

# Lecture 2: Design of Visual Displays

Segmentation and variables of the display plane. Modes of correspondence.

## Position in the course

- Theory driven approaches to HCI
- **Design of visual displays**
- Goal-oriented interaction
- Designing smart systems (guest lecturer)
- Designing efficient systems
- Designing meaningful systems (guest lecturer)
- Evaluating interactive system designs
- Designing complex systems

## Today's objective

- Gain a vocabulary for analysis and critique of visual displays
- Place visual design options within a universal framework
- Understand the range of options for design innovation
- Revisit familiar aspects of the “screen world” from a historically-informed design research perspective

## Themes in this lecture

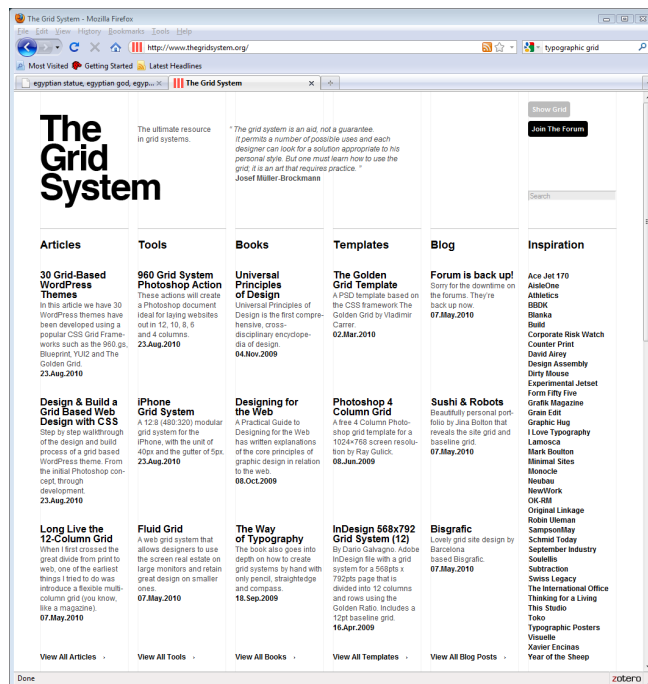
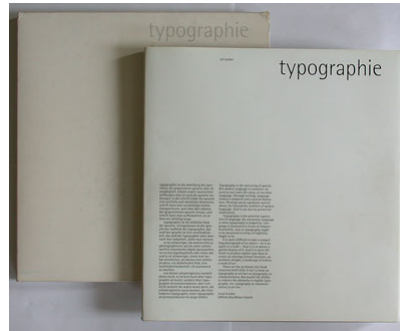
- Typography and text
- Maps and graphs
- Schematic drawings
- Node-and-link diagrams
- Icons and symbols
- Visual metaphor
- Pictures – perspective and framing
- Unified theories of visual representation
  - encyclopaedia article, with accompanying videos, available at [interactiondesign.org](http://interactiondesign.org)

# Typography and text

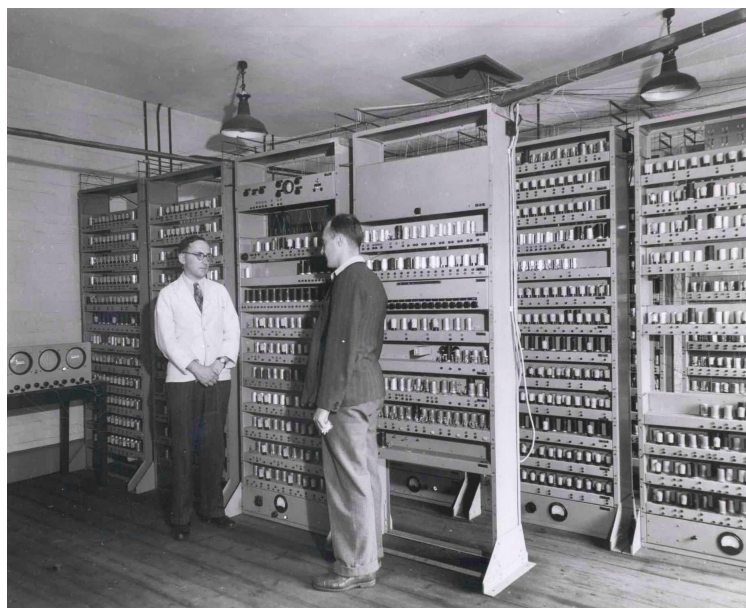


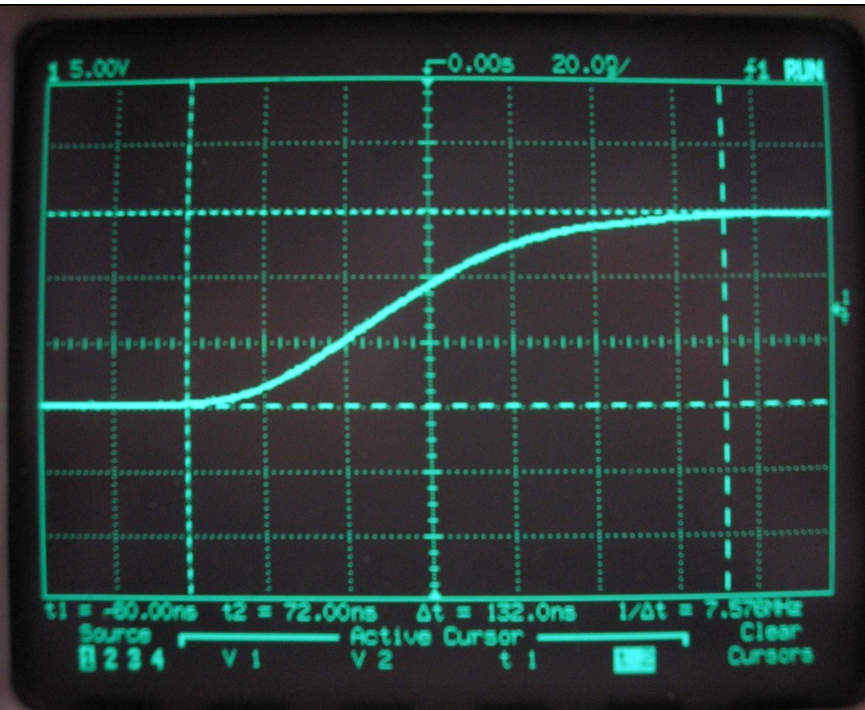
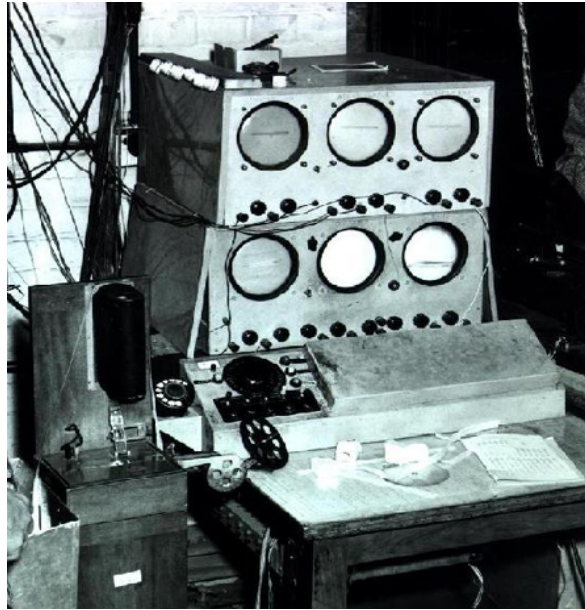
```
*****log_files*****
Verbose
Test Error
VTS Kernel Error
Information
Unix Msgs
Report
*****[DONE:ESC]*****
```

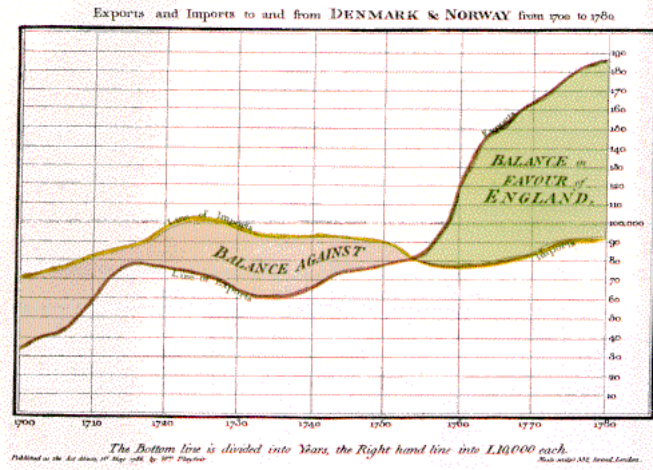




# Maps and graphs



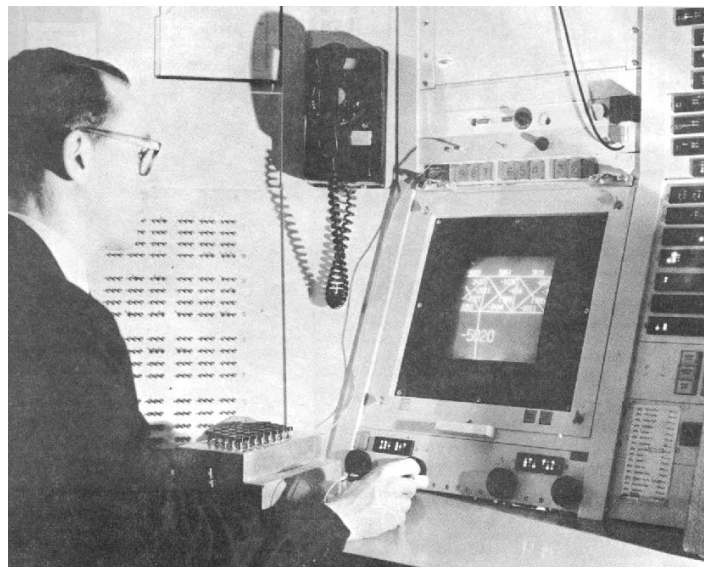


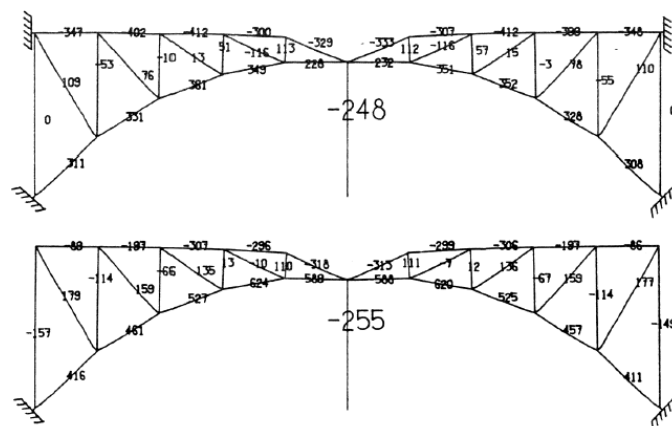
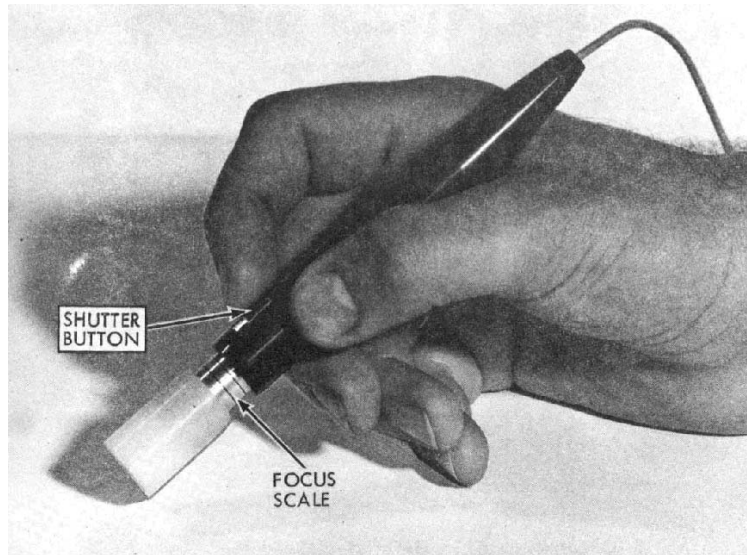


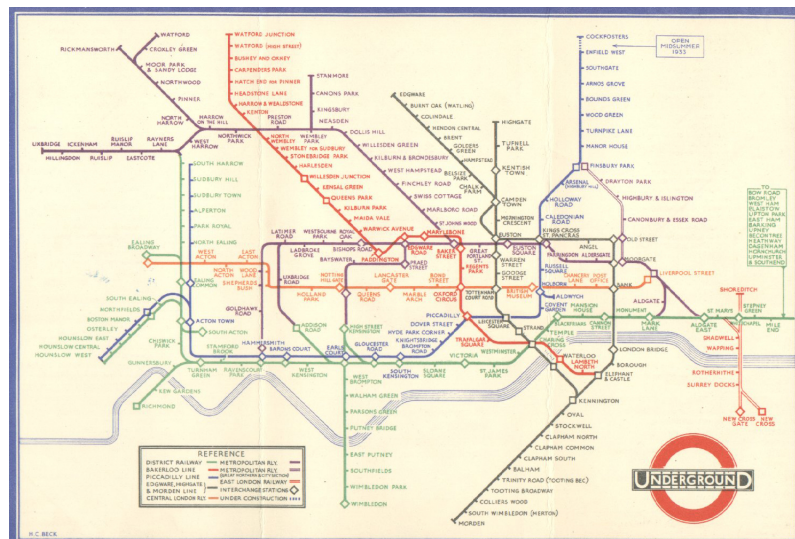
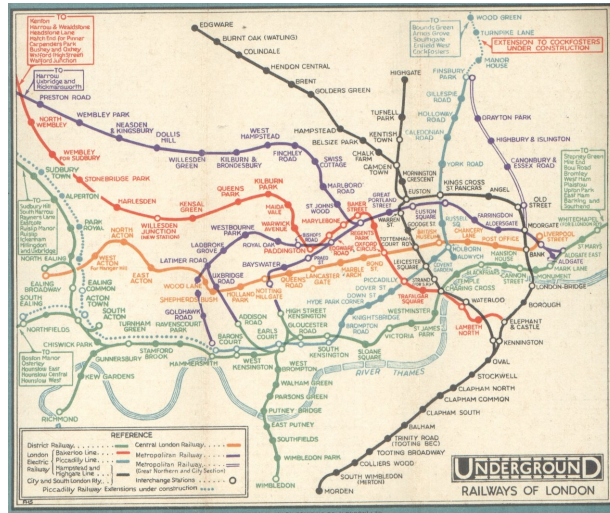


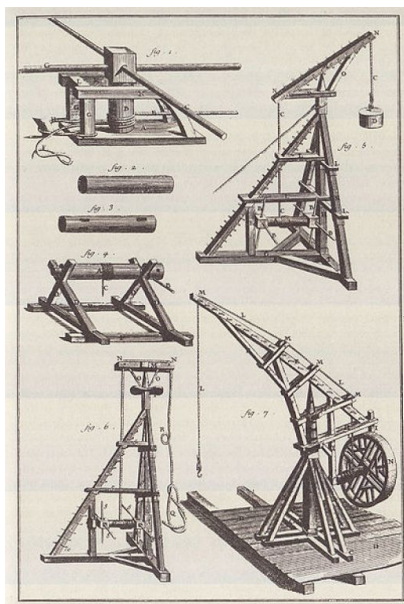
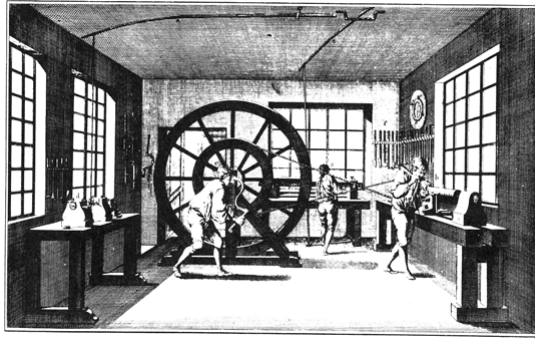


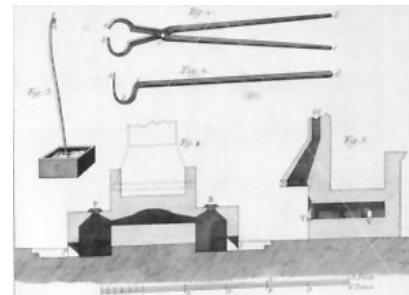
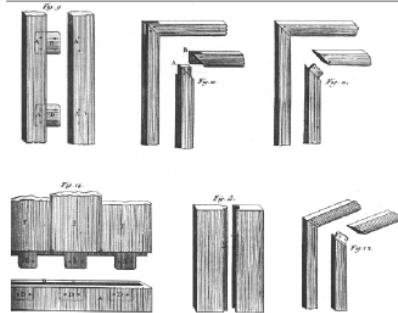
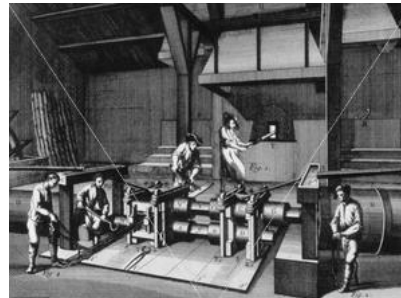
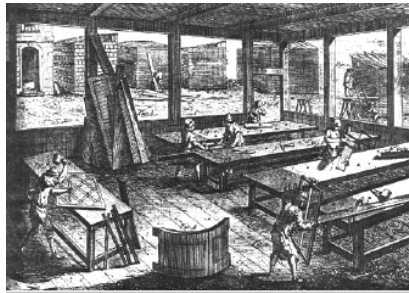
# Schematic drawings



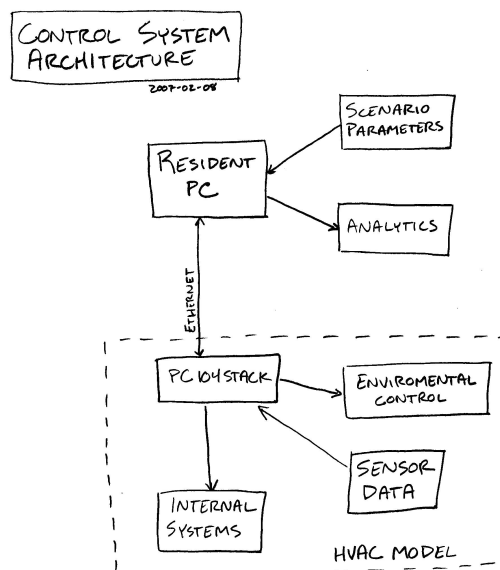
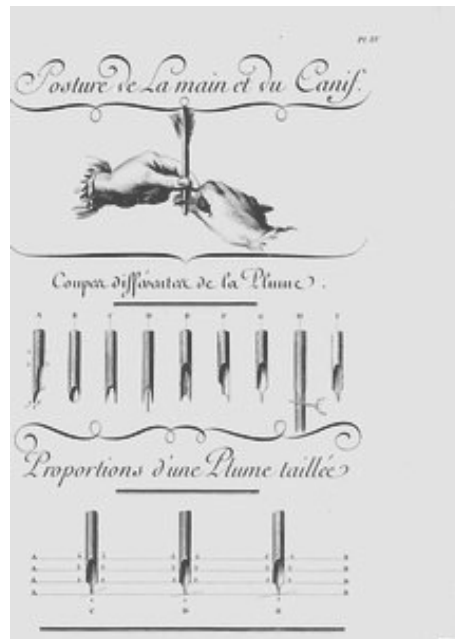


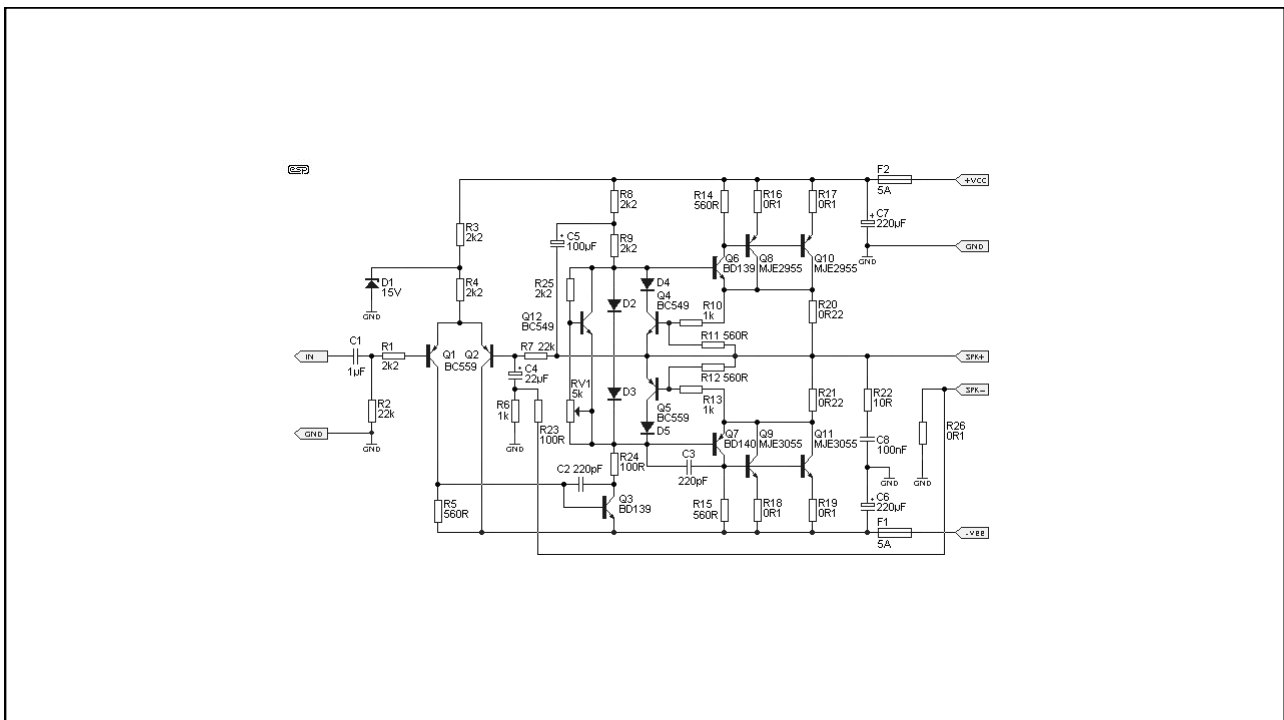
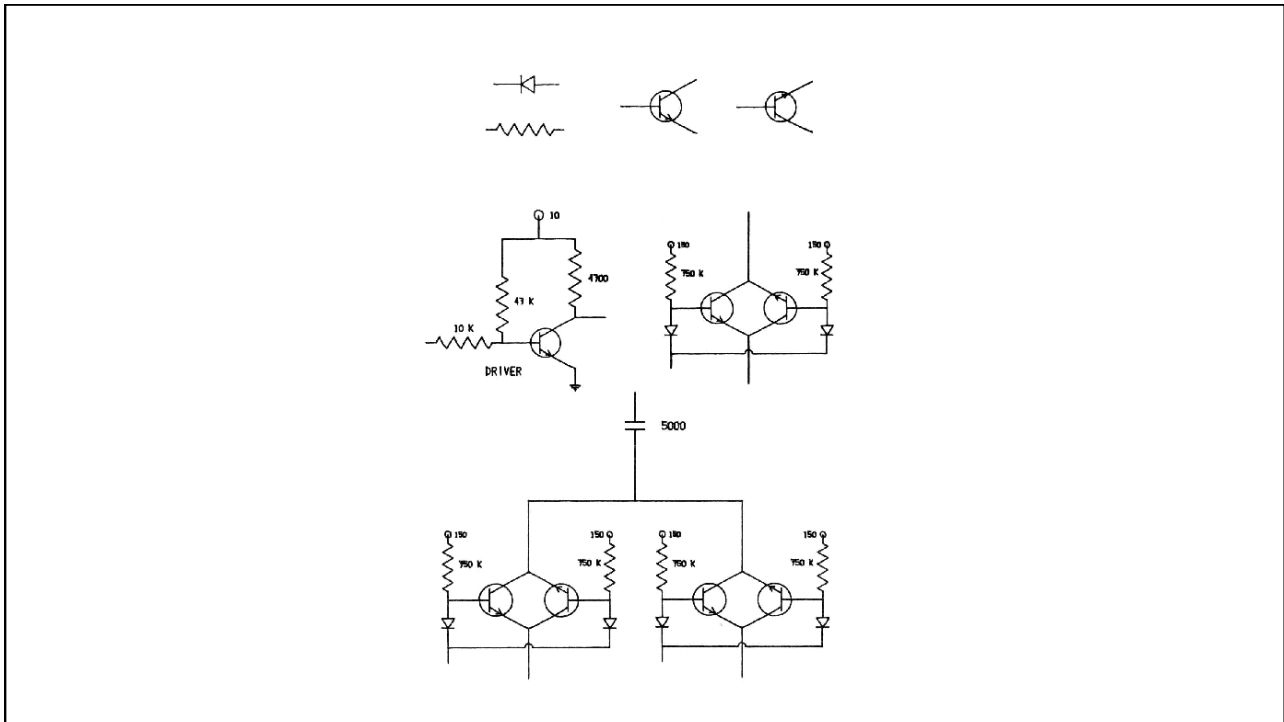




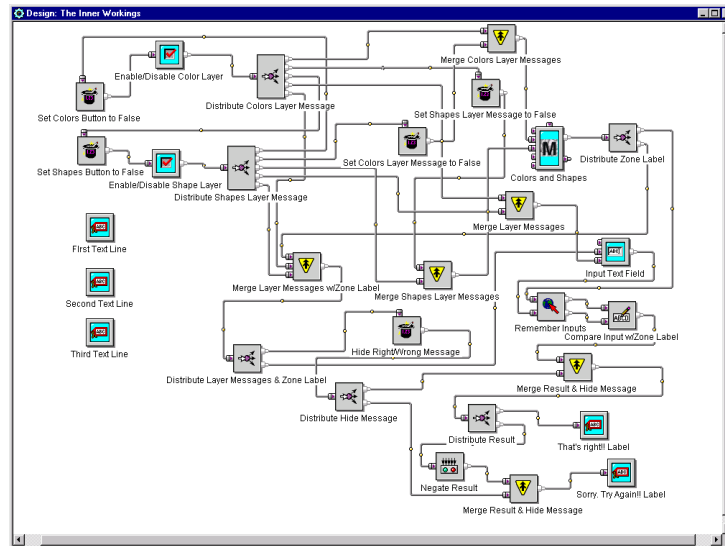


Node-and-link diagrams

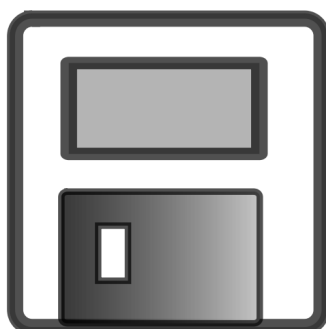
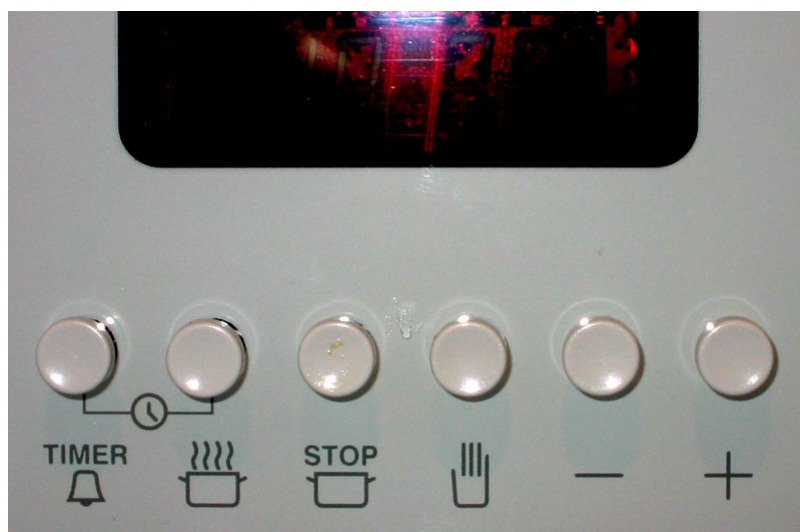




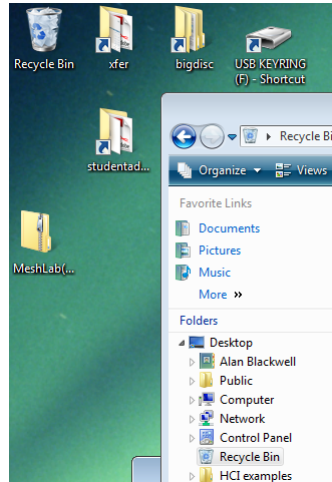




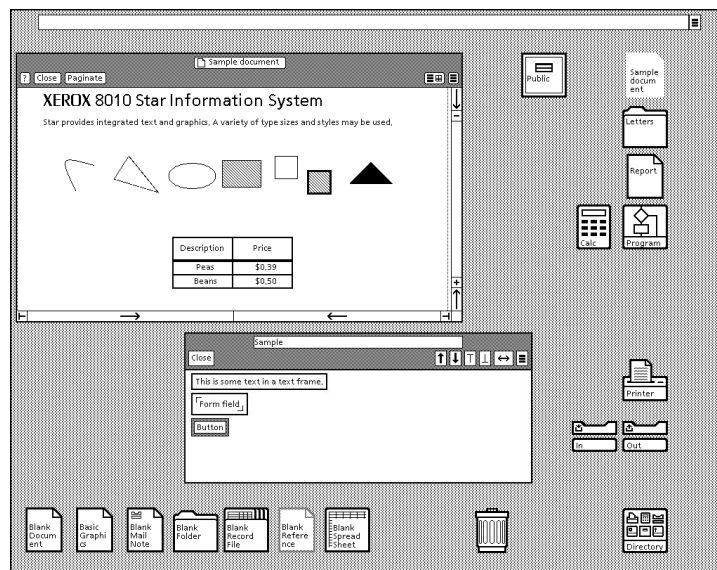
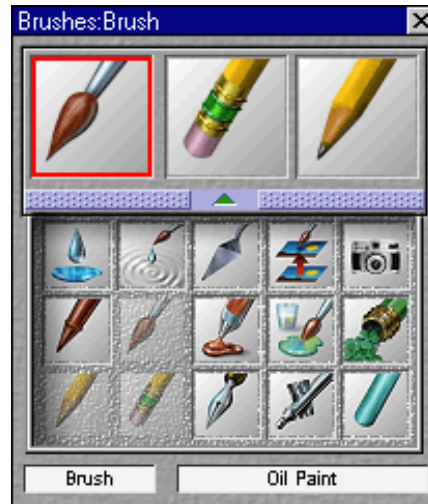
# Icons and symbols

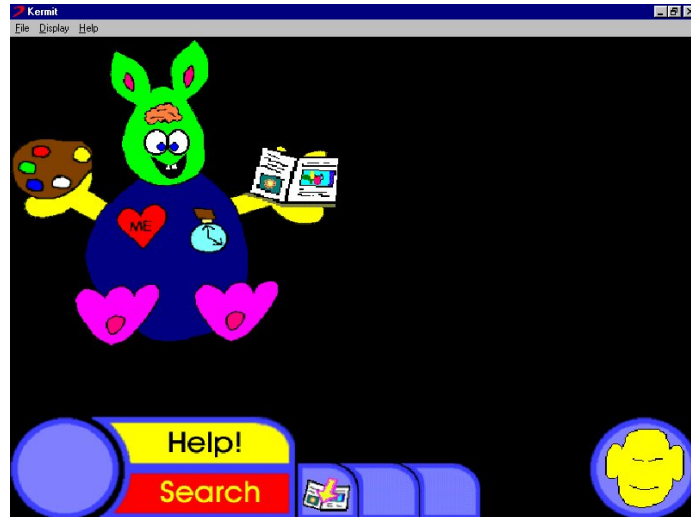






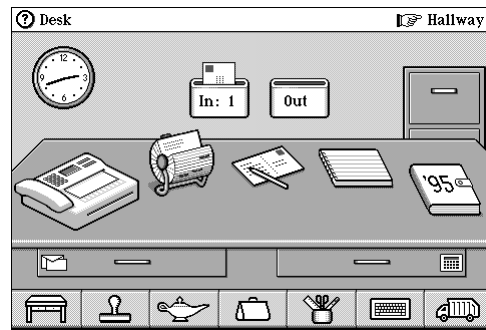
Visual metaphor





## Sony "Magic Link" (1994)

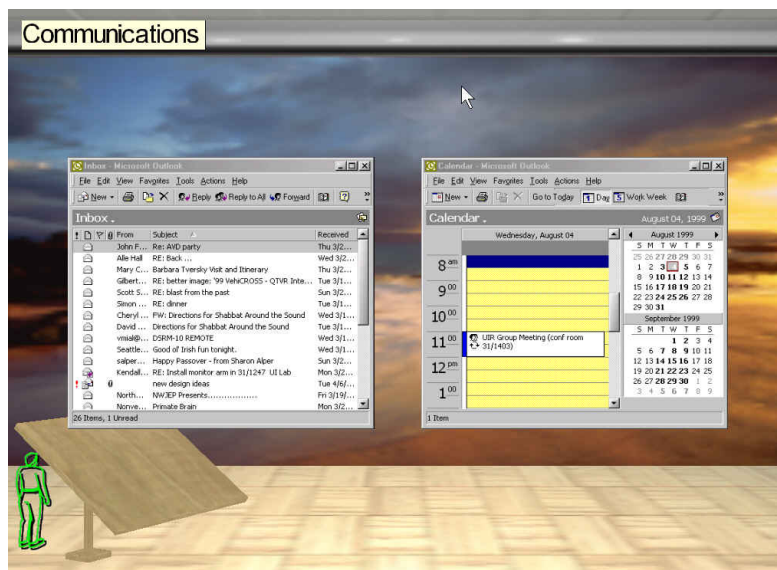




## Microsoft “Bob” (1995)



## Microsoft “Task Gallery” (2000)

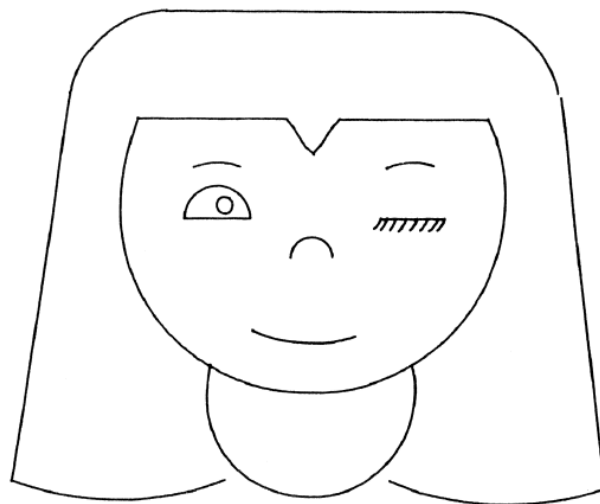


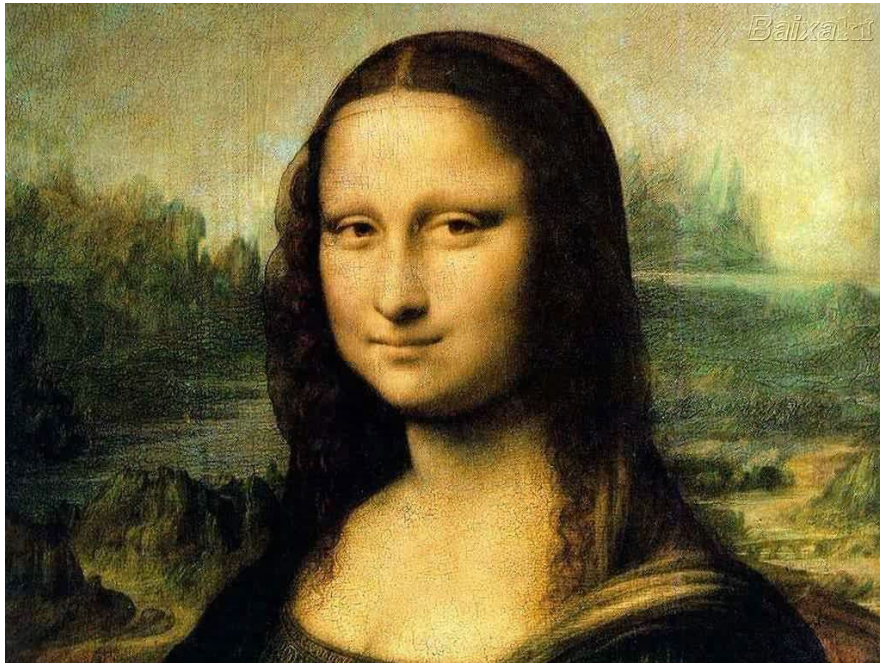


## MIUI “Warm Space MiHome Desktop” (2015)



# Pictures









**Crossfire GTK Client**

File Client Action

Inventory 299.0 / 3500 Count 8

Name	Weight
scroll case of Holding	0.5
quiver of arrows	0.1
magnifying glass	2.0
Unholy Bow	9.0
Unholy Bow	9.0
fourteen arrows	0.4
five arrows	0.1
three arrows	0.1
bolt	0.1
nine bolts	0.5
nine bolts	0.5

Close You see:

Name	Weight
bed to reality	
woodfloor	

Player: Chrisll the ancient cold dragon  
 Score: 1914353147 Level: 109  
 S27 D22 Co28 I19 W15 P30 Ch23  
 Wc-94 Dam 17 Ac-16 Arm 75  
 Speed: 1.80 (6.02)  
 Range: nothing

smithery	316706 (9)	bowyer	938:
jeweler	320472 (9)	alchemy	83727
literacy	1954740 (12)	bargaining	14660
	8748758 (17)		768

NOTE: This server runs latest CVS code. This means that stability may not be the highest, but it will have all the latest bells and whistles. This also means games features and other aspects may change unexpectedly.

Since this server uses the latest split skill code, it is possible that old clients may have problems. If you see stability problems with your client, please make sure you have the latest client (from CVS) installed.

Chrisll has entered the game.

No mail.

Wrager has entered the game.

Leon shouts: anyone have 2 improve damage scrolls they want to sell or trade?

Welcome back:

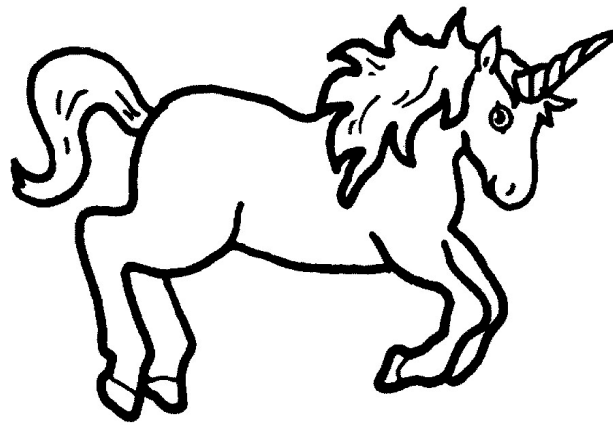
Players:

- Hoz the Diligent [/home/crossfire/var/crossfire/players/Hoz/\_scom\_apartment\_apartments]Peaceful
- Leaf the AFK [/home/crossfire/var/crossfire/players/Lancen/Shadow Knight]Peaceful
- Lancen the Shadow Knight [/home/crossfire/var/crossfire/players/Lancen/\_scom\_apartment\_apartments]Peaceful
- Karny the elf [/home/crossfire/var/crossfire/players/Karny/\_scom\_apartment\_apartments]Peaceful
- Perlie the big cold dragon [/home/crossfire/var/crossfire/players/Perlie/\_scom\_apartment\_apartments]Peaceful
- FireStar the fireborn [/home/crossfire/var/crossfire/players/Korusef/\_scom\_apartment\_apartments]Peaceful
- Juneabra the elf [/home/crossfire/var/crossfire/players/Wumpus/\_scom\_apartment\_apartments]Peaceful
- Wumpus the elf [/home/crossfire/var/crossfire/players/Korusef/\_scom\_apartment\_apartments]Peaceful
- Korusef the fireborn [/home/crossfire/var/crossfire/players/Korusef/\_scom\_apartment\_apartments]Peaceful
- Bofozar the Wraith [/home/crossfire/var/crossfire/players/Casper/\_scom\_apartment\_apartments]Peaceful
- Casper the Damned Heretic [/home/crossfire/var/crossfire/players/Neptune/\_scom\_apartment\_apartments]Peaceful
- Neptune the ancient electricity dragon [/home/crossfire/var/crossfire/players/Destru/\_scom\_apartment\_apartments]Peaceful
- Destru the Damned Heretic [/home/crossfire/var/crossfire/players/Leon/\_scom\_apartment\_apartments]Peaceful
- Leon the Elven Monk [/home/crossfire/var/crossfire/players/Chrisll/\_scom\_apartment\_apartments]Peaceful

Hp: 431/431  
 Sp: 413/413  
 Gr: 335/273  
 Food: 858

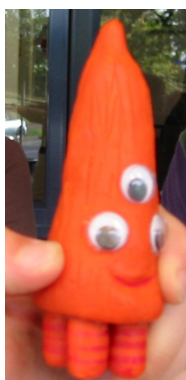
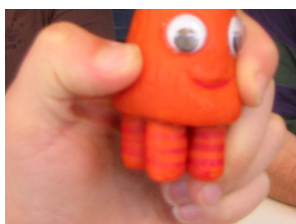
armor	+75
magic	+69
fire	+71
elec	+61
cold	+56
acid	+39
drain	+100
pois	+43
fear	-100
depl	+100
death	+100













Unified theories of visual  
representation

	Graphic Resources	Correspondence	Design Uses
Marks	Shape Orientation Size Texture Saturation Colour Line	Literal (visual imitation of physical features) Mapping (quantity, relative scale) Conventional (arbitrary)	Mark position, identify category (shape, texture colour) Indicate direction (orientation, line) Express magnitude (saturation, size, length) Simple symbols and colour codes
Symbols	Geometric elements Letter forms Logos and icons Picture elements Connective elements	Topological (linking) Depictive (pictorial conventions) Figurative (metonym, visual puns) Connotative (professional and cultural association) Acquired (specialist literacies)	Texts and symbolic calculi Diagram elements Branding Visual rhetoric Definition of regions
Regions	Alignment grids Borders and frames Area fills White space Gestalt integration	Containment Separation Framing (composition, photography) Layering	Identifying shared membership Segregating or nesting multiple surface conventions in panels Accommodating labels, captions or legends
Surfaces	The plane Material object on which the marks are imposed (paper, stone) Mounting, orientation and display context Display medium	Literal (map) Euclidean (scale and angle) Metrical (quantitative axes) Juxtaposed or ordered (regions, catalogues) Image-schematic Embodied/situated	Typographic layouts Graphs and charts Relational diagrams Visual interfaces Secondary notations Signs and displays

[https://www.interaction-design.org/encyclopedia/visual\\_representation.html](https://www.interaction-design.org/encyclopedia/visual_representation.html)

## Analysis examples

Kyrie eleison (I)

Adagio

Flauto traverso 1

Flauto traverso 2

Oboe d'amore 1

Oboe d'amore 2

Fagotti

Violino 1

Violino 2

Viola

SOPRANO 1

Ky - ri - e, Ky - ri - e, le - i - son, e - lei - son.

SOPRANO 2

Ky - ri - e, Ky - ri - e, le - i - son, e - lei - son.

ALTO

Ky - ri - e, Ky - ri - e, le - i - son, e - lei - son.

TENORE

Ky - ri - e, Ky - ri - e, Ky - ri - e, le - i - son.

BASSO

Ky - ri - e, Ky - ri - e, Ky - ri - e, lei - son.

Continuo

7 6 5 6 9 8 7 6 5 6 7 6 5

BASSO

Ky - ri - e, Ky - ri - e, Ky - ri - e, lei - son.

J. S. Bach Chorale number 285 of the Schubert collection,  
emulating layout and spacing of the Breitkopf 1990 Edition

Original typesetting by Arild Stenberg

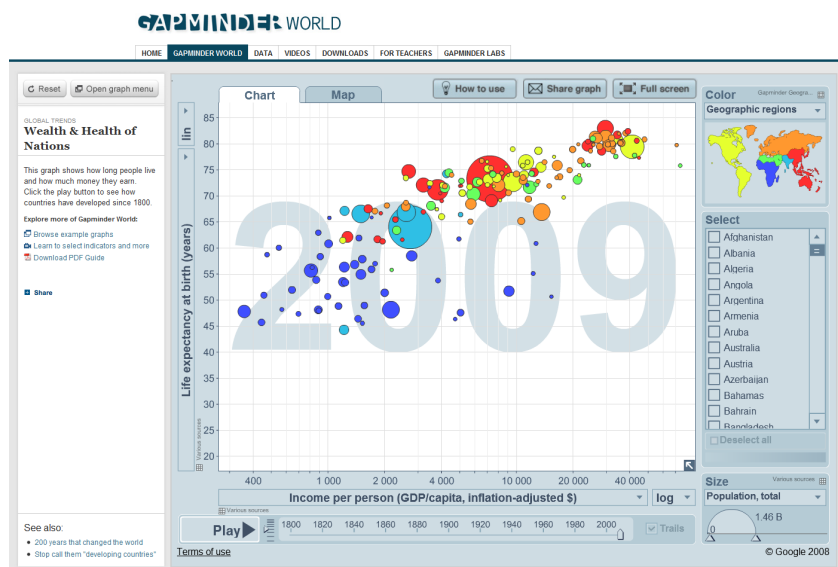


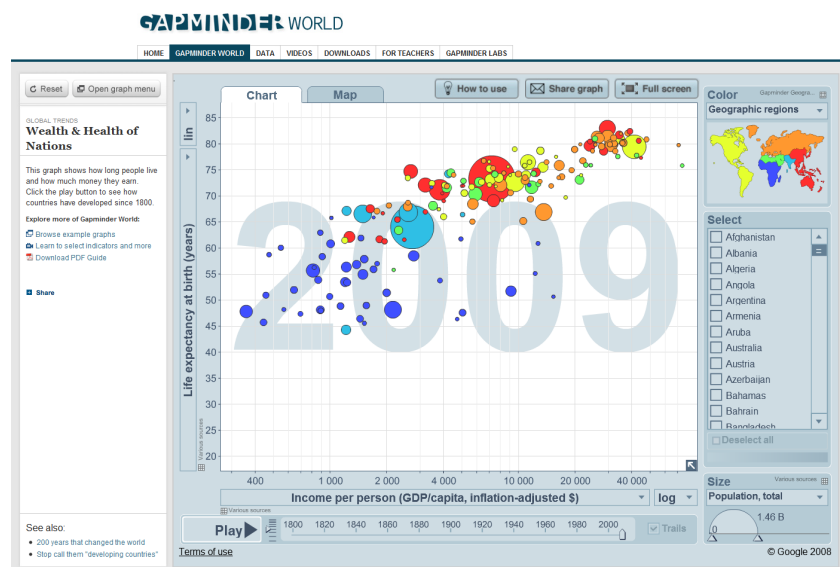
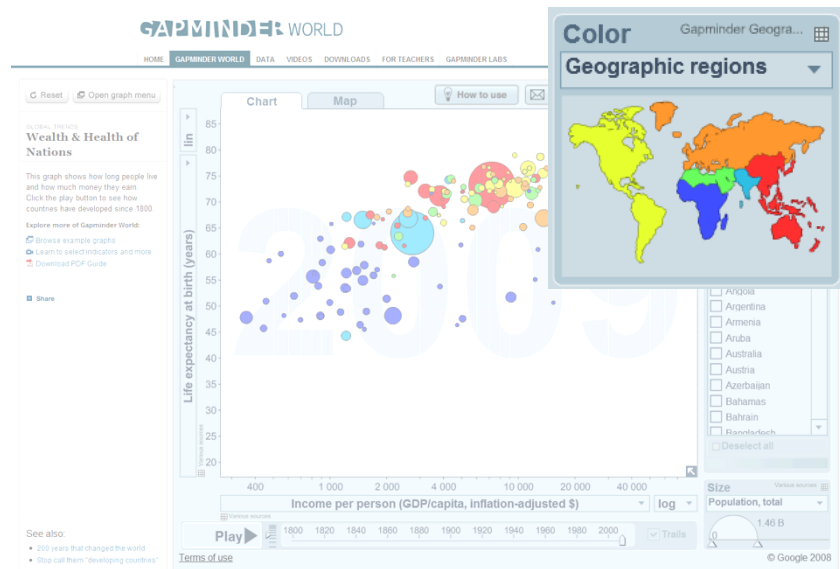
From Sternberg (2018) *Legibility of Musical Scores and Parallels with Language Reading*  
Unpublished PhD thesis, Cambridge Centre for Music and Science

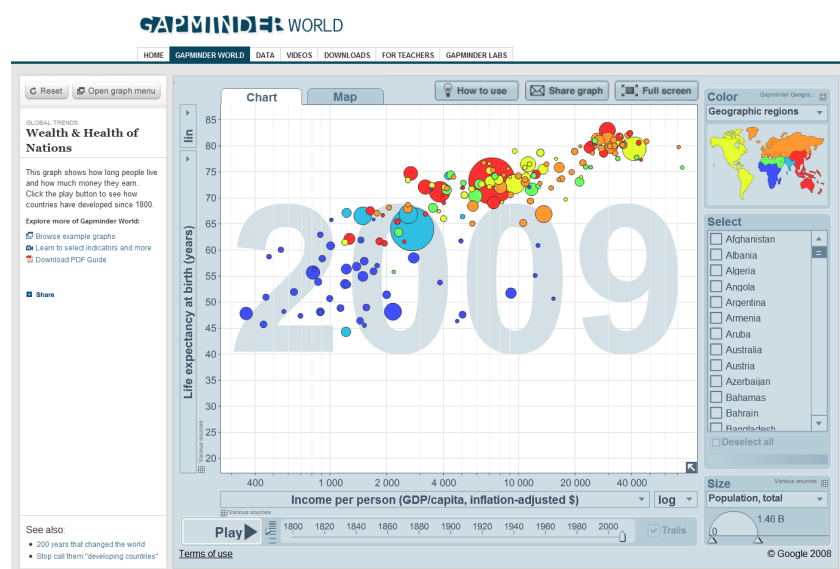
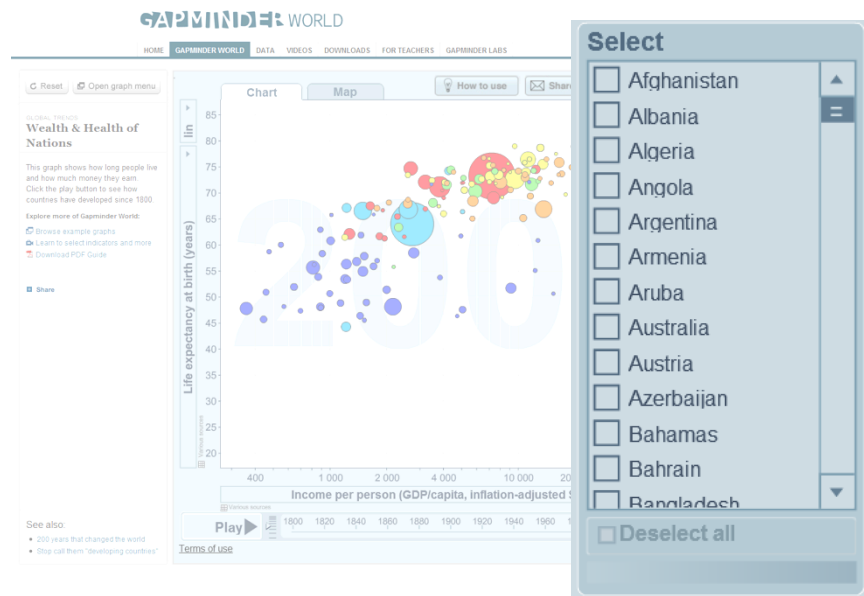
J. S. Bach Chorale number 285  
Redesigned for performance by Arild Stenberg



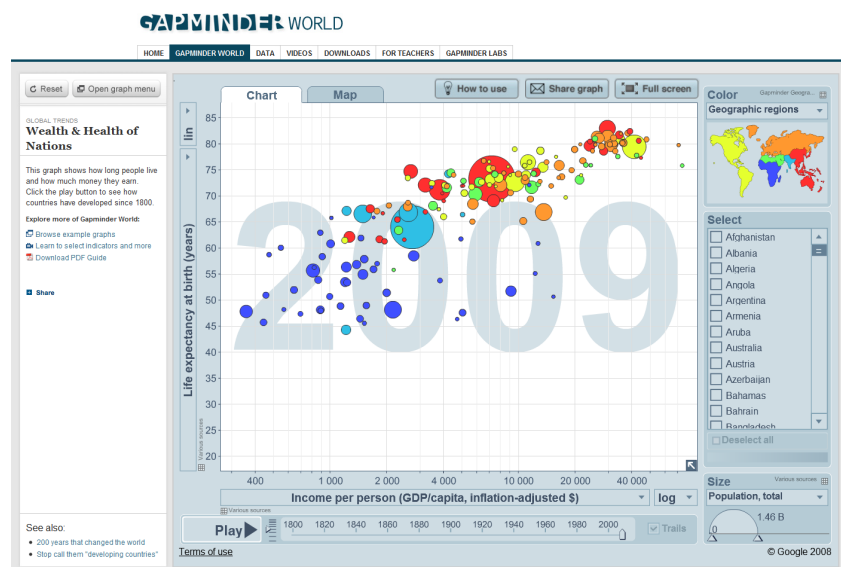
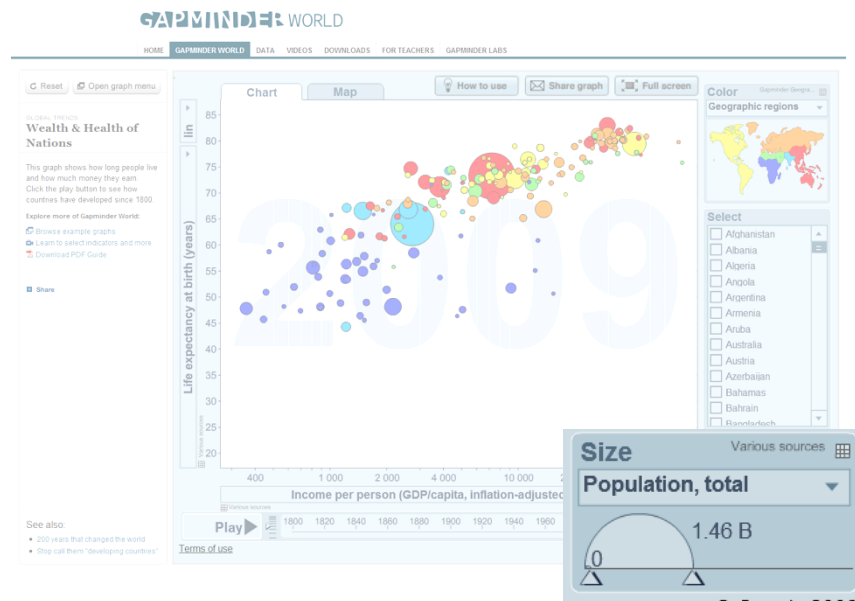
	Graphic Resources	Correspondence	Design Uses
Marks	Shape	Conventional (arbitrary)	Mark position identify category (shape)
Symbols	Geometric elements Letter forms Connective elements	Topological (linking) Acquired (specialist literacies)	Texts Definition of regions
Regions	Alignment grids White space	Containment Separation	Segregating and nesting multiple surface conventions in panels Accommodating labels
Surfaces	Material object on which the marks are imposed (paper)	Metrical (quantitative axes) Juxtaposed and ordered (regions)	Musical score

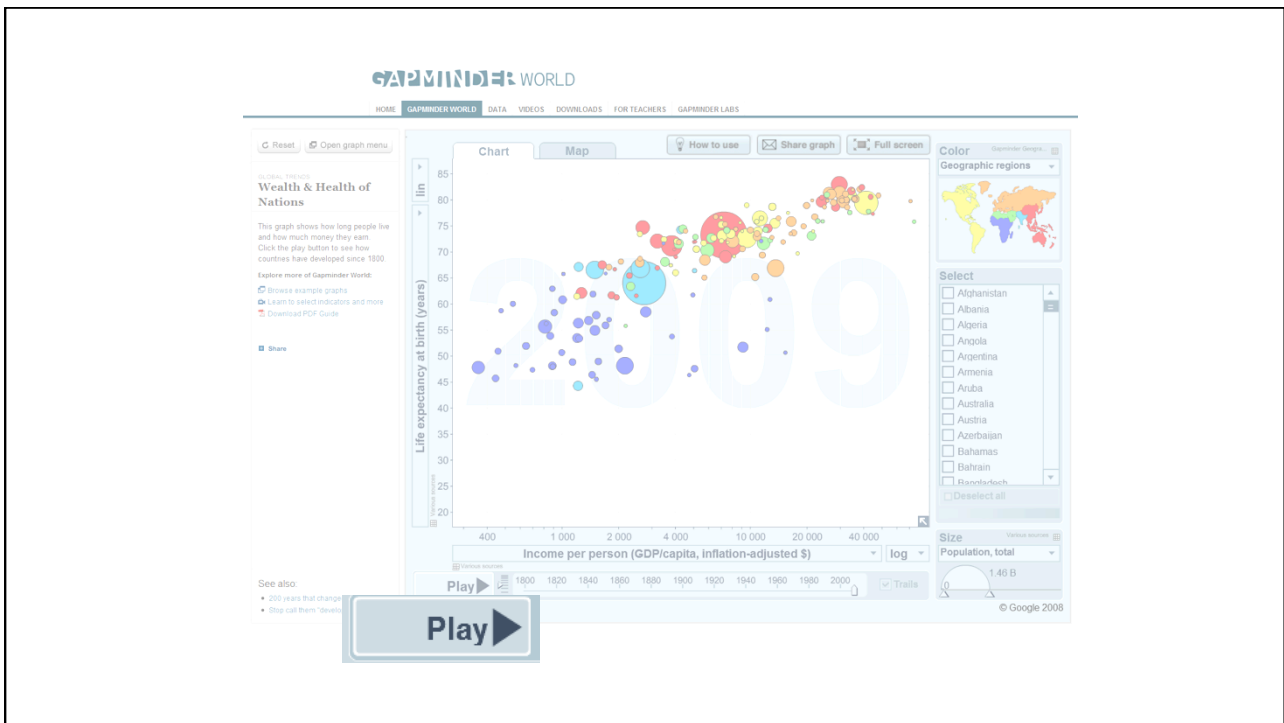


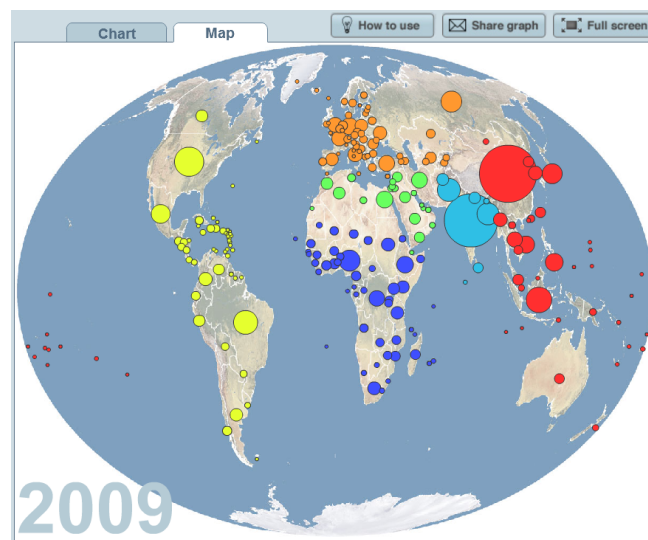
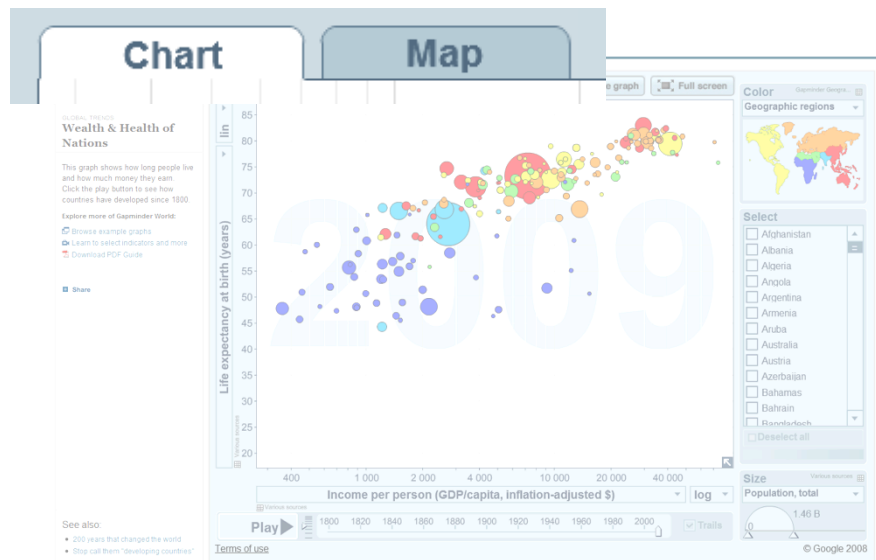


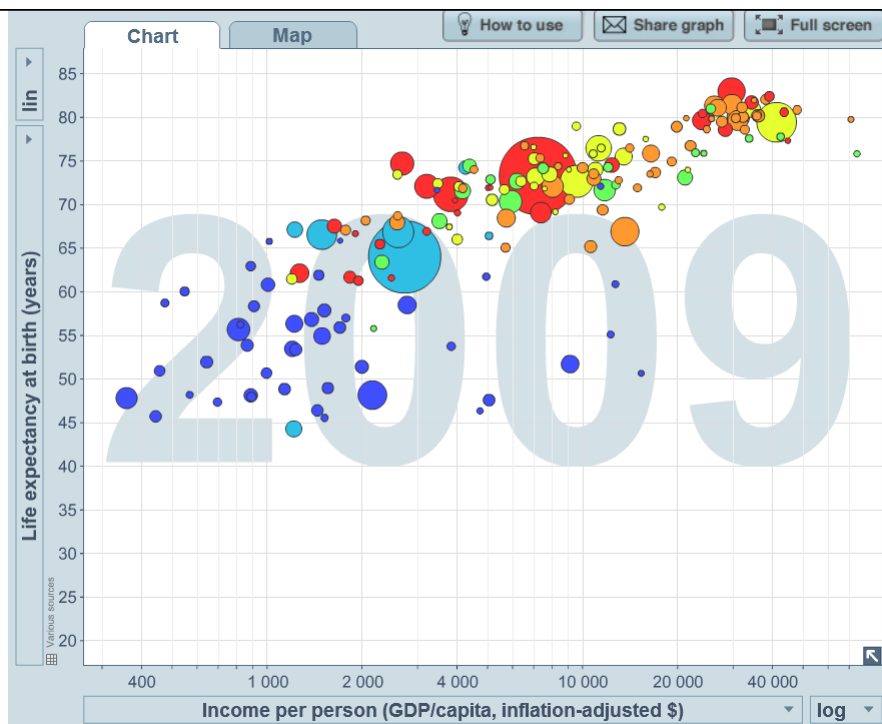
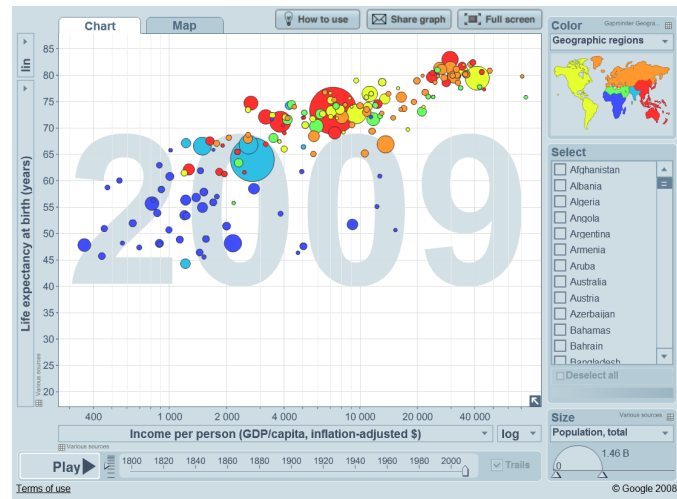


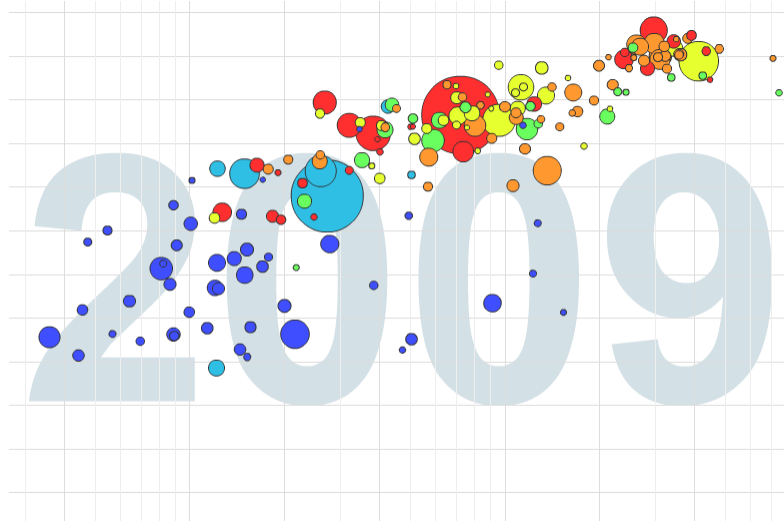












	Graphic Resources	Correspondence	Design Uses
Marks	Size Colour	Mapping (quantity, relative scale)	Mark position identify category (colour) Express magnitude (size)
Symbols	Geometric elements Connective elements	Topological (linking)	Diagram elements Visual rhetoric
Regions	Alignment grids	Containment Separation Framing (composition)	Segregating or nesting multiple surface conventions in panels Accommodating labels, captions or legends
Surfaces	Display medium (web browser)	Metrical (quantitative axes) Image-schematic?	Graphs and charts