

Contents

Preface	ix
---------	----

Chapter 1—Introduction

1.1—Problem, Purpose, and Rationale	1
1.2—Concepts and Definitions	5
1.3—Perspective and Methods	9
1.4—Overview	14

Chapter 2—Prehistory and Emergence

2.1—Engineering Servomechanisms and Control Theory	17
2.2—The Loop Concept in Mathematical Models	32
2.3—Homeostasis and the Loop Concept in Biology	46
2.4—Logic Loops	53
2.5—The Loop Concept in Social Science Literature	59
Before 1945	

Chapter 3—Two Feedback Threads

3.1—Emergence	92
3.2—The Cybernetics Thread	94
3.3—The Servomechanisms Thread	129
3.4—Origins and Prospects	161

Chapter 4—Developments in the Cybernetics Thread

4.1—Introduction	169
4.2—Management Science and the Work of Stafford Beer	170
4.3—The TOTE Unit	189
4.4—Magoroh Maruyama and Deviation-Amplifying Feedback	200
4.5—Political Science: Karl Deutsch and David Easton	204
4.6—Karl Weick and the Study of Organizations	228
4.7—The Psychology of William Powers	240
4.8—Summary and Directions	263

Chapter 5—Developments in the Servomechanisms Thread

✓ 5.1—Introduction	271
✓ 5.2—Feedback in the Later Work of Herbert Simon	271
5.3—Use of the Feedback Concept in Economics	277
5.4—System Dynamics	296
5.5—Summary and Directions	313

Chapter 6—Issues and Implications

6.1—Introduction	318
6.2—Two Arguments	320
6.3—Themes and Issues	332
6.4—Reflections and Conclusions	341

Bibliography	349
--------------	-----

Index	363
-------	-----