

# Contents

*List of Figures*  
*Preface*

Introduction

## PART I IDEAS OF MECHANISM

### I Mechanisms, Then and Now

- 1.1 Preliminaries 15
- 1.2 Old versus New Mechanism 15
- 1.3 Old Mechanism: From Metaphysics to Practice 17
- 1.4 New Mechanism: From Practice to Metaphysics 29
- 1.5 Newton Revisited 37

### 2 Extending Mechanism beyond the Two 'Most Catholic Principles of Bodies'

- 2.1 Preliminaries 40
- 2.2 Mechanical versus Quasi-Mechanical Mechanism 41
- 2.3 Poincaré's Problem 46
- 2.4 Quasi-Mechanical Mechanisms 50
- 2.5 Hegel's Problem 53
- 2.6 Bringing Together the Two Problems 56

## PART II CAUSATION AND MECHANISM

### 3 Mechanisms in Scientific Practice: The Case of Apoptosis

- 3.1 Preliminaries 61
- 3.2 The Case of Apoptosis 61
- 3.3 Mechanisms of Cell Death 79
- 3.4 Is Mechanism More than the Causal Pathway? 84
- 3.5 What Does the Case of Apoptosis Show? 86

*page* x  
xi

I

I 3

I 5

15

15

17

29

37

40

40

41

46

50

53

56

59

61

61

61

79

84

86

4	Mechanisms as Causal Pathways	90
4.1	Preliminaries	90
4.2	Causal Mechanism: Three Theses	90
4.3	The Case of Scurvy	94
4.4	Inflationary Accounts of Mechanism	102
4.5	Causal Mechanism as a Deflationary Account	106
5	Mechanisms, Causation and Laws	118
5.1	Preliminaries	118
5.2	Mechanisms and Difference-Making	118
5.3	Early Mechanistic Views	120
5.4	Mechanisms-for versus Mechanisms-of	126
5.5	Mechanisms-for and Mechanisms-of	131
5.6	Mechanisms-for	133
6	Against Activities	138
6.1	Preliminaries	138
6.2	Mechanisms and Counterfactuals	138
6.3	Activities and Singular Causation	143
6.4	Against Activities I: The MDC Account	145
6.5	Against Activities II: Glennan's Approach	149
6.6	Against Activities III: Illari and Williamson's Approach	154
6.7	Against Glennan on Causation as Production	157
6.8	Activities and the Language of Science	160
7	Whither Counterfactuals?	164
7.1	Preliminaries	164
7.2	Counterfactuals: A Primer	165
7.3	Counterfactual Manipulation and Causation	175
7.4	Causal Inference and Counterfactuals	183
7.5	Using a Black Box versus Looking into It	187
PART III BEYOND NEW MECHANISM		191
8	Constitution versus Causation	193
8.1	Preliminaries	193
8.2	Craver on Constitutive Relevance	194
8.3	Are There Constitutive Mechanisms?	196
8.4	Against Constitutive Mechanisms	201
8.5	Causal Mechanism and Constitutive Relevance	205
9	Multilevel Mechanistic Explanation	209
9.1	Preliminaries	209
9.2	Levels of Composition in Biology	210
9.3	Craver on Levels of Mechanisms	212

9.4	Levels of Composition and Multilevel Mechanistic Explanation	214
9.5	Examples of Multilevel Mechanisms	216
9.6	Mechanisms and Interlevel Causation	221
10	Methodological Mechanism	225
10.1	Preliminaries	225
10.2	Methodological Mechanism: Historical Predecessors	225
10.3	General Characterisations of Mechanism	230
10.4	Inflationary New Mechanism	232
10.5	Causal Mechanism as a Way Out of the Dilemma	239
10.6	The Triviality Problem	242
	Finale	247
	References	255
	Index	267