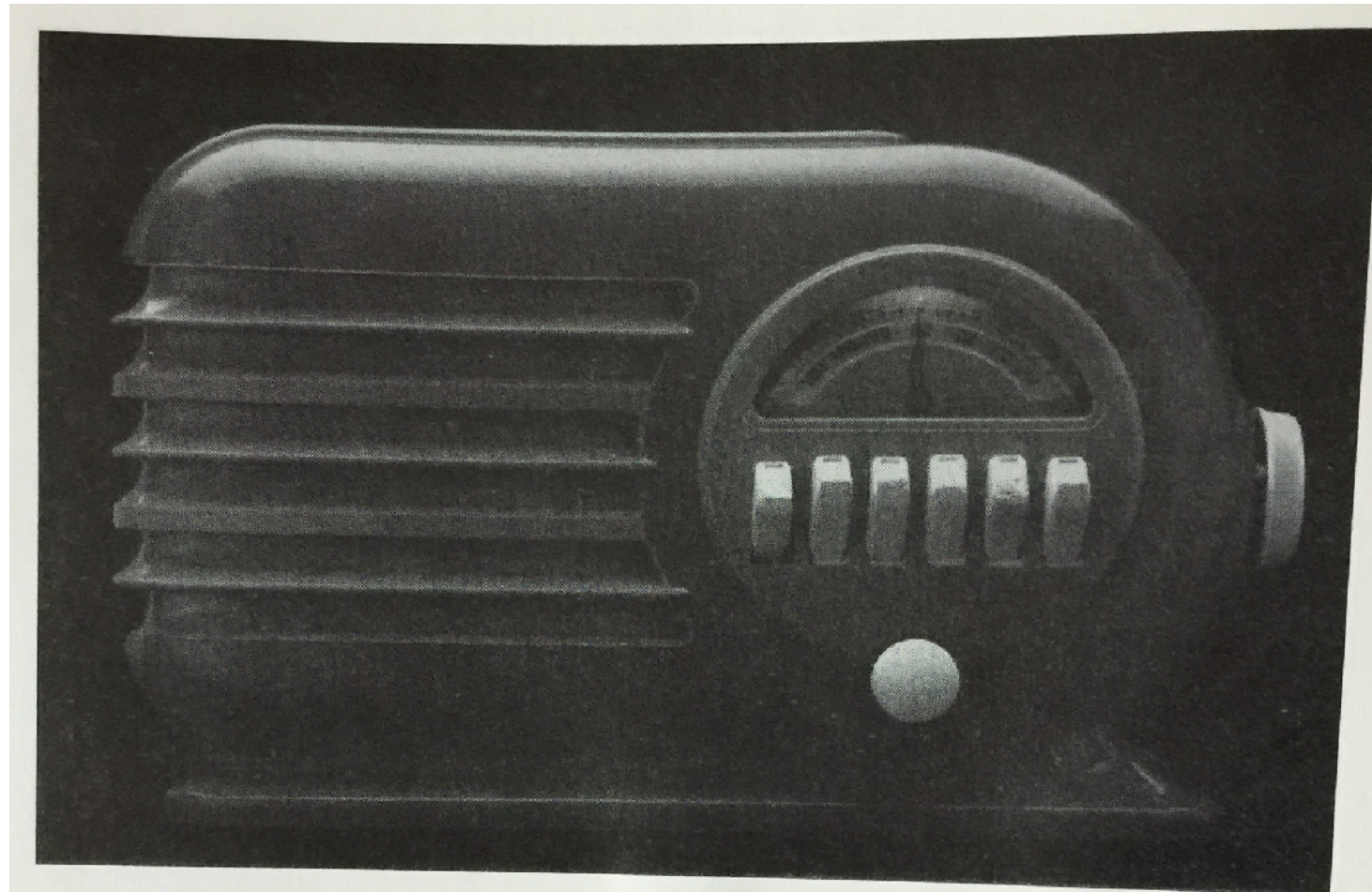
# Elegance & simplicity

- *Elegance*—derives from Latin eligere, to “select carefully”
- **Judicious** selection of elements and economy of expression revealing an intimate understanding of problem
- Removing & combining superfluous elements until only the necessary remains



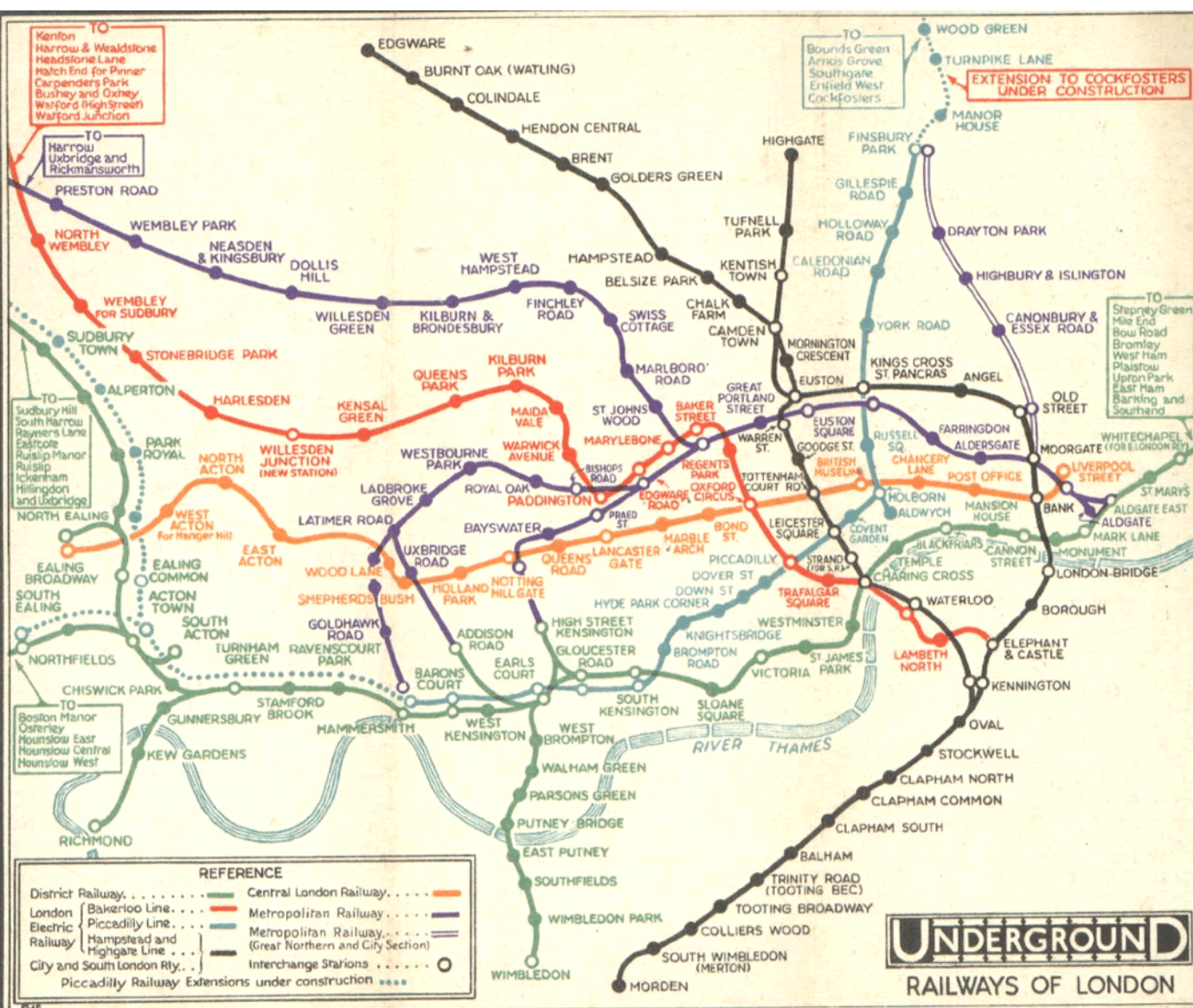
# Benefits of simplicity

- **Approachability** - rapidly understood affordances, allowing glanceable understanding of possible interactions
- **Immediacy** - greater emotional impact because interactions can be quickly understood





# Guidelines for Visual Design



Simplicity in new map: Abstract Geographic Details



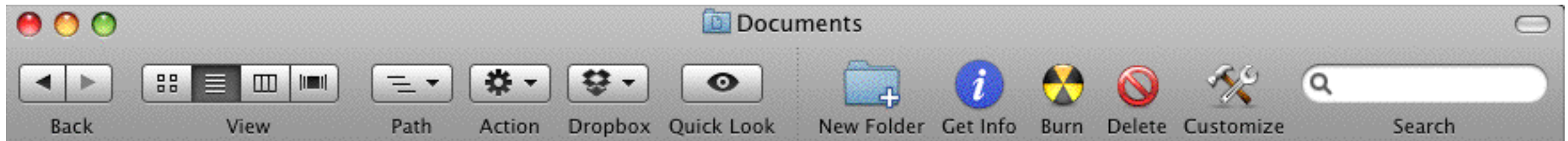
# Reducing a design to its essence

- Make design simple, bold direct by removing inessential details & elements
    - Even essential elements may be suggested
1. Determine essential qualities & information to be conveyed
  2. Critically examine each element & ask how design would suffer without it.
  3. Try removing elements. What happens?

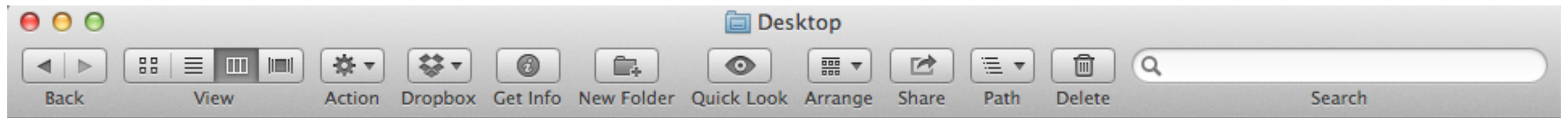




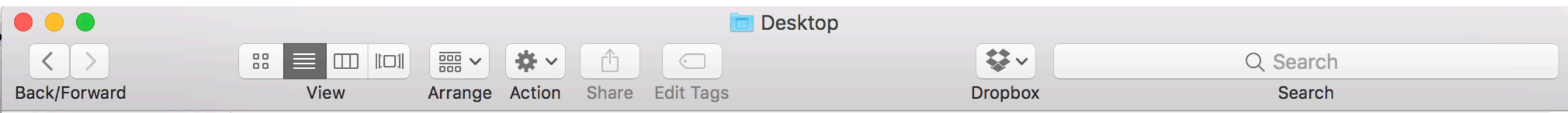
# Trade-offs in Simplicity



OSX c.2010



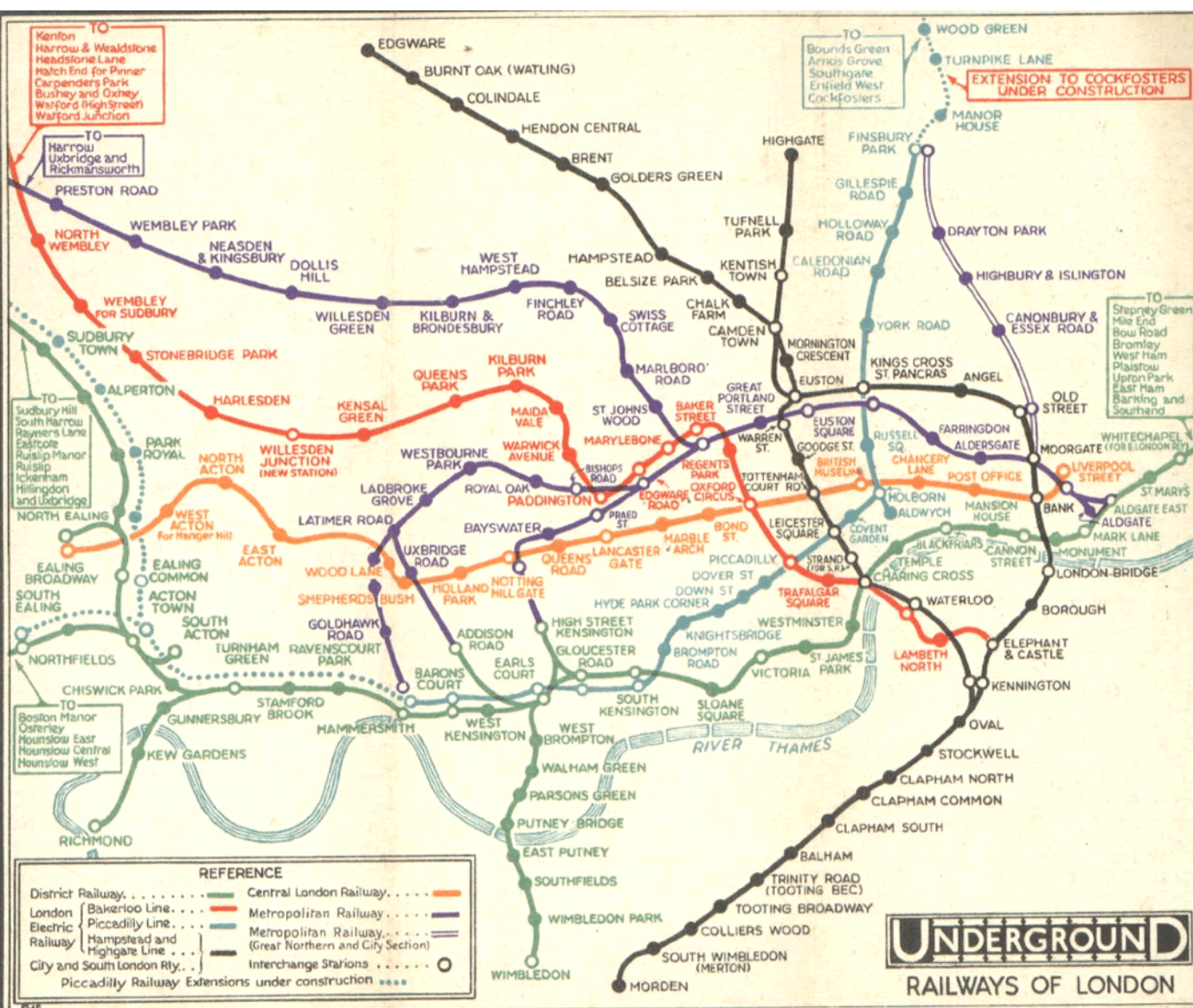
OSX c.2011



OSX c.2016



# Guidelines for Visual Design



Reduction in new map: relative distances don't matter

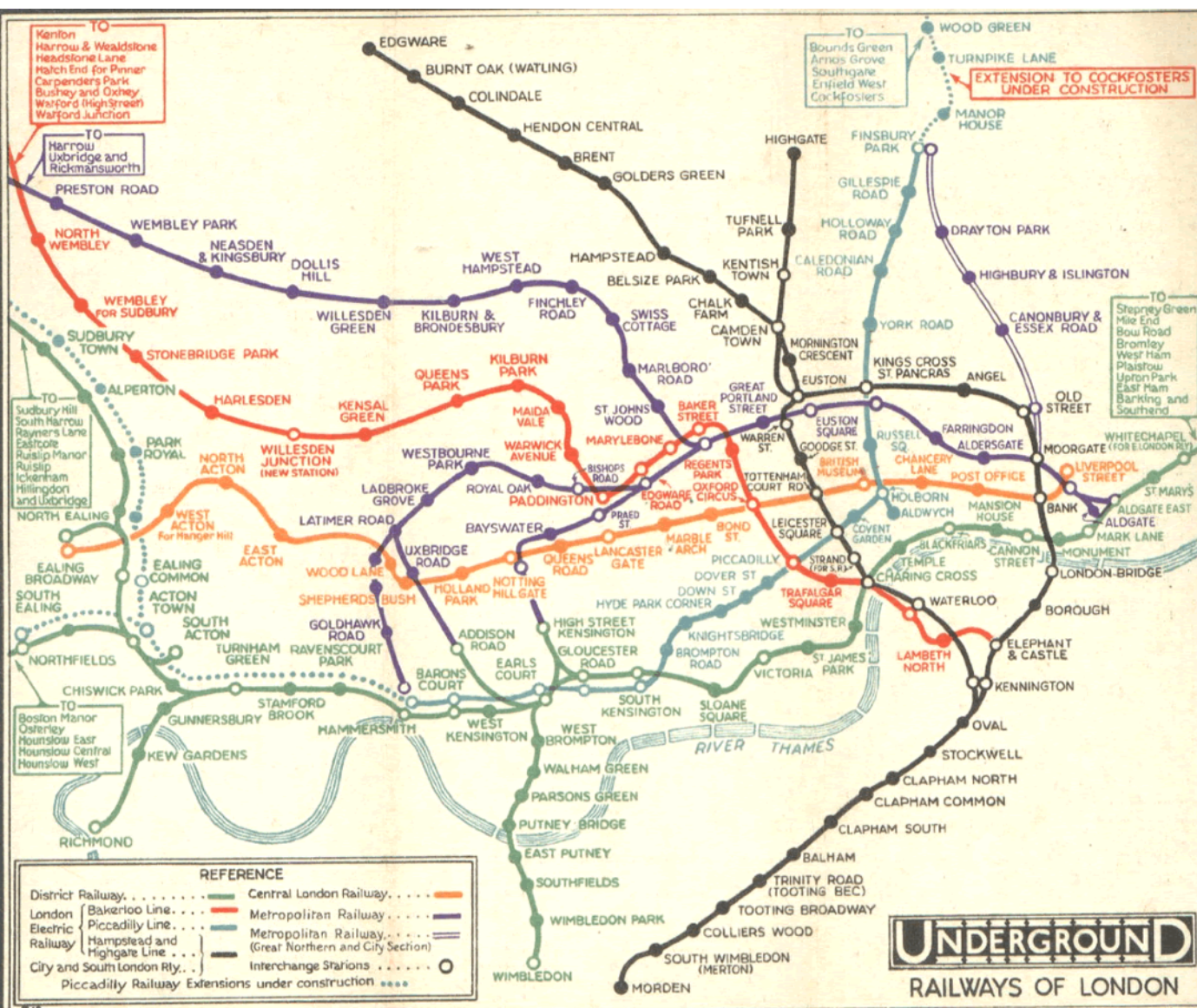


# Regularizing the elements of a design

- Reduce information by repeating elements according to a rule, principle or rhythm
  - Enable user to scan ahead
  - Use irregularity where needed to clarify that something is irregular!
1. Use **regular** geometric forms, simplified controls, muted colors where possible
  2. If multiple similar forms required, make them identical as much as possible in size, shape, color, texture, spacing, alignment
  3. Limit variation in typography to a few sizes
  4. Make sure critical elements intended to stand out are **not** regularized



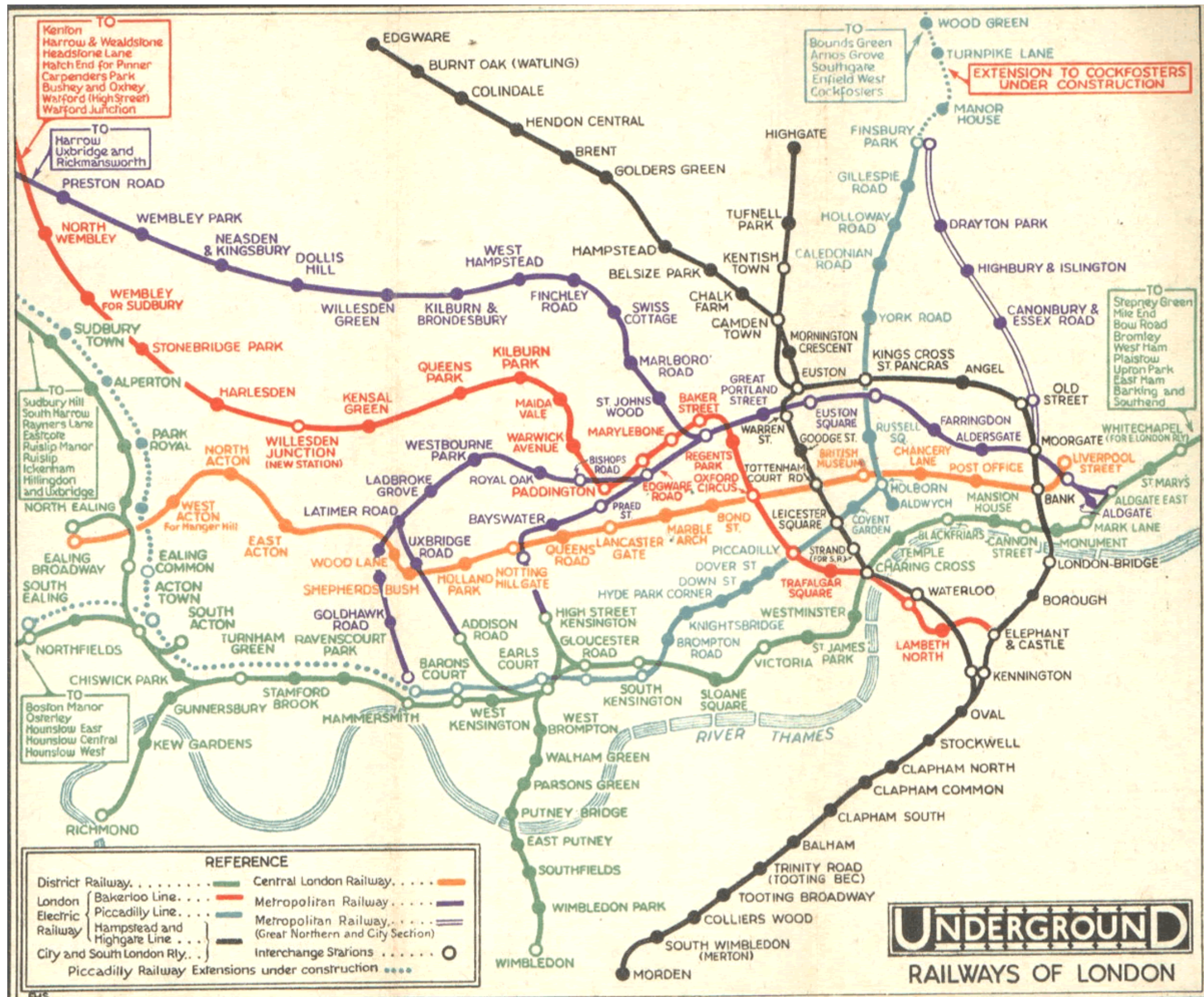
# Guidelines for Visual Design



Regularization in new map: Straight lines result in station names laid out in a line, rather than bouncing around

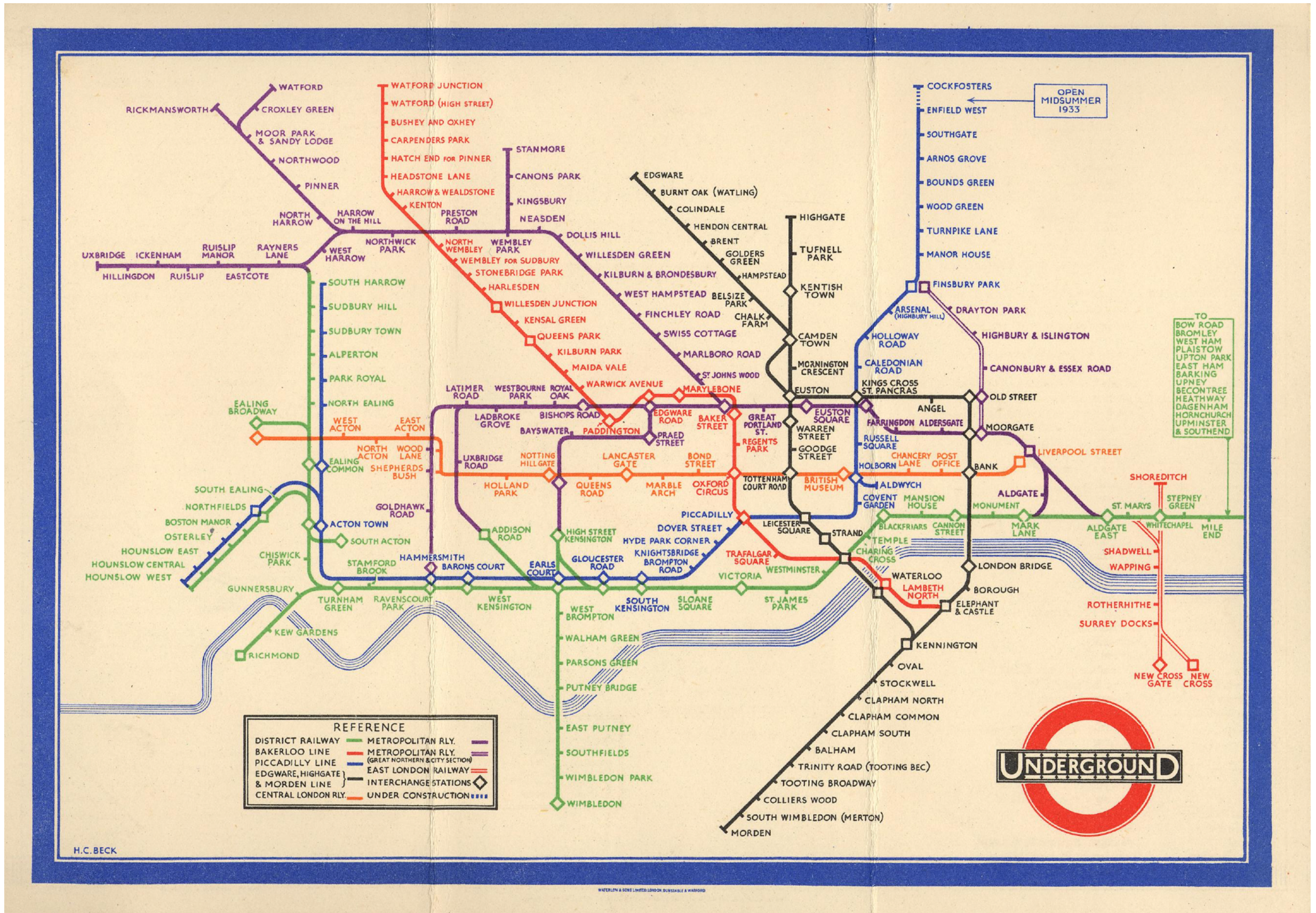


# Original (1920's?) Underground Map



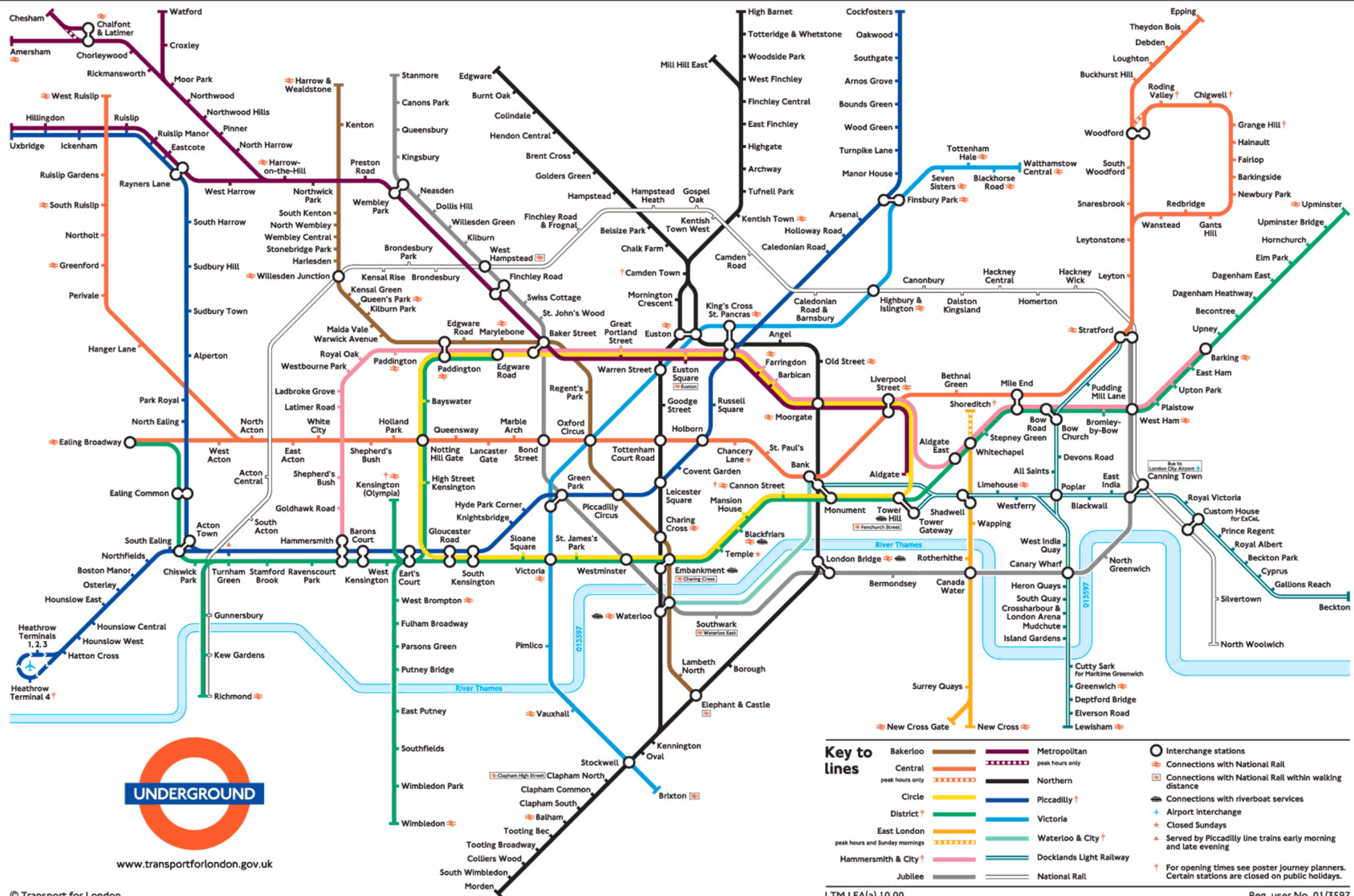


# Beck's 1933 Underground Map



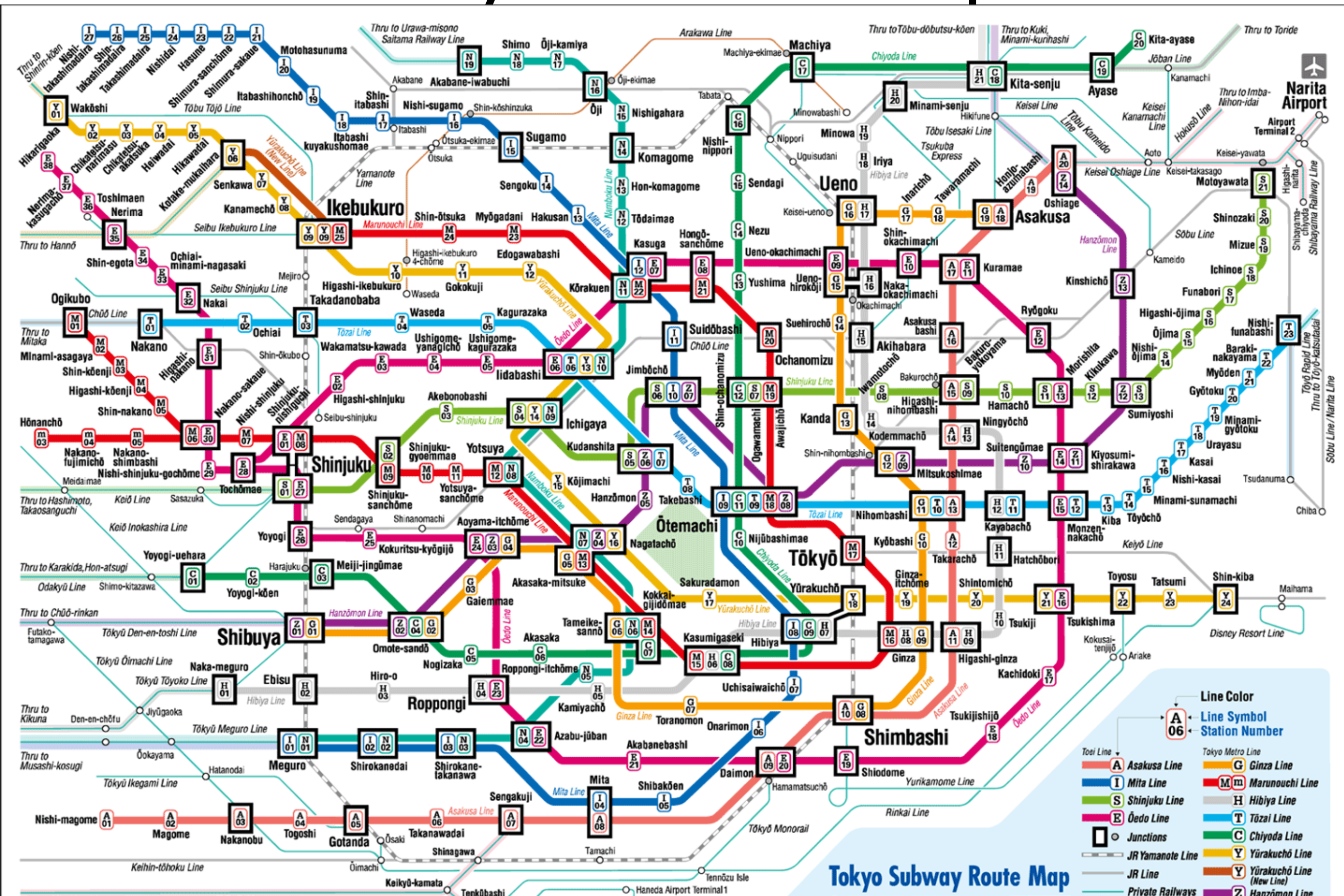


# Today's Underground Map





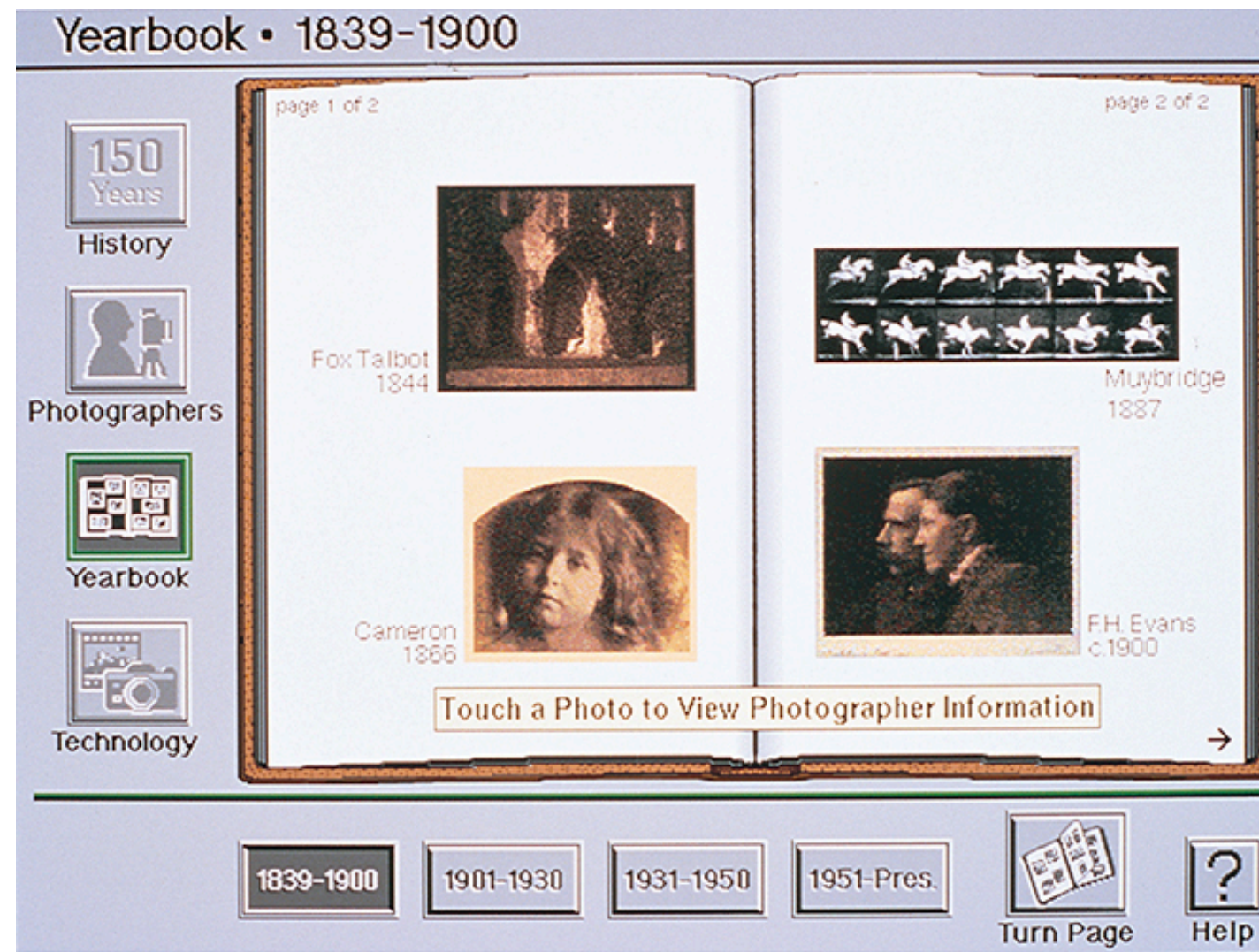
# Tokyo Metro Map





# Error - excessive skeuomorphism

- Skeuomorphism - making visual design resemble reality (like metaphors)
- Excessive skeuomorphism is distracting and wastes potential visual bandwidth that could encode meaningful information





## 6 Notes

 Search<http://ww...> Saturday<http://ww...> Saturday<http://www...> Jun 7

MAY INVOICES May 31

CAPSULES May 31

APRIL INVOICES Apr 30

## It's the City Journal Books Podcast: 21st century conversatio... +

2 days ago

Jun 15 11:41 AM

It's the City Journal Books Podcast: 21st century conversations for 19th century attention spans.

I'm Joel Mathis, contributing editor to Philadelphia Magazine online.

(Ben)

AND we're joined today by Erica GREEDER. She's a senior editor at Texas Monthly—formerly, she was the southwest correspondent for The Economist. Her work has also appeared in the *New York Times*, the *New York Sun*, *The Spectator* (UK), and *More Intelligent Life*. And she is currently the author of **BIG HOT CHEAP AND RIGHT: WHAT AMERICA CAN LEARN FROM THE STRANGE GENIUS OF TEXAS**. Welcome to the podcast

What CAN America learn from the strange genius of Texas?

“Oh, that’s what our TodoApp was doing wrong! It didn’t have enough leather!”

you're familiar with the "Texas on the Brink" booklet put out by the state's Democrats in 2011, but let me kind of go through the quick litany here: Texas ranks 50th among the states in the percentage of its population 25 or older





Calendars



Invitations (0)

Day

Week

Month

Year

List



Search

July 2013

Wednesday

July 3



Ted Faszter's Birthday

all-day



Mike Yutzy's Birthday

all-day

Thursday

July 4



Cherie Yvette's Birthday

all-day

Monday

July 15



Allie Johnson's Birthday

all-day



Dr Stoll

8:45 AM to 9:45 AM

Thursday

July 18



Richard Gintowt's Birthday

all-day



Jacks birthday

11 AM to Noon

Monday

July 22



Alisha Campbell's Birthday

all-day

Saturday

July 27

## Ted Faszter's Birthday

Details

Wednesday, July 3, 2013

all-day events



Mike Yutzy's Birthday



Ted Faszter's Birthday

2 PM

3 PM

4 PM

5 PM

6 PM

7 PM

8 PM

9 PM

Today

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Aug





| Sun   | Mon   | Tue  | Wed   | Thu                              | Fri | Sat |
|---|---|--|---|----------------------------------|-----|-----|
|   | <div><div></div><div>SWE 432</div></div>                                | Noon   |   |                                  |     |     |
| 20 <div><div></div><div>SWE meeting</div></div> | 21 <div><div>11 AM</div><div>Office Hours</div><div>SWE 432</div></div> | 22 <div><div>10:30 AM</div><div>Noon</div></div> | 23 <div><div></div><div>SWE 432</div></div> | 24 <div><div>Noon</div></div>    | 25  | 26  |
| 27  | 28 <div><div>Office Hours</div><div>SWE 432</div></div>                 | 29 <div><div>10:30 AM</div><div>Noon</div></div> | 30  |                                  |     |     |
|   |   |  |   | Dec 1 <div><div>Noon</div></div> | 2   | 3   |
| 4   | 5 <div><div>Office Hours</div><div>SWE 432</div></div>                  | 6 <div><div>10:30 AM</div><div>Noon</div></div>  | 7 <div><div></div><div>SWE 432</div></div>  | 8 <div><div>Noon</div></div>     | 9   | 10  |
| 11  | 12  | 13 <div><div>10:30 AM</div></div>                | 14  | 15                               | 16  | 17  |

# Scale, Contrast, & Proportion

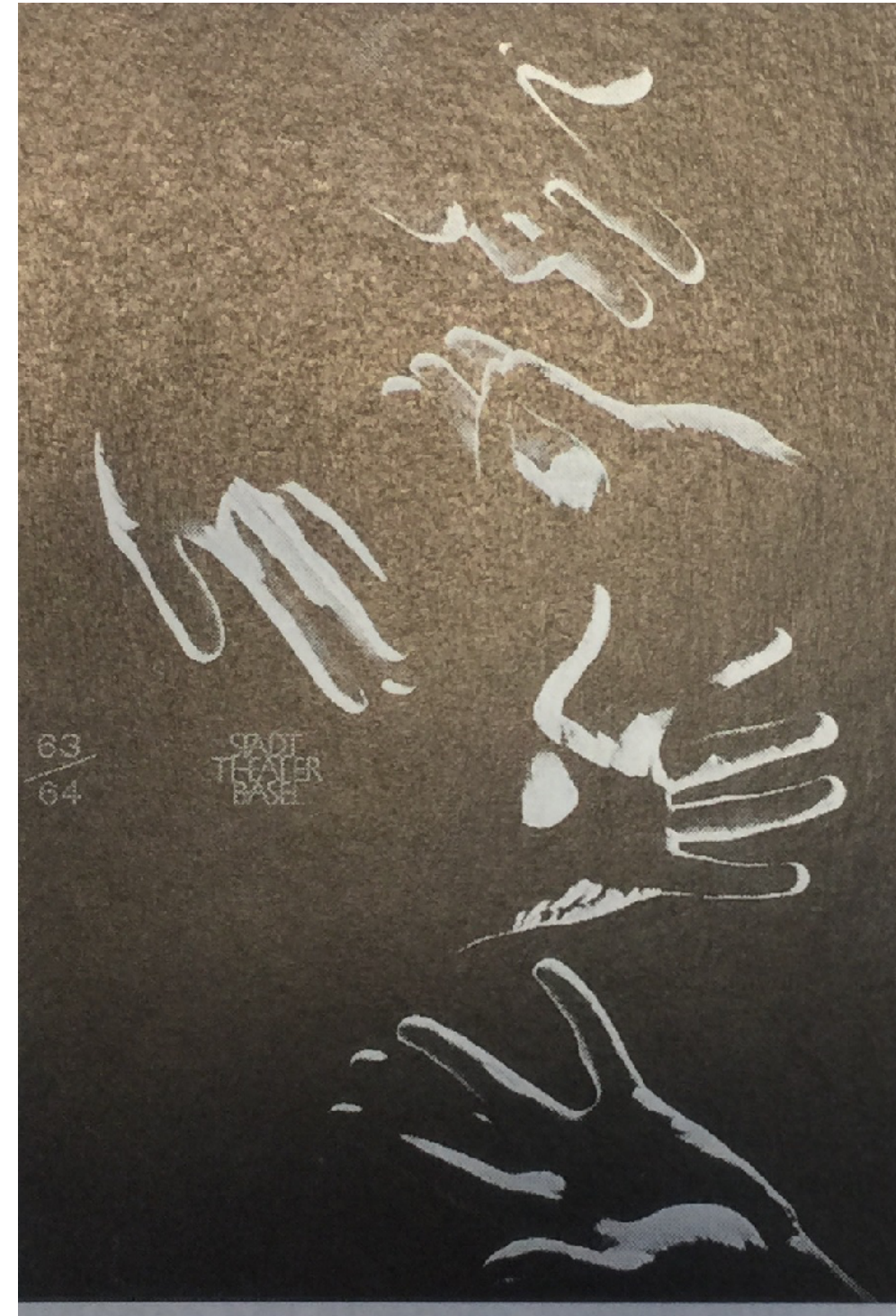
# Scale, contrast, & proportion

*Information consists of differences that make a difference.* (Edward Tufte, Envisioning Information)

Individual visual variables of design that encode information

# Terminology

- Scale - **relative** size or magnitude of element in comparison to related elements
- Contrast - visually noticeable **distinctions** along a common visual dimension
- Proportion - ratio and **balance** between elements
- Emphasis - contrasts can emphasize important elements or areas & add visual **interest** by creating tension & drama





# Train Tables: Which is Better?

| Train No.                                      | 3701                    | XM<br>3301              | 3801                  | A<br>67                 | 3<br>3803              | 3<br>3201               | A3<br>51                | 3<br>3703             | 3<br>3807             | 3<br>3203               | A3<br>61                | 3<br>3809             | A3<br>47                | 3<br>3901               | 3<br>3811             | 3<br>3903               | 3<br>3813             | 3205                    | 3815                   | 3817                    | 3819                    | 3207                    | 3821                    | 3823                    | 3825                    | 3209                    | 3827                    | 3829                  | 3831                   |
|--|-------------------------|-------------------------|-----------------------|-------------------------|------------------------|-------------------------|-------------------------|-----------------------|-----------------------|-------------------------|-------------------------|-----------------------|-------------------------|-------------------------|-----------------------|-------------------------|-----------------------|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-----------------------|------------------------|
| New York, N.Y.                                 | A.M.<br>12.10           | A.M.<br>12.40           | A.M.<br>1.30          | A.M.<br>3.52            | A.M.<br>4.50           | A.M.<br>6.10            | A.M.<br>6.25            | A.M.<br>6.35          | A.M.<br>6.50          | A.M.<br>7.10            | A.M.<br>7.30            | A.M.<br>7.33          | A.M.<br>7.45            | A.M.<br>7.50            | A.M.<br>8.05          | A.M.<br>8.25            | A.M.<br>8.40          | A.M.<br>8.50            | A.M.<br>9.10           | A.M.<br>9.40            | A.M.<br>10.10           | A.M.<br>10.25           | A.M.<br>10.40           | A.M.<br>11.10           | A.M.<br>11.40           | A.M.<br>11.50           | P.M.<br>12.10           | P.M.<br>12.40         | P.M.<br>1.10           |
| Newark, N.J. P<br>North Elizabeth<br>Elizabeth | 12.24<br>.....<br>12.31 | 12.55<br>.....<br>1.03  | 1.44<br>.....<br>1.51 | 4.07<br>.....<br>.....  | 5.04<br>.....<br>5.11  | 6.24<br>.....<br>6.31   | 6.38<br>.....<br>.....  | 6.49<br>.....<br>6.56 | 7.04<br>.....<br>7.11 | 7.24<br>7.30<br>7.32    | 7.45<br>.....<br>.....  | 7.47<br>.....<br>7.54 | 7.59<br>.....<br>.....  | 8.04<br>8.10<br>8.13    | 8.19<br>.....<br>8.26 | 8.39<br>.....<br>8.46   | 8.54<br>.....<br>9.01 | 9.04<br>.....<br>9.11   | 9.24<br>.....<br>9.31  | 9.54<br>10.24<br>10.31  | 10.24<br>10.39<br>10.46 | 10.54<br>10.54<br>11.01 | 11.24<br>11.24<br>11.31 | 11.54<br>11.54<br>12.01 | 12.04<br>12.04<br>12.11 | 12.24<br>12.24<br>12.31 | 12.54<br>12.54<br>1.01  | 1.24<br>.....<br>1.31 |                        |
| Linden<br>North Rahway<br>Rahway               | 12.36<br>.....<br>12.40 | .....<br>.....<br>1.11  | 1.56<br>.....<br>2.00 | .....<br>.....<br>..... | 5.16<br>.....<br>5.20  | 6.36<br>.....<br>6.40   | .....<br>.....<br>..... | 7.01<br>7.03<br>7.06  | 7.15<br>.....<br>7.20 | 7.37<br>7.39<br>7.42    | .....<br>.....<br>..... | 7.59<br>.....<br>8.03 | .....<br>.....<br>..... | 8.18<br>8.20<br>8.24    | 8.31<br>8.33<br>8.36  | 8.51<br>8.54<br>8.57    | 9.06<br>.....<br>9.10 | .....<br>.....<br>9.18  | 9.36<br>.....<br>9.40  | 10.06<br>.....<br>10.10 | 10.36<br>.....<br>10.40 | .....<br>.....<br>10.53 | 11.06<br>.....<br>11.10 | 11.36<br>.....<br>11.40 | 12.06<br>.....<br>12.10 | .....<br>.....<br>12.18 | 12.36<br>.....<br>12.40 | 1.06<br>.....<br>1.10 | 1.36<br>.....<br>1.40  |
| Metro Park (Iselin)<br>Metuchen                | 12.44<br>12.48          | .....<br>.....          | 2.04<br>2.08          | 4.26<br>.....           | 5.24<br>5.28           | .....<br>.....          | 6.56<br>.....           | 7.10<br>7.14          | 7.25<br>7.29          | .....<br>.....          | 8.04<br>.....           | 8.07<br>8.11          | 8.15<br>.....           | .....<br>.....          | 8.40<br>8.44          | .....<br>.....          | 9.14<br>9.18          | .....<br>.....          | 9.44<br>9.48           | 10.14<br>10.18          | 10.44<br>10.48          | .....<br>.....          | 11.14<br>11.18          | 11.44<br>11.48          | 12.14<br>12.18          | .....<br>.....          | 12.44<br>12.48          | 1.14<br>1.18          | 1.44<br>1.48           |
| Edison<br>New Brunswick<br>Jersey Avenue       | 12.51<br>12.55<br>1.02  | .....<br>.....<br>..... | 2.11<br>2.15<br>2.18  | .....<br>.....<br>..... | .....<br>5.35<br>..... | .....<br>.....<br>..... | .....<br>7.05<br>.....  | 7.17<br>7.21<br>7.28  | 7.32<br>7.35<br>..... | .....<br>.....<br>..... | .....<br>.....<br>..... | 8.14<br>8.18<br>8.21  | .....<br>8.25<br>.....  | .....<br>.....<br>..... | 8.47<br>8.50<br>..... | .....<br>.....<br>..... | 9.21<br>9.25<br>9.28  | .....<br>.....<br>..... | .....<br>9.54<br>..... | 10.21<br>10.25<br>10.28 | .....<br>.....<br>..... | .....<br>.....<br>..... | 11.21<br>11.25<br>11.28 | .....<br>11.54<br>..... | 12.21<br>12.25<br>12.28 | .....<br>.....<br>..... | .....<br>12.54<br>..... | 1.21<br>1.25<br>1.28  | .....<br>1.54<br>..... |
| Princeton Jct. S<br>Trenton, N.J.              | .....<br>.....          | .....<br>.....          | 2.31<br>2.42          | .....<br>4.58           | 5.50<br>6.03           | .....<br>.....          | 7.19<br>7.28            | .....<br>.....        | 7.50<br>8.01          | .....<br>.....          | .....<br>8.31           | 8.34<br>8.44          | 8.41<br>8.52            | .....<br>.....          | 9.05<br>9.16          | .....<br>.....          | 9.41<br>9.52          | .....<br>.....          | 10.09<br>10.15         | 10.41<br>10.52          | 11.09<br>11.19          | .....<br>.....          | 11.41<br>11.52          | 12.09<br>12.19          | 12.41<br>12.52          | .....<br>.....          | 1.09<br>1.22            | 1.41<br>1.52          | 2.09<br>2.20           |

|                                 |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |       |  |  |  |
|---------------------------------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|--|--|--|
|                                 | am ●  |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |       |  |  |  |
| New York, NY                    | 12.10 | 12.40 | 1.30 | 3.52 | 4.50 | 6.10 | 6.25 | 6.35 | 6.50 | 7.10 | 7.30 | 7.33 | 7.45 | 7.50 | 8.05 | 8.25 | 8.40 | 8.50 | 9.10  | 9.40  | 10.10 | 10.25 | 10.40 | 11.10 | 11.40 |  |  |  |
| Newark, NJ <sup>P</sup>         | 12.24 | 12.55 | 1.44 | 4.07 | 5.04 | 6.24 | 6.38 | 6.49 | 7.04 | 7.24 | 7.45 | 7.47 | 7.59 | 8.04 | 8.19 | 8.39 | 8.54 | 9.04 | 9.24  | 9.54  | 10.24 | 10.39 | 10.54 | 11.24 | 11.54 |  |  |  |
| North Elizabeth                 |       |       |      |      |      |      |      |      |      | 7.30 |      |      |      | 8.10 |      |      |      |      |       |       |       |       |       |       |       |  |  |  |
| Elizabeth                       | 12.31 | 1.03  | 1.51 |      | 5.11 | 6.31 |      | 6.56 | 7.11 | 7.32 |      | 7.54 |      | 8.13 | 8.26 | 8.46 | 9.01 | 9.11 | 9.31  | 10.01 | 10.31 | 10.46 | 11.01 | 11.31 | 12.01 |  |  |  |
| Linden                          | 12.36 |       | 1.56 |      | 5.16 | 6.36 |      | 7.01 | 7.15 | 7.37 |      | 7.59 |      | 8.18 | 8.31 | 8.51 | 9.06 |      | 9.36  | 10.06 | 10.36 |       | 11.06 | 11.36 | 12.06 |  |  |  |
| North Rahway                    |       |       |      |      |      |      |      | 7.03 |      | 7.39 |      |      |      | 8.20 | 8.33 | 8.54 |      |      |       |       |       |       |       |       |       |  |  |  |
| Rahway                          | 12.40 | 1.11  | 2.00 |      | 5.20 | 6.40 |      | 7.06 | 7.20 | 7.42 |      | 8.03 |      | 8.24 | 8.36 | 8.57 | 9.10 | 9.18 | 9.40  | 10.10 | 10.40 | 10.53 | 11.10 | 11.40 | 12.10 |  |  |  |
| Metro Park (Iselin)             | 12.44 |       | 2.04 | 4.26 | 5.24 |      | 6.56 | 7.10 | 7.25 |      | 8.04 | 8.07 | 8.15 |      | 8.40 |      | 9.14 |      | 9.44  | 10.14 | 10.44 |       | 11.14 | 11.44 | 12.14 |  |  |  |
| Metuchen                        | 12.48 |       | 2.08 |      | 5.28 |      |      | 7.14 | 7.29 |      |      | 8.11 |      |      | 8.44 |      | 9.18 |      | 9.48  | 10.18 | 10.48 |       | 11.18 | 11.48 | 12.18 |  |  |  |
| Edison                          | 12.51 |       | 2.11 |      |      |      |      | 7.17 | 7.32 |      |      | 8.14 |      |      | 8.47 |      | 9.21 |      |       | 10.21 |       |       | 11.21 |       | 12.21 |  |  |  |
| New Brunswick                   | 12.55 |       | 2.15 |      | 5.35 |      | 7.05 | 7.21 | 7.35 |      |      | 8.18 | 8.25 |      | 8.50 |      | 9.25 |      | 9.54  | 10.25 | 10.54 |       | 11.25 | 11.54 | 12.25 |  |  |  |
| Jersey Avenue                   | 1.02  |       | 2.18 |      |      |      |      | 7.28 |      |      |      | 8.21 |      |      |      |      | 9.28 |      |       | 10.28 |       |       | 11.28 |       | 12.28 |  |  |  |
| Princeton Junction <sup>S</sup> |       |       | 2.31 |      | 5.50 |      | 7.19 |      | 7.50 |      |      | 8.34 | 8.41 |      | 9.05 |      | 9.41 |      | 10.09 | 10.41 | 11.09 |       | 11.41 | 12.09 | 12.41 |  |  |  |
| Trenton, NJ                     |       |       | 2.42 | 4.58 | 6.03 |      | 7.28 |      | 8.01 |      | 8.31 | 8.44 | 8.52 |      | 9.16 |      | 9.52 |      | 10.19 | 10.52 | 11.19 |       | 11.52 | 12.19 | 12.52 |  |  |  |
| TRAIN NUMBER                    | 3701  | 3301  | 3801 | 67   | 3803 | 3201 | 51   | 3703 | 3807 | 3203 | 61   | 3809 | 47   | 3901 | 3811 | 3903 | 3813 | 3205 | 3815  | 3817  | 3819  | 3207  | 3821  | 3823  | 3825  |  |  |  |
| NOTES                           |       | XM    |      | ➡    | 3    | 3    | ➡3   | 3    | 3    | 3    | ➡3   | 3    | ➡3   | 3    | 3    | 3    | 3    |      |       |       |       |       |       |       |       |  |  |  |



# Principles

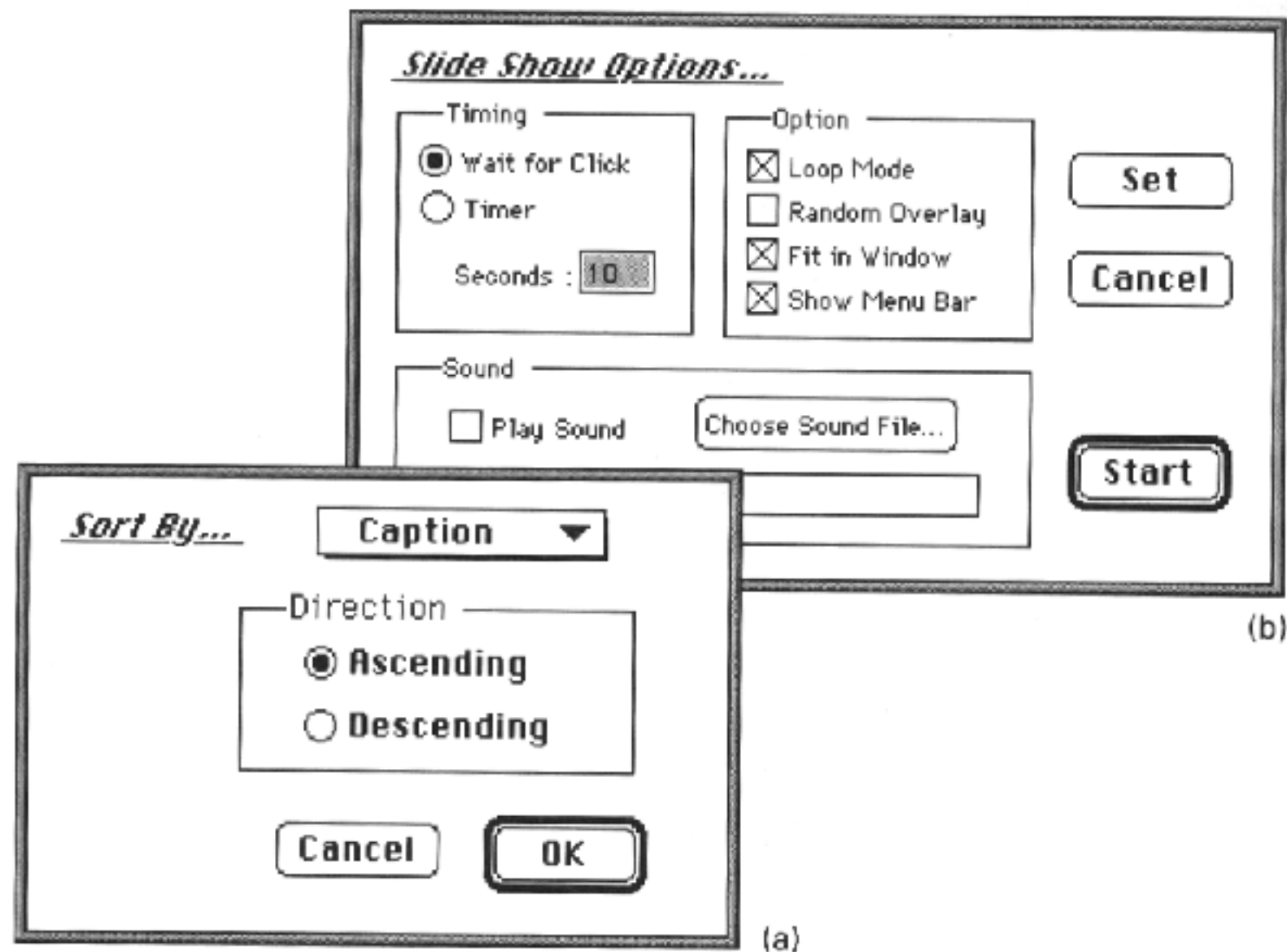
- Clarity - contrasts should be clear and easily differentiated, not slight and subtle
- Harmony - proportions and ratios should be harmonious
- Activity - use contrasts to maintain orientation & context within design
- Restraint - contrasts should be conscious, strong, few in number, and never overwhelming

# Error: Lack of Clarity



# Error - excessive typographic contrasts

5 different types sizes in 3 different fonts (!!)





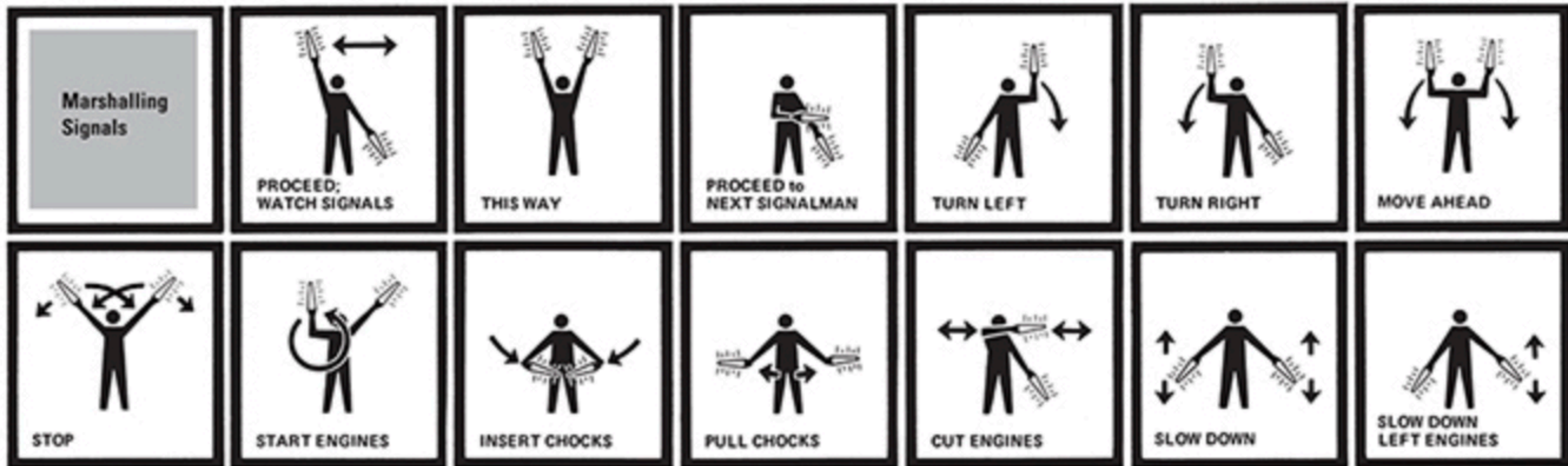
# Layers

- Contrasting color, value, texture can segregate information into separate layers
- Supports **overlapping** information in displays, allowing selective processing of specific sets of elements
- Allows different layers to be read and interpreted **separately**





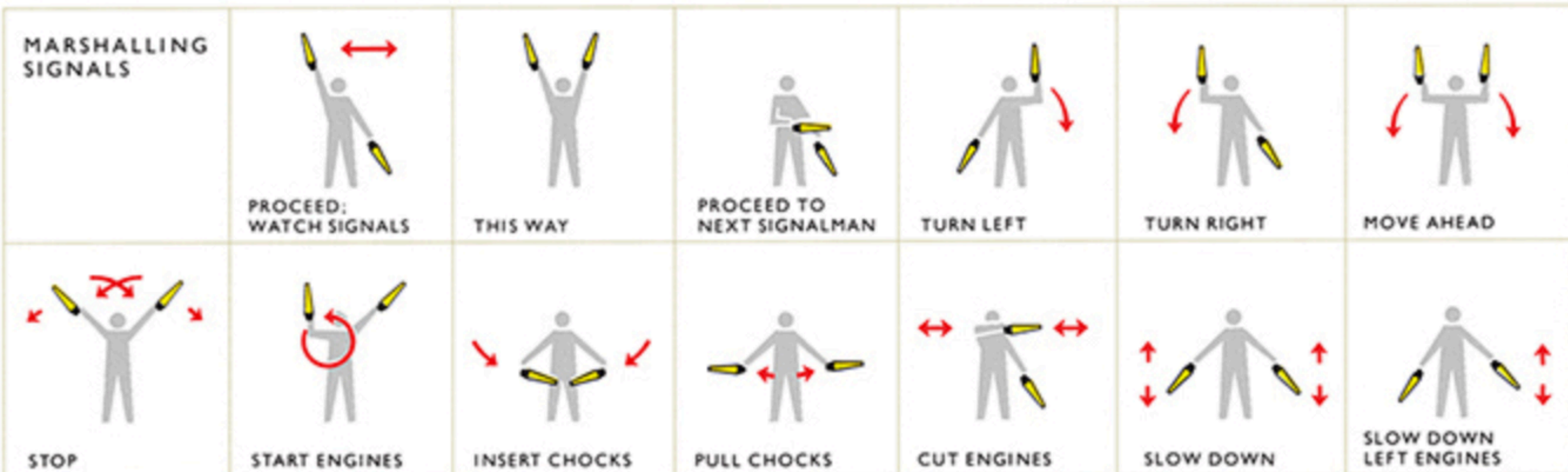
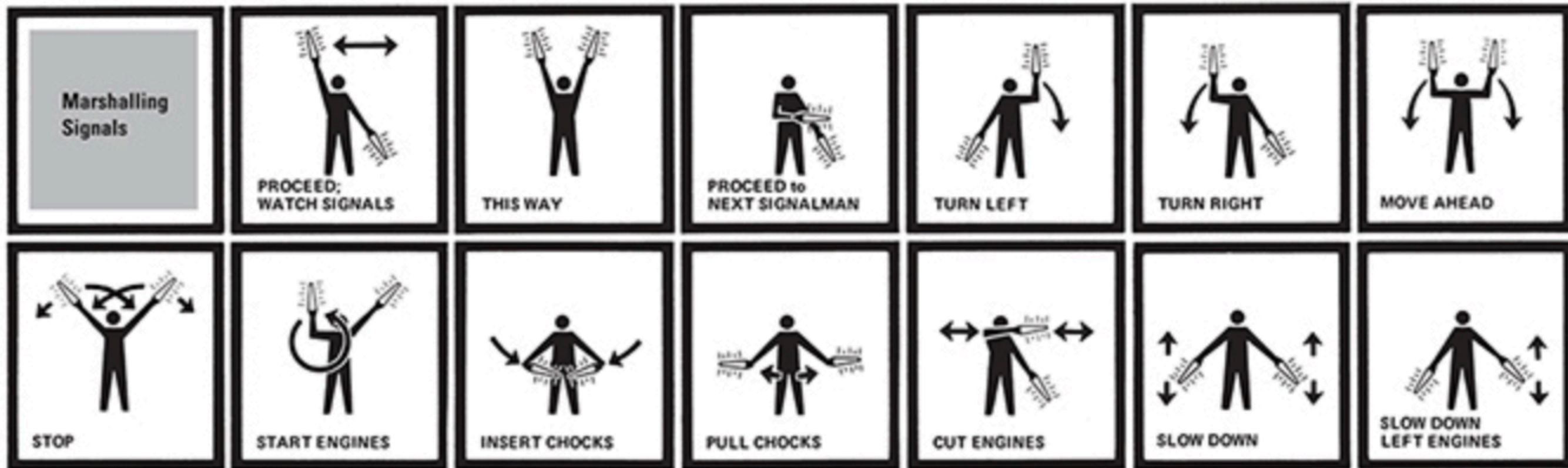
# No Layers, Confusing



# Creating layers

1. Group items into categories based on intended use
2. Determine rank & importance of groups
3. Use perceptual variables (size, value, hue, etc.) to establish layering effect
4. Maximize differences between groups while minimizing differences within groups
5. Use squint test to ensure elements in group retain together but visually separated

# Layers



# Organization & Structure

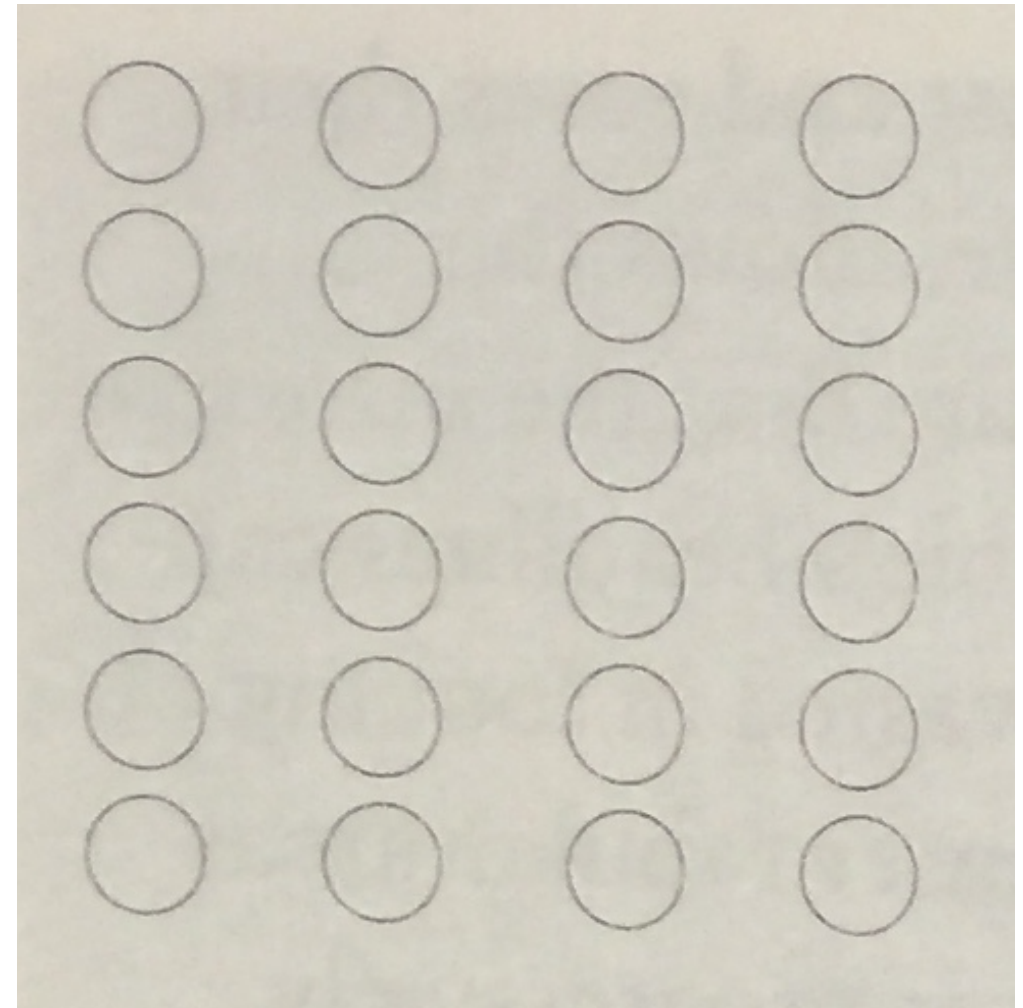


# Organization & structure

- Organization needs to be **designed**
- Benefits
  - Unity - ties together related elements so that they work **together**
  - Integrity & readability - offers structure that helps user to easily scan & make comparisons
  - Control - determines where user will focus **attention** in the design
- Gestalt -> psychology of perception

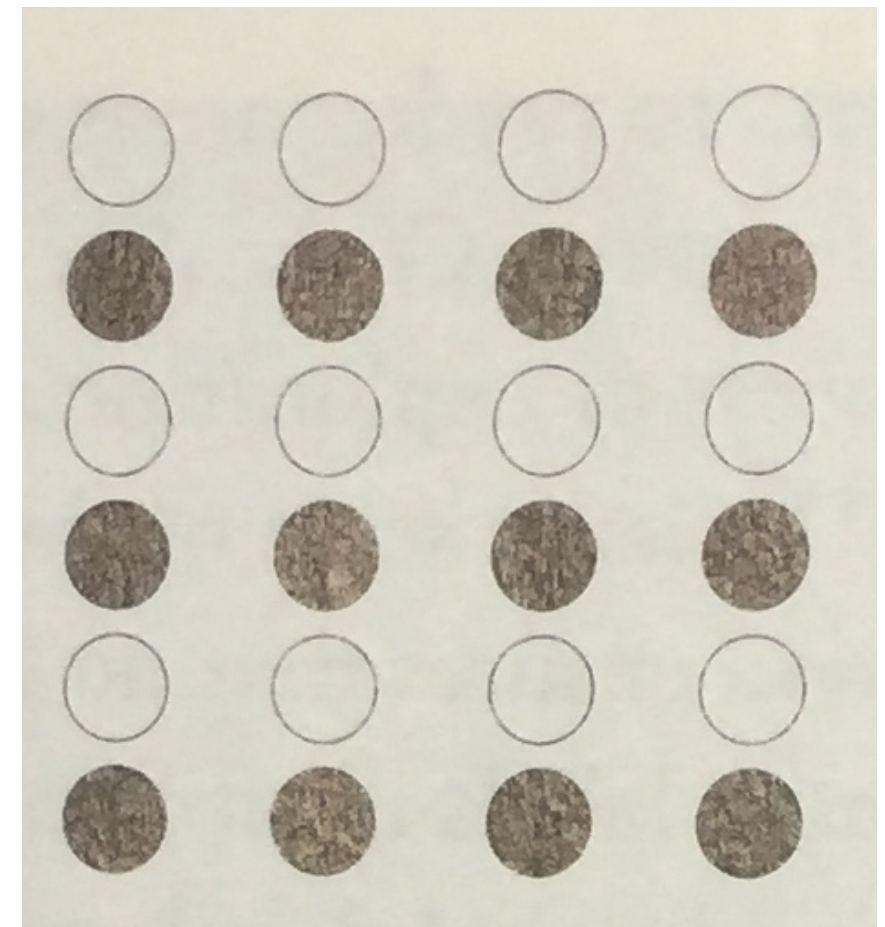
# Gestalt principle - Proximity

- Elements associated MOST strongly w/ nearby elements
- parsed as 4 columns based on close vertical spacing
- then parsed as two sets of two columns based on spacing



# Gestalt principle - Similarity

- Elements associated more strongly when share common visual attributes than when they differ
- parsed as rows based on fill similarity, despite closer column spacing

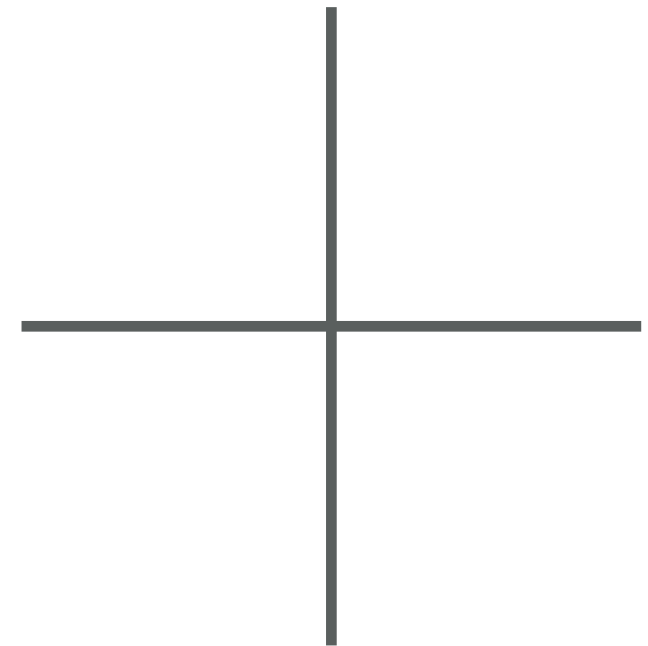




# Gestalt principle - Continuity

- Preference for **simplest** physical explanation of complex figure

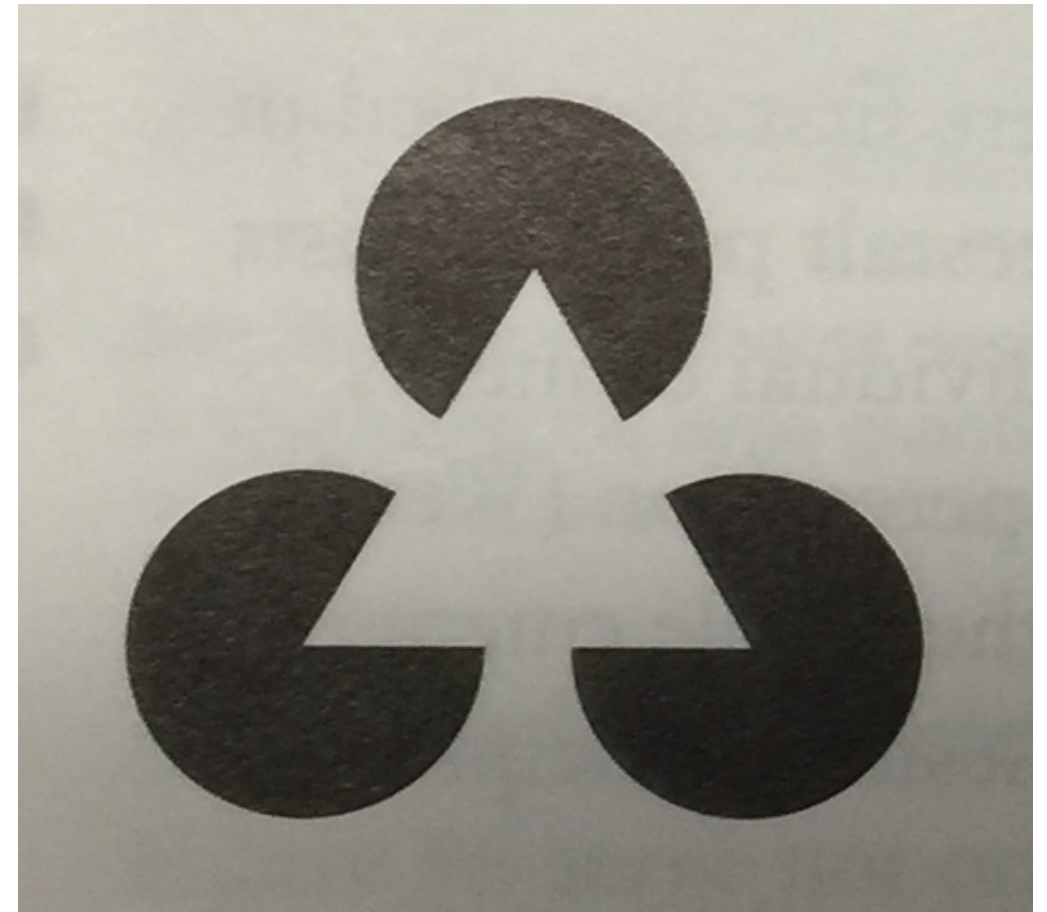
parsed as two lines, rather than  
4 separate lines or 4 opposing  
angles



# Gestalt principle - Closure

- Preference to interpret figures as complete, even when missing information

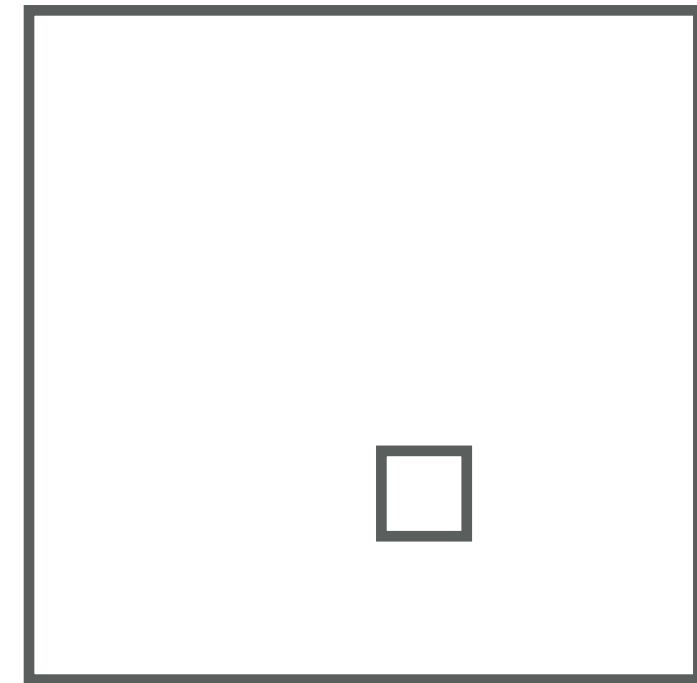
Parsed as triangle  
superimposed on 3 complete  
circles, even though none of  
these is actually present



# Gestalt principle - Area

- Preference to interpret smaller overlapping elements as figure, larger as ground

Small rectangle parsed as small rectangle on top of larger, rather than hole

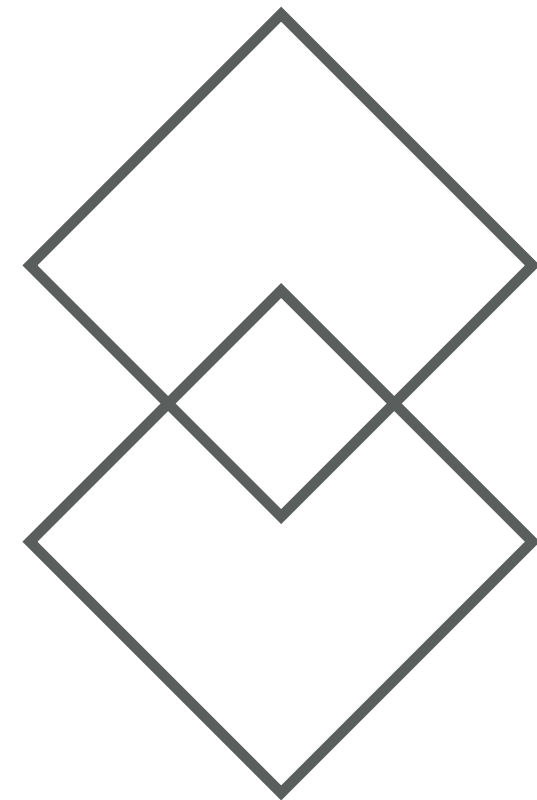




# Gestalt principle - Symmetry

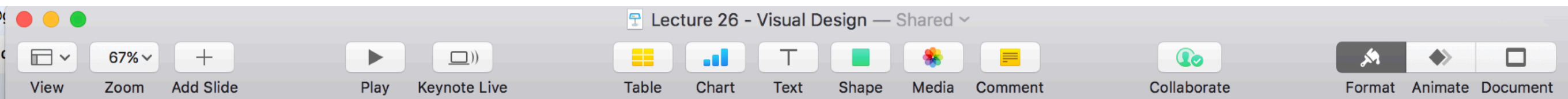
- Preference to interpret ambiguous form as multiple symmetric elements

Parsed as two overlapping objects rather than 3 separate shapes



# Grouping

- Binding UI elements tightly together while distinguishing them from surrounding controls
- “Showing” not “telling”
- Can be achieved through
  - Bounding boxes (not recommended)
  - Negative space & contrasts
  - Arrangement & alignment





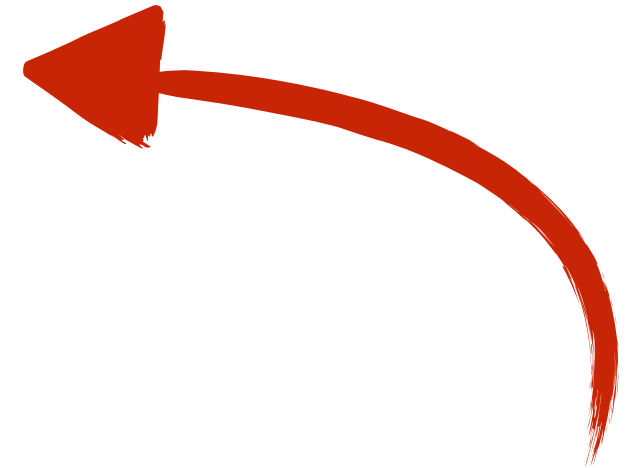
# Hierarchy

Order groups based on perceptual prominence  
corresponding to intended reading sequence

Can help solve “skimming” problems

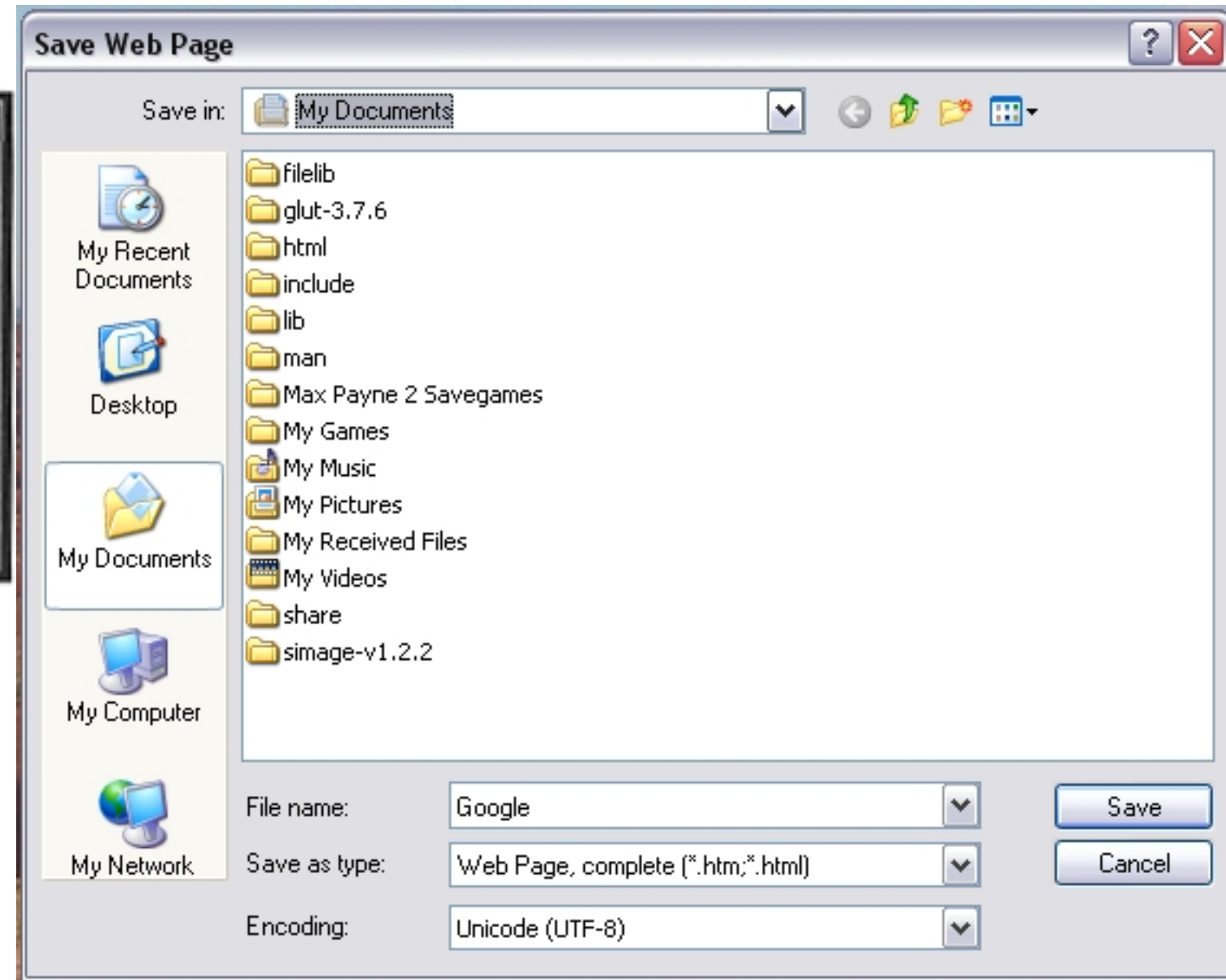
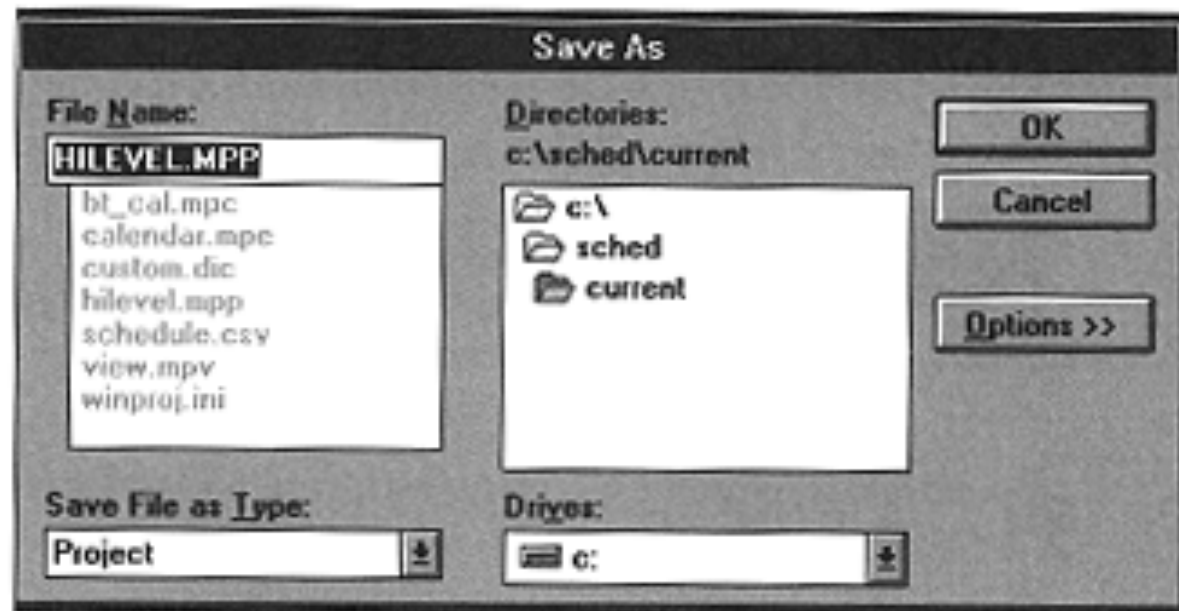
Structure can help people focus attention on key parts

Key points might **get lost though.**



**But bolding helps! Plus this obnoxious red arrow  
and text in a totally different font!**

# Hierarchy in UIs





# Error - Haphazard layout

xbugtool 2.0 Beta 2 Server: elmer-bb.Corp

Load ▾ Store Submit ▾ View Print ▾ Reset ▾ Props Gen. Help ▾

Bug ID: \_\_\_\_\_ Cc: \_\_\_\_\_ Mode:

Category ▾ \_\_\_\_\_ Priority: 

|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

Subcategory... \_\_\_\_\_ Severity: 

|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

Resp Mgr... \_\_\_\_\_ Bug/Rfe: 

|     |     |
|-----|-----|
| bug | rfe |
|-----|-----|

State ▾ \_\_\_\_\_ Responsible Engineer: \_\_\_\_\_

Synopsis: \_\_\_\_\_

Keywords: \_\_\_\_\_

State triggers:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Duplicate of: \_\_\_\_\_ Interest list: \_\_\_\_\_

Patch id: \_\_\_\_\_ See also (bugids): \_\_\_\_\_

History:

Submitter : \_\_\_\_\_ Date: \_\_\_\_\_

Generic SVR4 problem?:

Dispatch operator : \_\_\_\_\_ Date: \_\_\_\_\_

Evaluator : \_\_\_\_\_ Date: \_\_\_\_\_

Commit operator : \_\_\_\_\_ Date: \_\_\_\_\_

Fix operator : \_\_\_\_\_ Date: \_\_\_\_\_

(a)

Eugtool

Report ▾ View ▾ Props ▾ Help ▾ Mode:

Bug ID: ▾ \_\_\_\_\_ Type:

Category: ▾ XView Priority: 

|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

Subcategory: ▾ library Severity: 

|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

Release: ▾ 1.0

Status: ☒ Submitted

Synopsis: \_\_\_\_\_

Keywords: \_\_\_\_\_

Pub Summary: \_\_\_\_\_

See also: \_\_\_\_\_

Interest List: \_\_\_\_\_

•

Root Cause: ▾ documentation-confusing

Same as: \_\_\_\_\_

Resp Mgr: ▾ none Hook 1: \_\_\_\_\_

Resp Engr: ▾ none Hook 2: \_\_\_\_\_

Flags: ☐ Fix Affects Documentation

☐ Generic SVR4 Problem

(b)

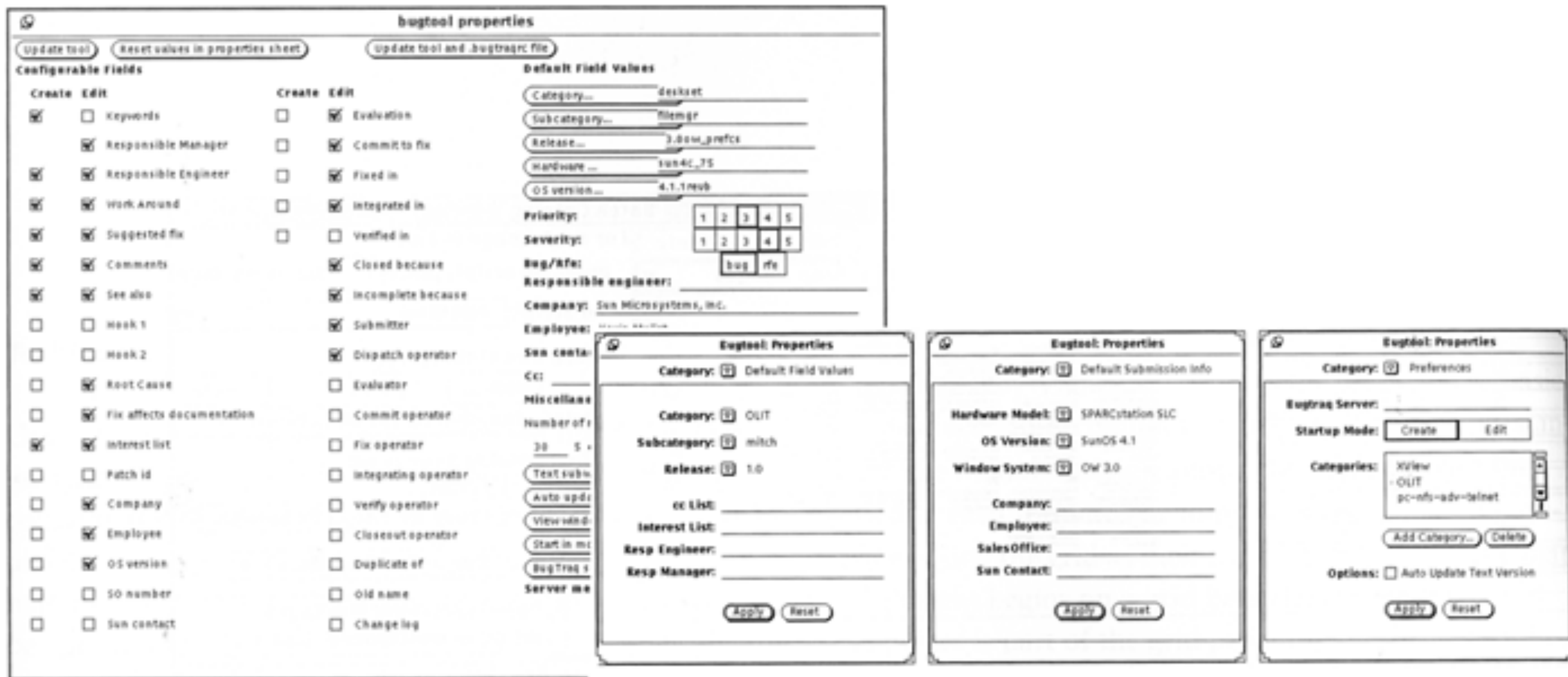
# Error - Ambiguous internal relationships



Groups are aligned, contents are not



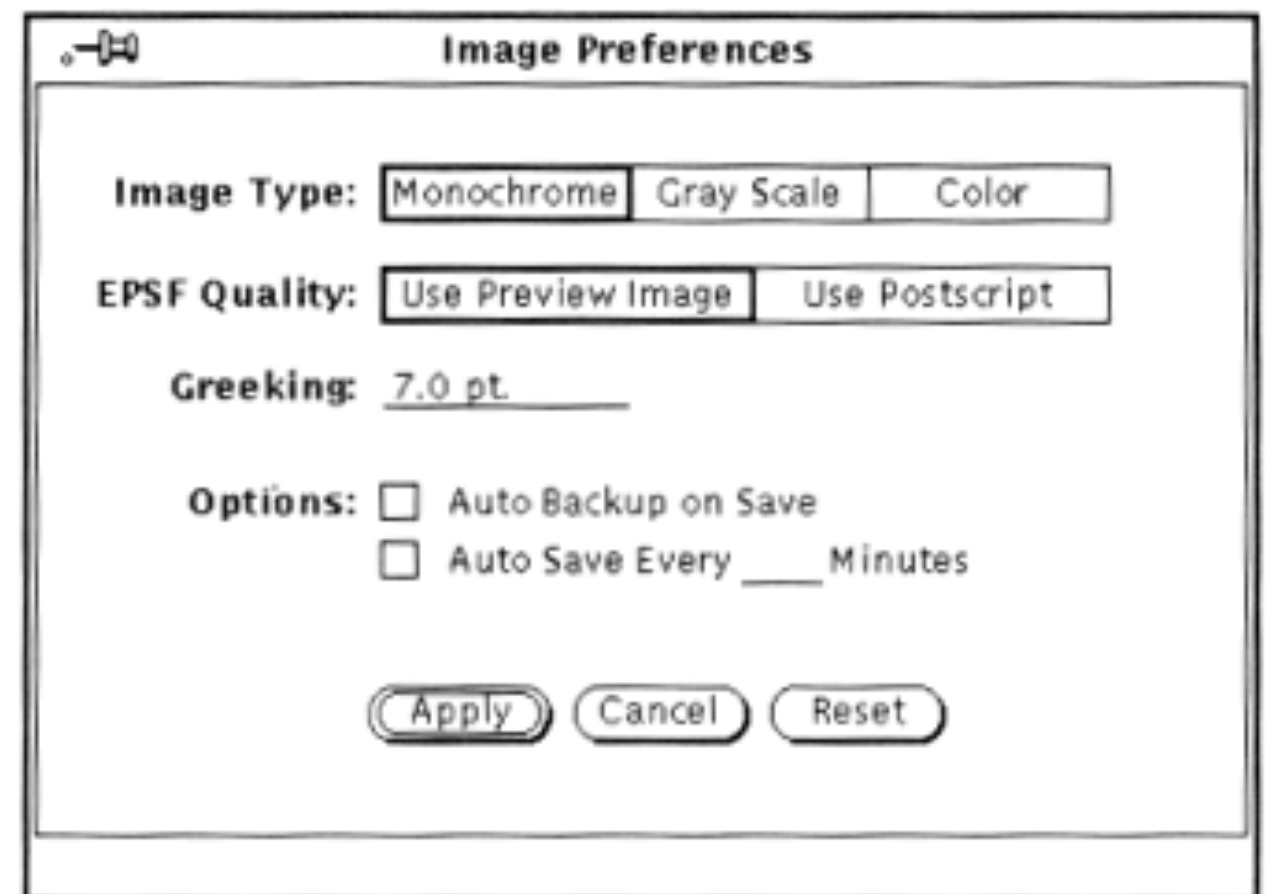
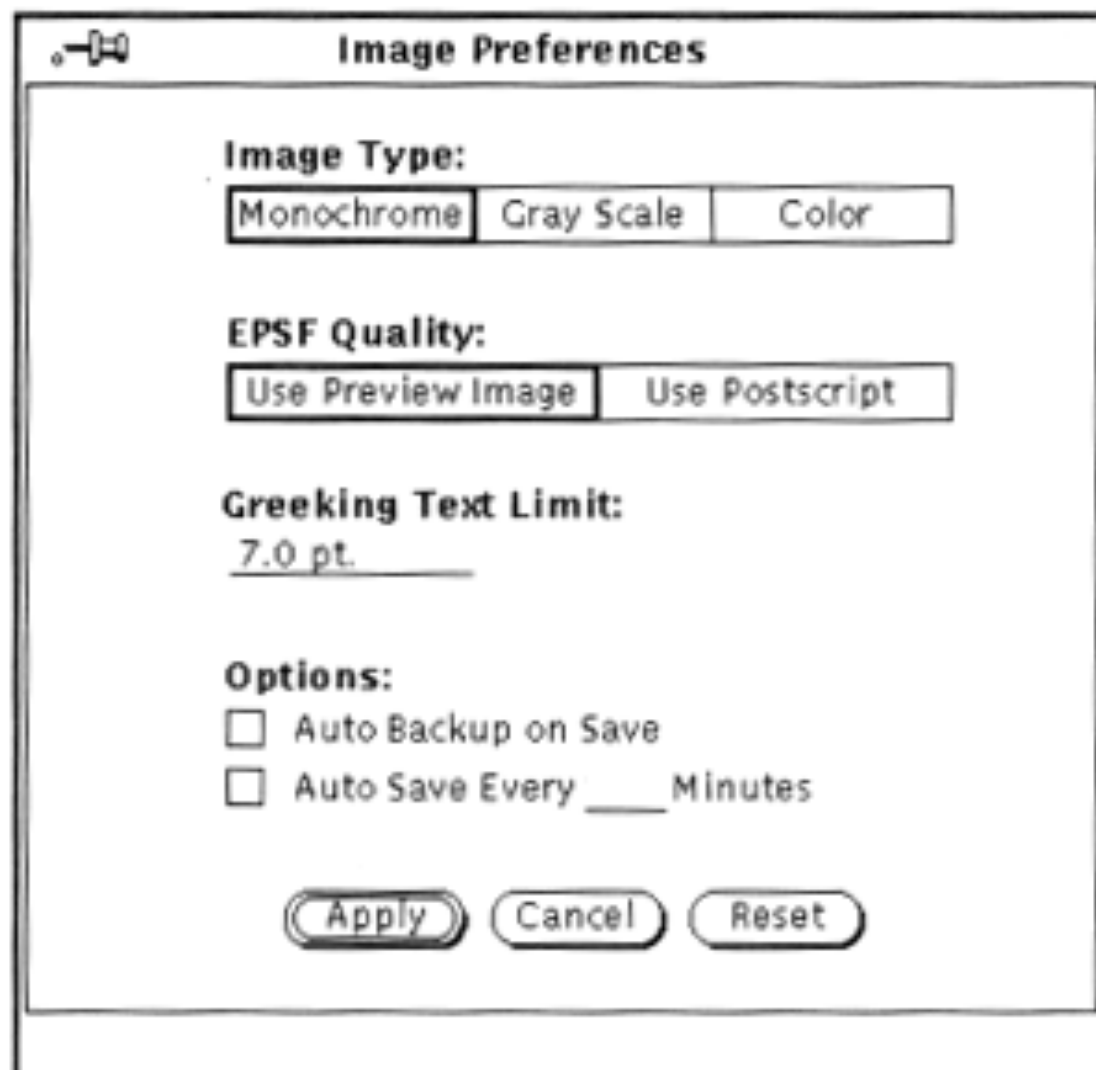
# Error - Excessive display density



tiny font, tons of dead space.  
fixed by breaking into separate panes

# Use negative space

- Directs **attention** to critical regions of display
  1. Review design, prioritizing groups
  2. Add extra **space** to ensure spatial separation & emphasis, particularly for important elements





Images & Icons

# Images & Icons

- Benefits
  - Identification - images are easy to recognize
  - Expression - breadth of artistic expression that can make design more engaging & enjoyable



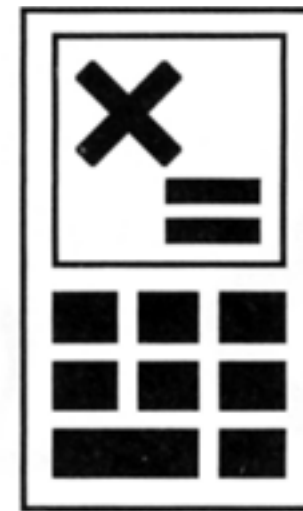
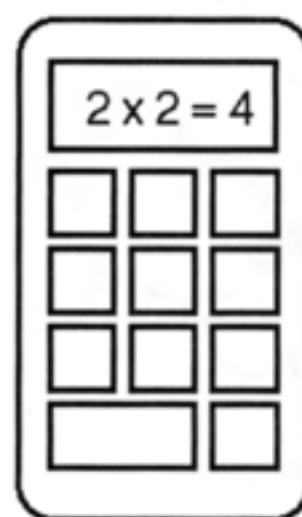
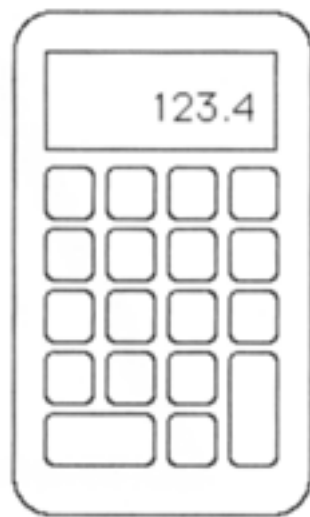
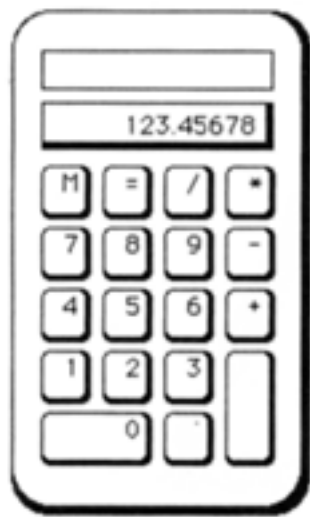
# Types of iconic representation

- Similar - visually **analogous** to action, object, concept
- Example - things that exemplify or are commonly associated
- Symbolic - represent concept at higher level of **abstraction**
- Arbitrary - little or no relationship to concept, must be learned through **standard**



# Use of abstraction

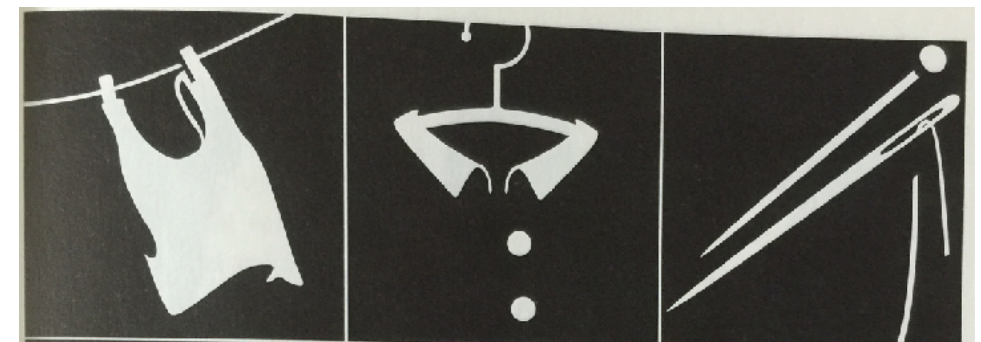
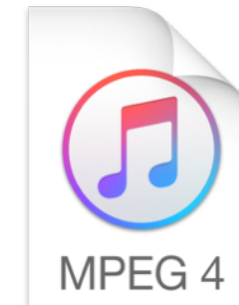
- Simplifying highly concrete, realistic representations makes them easier to interpret up to the point at which further abstraction obscures icon's semantics
- Makes icon more generic, more canonical, less complex





# Principles of icon design

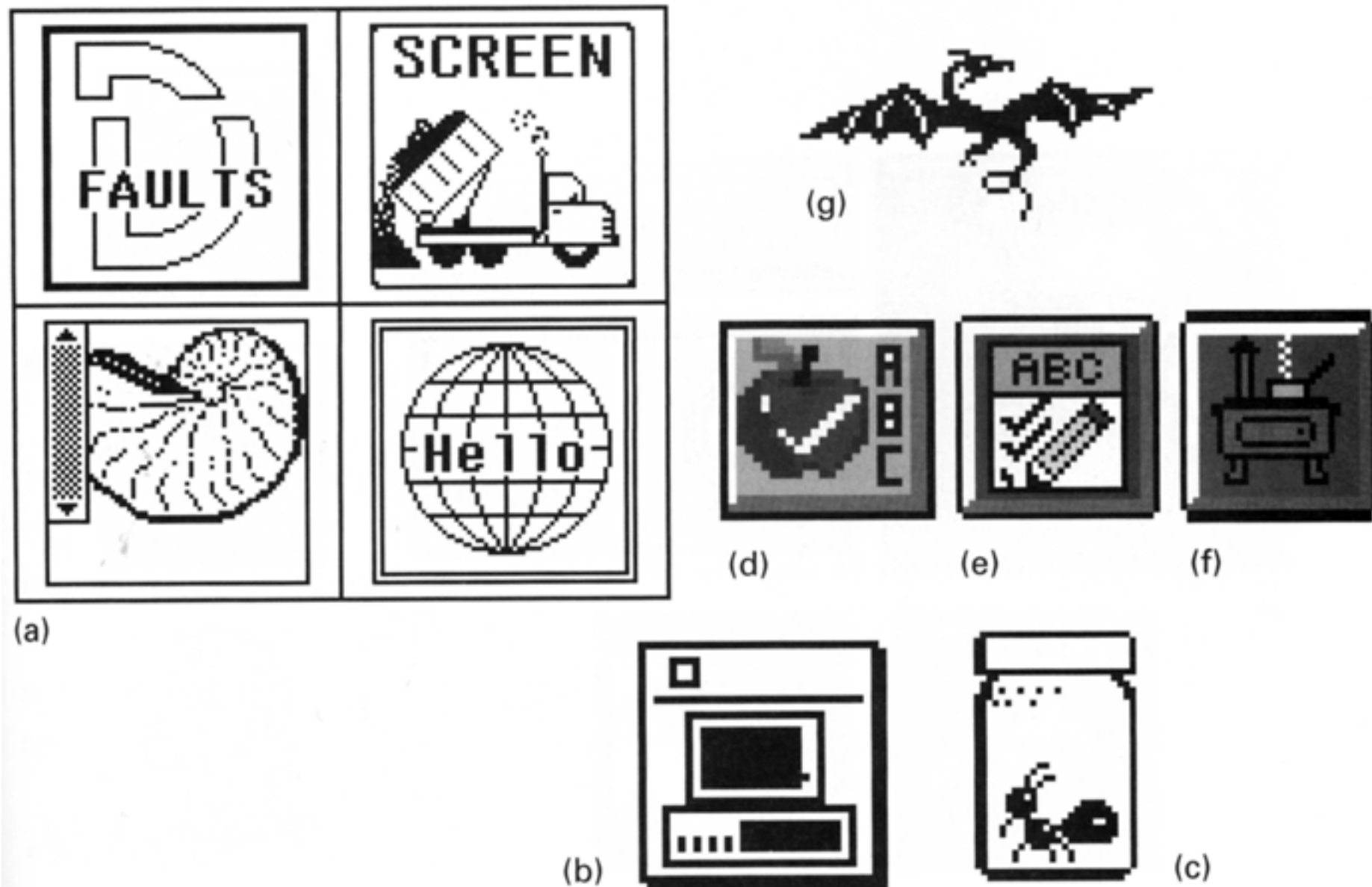
- Immediacy - can be perceived effortlessly & involuntarily by being **bold**, clear, balanced
- Generality - represents a **class** of items, rather than an individual element, by removing details that may vary
- Cohesiveness - set of icons that function **together** by sharing visual variables
- Characterization - call to mind one or more **distinctive** features



# Selecting the right type of icon

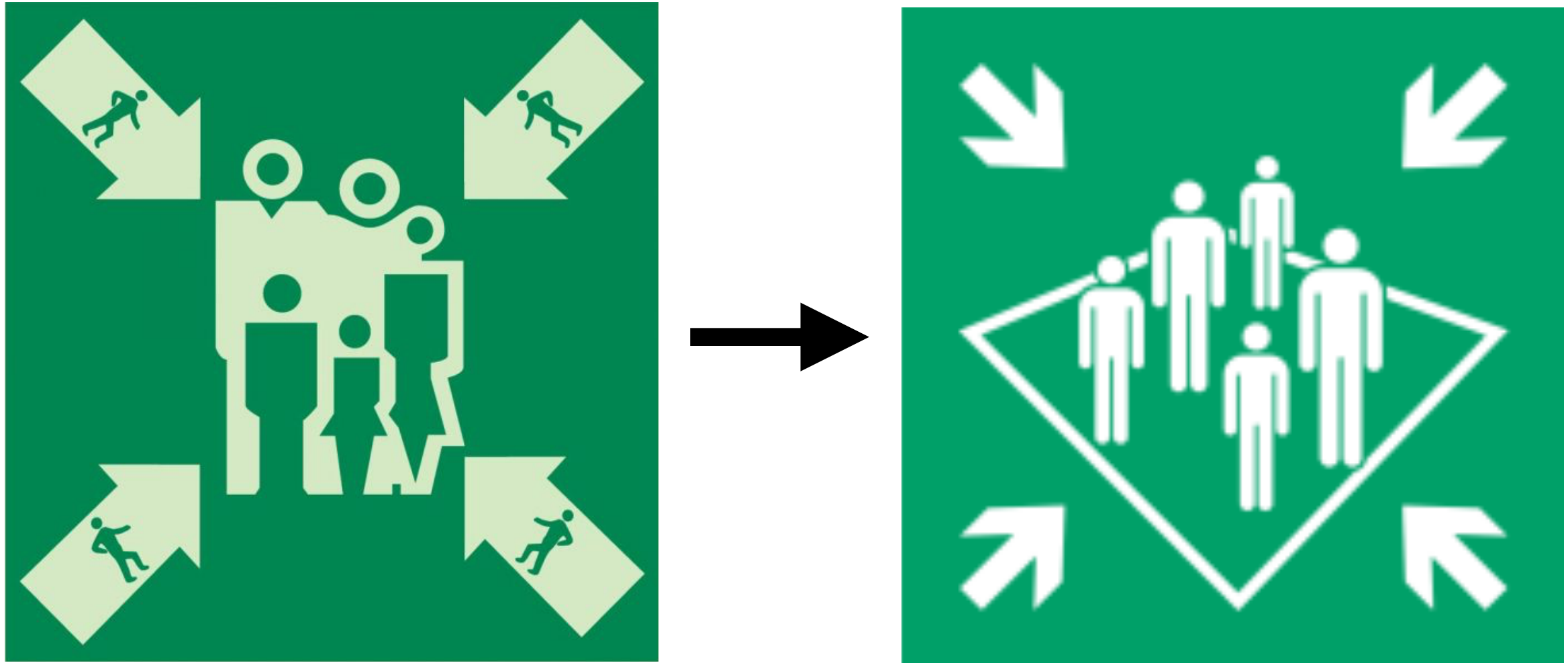
- If concept is concrete, familiar, tangible, use similar or example icon
- If concept will be used repeatedly, consider using more symbolic or arbitrary icon based on convention
- If concept is abstract process or subtle, use textual label

# Error - Cultural or language dependence





# Misleading Syntax



# Cultural Errors: Airplane Exit Signs



“Please be aware that the nearest exit may be located behind you.”



# New Airbus Exit Sign



“Please be aware that the nearest exit may be located behind you. Exit signs are marked in green, with arrows”



# Activity: OS 10.2 Preferences Icons



Best 3, worst 3 and why? Then: How to make worst 3 better?