Foreword

The Inextricable Duality of Cities and Planning

Michael Batty
CASA, University College London

From classical times, our understanding of cities and their planning have remained largely separate from one another. Although most of us now believe that it is impossible to resolve problems in cities or to achieve the ideal city or the city beautiful without some basic understanding of their current state, plans still tend to be fashioned with little understanding of whether or not they are realisable in terms of how cities actually function. Moreover our understanding of cities often sees plans as something imposed on top of and not an intrinsic part of the functioning of cities, hence being separate from all other processes that determine how cities are organized and how they evolve. Since planning has been institutionalized in many countries as part of the social functions of government over the last 100 years, this schism has been exacerbated. The city has become a focus for all kinds of ills that might be resolved by politically expedient solutions; and often, policies and plans fly in the face of the fact that many of the unintended consequences of such interventions are simple never anticipated. In parallel fashion, those intent on an understanding of cities, tend to see such systems as external to our self, akin to the remoteness of phenomena in the physical sciences, to be studied passively rather than actively. To an extent, this dichotomy between cities and planning is now the subject of intense scrutiny but so far, there are few insights into how our understanding of cities might be informed by their planning and vice versa.

In the last 20 years, complexity theory has come onto broad canvas of urban and regional planning. In general terms, such approaches do tend to grapple with the notion that decision processes are the defining instruments of such understanding and in this sense, planning is but one of many processes that determine the functioning of systems such as cities. Yet most research into complexity theory as applied to cities has not explicitly broached the notion of planning. In some senses, the same divisions between aggregate social physics and more micro individual behaviours that exist in economics, have come to characterize the structure of this theory. Ideas about how

cities evolve from the bottom up quickly generate aggregates that show signatures and patterns such as self-similarity, self-organisation, emergence, path dependence and a host of generic characteristics that serve to define complexity. New approaches to modelling such patterns and morphologies using bottom up structures such as those embodied in individual or agent-based models do offer the prospect of integrating planning processes with many others that serve to determine how cities are structured and how they evolve. But to date, the schism still exists, particularly when ideas about complexity theory are thought about in the context of institutionalised planning processes. If you were to open a book about 'complexity science and cities' and one about 'complexity science and planning' and such books do exist, you would be forgiven for wondering how they are related to one another. Apart from the term complexity, there would be little common material. The challenge is to enable a proper synthesis: to establish what is in essence an inextricable duality between cities and planning in terms of complexity and this has never been more urgent. In fact the field will not progress unless this kind of synthesis becomes central to our thinking.

What is interesting and insightful about Shih-Kung Lai and Haoying Han's new book is that they broach this problem head on. The essence of their argument is that they propose simple but tractable organizational decision processes that look both to ideas about how to generate good solutions to urban problems through planning but which build on ideas about how cities evolve from the bottom up. In short they have written a book on a complexity theory of cities <u>and</u> city planning. This is no mean feat because, as I have implied when one looks at planning, it is but one of many processes that determine how cities function. But to make progress in understanding how these particular processes differ from the myriad of other decision making structures that determine how cities function and evolve, we need to somehow distinguish 'planning processes' of the kind that we use professionally to redesign the city from all those other processes affected by planning but do not have any synoptic perspective or goal about the state of the city in general. This poses an asymmetry that in a sense has stopped the field from progressing. Merging top down 'public' planning processes with the many other 'private' ones which tend to cover the range from top down to bottom up has been quite difficult while at the same time embedding such logics into the approaches that see the city as a complex phenomena in more aggregate terms has proved somewhat intractable. This is the reason why books on complexity and cities differ so much from those on complexity and planning. The former deal with cities *per se* while the latter deal only with planning *per se* and never the twain shall meet.

In fact Shih-Kung Lai and Haoying Han tackle this issue by assuming a generic organizational model due to Michael Cohen and his colleagues called the 'garbage can model' (GCM). An unusual, somewhat evocative term perhaps but one that focuses directly on the fact that complex decision-making problems form an 'organized anarchy' of parallel, simultaneous, and sequential processes that exist both dependently and independently of one another but operate at different speeds with different goals. The GCM is a model that can be elaborated in many ways and the authors first generalise it to spatial concerns and then illustrate how it can be applied to cities in terms of different foci – land development, individual firms and related activities. They then translate this model into slightly more familiar terms, developing agent-based and one dimensional cellular automata equivalents, which serve to ground the decision structures in more traditional complexity theory, involving ideas about the organisation of cities in terms of size and agglomeration whose signatures

are power laws. In a sense, their thesis works backwards from planning to cities but in taking an manifestly complex decision-making structure to begin with, they succeed in showing how planning can be embedded in ideas about how cities function and evolve.

This is not an easy book to read. It switches the focus from the comfortable, more conventional ways of planning based on communicative and learning processes dominated by diverse stakeholder interests, and from standard ideas about cities as complex systems which show emergence, fractality and so on, to the ground between. This is difficult terrain and it forces the reader to think long and hard about the goals of planning and the way cities respond to these in terms of the way they evolve. In the last three chapters, they pull these ideas together proposing a more generic framework for planning and design. Throughout the book, they provide tantalizing glimpses of theories and methods that inform the debate – issues about creativity, links between problem-solving and decision-making, ideas about how these problems might be formulated using the theory of games. There is much food for thought here and I urge readers to pursue these arguments with diligence for there is much to be learnt from these chapters. But even more important is that fact that any treatise on complexity theory in cities and planning can only provide snapshots of such complexity and it is the tools that are introduced here that readers should grasp, extend and apply to new kinds of planning problem at different scales and in different cultures.