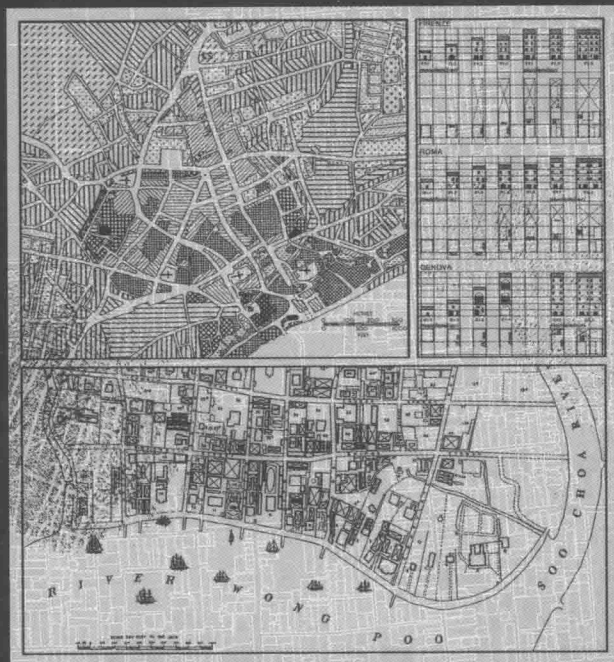


# Urban Morphology, Architectural Typology and Cities in Transition

城市形态学、建筑类型学与  
转型中的城市

*Edited by Yinsheng Tian, Kai Gu and Wei Tao*



Science Press  
Beijing

The research on which this book is based was partially funded by the China Natural Science Foundation (Award References:40971096, 41271178)

**Urban Morphology, Architectural Typology  
and Cities in Transition**  
城市形态学、建筑类型学与  
转型中的城市

*Edited by Yinsheng Tian, Kai Gu and Wei Tao*



Science Press  
Beijing

## 内 容 简 介

源自英德两国的康泽恩城市形态学和源自意大利的建筑类型学是两个既有区别又相互补充的理论学派,在城市的历史保护与发展研究方面具有独到之处。本书系统介绍了它们的产生及发展过程、核心理论及应用价值,其中特别包含了对中国城市的案例研究。

本书可供城市规划与建筑设计、城市与建筑历史研究及遗产保护、城市形态学等相关领域科研人员参考。

### 图书在版编目(CIP)数据

城市形态学、建筑类型学与转型中的城市=Urban Morphology, Architectural Typology and Cities in Transition; 英文/田银生,谷凯,陶伟著. —北京:科学出版社,2014. 3

ISBN 978-7-03-040218-9

I. ①城… II. ①田…②谷…③陶… III. ①城市建设-城市规划-研究-英文 IV. ①TU984. 11

中国版本图书馆 CIP 数据核字(2014)第 049012 号

责任编辑:汤 枫 周 炜 / 责任校对:赵桂芬

责任印制:张 倩 / 封面设计:陈 敬

科学出版社 出版

北京东黄城根北街 16 号

邮政编码:100717

<http://www.sciencep.com>

北京通州皇家印刷厂 印刷

科学出版社发行 各地新华书店经销

\*

2014 年 3 月第 一 版 开本:720×1000 1/16

2014 年 3 月第一次印刷 印张:13 1/4

字数:323 000

定价:70.00 元

(如有印装质量问题,我社负责调换)

## **Contributors**

Dr Michael Barke, University of Northumbria, UK

Professor Giancarlo Cataldi, Professor Gian Luigi Maffei and Professor Paolo Vaccaro, Università degli Studi di Firenze, Italy

Professor Michael Conzen, University of Chicago, USA

Dr Fei Chen and Dr Ombretta Romice, University of Strathclyde, UK

Dr Kai Gu, University of Auckland, New Zealand

Professor Wei Tao, South China Normal University, China

Professor Yinsheng Tian, South China University of Technology, China

Professor Jeremy Whitehand and Susan Whitehand, University of Birmingham, UK

## Copyright Information

Whitehand J W R. British urban morphology: The Conzenian tradition. *Urban Morphology*, 2001, 5(2): 103~109. Reprinted by permission of Urban Morphology and the author.

Conzen M P. How cities internalize their former urban fringes: A cross-cultural comparison. *Urban Morphology*, 2009, 13(1): 29~54. Reprinted by permission of Urban Morphology and the author.

Cataldi G, Maffei G L, Vaccaro P. Saverio Muratori and the Italian school of planning typology. *Urban Morphology*, 2002, 6(1): 3~14. Reprinted by permission of Urban Morphology and the authors.

Cataldi G. From Muratori to Caniggia: The origins and development of the Italian school of design typology. *Urban Morphology*, 2003, 7(1): 19~34. Reprinted by permission of Urban Morphology and the author.

Whitehand J W R, Gu K. Research on Chinese urban form: Retrospect and prospect. *Progress in Human Geography*, 2006, 30(3): 337~355. The final, definitive version of this paper has been published in *Progress in Human Geography*, 30(3), 2006 by SAGE Publications Ltd. All rights reserved. ©Progress in Human Geography.

Gu K, Tian Y S, Whitehand J W R, Whitehand S M. Residential building types as an evolutionary process: The Guangzhou area, China. *Urban Morphology*, 2008, 12(2): 97~116. Reprinted by permission of Urban Morphology and the authors.

Chen F, Romice O. Preserving the cultural identity of Chinese cities in urban design through a typomorphological approach. *Urban Design International*, 2009, 14(1): 36~54. Reprinted by permission of Urban Design International and the authors.

## 前 言

本书所说的城市形态学(urban morphology)指的是德国地理学家康泽恩(M. R. G. Conzen)创立的城市形态研究学派,建筑类型学(architectural typology)指的是意大利建筑学家穆拉托瑞(S. Muratori)和卡尼吉亚(G. Caniggia)创立的建筑类型学。城市形态学和建筑类型学植根于地理学和建筑学两个不同的领域,分别成长于欧洲的不同地区(城市形态学在德国和英国,建筑类型学在意大利),形成了各自独立的方法体系,然而它们之间存在着众多的相似和互补之处。

城市的发展变化过程和结构组织逻辑是这两个学科共同关注的焦点,它们的核心概念有异曲同工之处,例如,形态学的“形态时期”(morphological periods)与“规划单元”(plan units)和类型学的“类型过程”(typological processes)与“城市肌理”(urban tissue),它们都强调城市快速发展和萧条的周期性对建筑环境特征的影响,并同时关注不同时期之间的复杂和密切的关系。它们都认为充分理解和分析城市的物质形态和历史发展过程是城市和建筑未来发展的基础。

当然,城市形态学与建筑类型学也各有侧重。总体来讲,城市形态学主要从结构与构成的角度分析城市景观,而建筑类型学主要从整体性与文脉的角度分析城市景观;城市形态学关注分析性与概念性,而非单纯的描述性地研究和解答城市是如何建造并为什么这样建造,而建筑类型学关注如何提炼现有的形态特征来创造新的形式。显而易见,它们在方法论方面的相似性与互补性提供了创造一种综合性的“类型-形态”的新的城市分析框架(typo-morphological approach)的可能性。

由于上述缘故,两个学派多年来形成了紧密的合作和交流关系,特别是在1994年,共同发起成立了“国际城市形态论坛(International Seminar on Urban Form)”,随后在1997年,又创办了《城市形态》(*Urban Morphology*)杂志。国际城市形态论坛每年在不同的国家举办,影响越来越大。

2009年,第16届国际城市形态论坛首次走出了欧美,在中国的华南理工大学举办,主题是“城市形态和城市转型”(Urban Morphology and Urban Transformation)。这个主题是根据中国当前城市发展的实际而设定的,具有很强的针对性,以这种方式把两个学派与中国的城市联系起来。

在过去三十多年中,随着中国城市社会与经济的快速转型,其物质结构发生了重大的变化。同世界其他国家相比,中国城市形态的变化从动力机制到实体环境都显示出不同的特点,对其复杂性与多样性的研究需要有更多的理论和方法。此时此刻,城市形态学和建筑类型学显示出了它们的独特价值。

实际上,建筑类型学在 20 世纪 80 年代就被引进到中国,并有一定的应用。而系统的城市形态学在 21 世纪初才被引进到中国,但已经在一些中国城市的研究中取得了成果,为重新认识和解读中国城市结构和演变规律提供了新的视角,其科学意义主要包括:第一,发展了中观和微观层次的城市形态研究。多年以来,中国的城市形态研究多停留于宏观层面,很少有深入的中观和微观层次的研究。而把城市形态研究深入到街区、地块乃至建筑层次后,可以挖掘出更多、更丰富、更细致的城市信息,是城市形态研究的深化。第二,突破对城市形态静态的事实描述,形成动态的过程分析。也就是把历史的积淀在时间轴上加以展开审视,加深了对城市物质结构的全面理解。第三,在描述性研究的基础上,上升到概念层次的分析性研究,增强了中国城市形态研究的理论强度和科学性。第四,促进了中国城市形态研究与国际的同步发展。

我们相信,两个学派在中国城市的学术研究和建设实际中有着更为广阔的天地。以城市形态学为例,可以在城市景观管理(landscape management)和城市历史保护方面发挥很好的作用。例如,通过应用“形态区域”(morphological regions)和“形态时期”概念,可以在城市景观特色区域和城市历史发展演变之间建立直接的联系;对城市平面格局(ground plan),用地和建筑类型的分区、分类和评估,有助于确定历史保护区的边界及其保护级别。城市形态学理论也可以广泛应用于城市设计和城市分区规划管理(zoning and planning)中,以这种理论对城市结构的分析可为城市形态优化和规划设计管理提供决策依据。

城市形态学和建筑类型学也为中西方城市的对比研究提供了方法,不仅可以判定不同地区城市形态特征的相同与不同,也可以对比总结不同地区的城市形态演变的规律。并且,它们共同组建的国际城市形态论坛的跨学科性和多国学术背景为城市比较研究提供了理想的条件。

基于上述种种原因,我们编撰了本书,期望学界能对城市形态学和建筑类型学有更多的认识。本书虽然是章节相对独立的文集式成果,但构成了一个完整的体系,全面反映了康泽恩城市形态学和意大利建筑类型学的发展过程和学术方法,展现了这两个学派在过去十多年中的重要探索,特别可贵的是包括了它们对中国城市形态的研究。

田银生,谷凯,陶伟

2014 年 3 月

## Preface

In September 2009, about 250 scholars and practitioners from 26 countries attended the Sixteenth International Seminar on Urban Form in Guangzhou, China. Centred on the theme of urban morphology and urban transformation, many of the conference papers presented recent developments in the study of urban landscapes that are of concern to architects, planners and geographers. The success of the conference reflected the increasing interest in spatial analysis of urban form and its significance for urban planning and design practice. Although the conference papers represented diverse perspectives and approaches to the physical urban environment, research of the Anglo-German geographical school, or Conzenian school, associated with M. R. G. Conzen and the Italian architectural school, the Caniggian school, associated with G. Caniggia and S. Muratori, were key components. The investigation of the traditions and recent practical applications of these two schools of thought has formed the basis of this book.

The Guangzhou conference, the first organized by the International Seminar on Urban Form in Asia, reflected the increasing research interest in Chinese cities at a time of their unprecedented growth and change. This book reviews the work of the Conzenian and Caniggian schools and exemplifies some of the ideas and methods associated with these schools, particularly in relation to changing Chinese urban form.

The organization of the conference and the preparation of this book have been aided by a large number of individuals and organizations. We should like to record here a number of general acknowledgements. The Natural Science Foundation of China contributed financially to the preparation of the conference and Dr Michael Barke assisted with the financial management. The School of Architecture and Civil Engineering and the State Key Laboratory of Subtropical Building Science at the South China University of Technology hosted the conference on the university campus. Dr Feng Song at Beijing University, Daisy X. Dai at Tongji University, Professor Beisi Jia at Hong Kong University, Dr Ian Morley at the Chinese University of Hong Kong, and Professor Yinsheng Tian at South China University of Technology organized post-conference excursions in Beijing, Shang-



hai, Hong Kong, Shenzhen and Guangzhou respectively. We are grateful to Professor Jingtang He, Professor Piper Gaubatz, Professor Jeremy Whitehand, Professor Michael Conzen, Professor Gian Luigi Maffei, Professor Nicola Marzot and Mr Haojun Ye for their keynote lectures. Finally, we should like to record our indebtedness to Professor Jeremy Whitehand and Mrs Susan Whitehand for their detailed guidance and generous assistance in the preparation of the conference and the publication of the book.

Yinsheng Tian, South China University of Technology

Kai Gu, University of Auckland

Wei Tao, South China Normal University

# Contents

## **Preface**

<b>Chapter 1 The Structure of Urban Form; Conzenian and Caniggian Ideas</b> .....	1
1.1 Research on Urban Form .....	1
1.2 Urban Morphology and Design Typology .....	2
1.3 Urban Morphology of Chinese Cities .....	4
1.4 Structure of the Book .....	5
Notes and References .....	7
<b>Chapter 2 British Urban Morphology: The Conzenian Tradition</b> .....	10
2.1 The Antecedents of M. R. G. Conzen .....	10
2.2 Conzen's Ideas and their Influence .....	11
2.3 Recent Research .....	14
2.4 Conclusions .....	18
Notes and References .....	18
<b>Chapter 3 How Cities Internalize their Former Urban Fringes: A     Cross-Cultural Comparison</b> .....	20
3.1 Discovery and Conceptualization of Fringe Belts .....	21
3.2 A Strategy for Comparative Study of Fringe Belts .....	31
3.3 Dynamics and Differentiation of Fringe-Belt Types .....	36
3.4 A Framework for Comparative Study .....	44
3.5 Closing Remarks .....	48
Notes and References .....	49
<b>Chapter 4 Urban Transformation in an Inner City Area: Morphological     Processes in Shieldfield, Newcastle upon Tyne, UK</b> .....	56
4.1 Introduction .....	56
4.2 Creating Shieldfield: The First Transformation .....	59
4.3 Redeveloping Shieldfield: The Second Transformation .....	64
4.4 Shieldfield and the Inner Fringe Belt: A Third Transformation? .....	72
Notes and References .....	77

<b>Chapter 5</b>	<b>Saverio Muratori and the Italian School of Planning Typology</b>	79
5.1	Saverio Muratori	79
5.2	Saverio Muratori's Roman School	83
5.3	The Dispersal from Rome	84
5.4	Gianfranco Caniggia	86
5.5	The Present School	88
	Notes and References	91
<b>Chapter 6</b>	<b>From Muratori to Caniggia: The Origins and Development of the Italian School of Design Typology</b>	95
6.1	Muratori's Roman School	95
6.2	Muratori as a Philosopher	96
6.3	Muratori's Cultural Background	97
6.4	The Architectural Issue of Technique and Language	99
6.5	The Philosophical Issue of Typological 'Features'	100
6.6	The Constructional Issue of the Built Environment	102
6.7	The Urban Issue of the Development of Towns	103
6.8	The Geographical Issue of the Human Environment	105
6.9	The Historical Issue of the Development of Civilization	106
6.10	The Scuola Muratoriana	107
6.11	Formative Generation Gaps	108
6.12	The Relative Accomplishments of Muratori and Caniggia	112
6.13	Final Judgement and Criticism	113
6.14	Conclusions	114
	Notes and References	115
<b>Chapter 7</b>	<b>Research on Chinese Urban Form: Retrospect and Prospect</b>	120
7.1	Research on Traditional Cities	121
7.2	Research on Early Modern Cities	129
7.3	Research on Socialist and Post-Reform Cities	131
7.4	Historical Preservation and Conservation	132
7.5	The Challenge for Urban Morphology	133
7.6	The Application of Conzenian and Caniggian Approaches	135
7.7	Conclusions	137
	Notes and References	139

---

<b>Chapter 8 Residential Building Types as an Evolutionary Process: The Guangzhou Area, China</b> .....	147
8.1 Guangzhou: History and Research Sources .....	148
8.2 Rural and Small-Town Building Types .....	150
8.3 Residential Building Forms in Guangzhou .....	153
8.4 Multi-Storey Zhutongwu and Zhutongwu Flats .....	155
8.5 The Xiguan Dawu .....	157
8.6 The Qilou .....	159
8.7 The Dongshan House .....	160
8.8 Adaptations and New Types .....	161
8.9 Interpreting Residential Building Forms in Guangzhou .....	163
8.10 Conclusions .....	167
Notes and References .....	169
<b>Chapter 9 Preserving the Cultural Identity of Chinese Cities in Urban Design through a Typomorphological Approach</b> .....	172
9.1 Typomorphology .....	173
9.2 Case Study: Suzhou .....	174
9.3 Urban Design Suggestions .....	190
9.4 Discussion and Conclusions .....	194
Notes and References .....	195

# Chapter 1 The Structure of Urban Form: Conzenian and Caniggian Ideas

*Kai Gu and Yinsheng Tian*

## 1.1 Research on Urban Form

Unprecedented urban growth and transformation practically worldwide are presenting great challenges for the comprehension and management of cities. At the same time, there has been a burgeoning of research on urban form<sup>[1]</sup>. Reconciling the historical legacies embodied in that urban form with the accelerating stream of functional impulses is a major task. ‘The most enduring feature of the city is its physical build, which remains with remarkable persistence, gaining increments that are responsive to the most recent economic demand and reflective of the latest stylistic vogue, but conserving evidence of past urban culture for present and future generations’<sup>[2]</sup>. At the same time, ‘urban society changes more than any other human grouping, economic innovation comes usually most rapidly and boldly in cities, immigration aims first at the urban core forcing upon cities the critical role of acculturating refugees from many countrysides, and the winds of intellectual advance blow strong in cities’<sup>[3]</sup>. As a body of theoretical knowledge, research on urban form combines and reconciles the vital contest between the persistence of the urban artifact and socio-economic changes<sup>[4]</sup>.

Research on urban form emerged within a wide range of subjects, including geography, history, architecture and planning<sup>[5]</sup>. It tended to develop different theoretical foundations grounded in those respective disciplines. Each contains its own strengths and research foci. Research within the Anglo-German geographical school and the Italian architectural school has grown rapidly in recent years. This is reflected in the increasing number of research publications in a wide variety of geographical regions<sup>[6]</sup>, theoretical advances<sup>[7]</sup>, and attempts to strengthen the contribution of research in urban morphology and typology to the practice of planning and design<sup>[8]</sup>. Apart from its intrinsic importance, it has been argued that urban morphology is fundamental to the management and creation of urban

landscapes<sup>[9]</sup>.

## 1.2 Urban Morphology and Design Typology

Sauer<sup>[10]</sup> attributes the origin of the term ‘morphology’ to eighteenth-century biological science, although the concept of morphology was evident in classical Western thought<sup>[11]</sup>. The morphological method was introduced to geography by Ritter (1779~1859) for the study of the forms and structure of the landscape<sup>[12]</sup>. Subsequently, von Richthofen<sup>[13]</sup> did pioneering work on the morphology of the natural landscape. In parallel to this Schlüter<sup>[14]</sup> developed an interest in the morphology of the cultural landscape at the end of the nineteenth century<sup>[15]</sup>. He called for the detailed description of the visible and tangible man-made forms on the ground and their genetic and functional explanation in terms of the aims and actions of man in the course of history and in the context of nature. From the beginning he was not content with merely descriptive morphology but envisaged an explanatory morphology, being fully aware of the interdependence in geography of the three aspects of form, function and development through time<sup>[16]</sup>. Urban morphology, as it took shape at the end of the nineteenth century and in the early twentieth century<sup>[17]</sup>, was essentially about the urban landscape as a subdivision of the cultural landscape<sup>[18]</sup>.

The urban morphological approach, notably that part of it relating to town-plan analysis, was especially developed in the mid-twentieth century by M. R. G. Conzen (1960) in *Alnwick, Northumberland: A Study in Town-Plan Analysis*<sup>[19]</sup>. The town plan was itself subdivided for analytical purposes into streets, and their arrangement in a street system, plots and their aggregation in street-blocks, and buildings, or more precisely their block-plans. By the development of a number of constructs—such as plan units, morphological periods, morphological regions, morphological frames, plot redevelopment cycles and fringe belts—Conzen’s work has provided the foundation of the Conzenian school in Britain. Its contribution to a historico-geographical perspective on urban form may be summarized under five headings; first, the establishment of a basic framework of principles for urban morphology; secondly, the adoption for the first time in the geographical literature in the English language of a thorough-going evolutionary approach; thirdly, the recognition of the individual plot as being the fundamental unit of analysis; fourthly, the use of detailed cartographic analysis (especially em-

ploying large-scale plans) in conjunction with field survey and documentary evidence; and fifthly, the conceptualization of developments in the townscape<sup>[20]</sup>. Particularly in Conzen's later work, the implications for conservation of the type of morphological analysis he developed became evident. What started as essentially basic research is now also being recognized for its implications in urban landscape management<sup>[21]</sup>.

The Conzenian school of thought developed mainly in the second half of the twentieth century. At much the same time, but independently, the Caniggian school developed within architecture<sup>[22]</sup>. This field of study has developed primarily around the works of the Italian architects Muratori, Caniggia and Rossi. Buildings and open spaces are classified by type; types represent different generations of building traditions, or variations within each generation. Types reflect the different socio-economic strata of the people for whom they were intended<sup>[23]</sup>. According to Rossi's<sup>[24]</sup> interpretation, 'if ... the type is a constant, it can be found in all the areas of architecture'. 'Typology thus becomes broadly the analytical moment of architecture and can be characterized even better at the urban level'. Typology can best be used to bridge the gap between the urban scale and the building scale. Typological studies focus on the classification of building types and open spaces in order to describe and explain urban form, and then suggest possible directions for future adaptation and change. The implications for design practice and urban landscape management have been explored broadly<sup>[25]</sup>. In both this school of thought and the Conzenian one the urban landscape is viewed as a historical phenomenon; past, present and future are indissolubly linked. In both schools, sound planning and design are rooted in understanding the past<sup>[26]</sup>.

There are intriguing links between Conzenian and Caniggian thinking. At the core of Caniggian thinking is the way in which physical structures, notably buildings, are altered over time, for example by certain recurrent types of adaptation and addition. Such changes to existing buildings eventually become the basis for a new generation of buildings, a new 'type' which contains, from its inception, features that in earlier buildings had been adaptations. This sequence is known as a 'typological process'<sup>[27]</sup>.

The link between this line of thought and a major aspect of Conzenian thinking merits much more exploration. Conzen emphasized how different building types are constructed in different historical periods and contribute to the character of the different growth phases that can be distinguished in a city's development<sup>[28]</sup>. These growth phases, each constrained by features already existing as a

result of earlier phases, result in cities being structured into a variety of areas each of which is to varying degree distinct from its neighbours in physical character. These areas are referred to variously as morphological regions, urban landscape units, or character areas. Each area tends to be historically influenced in two ways; first, through the environment provided by existing forms, especially their layout; secondly, by the way in which forms, most obviously buildings, though new and embodying the innovations of their period of construction, also embody characteristics ‘inherited’ from previous generations of forms. To understand this process of creating a mosaic of character areas, which is itself in flux, it is necessary to appreciate not only the physical sequences of which the mosaic is a product, but also the decision-making processes, planned and spontaneous, that it represents<sup>[29]</sup>.

### 1.3 Urban Morphology of Chinese Cities

Chinese cities have undergone unprecedented growth and transformation, presenting great challenges for the comprehension and management of urban landscape change. The threat of homogenization of the built environment has become apparent in the era of economic and intellectual globalization. At the same time, there is increasing awareness of the value of preserving regional and local distinctiveness in urban forms for reinforcing social identity and supporting cultural tourism.

In the past decade, research on Chinese urban form has grown rapidly both in China itself and in other parts of the world. Hitherto research on Chinese urban form across a range of disciplines, including architectural history, urban planning, archaeology and urban geography, has tended to be descriptive and has contained scant comparison, either of findings or methods, with that on towns and cities in other parts of the world. Analytical and conceptual approaches, such as have been applied to good effect within parts of Europe, have been comparatively rare. Urban morphological and design typological ideas can provide a frame of reference that helps understanding of the extent to which generalizations that have been recognized elsewhere in the world can be applied in China.

Language barriers, contrasts in theoretical orientation and the long isolation of China from the outside world may explain the fact that very few publications have focused on the urban morphology and design typology of Chinese cities. Pau-



city of historical and contemporary ground plans of Chinese cities has been a serious impediment. However, to assist conservation planning, many important historical cities, such as Beijing, Pingyao and Lijiang, have prepared true ground plans of their historical areas. This has facilitated the development of a new research frontier for research in urban morphology and design typology in China. Within the ambits of historico-geographical and historico-architectural studies, which are now being shown to have many commonalities, the application of Conzenian and Caniggian approaches to Chinese towns and cities has undoubted potential<sup>[30]</sup>.

## 1.4 Structure of the Book

The chapters that follow fall into two groups. Chapters 2~6 review or exemplify the Conzenian and Caniggian schools of thought, largely within the Western context in which they have until recently developed. Chapters 7~9 are essentially concerned with very recent applications of the ideas and methods of these two schools to Chinese cities.

Chapter 2, provides a systematic review of the origins and developments of historical morphological ideas that are grounded in research of M. R. G. Conzen. Inspired by early pioneering studies of urban morphogenesis in central European countries in the late-nineteenth century, Conzenian ideas provide a powerful tool for understanding and characterizing the structure and transformation of urban landscapes. This chapter also highlights recent explorations of historical morphology, especially interdisciplinary integration and the relationship between research and practice.

Chapter 3 develops one of the major themes of Chapter 2, focusing on the concept of urban fringe belts, one of the most frequently studied Conzenian ideas. Based on a review of the birth and growth of fringe-belt theory over three-quarters of a century, this chapter focuses on its application in a number of cities in different geographical regions. It explores the efficacy and limits of the fringe-belt concept in examining and managing the urban landscape in diverse cultural contexts.

Chapter 4 investigates the transformation process of an inner city area in the British city of Newcastle upon Tyne in relation to Conzenian ideas, especially morphological periods and fringe belts. Articulation of broad periods of morphological change and identification of elements from previous phases have exerted