# Contents

#### Introduction

### PART | foundations

1	Why Visualize: From Information to Wisdom	5
	Rational Optimism	6
	Low-Tech Visualization to the Rescue	. 8
	Drowning in Data? Only If You Don't Know How	
	to Swim	14
	From Information to Wisdom	15
	Making Reality Visible	17
	Visualization as a Technology	19
2	Forms and Functions: Visualization as a Technology	25
	An Information Graphic on Defense	26
	What Shape Should My Data Have?	28
	The Origins of "Form Follows Function"	32
	More about Functions in Nature	33
	Functions Constrain Forms	36
	The Bubble Plague	39
	More Flexible Than It Seems	43
3	The Beauty Paradox: Art and Communication	45
	Building a Narrative Structure	46
	An Unexpectedly Controversial Chart	47
	The Visualization Wheel	50
	Abstraction-Figuration	52
	Functionality-Decoration	53
	Density-Lightness	54
	Multidimensionality-Unidimensionality	54
	Originality-Familiarity	54
	Novelty-Redundancy	57
	Identifying your audience	59
	Engineers vs. Designers: Edward Tufte and	
	Nigel Holmes	61
	Minimalism and Efficiency	63

xiv

	Is All "Chartjunk" Junk?	64
	Fun and Functionality	68
	Otto Neurath and the Visual Education of the Masses	70
4	The Complexity Challenge:	
	Presentation and Exploration	73
	It's Not the Style, It's the Content	74
	Seek Depth	76
	Graphics Don't "Simplify" Information	78
	Finding Balance: Density and Multidimensionality	80
	Functionality and Abstraction	81
	Fun-tionality	85
	The "Boom" Effect	86

## PART II cognition

5	The Eye and the Visual Brain	97
	The Unexplained Eye	98
	Let There Be Light	99
	Light and Photoreceptors	100
	Foveal, Peripheral Vision, and Animated Infographics	102
	The Lying Brain	105
	The Efficient Brain	108
	A New Diagram For Vision	110
6	Visualizing for the Mind	111
	The Brain Loves a Difference	111
	The Gestalt School of Thought and Pattern Recognition	114
	Choosing Graphic Forms Based on How Vision Works	118
	The Perceptual Tasks Scale as a Guide for Graphics	123
	Other Preattentive Features: Seeing in Depth	128
7	Images in the Head	133
	How to Open an Airplane Door	134
	Recognizing by Remembering	136
	The Comparing Brain	139
	The Mental Imagery Debate	141
	How Do We Really Know that a Face is a Face?	142
	Applying Object Recognition to Information Graphics	144
	Looking Ahead	146

### PART III practice

8	Creating Information Graphics	153
	Brazilian Saints	154
	The Changing Face of Brazil's Population	160
	Inequality and the Economy	167
	A Word on Structure, Color, and Type	171
9	The Rise of Interactive Graphics	185
	Early Lessons on Interaction Design	188
	Visibility	189
	Feedback	190
	Constraints	192
	Consistency	192
	Structuring Interactive and Animated Infographics	195
	Different Kinds of Interaction	200
	Instruction	200
	Conversation	200
	Manipulation	203
	Exploration	204
	How to Plan For Interactive Infographics	204
PART IV P	orofiles	
1	The Infographics Gentleman	212
	John Grimwade (Condé Nast Traveler magazine)	
2	Information Art	231
	Juan Velasco and Fernando Baptista (National Geographic magazine)	
3	All the Infographics That Are Fit to Print	250
	Steve Duenes and Xaquín G.V. (The New York Times)	
4	Capital Infographics	264

•	Hannah Fairfield (The Washington Post)
5	Germanic Precision

279

Jan Schwochow (Golden Section Graphics)

6	Visualization in Academia	293
	Geoff McGhee (Stanford University)	
7	Quantitative Humanism	306
	Hans Rosling (Gapminder Foundation)	
8	Truth and Beauty Operator	314
	Moritz Stefaner (http://moritz.stefaner.eu)	
9	The Rising Stars	326
	Gregor Aisch (driven-by-data.net) and	
	Jan Willem Tulp ( <i>TULP interactive</i> )	
10	Visualizing Literature	342
	Stefanie Posavec (itsbeenreal.co.uk)	
	Bibliography	351
	Index	354