Contents

Foreword .......................................................... vii
Abbreviations for Archives .................................. xv
Introduction ...................................................... xvii

Part I (1894–1918)

1 Formative Years ............................................... 3
   1.1 Family Roots ........................................... 3
   1.2 Clay of New England ................................. 7
   1.3 Child Prodigy ........................................... 8
   1.4 From Evolutionary Positivism to Pragmatism ....... 10
   1.5 In the Temple of American Philosophy ............. 14
   1.6 The Positivistic Idealism of Santayana .............. 16
   1.7 The Idealism of Royce ............................... 19
   1.8 Royce’s Seminar on Scientific Method .............. 21

2 The Young Philosopher of Mathematics .................. 23
   2.1 The Choice of the Philosophy of Mathematics .......... 23
   2.2 Bertrand Russell ...................................... 25
   2.3 The Term Under Husserl ............................. 29
   2.4 Philosophy of Relativism ........................... 30
   2.5 A Future Mathematician with a Future Poet: Wiener and Eliot ......................... 32
   2.6 Wiener’s Logical Research and the “No” from Harvard ........... 34
   2.7 The University of Maine ............................ 39
   2.8 Collaboration with the Encyclopedia Americana ...... 40
Part II  (1919–1939)

3 Interwar Scientific Research ........................................... 47
  3.1 An Unorthodox Mathematical Education .......................... 47
  3.2 From Harvard University to Massachusetts Institute of Technology ........................................... 49
  3.3 Wiener’s First Steps in Mathematical Research ................... 51
  3.4 Wiener’s New Esthetic Sense in Science .......................... 54
  3.5 The Influence of Peirce via Royce on Wiener’s Science ........... 57
  3.6 Wiener’s Leibnizian Framework .................................. 62
  3.7 Pragmatic Factors in the Fertility of Wiener’s Science .......... 64
  3.8 Researches Alongside Engineers ................................... 67
  3.9 Participation in Projects to Build Technical Equipments ........ 69
  3.10 Research Alongside Physicists .................................... 70

4 Reflections on Science and Technology .............................. 73
  4.1 Mathematics as a Fine Art ........................................... 73
  4.2 The Relation with the Natural Philosophy of J.B.S. Haldane .......... 80
  4.3 Arturo Rosenblueth .................................................. 82
  4.4 John von Neumann .................................................... 85
  4.5 “The Role of the Observer” ......................................... 88
  4.6 “The Shattered Nerves of Europe” ................................ 93
  4.7 Thinking Technology: Matter and Energy .......................... 94

Part III  (1940–1945)

5 Wiener and the Computer. Act One ................................. 103
  5.1 Wiener’s Principles for a High Speed Computing Machine ....... 103
  5.2 Wiener’s Numerical Method ........................................ 104
  5.3 The Choice of a Digital and High Speed Architecture ........... 105
  5.4 The PDE Project Packed Away in Camphor Balls ................ 108

6 The Research Project on “Anti-aircraft Directors” ............... 111
  6.1 Anti-aircraft Directors: A Strategic Project ....................... 111
  6.2 An Eccentric Idea ................................................... 112
  6.3 Carrying out Research ............................................... 114
  6.4 The First Synthesis: Inclusion of Control in Communication Engineering .................................. 117
  6.5 The Second Synthesis: Inclusion of Communication in Statistics ........................................... 120
  6.6 The Role of Living Organisms in this Research ................... 123
  6.7 “Behavior, Purpose, and Teleology” ............................... 125
  6.8 The Epilogue of the Research on A. A. Directors ................ 128
  6.9 The Paternity of Discoveries and Inventions ..................... 131
10.6 The New Industrial Revolution ........................ 219
10.7 The Information Society ............................ 222
10.8 Criticism of Social Engineering ................. 224
10.9 Wiener and the USSR ............................ 227

11 After Cybernetics ........................................... 231
11.1 Wiener and von Neumann in the Cold War .......... 231
11.2 Cybernetics as a “Grammar of the Cold War” .... 234
11.3 An Anthropology for the Information Society .... 239
11.4 The Golem and Its Creator ......................... 242
11.5 The Butterfly Effect and Limits to Growth ... 244
11.6 Fertility of Science .................................. 245
11.7 The Tempter ....................................... 249

Bibliography ................................................ 253
Index ....................................................... 301