

CONTENTS

PREFACE	xv
CHAPTER 1 • INTRODUCTION	1
1.1 An ink blot.....	1
1.2 Welcome to the digital age	2
1.3 Research design	5
1.4 Themes of this book.....	6
1.5 Outline of this book.....	9
What to read next.....	11
CHAPTER 2 • OBSERVING BEHAVIOR	13
2.1 Introduction.....	13
2.2 Big data	14
2.3 Ten common characteristics of big data	17
2.3.1 Big	17
2.3.2 Always-on.....	21
2.3.3 Nonreactive	23
2.3.4 Incomplete.....	24
2.3.5 Inaccessible	27
2.3.6 Nonrepresentative	29
2.3.7 Drifting.....	33
2.3.8 Algorithmically confounded.....	35
2.3.9 Dirty	37
2.3.10 Sensitive	39
2.4 Research strategies.....	41
2.4.1 Counting things	41
2.4.2 Forecasting and nowcasting.....	46
2.4.3 Approximating experiments	50

2.5	Conclusion	61
	Mathematical notes	62
	What to read next	70
	Activities	77

CHAPTER 3 • ASKING QUESTIONS 85

3.1	Introduction	85
3.2	Asking versus observing	87
3.3	The total survey error framework	89
	3.3.1 Representation	91
	3.3.2 Measurement	94
	3.3.3 Cost	98
3.4	Who to ask	99
3.5	New ways of asking questions	107
	3.5.1 Ecological momentary assessments	108
	3.5.2 Wiki surveys	111
	3.5.3 Gamification	115
3.6	Surveys linked to big data sources	117
	3.6.1 Enriched asking	118
	3.6.2 Amplified asking	122
3.7	Conclusion	130
	Mathematical notes	130
	What to read next	136
	Activities	141

CHAPTER 4 • RUNNING EXPERIMENTS 147

4.1	Introduction	147
4.2	What are experiments?	149
4.3	Two dimensions of experiments: lab–field and analog–digital	151
4.4	Moving beyond simple experiments	158
	4.4.1 Validity	161
	4.4.2 Heterogeneity of treatment effects	167
	4.4.3 Mechanisms	169
4.5	Making it happen	174
	4.5.1 Use existing environments	175
	4.5.2 Build your own experiment	178

4.5.3	Build your own product	182
4.5.4	Partner with the powerful	183
4.6	Advice	188
	4.6.1 Create zero variable cost data	190
	4.6.2 Build ethics into your design: replace, refine, and reduce	196
4.7	Conclusion	202

	Mathematical notes	203
	What to read next	209
	Activities	220

CHAPTER 5 • CREATING MASS COLLABORATION 231

5.1	Introduction	231
5.2	Human computation	233
	5.2.1 Galaxy Zoo	234
	5.2.2 Crowd-coding of political manifestos	241
	5.2.3 Conclusion	244
5.3	Open calls	246
	5.3.1 Netflix Prize	246
	5.3.2 Foldit	249
	5.3.3 Peer-to-Patent	252
	5.3.4 Conclusion	254
5.4	Distributed data collection	256
	5.4.1 eBird	257
	5.4.2 PhotoCity	259
	5.4.3 Conclusion	262
5.5	Designing your own	265
	5.5.1 Motivate participants	265
	5.5.2 Leverage heterogeneity	266
	5.5.3 Focus attention	267
	5.5.4 Enable surprise	267
	5.5.5 Be ethical	268
	5.5.6 Final design advice	269
5.6	Conclusion	271
	What to read next	272
	Activities	277

CHAPTER 6 • ETHICS

281

6.1	Introduction.....	281
6.2	Three examples	283
6.2.1	Emotional Contagion	284
6.2.2	Tastes, Ties, and Time.....	285
6.2.3	Encore	286
6.3	Digital is different.....	288
6.4	Four principles	294
6.4.1	Respect for Persons	295
6.4.2	Beneficence	296
6.4.3	Justice	298
6.4.4	Respect for Law and Public Interest	299
6.5	Two ethical frameworks	301
6.6	Areas of difficulty	303
6.6.1	Informed consent.....	303
6.6.2	Understanding and managing informational risk	307
6.6.3	Privacy	314
6.6.4	Making decisions in the face of uncertainty	317
6.7	Practical tips	321
6.7.1	The IRB is a floor, not a ceiling	321
6.7.2	Put yourself in everyone else's shoes	322
6.7.3	Think of research ethics as continuous, not discrete.....	324
6.8	Conclusion	324
	Historical appendix.....	325
	What to read next.....	331
	Activities	338

CHAPTER 7 • THE FUTURE

355

7.1	Looking forward	355
7.2	Themes of the future.....	355
7.2.1	The blending of readymades and custommades.....	355
7.2.2	Participant-centered data collection.....	356
7.2.3	Ethics in research design	357
7.3	Back to the beginning.....	358