

## Preface

In the last two decades, it has become apparent that knowledge is a major factor of (post)modern production. In the globalizing world, knowledge and information (and the social and technological settings for their production and communication) are now seen as keys to economic prosperity. Cities worldwide have undergone major transformations in the 21<sup>st</sup> century, an era in which the role of knowledge in wealth creation becomes a critical issue for cities. Urban administrations need to discover new approaches to harness the considerable opportunities of knowledge production for a global order. Knowledge is produced by cultures and most cultures producing knowledge are centred in cities. To compete nationally and internationally cities need knowledge infrastructure (universities, R&D institutes, etc.); a concentration of well-educated people (knowledge workers); technological, mainly electronic, infrastructure; and connections to the global (knowledge) economy. Within cities, knowledge-based urban development has become an emerging area of research interest that links interests of planners, economists, geographers, and other social scientists. Despite this growing interest knowledge-based urban development still remains in its infancy. As the finite opportunities of globalized production are taken up on an ever-widening scale elsewhere, there is an urgent need for comprehensive research into the current state-of-play and the future potential of knowledge-based urban development. This book, which is a companion volume to *Creative urban regions: harnessing urban technologies to support knowledge city initiatives* (also published by IGI Global) focuses on some of these developments and issues. The forewords and afterword are written by respected senior academic researchers Richard Knight (Civic Process, USA), Greg Hearn (Queensland University of Technology, Australia) and Klaus Kunzmann (University of Dortmund, Germany). The book is divided into four sections each focusing broadly on a particular aspect of the knowledge-based urban development question.

### Section I: Urban Development and Knowledge Environment

The four chapters in Section I consider the broad connections between knowledge creation, creative environments and urban development. Joris van Wezemael's chapter presents an essay dealing with the debate of knowledge creation as a major challenge to understanding urban futures and the way in which contemporary urban planning deals with the uncertainties of knowledge-based urban development. He argues that knowledge creation in the context of practice is one strategy for urban development in order to meet the complexity of fluxing environments as theorized in relational urban geography. Moreover, he points to the issues facing urban planning practice when planning realities change from a linear sense to a non-linear sense as is likely to be the case with knowledge-based urban development. The significant points made by van Wezemael relate to the *raison d'être* of this book. He points to the need for significant advancement in both theoretical and empirical studies focusing on knowledge-creation in spatial planning, as without such contributions the current knowledge-gap that plagues research in this area will continue.

In the second chapter of this section Beth Perry considers knowledge-based urban development in England and asks how we should conceptualize the relationship between knowledge-based development and space given the ambiguities that exist between theoretical approaches and planning practice. Using a case study of the Manchester city region the chapter begins to question the UK experience of knowledge-based urban development and, as with the previous chapter, identifies potential policy tensions, particularly in relation to the balance between different scales of policy foci. In setting out her argument, Perry notes that the UK experience illustrates the ambivalence that surrounds knowledge-based urban development at the local level, an ambivalence that is the result of multi-level policy environment.

The third chapter in Section I focuses on the question of knowledge-based urban development and city scale. The chapter by Scott Baum, Tan Yigitcanlar, and Kevin O'Connor asks to what extent can calls for lower-order cities to develop creative industries be successful. As a part of a broader agenda of knowledge-based urban development, creative industries and arguments surrounding creative or knowledge workers have come to the fore. Given the persuasive nature of the work by Richard Florida it has not been surprising that many planners have looked toward the creative class model as a framework for city and regional economic development. This chapter questions the ability of lower-order cities and regions to successfully vie for creative industry activity and hence join in the knowledge-based urban development movement. Using a range of indicators, Baum, Yigitcanlar, and O'Connor illustrate that the economic geography of creative industries in Australia is spatially concentrated in particular regions and sectors of large cities and is highly unlikely to change significantly. They point out that planners and regional development practitioners need to reconsider the ability of lower-order places to have a successful knowledge-based urban development niche. In short, creative industry development as a subset of knowledge-based urban development is not a suitable development path for all places.

In the final chapter, Caroline Wong presents a conceptual approach to the knowledge-based economy that focuses on the developmental synergies between technology, culture, and place as expressed in the innovative and creative milieu of the city of Singapore. The chapter draws on research in the management of change as Singapore transits from a knowledge-based economy to a creative economy. Wong's analysis of the knowledge-based economy suggests that competitive advantage is increasingly derived from investment in intangibles, particularly information and knowledge-based competencies. She focuses on the film industry as a microcosm-level of analysis to examine the state of the creative economy as the latest phase in Singapore's economic development as technology and information are increasingly used to navigate and mediate its people, resources, and capital. The objective of this research focuses on examining the types of competencies that enable firms in the industry to stay competitive in the contemporary knowledge-based economy in the light of technological developments. In this chapter Wong seeks to shed light on what matters for the industry and the role that Singaporean government has in shaping the creative economy.

## **Section II: Knowledge-Based Urban Development Strategies**

The five chapters in Section II provide insight into planning and policy strategies applicable to the successful implementation of knowledge-based urban development.

The chapter, by Mark Wilson and Kenneth Corey, "The alert model: a planning-practice process for planning knowledge-based urban and regional development" focuses on two related issues. First, the chapter draws attention to needed new planning processes to foster urban and regional development for knowledge-based development, and second, it raises the need to mobilize the strategic planning of effective intelligent development by the principal stakeholders of city-regions throughout the global knowledge economy. Continuing from the theme of the first section of the book, Wilson and Cary present a framework that allows routine planning practice to catch up with new economic realities. In particular,

they forge an understanding of the need for wider reconciliation between planning as an academic field, as a profession, and as an applied practice. In order for planning to embrace knowledge-based urban development, they argue for academic practitioner-planners to focus their efforts on the intersection of theoretical and basic urban and regional planning research, and empirical exploratory planning research and planning practice.

The next chapter in this section focuses on developing knowledge cities in Germany. In this chapter, Peter Franz questions the important role that universities have as a precondition for knowledge city development in Germany. Focusing on the role of institutional regulations, the chapter considers several case studies of the ways in which regulations and institutional specialties in Germany act as obstacles for choosing and implementing knowledge city strategies. Franz argues that, although clearly German university towns are potential sites for knowledge precincts to develop, impediments have acted to reduce this likely outcome.

The third chapter in Section II focuses on the Smart State initiative introduced by the Queensland State Government in Australia and places the Smart State Policy firmly within the framework of knowledge-based urban development. In this chapter, Tan Yigitcanlar and Koray Velibeyoglu start from the proposition that knowledge cities are complex entities and that attempts to transform cities into knowledge cities need to be guided by sound strategic visions, have broad social and political support, be financially viable and socially inclusive. It is within this framework that the authors consider the Queensland Government's Smart State Policy and the Brisbane Smart City Policy finding that these policies, as represented by the State and Local governments, and in light of their early stage, has significant potential to move Brisbane to a globally competitive knowledge city.

The fourth chapter in Section II focuses on knowledge-based urban development in Barcelona, Spain, and in particular, the *city of knowledge* discourse that has become the official view of Barcelona's urban planning policy. Outlining the main strands of the *22@bcn plan* the chapter notes that, while this plan is clearly aligned with the city of knowledge discourse, the objective of the plan has been frustrated by the gaps between the expected outcomes and the social realities that have been developed. In discussing the Barcelona model, the authors, Anna Clua and Abel Albet, describe the paradoxes and problems that have faced Barcelona as the city has attempted to re-invent itself in the face of knowledge-based urban development. Their conclusion is that in Barcelona there is a clear imbalance between the strategic projection of the city of knowledge and the execution of this project through urban planning.

Sang-ho Lee, Jung Hoon Han, Yoon Taik Leem, and Tan Yigitcanlar's chapter on ubiquitous cities presents argument for understanding the need for planning to give greater attention to the notions of ubiquitous cities. A ubiquitous city (or U-city) is about creating an urban environment where any citizen can get any service anywhere, anytime using ICT devices. Using a case study focused on the Republic of Korea, the authors argue that in an U-city significant benefits are likely to flow onto urban development and planning especially as the society moves toward full U-city maturity. The chapter provides examples of policy that has been introduced to move toward greater U-city presence. In particular, the authors discuss the link between the U-city developments and broader knowledge-based urban development dimensions and identify particular projects that have been aimed at such integration. The authors conclude by noting that the success of U-city strategies requires the collaboration across all interested stakeholders from national governments to local councils and private sector organizations.

### **Section III: Knowledge-Based City, Economy and Development**

The third section of the book focuses on the links between knowledge-based cities and broader economic and development issues. The first chapter in Section III presents a case study of DNA Valley in the United States focusing on the difficulties facing the development of sustainable knowledge-based urban

development outcomes. Within the chapter, Edmund Zolnik argues that investments in pharmaceutical research and development have led to the emergence of a bio-technopole in the national capital region of the United States, and that the emergence of the private sector as a partner in big science programs such as the Human Genome Project has led to many innovations that foster and sustain knowledge-based urban development in DNA Valley. An important point made in the chapter regards the debate surrounding whether or not national and state restrictions on stem cell research put the United States at a competitive disadvantage in the global knowledge-based economy.

That is a big science in the 21<sup>st</sup> Century and is international in scope. Therefore, the best practices for knowledge-based urban development from biotechnology may not emanate only from the United States. In the end, international, interurban comparisons of knowledge-based urban development that acknowledge but do not focus solely on the role that government policy, both national and sub-national, plays in biotechnology will be more informative for policymakers.

Glenn Searle and Bill Pritchard's chapter, "Beyond planning: Sydney's knowledge sector development," presents a grounded discussion exploring how knowledge-based urban development is generated with particular reference to cluster development. They ask two questions: What is the relative role of localization economies in generating different urban knowledge clusters? and How does this compare with the role of general urban agglomeration economies and can spatial planning activities promote such development? Searle and Pritchard answer these questions by considering the city of Sydney—Australia's undisputed global city. In concert with the flavor of the arguments made by van Wezemael, they find that Sydney's planners have been ill-prepared and confused by the tasks associated with optimizing knowledge-based development in the city. They suggest that rather than any carefully orchestrated approach the knowledge-based development that has occurred in Sydney has tended to be accidental. The approach they suggest for overcoming this accidental development approach is for planners to forge stronger relationships with private sector entities so that urban infrastructures can be allocated consistent with the needs of private sector investors.

In the third chapter of Section III, Willem van Winden and Luis Carvalho focus on the competitiveness and transition paths toward the knowledge economy of the two largest urban and economic concentrations in Portugal, Porto, and Lisbon. Using an integrative framework in which the competitive performance of urban areas is linked to sources explaining that performance, the chapter presents evidence of the significant economic performance differences that exist between the two regions, both in terms of business development and human capital development. Overall, Lisbon records more favorable outcomes, and the authors argue that this performance gap has widened in the last 10 years, with signs of dynamic and cumulative gaps between both urban regions. The chapter shows that business development and human capital development tend to reinforce each other, which is clearly visible in the agglomeration of Lisbon. Nevertheless, although education and qualifications have improved significantly in Porto's urban region, there is an increasing mismatch between qualification's supply and the business absorption. This situation is leading to increasingly qualified unemployment in the urban region and to the migration of the most qualified to other national and international urban regions. The chapter suggests that the different performance levels can be explained by differences in rooted structural assets (industry structure, knowledge base, quality of life accessibility, diversity), but also by the governance quality in both urban regions.

The fourth chapter in this section moves from Portugal to the Netherlands and focuses on production and consumption-oriented strategies in knowledge hubs using Delft as a case study. Using results of an analysis of the Delft Knowledge City policy, Anna Maria Fernandez-Maldonado and Arie Romein illustrate that Delft's local strategy for urban development has focused on the production rather than the consumption aspects of knowledge hub development. This bias for (high-tech) production reflects the

economic policy's main guidelines at the national level with The Netherlands aiming at improving its R&D and technology production sectors. Within the national picture, Delft is considered a good place to make this happen. At local level, Delft is doing everything to take advantage of this situation, with the assumption that a larger knowledge-based production will lead to a type of urban development that benefits all citizens. Undervaluing important aspects related to the city's quality of place, Delft has insufficiently succeeded in integrating the knowledge sector within city life in general. Delft Knowledge City strategy still remains divorced from the urban worries of common citizens and the non-knowledge economic sector. Delft can permit itself this disregard to the consumption aspects of city life because of its favorable location; it *borrow*s amenities, buzz, and residential environments from the nearby larger cities: The Hague and Rotterdam. But this situation does not contribute to a more sustainable urban development, since it is an obvious disadvantage for those residents who do not have the resources (in terms of money, time, health, social networks, or knowledge) to operate along larger urban networks. The authors conclude that the case of Delft provides a useful illustration that the presence of a solid knowledge base is no guarantee for a sustainable type of urban development.

#### **Section IV: Planning for Knowledge-Based Development**

The final section of the book focuses attention on issues related to successful planning for knowledge-based development. The first chapter of Section IV provides insight into knowledge cities of the Middle East. Rather than concentrating solely on a single city, Ali Alraouf focuses on several case study cities in an attempt to explore the knowledge city concept in depth and relate it to the ongoing process of creating knowledge-based economic developments in major Middle Eastern cities. By doing so, he discusses the principles of a knowledge city, and portrays its distinguishing characteristics and processes, and attempts to foster this concept in today's Middle Eastern cities. The chapter introduces the concept of *urban creativity engines* in relation to the Middle East context, and provides examples of how this concept in relation to Middle Eastern cities provides a useful framework with which to construct and evaluate knowledge cities.

The second chapter in this section focuses on a case study in Australia. In Phillip Daffara's chapter, the focus is on the development of a knowledge town using Sippy Downs as a case study and considering the impact of planning/urban design practice, as enacted at the local level by key stakeholders. The context for the chapter is the design and creation of a new master-planned community with a focus on knowledge-based urban development, and Daffara uses this context to assess the degree to which normative urban/regional planning as applied on the Sunshine Coast is effectively responding to the desire for a new town and its business activity centre, based on the global knowledge economy. The elements that have succeeded in Sippy Downs are based on the accumulative effect of successive master planning studies from 1994 to 2006, allowing a shared vision to be built among stakeholders for the university town, within a context of rapid population growth and changing infrastructure demand. Through the design principles and participation processes of New Urbanism, local community knowledge was generated to shape the vision and plan for a regional knowledge hub. What clearly did not occur in Sippy Downs was the consistent delivery of proactive, collaborative, and coordinated public-private partnerships to implement the vision and master plan. This must be remedied if the town is to succeed in establishing itself as a knowledge hub. To achieve that end, this analysis has provided future directions for improving the place management and governance of the town's development. It also has proposed future development knowledge-based urban development 18 of 21 opportunities that can culturally converge Sippy Down's local place experience with the power of global knowledge/information networks.

The final chapter in this section is by Bhishna Bajracharya and Janelle Allison and explores the role of ICTs in the development of knowledge-based master-planned communities. In particular, the chapter



focuses on an exploratory study on how ICTs have been adopted in master planned communities of South East Queensland, Australia. The chapter considers four roles of ICT in the master planned communities, including teleworking; creating a sense of community; promoting integrated office and businesses; and developing learning communities; and it provides specific case study material relating to selected sites in South East Queensland. Specifically the chapter highlights how many of the newer master planned communities now incorporate work and learning spaces in the mix of land uses, thereby encouraging the development of knowledge communities. In short, the authors argue that the integration of ICTs can play a positive role in the development of knowledge-based master planned communities with a focus on living, working, learning, and playing.