

THE DESIGN OF DESIGN

ESSAYS FROM A COMPUTER SCIENTIST

FREDERICK P. BROOKS, JR.



Photo credit: © Jerry Markatos

ABOUT THE AUTHOR

Frederick P. Brooks, Jr., is Kenan Professor of Computer Science at the University of North Carolina at Chapel Hill. He is best known as the "father of the IBM System/360," having served as project manager for its development and later as manager of the Operating System/360 software project during its design phase. For this work, he, Bob Evans, and Erich Bloch were awarded the National Medal of Technology in 1985. Earlier, he was an architect of the IBM Stretch and Harvest computers.

At Chapel Hill, Dr. Brooks founded the Department of Computer Science and chaired it from 1964 through 1984. He has served on the National Science Board and the Defense Science Board. His current teaching and research is in computer architecture, interactive computer graphics, and virtual environments.

Design of Design, The: Essays from a Computer Scientist

Table of Contents

C	\cap	n	te	n	te
١,	. ,		1		1.5

Preface

I: Models of Designing

Chapter 1 The Design Question

Chapter 2 How Engineers Think of DesignThe Rational Model

Chapter 3 Whats Wrong with This Model?

Chapter 4 Requirements, Sin, and Contracts

Chapter 5 What Are Better Design Process Models?

II: Collaboration and Telecollaboration

Chapter 6 Collaboration in Design

Chapter 7 Telecollaboration

III: Design Perspectives

Chapter 8 Rationalism versus Empiricism in Design

Chapter 9 User ModelsBetter Wrong than Vague

Chapter 10 Inches, Ounces, Bits, DollarsThe Budgeted Resource

Chapter 11 Constraints Are Friends

Chapter 12 Esthetics and Style in Technical Design

Chapter 13 Exemplars in Design

Chapter 14 How Expert Designers Go Wrong

Chapter 15 The Divorce of Design



Table of Contents

Chapter 16 Representing	Designs	Trajectories	and
Rationales			

IV: A Computer Scientists Dream System for Designing Houses

Chapter 17 A Computer Scientists Dream System for Designing HousesMind to Machine

Chapter 18 A Computer Scientists Dream System for Designing HousesMachine to Mind

V: Great Designers

Chapter 19 Great Designs Come from Great Designers Chapter 20 Where Do Great Designers Come From?

VI: Trips through Design Spaces: Case Studies

Chapter 21 Case Study: Beach House View/360

Chapter 22 Case Study: House Wing Addition

Chapter 23 Case Study: Kitchen Remodeling

Chapter 24 Case Study: System/360 Architecture

Chapter 25 Case Study: IBM Operating System/360

Chapter 26 Case Study: Book Design of Computer

Architecture: Concepts and Evolution

Chapter 27 Case Study: A Joint Computer Center

Organization: Triangle Universities Computation Center

Chapter 28 Recommended Reading

Acknowledgments

Bibliography

People Index

Α

В



Table of Contents

С

D

Ε

F

G

Н

I

J

Κ

L

Μ

Ν

0

Р

Q

R

S

Т

U

۱/

W

Υ

Ζ

Subject Index

Α

В

С

Table of Contents

D

Ε

F

G

Н

I

J

Κ

L

М

Ν

0

Р

Q

R

S

Т

U

٧

W

Υ

Ζ