

Lecture Notes For Tutorial: Graphic Design for Usable GUI's

Aaron Marcus, President
Aaron Marcus and Associates, Inc.

Volker Frank, Designer/Analyst
Aaron Marcus and Associates, Inc.

John Armitage Designer/Analyst
Aaron Marcus and Associates, Inc.

Pamela Tien, Designer/Analyst
Aaron Marcus and Associates, Inc.

**SIGGRAPH '96
New Orleans, Louisiana
5 August 1996**

© Copyright 1996 by Aaron Marcus and Associates, Inc.
All rights reserved.
For further information, please contact:

Mr. Aaron Marcus, President
Aaron Marcus and Associates, Inc.
1144 65th Street, Suite F
Emeryville, CA 94608-1053USA
Telephone: 510-601-0994 x19

Lecture Notes For Tutorial: Graphic Design for Usable GUI's

**Aaron Marcus, President
Aaron Marcus and Associates, Inc.**

**Volker Frank, Designer/Analyst
Aaron Marcus and Associates, Inc.**

**John Armitage Designer/Analyst
Aaron Marcus and Associates, Inc.**

**Pamela Tien, Designer/Analyst
Aaron Marcus and Associates, Inc.**

**SIGGRAPH '96
New Orleans, Louisiana
5 August 1996**

© Copyright 1996 by Aaron Marcus and Associates, Inc.
All rights reserved.
For further information, please contact:

**Mr. Aaron Marcus, President
Aaron Marcus and Associates, Inc.
1144 65th Street, Suite F
Emeryville, CA 94608-1053USA
Telephone: 510-601-0994 x19**

Table of Contents

Section/Page	Item
INTRO/2	Table of Contents
INTRO/3	Tutorial Abstract
INTRO/4	Instructor Biography
INTRO/5	Agenda
INTRO/6	Lecture Materials
PEVC/1	Lecture 1: Principles of Effective Visual Communication
GS/1	Lecture 2: Grid Systems in GUI Design
ID/1	Lecture 3: Icon Design, Semiotics
DD/1	Lecture 4: Dialogue Design
FUID/1	Lecture 5: The Future of User Interface Design
MD/1	Lecture 6: Metaphor Design
APP/1	Appendices

Tutorial Abstract

The tutorial will introduce terminology, principles, guidelines, and heuristics for using information-oriented, systematic graphic design in graphical user interfaces (GUIs), especially for the design of icons, dialogue boxes and control panels, metaphors, mental models, and other navigational devices that often are not prescribed by window management systems.

Participants will be exposed to a wide body of existing knowledge and practical advice that are immediately useful, as well as potential research topics in user interface design. They will observe and analyze techniques for making displays more intelligible, functional, aesthetic, and marketable.

Extensively illustrated lectures and demo excerpts will cover perceptual, conceptual, and communication issues in typography, symbol systems, color, spatial composition, animation, and sequencing, including the design of the following:

Metaphors	Charts and diagrams
Mental models and navigation	Icons and cursors
Look and feel	Windows and menus
Proportion and composition: grids	Dialogue boxes/control panels
Color selection	Visual semiotics conventions
Tables and forms	Style guides

Practical pen-and-paper design problems with critical review and commentary by the instructor will give participants experience in designing components of graphical user interfaces, such icons, dialogue boxes, and metaphors.

Instructor Biographies

Aaron Marcus, President

Aaron Marcus received a BA in Physics from Princeton University (1965) and a BFA and MFA in Graphic Design from Yale University Art School (1968). He is an internationally recognized authority on the design of user interfaces, interactive multimedia, and printing/publishing documents, including charts, forms, icons, and screens. Mr. Marcus has given tutorials at SIGGRAPH, NCGA, and SIGCHI conferences in addition to seminars at businesses and academic institutions in Australia, Canada, Finland, Israel, Singapore, South Korea, the USA, and Japan. He co-authored *Human Factors and Typography for More Readable Programs* (1990), *The Computer Image* (1982), and authored *Graphic Design for Electronic Documents and User Interfaces* (1992), all published by Addison-Wesley.

Mr. Marcus was the world's first professional graphic designer to be involved full-time in computer graphics (1967), the first graphic designer to program a desktop publishing system (for the AT+T Picturephone, 1969-71), the first graphic designer to design virtual realities (1971-73), the first graphic designer to establish an independent computer-based graphic design firm for the purpose of designing user interfaces, electronic documents, and multimedia (1982), the only graphic designer to be co-awarded a research grant (\$500,000 for three years) by the US Defense Department's Advanced Research Projects Agency (DARPA) to develop new document design standards for programming languages (1982-85), and the only graphic designer to receive the National Computer Graphics Association (NCGA/USA) Industry Achievement Award for contributions to computer graphics (1992).

Wolfgang Heidrich, Designer/Analyst

Mr. Heidrich received his BA degree in graphic design from the College of Design Schwäbisch Gmünd in Germany and his MA in graphic design from the Central St. Martins College of Art and Design in London. He has done corporate identity design for several German cities and information-oriented graphic design for Bosch GmbH in Germany. He has worked as a user interface designer in the Human Factors Division of BT Laboratories in England, where he specialized in the design of interactive multimedia and graphical user interfaces for network management applications.

Volker Frank, Designer/Analyst

Mr. Frank received his MA in Design in 1994 from the University of Cincinnati. His thesis concerned instructional multimedia. He studied visual communication in Mainz, Germany, during which he also worked as a free-lance magazine designer and as a design consultant for DTV, a major German publishing house.

John Armitage, Designer/Analyst

Mr. Armitage received his BFA in Graphic Design from Miami University in 1985, and his MFA in Graphic Design from Rhode Island School of Design (RISD) in 1989. He has held full-time design positions with The Procter & Gamble Co. in Cincinnati, Ohio, Total Design BV in The Netherlands, The Limited Inc. in Columbus, Ohio and Times Mirror Multimedia/Ehrlich Multimedia in Park Ridge, New Jersey. His art direction and design of Migraine Education, an educational multimedia program for Sandoz Corporation, contributed to its being awarded a Bronze Medal in the 1994 *NewMedia* Invision Awards competition.

Aaron Marcus, President

Mr. Marcus received a BA in Physics from Princeton University (1965) and a BFA and MFA in graphic design from Yale University Art School (1968). He is an internationally recognized authority on the design

of user interfaces, interactive multimedia, and printing/publishing documents. Mr. Marcus has given tutorials at ACM's SIGGRAPH, and SIGCHI conferences in addition to seminars at businesses and academic institutions around the world. He co-authored *Human Factors and Typography for More Readable Programs* (1990), *The Cross-GUI Handbook* (1994), and authored *Graphic Design for Electronic Documents and User Interfaces* (1992), all published by Addison-Wesley.

Mr. Marcus was the world's first professional graphic designer to be involved full-time in computer graphics (1967), the first graphic designer to program a desktop publishing system (for the AT&T Picturephone, 1969-71), the first graphic designer to design virtual realities (1971-73), the first graphic designer to establish an independent computer-based graphic design firm (1982), and the only graphic designer to receive the National Computer Graphics Association Industry Achievement Award for contributions to computer graphics (1992).

**John Armitage,
Designer/Analyst**

Mr. Armitage received his BFA in Graphic Design from Miami University in 1985, and his MFA in Graphic Design from Rhode Island School of Design (RISD) in 1989. His thesis at RISD concerned design process, strategy, and methods. His professional design experience has involved a wide variety of applications including educational interactive multimedia, information design, signage, environmental design, publication design, retail marketing, corporate identity, corporate literature, packaging, and advertising. He has held full-time design positions with The Procter & Gamble Co. in Cincinnati, Ohio, Total Design BV in The Netherlands, The Limited Inc. in Columbus, Ohio and Times Mirror Multimedia/Ehrlich Multimedia in Park Ridge, New Jersey. His art direction and design of Migraine Education, an educational multimedia program for Sandoz Corporation, contributed to its being awarded a Bronze Medal in the 1994 *NewMedia* Invision Awards competition.

**Volker Frank,
Designer/Analyst**

Mr. Frank received his MA in Design in 1994 from the University of Cincinnati. His thesis concerned instructional multimedia. Earlier, he studied visual communication in Mainz, Germany, where he also worked as a free-lance magazine designer and as a design consultant for DTV, a major German publishing house. At AM+A, Mr. Frank has recently worked on two computer-based training (CBT) CD-ROMs for Oracle Corporation, and is currently working on two CBT CD-ROMs for a start-up company specializing in scientific subjects.

**Pamela Tien,
Designer/Analyst**

Ms. Tien received her BFA in Graphic Design from Rhode Island School of Design in 1995. Her degree project studied Zen aesthetics as a source for ways to make western design more ecological and user-centered. She also studied the semiotics of icons and symbols, analytical writing and screen writing. Ms. Tien has won awards for writing and design, including the Honors Design Scholarship from the Women's Advertising Club of Rhode Island. Prior to joining AM+A, she had interned as a graphic designer, exhibit designer, and assistant marketing analyst of focus group research.

Agenda for the Tutorial

Tutorial

7 August 1995

Time	Topic
-------------	--------------

Morning Session

8:30-9:30	Lecture 1: Principles of Effective Visual Communication
9:30-10:15	Lecture 2: Grid Systems in GUI Design
10:15-10:30	Break
10:30-11:15	Lecture 3: Icon Design, Semiotics
11:15-12:00	Project 1: Icon Design
12:00-1:30	Lunch

Afternoon Session

1:30-2:00	Lecture 4: Dialogue Design
2:00-2:45	Project 2: Dialogue Design
2:45-3:00	Break
3:00-3:45	Lecture 5: The Future of User Interface Design
3:45-4:15	Lecture 6: Metaphor Design
4:15-5:00	Project 3: Metaphor Design

Lecture Materials

The following pages present materials for the lectures of the tutorial. Supplementary information may be found in the Appendices of the tutorial notes, and in the accompanying text to the tutorial, *Graphic Design for Electronic Documents and User Interfaces*, and *The Cross-GUI Handbook for Multiplatform User Interface Design*, both published by Addison-Wesley.