

---

## Contents

---

<b>Foreword</b> . . . . .	ix
<b>Introduction</b> . . . . .	xv
<b>Chapter 1. What Do We Mean by “Smart City” and Where Does This Idea Come From?</b> . . . . .	1
1.1. Not-so-smart smart cities! . . . . .	3
1.2. The smoke and mirrors of smart cities . . . . .	6
1.3. Other mirrors for other smoke: cities of the creative classes . . . . .	12
1.4. So what is a “smart city”? . . . . .	17
<b>Chapter 2. The Challenges of Urban Development in the Context of the Third Industrial Revolution</b> . . . . .	21
2.1. The demographic and economic challenges: toward a change in economic model . . . . .	21
2.2. Geopolitical challenges: the polar shift in development in favor of the south-west and the different strategies among industrialized and emerging countries . . . . .	26
2.3. Energy transfer: the fossil fuel curse is not about to disappear. . . . .	33
2.4. The six breakthroughs in urban development based on smart cities . . . . .	37
<b>Chapter 3. What Makes a City Smart?</b> . . . . .	43
3.1. Lessons from medieval cities . . . . .	44
3.1.1. Architect-less cities? . . . . .	45
3.1.2. How do cities become unintelligent? . . . . .	49

---

3.2. A city is a system of life . . . . .	52
3.3. Smart territory . . . . .	54
3.3.1. Territory: an immaterial asset. . . . .	54
3.3.2. The territory secretes innovation (and not the other way around) . . . . .	58
3.3.3. The territorial dynamic in action . . . . .	60
3.4. Are metropolises smart territories? . . . . .	63
3.5. A city is not a collection of smarties . . . . .	65
3.5.1. A city is a living system... . . . . .	65
3.5.2. ...which we understand today through new approaches... . . . . .	66
3.5.3. ...at the heart of which the sciences of complexity... . . . . .	67
3.5.4. ...help conjugate internal semi-stability and external instability. . . . .	68
3.6. The dangers of a technocentric approach . . . . .	70
<b>Chapter 4. New Sciences of Cities . . . . .</b>	<b>73</b>
4.1. The more or less sympathetic myths of the ideal city . . . . .	75
4.2. A city is an imbalanced system . . . . .	79
4.2.1. Definition of an urban ecosystem . . . . .	80
4.2.2. A city is a system in incomplete equilibrium. . . . .	82
4.2.3. What is a city's optimal size? . . . . .	85
4.2.4. Size and inequalities are correlated . . . . .	86
4.3. Smart city: an autopoietic system . . . . .	89
4.4. A city must be designed as a "system of systems" . . . . .	95
4.4.1. Modeling . . . . .	99
4.4.2. Emergence . . . . .	103
4.4.3. Evolution inside: the urban lifecycle management . . . . .	105
4.4.4. System architecture as a frame of representation . . . . .	107
4.4.5. The design method . . . . .	109
4.4.6. Integration process: more efficiency for less . . . . .	114
4.4.7. Integrating heterogeneous systems. . . . .	118
<b>Chapter 5. Smart City in Action . . . . .</b>	<b>125</b>
5.1. Two cities that should not exist: Norilsk and Singapore . . . . .	125
5.1.1. Norilsk, the most polluted and polluting city in the world . . . . .	125
5.1.2. Singapore, the smart nation . . . . .	127

---

5.2. Pilot projects . . . . .	133
5.2.1. The African city . . . . .	134
5.2.2. The emergence of a territorial project through meaning: the case of Rhamna, in Morocco . . . . .	136
5.2.3. Casablanca as a prototype for remedying to the tentacular growth of cities . . . . .	141
5.2.4. Angola, Namibia: eco-design of a drinking water supply . . . . .	146
5.2.5. Urban problem and economic transition: the Russian case of monotowns . . . . .	153
5.3. The worksites of the smart city . . . . .	159
5.3.1. The power of data . . . . .	159
5.3.2. How much do smart cities cost? . . . . .	171
5.3.3. The government of a smart city . . . . .	179
5.3.4. What are the tasks and what is the form of a smart government for a smart city? . . . . .	180
<b>Conclusion</b> . . . . .	187
<b>References</b> . . . . .	191
<b>Index</b> . . . . .	203