CONTENTS

Ac	knowledgments	xi
Pr	Preface: What Will the Future Bring?	
	PART 1: BACKGROUND	
1	Worrying about the Future	1
	Why Now? Is a Forecast Possible? Why Forty Years? Bases for an Educated Guess Full Steam Ahead with a Peaceful Mind	3 4 6 7 10
2	Five Big Issues toward 2052	11
	The Sustainability Revolution Five Central Issues Involving System Change The End of Capitalism? Glimpse 2-1: The Dark Decades: Privilege and Polarization The End of Economic Growth? Glimpse 2-2: Constraining Asian Consumption The End of Slow Democracy? Glimpse 2-3: Shuffling toward Sustainability The End of Generational Harmony? Glimpse 2-4: Intergenerational War for Equity The End of Stable Climate? Glimpse 2-5: Extreme Weather in 2052 PART 2: MY GLOBAL FORECAST	12 13 14 15 23 23 30 31 36 36 40 43
3	The Logic behind My Forecast	53
	The Guiding Star A Broad-Brush Picture A Brief Summary of My Story The Deterministic Backbone Linear Presentation of a Circular Maze The Mathematical Formulation A Final Note on the Data Base	54 54 55 56 57 58 59
4	Population and Consumption to 2052	62
	Population Will Peak	62

	Workforce Will Peak a Little Earlier Productivity Will Grow, but Meet Obstacles Production (GDP) Will Grow, but More and More Slowly Glimpse 4-1: The End of Uneconomic Growth Investments—Forced and Voluntary—Will Increase New Costs Will Emerge Adaptation and Disaster Costs Will Explode The State Will Get More Involved Glimpse 4-2: Light Green Growth Consumption Will Stagnate—and Fall in Some Places	65 67 70 73 78 81 86 88 90 93
5	Energy and CO2 to 2052	99
	Energy Efficiency Will Continue to Rise Energy Use Will Grow, but Not Forever Climate Intensity Will Be Reduced by Renewables Glimpse 5-1: The Road to PV Glimpse 5-2: The Death of Nuclear CO ₂ Emissions from Energy Will Peak in 2030 Temperature Increase Will Exceed Plus 2°C Plus 2°C Will Cause Real Difficulties Glimpse 5-3: Troubled Arctic Waters Glimpse 5-4: The Flight to the City	99 102 103 106 110 116 118 120 121 125
6	Food and Footprint to 2052	130
	Food Production Will Satisfy Reduced Demand Biofuels and White Meat Will Advance Glimpse 6-1: Expensive Oil = Expensive Food Glimpse 6-2: The Limits to Protein Commercial Fish Stocks Will Be Confined to Regulated Fisheries Planetary Ecosystems Will Suffer Glimpse 6-3: The Race to Lose Last Unused Bio-capacity Will Plunge Glimpse 6-4: Urban Mining of Metals Glimpse 6-5: Nature Limited to Parks	130 133 138 139 143 144 149 151 156
7	The Nonmaterial Future to 2052	160
	Smaller GDP: Milder Push against Global Limits Slower Growth in Productivity Tensions from Declining Consumption Prevalence of Short-Termism Stronger Government Forced Redistribution Megacity Environment Glimpse 7-1: Megacity Living and Externalization of the Mind Omnipresent Internet Disappearing Charms	161 162 162 164 166 167 169 171 174
	Better Health Glimpse 7-2: Individual Health from Public Care	177 178

	Armed Forces Fighting New Threats Glimpse 7-3: The Future of War and the Rise of Robots Glimpse 7-4: Military for Sustainability	181 182 185
8	The Zeitgeist in 2052	190
0	Fragmentation: More Focus on Local Solutions Glimpse 8-1: Scotland Joins New Europe Glimpse 8-2: The End of Mediterranean Disparity	190 191 196
	Glimpse 8-3: Slum Urbanism in Africa A New Paradigm: Less Fixation with Economic Growth Glimpse 8-4: Valuing the Whole	200 203 205
	Modified Capitalism: A Stronger Role for Wise Government Glimpse 8-5: Systemic CSR, or CSR 2.0	210
	Collective Creativity: A Web of Inspired Individuals Glimpse 8-6: Harnessing the Wisdom of the Crowd	218 218
	Glimpse 8-7: Peak Youth Gaming for the Public Good Intergenerational Equity: Widening the Lens	222 226
	PART 3: ANALYSIS	
9	Reflections on the Future	229
	The Main Drivers	229
	The Future in Graphs	231
	The Cliff-Hanger	234
	My Own Reactions	236
	Eight Straight Questions about the Future	239
	Wild Cards	250
	The Path to 2052	254
	Glimpse 9-1: Sudden Rush to Solar Glimpse 9-2: Financing the Future	256 260
10	Five Regional Futures	265
	Toward 2052: The United States	266
	Glimpse 10-1: Bright Solar Future	270
	Toward 2052: China Glimpse 10-2: China—the New Hegemon	274 274
	Toward 2052: OECD-less-US	283
	Toward 2052: BRISE	288
	Glimpse 10-3: Rich on Biofuels	292
	Toward 2052: Rest of the World	296
11	Comparison with Other Futures	300
	Testing against a Global Computer Model	300
	Comparison with The Limits to Growth Studies	301
	Overshoot and Collapse in Some Detail	307
	Perspectives on the Second Half of the Twenty-First Century	313

	Glimpse 11-1: The Fifth Cultural Step	314
	Glimpse 11-2: The Third Flowering of the Tree of Life	318
12	What Should You Do?	323
	What Global Society Ideally Should Have Done	325
	Twenty Pieces of Personal Advice	328
	Learn to Live with Impending Disaster without Losing Hope	351
Closing Words		353
Ap	pendices	354
F	1. Summary	354
	2. Definitions and Data Sources	356
	3. Further Reading for the 2052 Glimpses	359
	4. Extra Data on Fertility and Productivity	366
No	tes	368
Ind	lex	377