## **Contents**

C	ontents	ix	
L	ist of Illustrations	xiii	
Li	List of Tables xv		
1	Objectives of the Text	1	
	1.1 Caveats and Constraints	2	
	1.2 Structure of the Argument	4	
	1.2.1 Ground Work	5	
	1.2.2 The Critiques	6	
	1.2.3 A Speculative Sketch of a Normative Theory	7	
	1.3 Summary	7	
2	Background and Theoretical Context	9	
	2.1 Humans are Social Animals	15	
	2.2 What is Ecological Political Economy?		
	2.3 EPE of Science Concerning Sustainable Development: A Post- normal Science Discourse		
	2.4 Post-normal Politics and Political Theory		
	2.5 Life is full of Complex Problems		
	2.6 Conclusions		
3	Defining a Living Systems Approach to Ecological Economics		
	3.1 What is a Complex System?	41	
	3.1.1 General System Theory: the origins of the concept of complexit	ty 41	
	3.1.2 Three Views of Complexity		
	3.2 What is a Living System?	46	
	3.2.1 Living Systems Behave	47	
	3.2.2 Living Systems Reproduce	48	
	3.2.3 Living Systems Evolve over Time		
	3.2.4 Summary: What is Life?		



	3.3 Core Principles of a Living Systems Approach to Ecological Economics	56
	3.3.1 The Life and Times of Georgescu-Roegen: $T \neq \Sigma t_i$ and $L \neq \Sigma$	
	3.3.2 Time T and Time t	
	3.3.3 Life L and Life 1	
	3.4 Conclusions	
4	Living with Living Systems	
	4.1 Mein Heidelberg Problem (The problem I encountered in Heidelberg, arising from when sitting in a tree)	60
	4.1.1 Experimental Subjects	
	4.1.2 Experiment Setting	
	<ul><li>4.1.3 Background</li><li>4.1.4 The 'Experimental' Event</li></ul>	
	4.1.4 The Experimental Event	
	Valuation	
	4.3 A Thick View of Being Living Systems Living within Living Systems	
	4.3.1 Environmental Value Articulation as an Other-reflecting EPF Complex	
	4.4 Life and Ecological Political Economy	
	4.5 The Politics of Science Concerning Sustainable Development	91
	4.6 Social Choice Decision Process as Living System Structures	
	4.7 Post-normal Science and the Politics of Science concerning Sustainable Development	
	4.7.1 An Empirical Observation with Normative Implications	98
	4.7.2 A Complex 'and/or' Relationship	99
	4.7.3 Extended Peer-review as a Political Process	103
	4.8 Conclusions: A Set of Living Systems Decision-making Process Criteria	
5	Codifying the Critique of Monetary Valuation	
	5.1 A Critique of the Pragmatic Defence	
	5.1.1 A) Monetary Valuation is Inaccurate	117
	5.1.2 B) Monetary Valuation is Internally Analytically Inconsisten	t117

## Contents

5.1.3 C) Monetary Valuation is a Maladaptive Process	118
5.2 Situating the Traditional and Pragmatic Analytical Critiques	121
5.3 A Review of the Traditional Analytical Critique	127
5.4 Net Social Welfare and the Impossibility of Internalization	127
5.4.1 Cost-benefit Analysis	129
5.4.2 Safe Minimum Standards and Pigouvian Taxation	131
5.5 The Worth of the Earth: An Exemplar of 'Thick' Monetary Valuation	135
5.6 Extending the Traditional Analytical Critique	139
5.6.1 Traditional Critique, plus	141
5.6.2 Combining our Embeddedness with our Aliveness	142
5.6.3 There's More to Economics than Money	150
5.6.4 The Entropy Law and the Fetish of Money	152
5.7 An Analytical Critique of the Pragmatic Defence	154
5.8 Conclusions	165
	160
6 Complex Deliberation, Limitations and Opportunities	107
<ul> <li>6 Complex Deliberation, Limitations and Opportunities</li> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> </ul>	
	171
6.1 Deliberative Valuation: An Alternative to Monetary Valuation	171 177
<ul><li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li><li>6.2 Participatory Science / the Methodology Strand</li></ul>	171 177 178
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li> <li>6.3 Applied/Experimental PNS</li> <li>6.3.1 Multi-Criteria Decision Analysis/Aid and Social Multi-Criteria</li> </ul>	171 177 178 179
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li> <li>6.3 Applied/Experimental PNS</li> <li>6.3.1 Multi-Criteria Decision Analysis/Aid and Social Multi-Criteria Evaluation (MCDA/SMCE)</li> </ul>	171 177 178 179 181
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li> <li>6.3 Applied/Experimental PNS</li></ul>	171 177 178 179 181 184
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li> <li>6.3 Applied/Experimental PNS</li></ul>	171 177 178 179 181 184 185
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li></ul>	171 177 178 178 181 184 185 187
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li></ul>	171 177 178 179 181 184 185 187 188
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li></ul>	171 177 178 179 181 184 185 187 188 182
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li></ul>	171 177 178 179 181 184 185 187 188 192 195 202
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li></ul>	171 177 178 179 181 184 185 187 188 192 195 202
<ul> <li>6.1 Deliberative Valuation: An Alternative to Monetary Valuation</li> <li>6.2 Participatory Science / the Methodology Strand</li></ul>	171 177 178 179 181 184 185 187 188 192 195 202 203

	6.8 Toward New Theory	.216
	6.8.1 MCDA/SMCE: Deliberative Valuation within a Practice Context.	.217
	6.8.2 Advancing Dryzek's Abandoned Project	223
	6.9 Conclusions	. 228
7	Complex Discourse and Disciplinary Representation	.231
	7.1 Putting the Anthropogenic CEM Epistemology into Practice	.233
	7.1.1 Multiple Intelligences an Epistemic Taxonomy	.235
	7.1.2 Complexity, Locality and Epistemology	.244
	7.1.3 Drafting Policies: A Form of Discursive Closure	246
	7.2 Representation	251
	7.2.1 Citizenship	254
	7.2.2 Terms of Engagement	256
	7.2.3 Disciplinary Representation through Work as Social Practice	258
	7.3 Structuring the Deliberative Space: Employing Multiple Intelligences	259
	7.4 Holarchic Interdisciplinary Deliberation	261
	7.5 Who Decides who Decides?	262
	7.5.1 Extended Peer Review Methodology as Political Theory	263
	7.5.2 Comprehending Complex Choices	267
	7.6 What Might this Look Like in 'Real' Governments?	269
	7.6.1 Work as Social Practice	272
	7.6.2 An Example of Complex Collaboration	272
	7.6.3 Seanad Éireann: A Precedent for Big Sky Decisions	273
	7.6.4 Legal Aid: A Precedent for Practical Problems	275
	7.7 Conclusions	276
8	Conclusions	279
	8.1 Objectives of the Text	279
	8.2 Gaps and Glitches	
	8.3 Insights and Innovations	
	8.4 Indications for Future Work	
R	leferences	285