Persuasive Technology

Using Computers to Change What We Think and Do

B.J. Fogg, Ph.D. Stanford University

14′

MORGAN KAUPMANN PUBLISHERS

AN IMPRINT OF ELSEVIER SCIENCE

AMSTERDAM BOSTON LONDON NEW YORK

OXFORD ^ARIS SAN DIEGO SAN FRANCISCO
SINGAPORE SYDNEY TOKYO

Contents

Foreword

by Philip G. Zimbardo, Ph.D.

Preface

Introduction: Persuasion in the Digital Age

Persuasion on the Web 2

Beyond the Web 2

The Emergence of "Captology" 5

Potential and Pitfalls 5

Advantage over Traditional Media: Interactivity 6

Advantages over Human Persuaders 7

- 1. Computers Are Persistent 7
- 2. Computers Allow Anonymity 8
- 3. Computers Can Store, Access, and Manipulate Huge Volumes of Data
- 4. Computers Can Use Many Modalities 9
- 5. Computer Software Can Scale 10
- 6. Computers Can Be Ubiquitous 10

How to Read This Book 11

Notes and References 12

- •	chapter 1	Overview of Captology	15
		Defining Persuasion 15	
		Focus on the Human-Computer, Relationship 16	
		Persuasion Is Based on Intentions, Not Outcomes 16	
		Levels of Persuasion: Macro and Micro 17	
		Microsuasion on the Web 19 Microsuasion in Video Games 19	
		Captology: Summary of Key Terms and Concepts 20	
		Notes and References 20	
;	chapter 2	The Functional Triad: Computers in Persuasive Roles	23
		The Functional Triad: Roles Computers Play 23	
		Computers as Tools 24 Computers as Media 25 Computers as Social Actors 26	
		Applying the Functional Triad to Captology 27	
		Research and Design Applications 27	
		Notes and References 29	
-	Chapter 3	Computers as Persuasive Tools	31
		Seven Types of Persuasive Technology Tools 32	
		Reduction Technology: Persuading through Simplifying 33	
		Simplifying Political Input 34	
		Tunneling Technology: Guided Persuasion 34	
		Ethical Concerns 37	
		Tailoring Technology: Persuasion through Customization 37	
		Ethical Concerns 40 Tailoring Information for Context 40	

Timing Is Critical 43
Self-Monitoring Technology: Taking the Tedium Out of Tracking 44
Eliminating a Language Quirk 45
Surveillance Technology: Persuasion through Observation 46
Surveillance Must Be Overt 47 Rewarding through Surveillance 48 Public Compliance without Private Acceptance 49
Conditioning Technology: Reinforcing Target Behaviors 49
Technology Applications of Operant Conditioning 50 Operant Conditioning in Computer Games 51 Applying Periodic Reinforcement 51 Shaping Complex Behaviors 53
The Right Persuasive Tool(s) for the Job 53
Notes and References 54
Computers as Persuasive Media: Simulation
Computers as Persuasive Media: Simulation Persuading through Computer Simulation 62
Persuading through Computer Simulation 62
Persuading through Computer Simulation 62 Cause-and-Effect Simulations: Offering Exploration and Insight 63 HIV Roulette: A Cause-and-Effect Simulator 64 Rockett's New School: Learning Social Skills 66
Persuading through Computer Simulation 62 Cause-and-Effect Simulations: Offering Exploration and Insight 63 HIV Roulette: A Cause-and-Effect Simulator 64 Rockett's New School: Learning Social Skills 66 Implications of Designer Bias 67
Persuading through Computer Simulation 62 Cause-and-Effect Simulations: Offering Exploration and Insight 63 HIV Roulette: A Cause-and-Effect Simulator 64 Rockett's New School: Learning Social Skills 66 Implications of Designer Bias 67 Environment Simulations: Creating Spaces for Persuasive Experiences 69
Persuading through Computer Simulation 62 Cause-and-Effect Simulations: Offering Exploration and Insight 63 HIV Roulette: A Cause-and-Effect Simulator 64 Rockett's New School: Learning Social Skills 66 Implications of Designer Bias 67
Persuading through Computer Simulation 62 Cause-and-Effect Simulations: Offering Exploration and Insight 63 HIV Roulette: A Cause-and-Effect Simulator 64 Rockett's New School: Learning Social Skills 66 Implications of Designer Bias 67 Environment Simulations: Creating Spaces for Persuasive Experiences 69 LifeFitness VR Rowing Machine: Competing in a Virtual Environment 70 The Tectrix VR Bike: Pedaling to Explore a Virtual Environment 70 Managing Asthma in a Simulated Environment 72 Using Simulation to Overcome Phobias 74
Persuading through Computer Simulation 62 Cause-and-Effect Simulations: Offering Exploration and Insight 63 HIV Roulette: A Cause-and-Effect Simulator 64 Rockett's New School: Learning Social Skills 66 Implications of Designer Bias 67 Environment Simulations: Creating Spaces for Persuasive Experiences 69 LifeFitness VR Rowing Machine: Competing in a Virtual Environment 70 The Tectrix VR Bike: Pedaling to Explore a Virtual Environment 70 Managing Asthma in a Simulated Environment 72 Using Simulation to Overcome Phobias 74 In My Steps: Helping Doctors to Empathize with Cancer Patients 76

; chapter 4

; chapter 5	Computers as Persuasive Social Actors	89
	Five Types of Social Cues 90	
	Persuasion through Physical Cues 91	
	The Impact of Physical Attractiveness 92	
	Using Psychological Cues to Persuade 94	
	The Stanford Similarity Studies 95 The Personality Study 95 The Affiliation Study 98 Ethical and Practical Considerations 100 The Oscilloscope Study 100	
	Influencing through Language 101	
	Persuading through Praise 103	
	Social Dynamics 105	
	The Reciprocity Study 108	
	Persuading by Adopting Social Roles 111	
	Computers in Roles of Authority 111	
	Social Cues: Handle with Care 114	
	Notes and References 115	
j chapter 6	6 Credibility and Computers	12 ⁻
	What Is "Credibility"? 122	
	A Simple Definition 122 Trustworthiness 123 Expertise 124 Combinations of Trustworthiness and Expertise 124	
	When Credibility Matters in Human-Computer Interaction 125	
	Instructing or Advising 126 Reporting Measurements 127 Providing Information and Analysis 128 Reporting on Work Performed 128 Reporting on Their Own State 129	

147

Running Simulations 130 Rendering Virtual Environments 130
Four Types of Credibility 131
Presumed Credibility 132 Surface Credibility 132 Reputed Credibility 135 Earned Credibility 136
Dynamics of Computer Credibility 137
Errors in Credibility Evaluations 139
Appropriate Credibility Perceptions 140
The Future of Computer Credibility 141
Notes and References 141
Credibility and the World Wide Web
The Importance of Web Credibility 148
Variability of Web Credibility 148
Two Sides of Web Credibility 149
The Stanford Web Credibility Studies 150
A Few Words about Our Findings 152 Interpreting the Data 155
Frustworthiness and Expertise on the Web 156
Trustworthiness and Web Credibility 156 Elements that Increase Credibility: Significant Changes in 2002 Results 155 Elements that Decrease Credibility: Significant Changes in 2002 Results 155 Expertise and Web Site Credibility 160 Elements that Increase Credibility: Significant Changes in 2002 Results 165 Elements that Decrease Credibility: No Significant Changes in 2002 162
The Four Types of Web Credibility 163
Presumed Credibility on the Web 163 Reputed Credibility on the Web 165 Awards 165 * Seals of Approval 165 ^

; Chapter 7

xx • Persuasive Technology

Chapter 8

Linksfrom Credible Sources 166				
Word-of-Mouth Referrals 167				
Surface Credibility on the Web 167				
Design Matters 167				
Enhancing Surface Credibility 169				
Earned Credibility on the Web 170 The Interaction Is Easy 171 The Information Is Personalized 172 The Service Is Responsible to Contempor Issues 172				
				The Service Is Responsive to Customer Issues 172
				The Web Credibility Framework 173
The Web Credibility Grid 175				
The Future of Web Credibility Research and Design 176				
Notes and References 177				
Increasing Persuasion through Mobility and Connectivity				
Intervening at the Right Time and Place 183				
The Study Buddy 183				
HydroTech 184				
An Emerging Frontier for Persuasive Technology 185				
Persuasion through Mobile Technology 185				
Examining Mobile Health Applications 186				
The Kairos Factor 187				
The Convenience Factor 188 -				
Simplifying Mobile Devices to Increase Persuasion Power 190				
Wedded to Mobile Technology 192				
Motivating Users to Achieve Their Own Goals 193				
The Importance of Experience Design 194				
Persuasion through Connected Technology 195				
Leveraging Current, Contingent, and Coordinated Information 195				
Connected Products: Leveraging Social Influence 197				
Persuading through Social Facilitation 197				
The Power of Social Comparison 198				
Leveraging Conformity—and Resistance 199 \				

183

211

Applying Social Learning Theory 201 Modeling Behavior at QuitNet.com 201 Modeling at epinions.com 204 Persuading through Intrinsic Motivation 204 AlternaTV: Leveraging Group-Level Intrinsic Motivators 205 The Future of Mobile and Connected Persuasive Technology 207 Notes and References 208 The Ethics of Persuasive Technology Is Persuasion Unethical? 212 Unique Ethical Concerns Related to Persuasive Technology 213 1. The Novelty of the Technology Can Mask Its Persuasive Intent 213 2. Persuasive Technology Can Exploit the Positive Reputation of Computers 215 3. Computers Can Be Proactively Persistent 216 4. Computers Control the Interactive Possibilities 216 5. Computers Can Affect Emotions But Can't Be Affected by Them 217 6. Computers Cannot Shoulder Responsibility 218 Intentions, Methods, and Outcomes: Three Areas Worthy of Inquiry 220 Intentions: Why Was the Product Created? 220 Methods of Persuasion 221 Using Emotions to Persuade 222 Methods That Always Are Unethical 223 Methods That Raise Red Flags 224 Operant Conditioning 224 Surveillance 226 Outcomes: Intended and Unintended 227 Responsibility for Unintended Outcomes 229 When Persuasion Targets Vulnerable Groups 230

Stakeholder Analysis: A Methodology for Analyzing Ethics 233

Step 4: Evaluate Which Stakeholder Has the IQlost to Gain 234 Step 5: Evaluate Which Stakeholder Has the Most to Lose 234

Step 2: List What Each Stakeholder Has to Gain 233 Step 3: List What Each Stakeholder Has to Lose 234

Step 1: List All of the Stakeholders 233

; chapter 9

xxii • Persuasive Technology

	Step 6: Determine Ethics by Examining Gains and Losses in Terms of Values Step 7: Acknowledge the Values and Assumptions You Bring to Your Analysis 234	234
	Education Is Key 235	
	Notes and References 235	
• chapter 10	Captology: Looking Forward	241
	Five Future Trends in Captology 243	
	Trend 1: Pervasive Persuasive Technologies 243 Trend 2: Growth Beyond Buying and Branding 244 Healthcare 245 Education 246 Trend 3: Increase in Specialized Persuasive Devices 246 Trend 4: Increased Focus on Influence Strategies 247 Trend 5: A New Focus on Influence Tactics 249 Looking Forward Responsibly 250 Notes and References 251	
	Appendix: Summary of Principles	255
	Figure Credits	263
	Index	267
	About the Author	283