Contents

Mode 3 Knowledge Production in Quadruple Helix Innovation Systems ................................................................. 1
1 Introduction to Knowledge and Definition of Terms .................. 1
  1.1 Open Innovation Diplomacy, Quadruple Helix Innovation, “Mode 3” Knowledge Production System, and Fractal Research, Education and Innovation Ecosystem (FREIE) ......................................................... 2
  1.2 Definition of Terms ................................................................. 6
  1.3 Mode 3, Quadruple Helix, Quintuple Helix, Democracy of Knowledge, Schumpeter’s Creative Destruction, and the Co-evolution of Different Knowledge Modes ..................... 12
2 The Conceptual Understanding of Knowledge and Innovation ........ 28
  2.1 Innovation Placed in Context .................................................... 28
  2.2 The Relationship Between Knowledge and Innovation .......... 30
  2.3 The “Mode 3” Knowledge Production System Multilevel Approach to Knowledge and Innovation: The “Multilevel Innovation Systems” ................................................................. 32
  2.4 Linear Versus (and/or) Nonlinear Innovation Models (Modes) ................................................................. 35
  2.5 Extending the “Triple Helix” to a “Quadruple Helix” Model of Knowledge and Innovation ............................................ 37
  2.6 Coexistence and Co-evolution of Different Knowledge and Innovation Paradigms ....................................................... 39
  2.7 The “Co-opetitive” Networking of Knowledge Creation, Diffusion, and Use ............................................................. 41
3 Sectoral Systems of Innovation and Technology Dynamics .................. 41
3.1 Sectoral Systems of Innovation and Technology Dynamics in IT/ICT (Information Technology/Information and Communication Technology) in the Software Sector ........... 42
3.2 Sectoral Systems of Innovation and Technology Dynamics in Life Sciences, Biotechnology, and the Pharmaceutical Industry ................................................................. 44
3.3 Sectoral Systems of Innovation and Technology Dynamics in the Machine Tool Sector ................................................................. 46
4 Conclusion .............................................................................................. 47
References ................................................................................................ 56
Mode 3 Knowledge Production in Quadruple Helix
Innovation Systems
21st-Century Democracy, Innovation, and
Entrepreneurship for Development
Carayannis, E.G.; Campbell, D.F.J.
2012, VI, 63 p. 13 illus., Softcover