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Book review

Michel Bierlaire, Andre de Palma, Ricardo Hurtubia, Paul Waddell. (Eds.), Integrated Transport & Land Use Modelling for Sustainable Cities, EPFL Press, Routledge (2015). Distributed by Routledge. ISBN 978-2-940222-72-8 (EPFL Press). ISBN 978-0-415-72910-9

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The rapid development in urban infrastructure has been challenging the sustainability of the urban regions. Local and regional government need to coordinate the planning of infrastructure investment and the reduction of carbon footprint. The use of a supporting-tool such as an agent-based land use transport interaction model to assist government is urgently needed. However, some improvements are required to allow heterogeneity in the agents and the context of lifestyles and preferences to be integrated in the existing model. This is the reason underlying the work presented in this book. This book describes the agent based land use and transport interaction model, from the-state-of-the-art to the challenges in implementation in European cities. In this respect, the experience presented in this book would be of interest to transport geographers in general.

This book is a compilation of works and results conducted within the SustainCity project which had been running during 2010 to 2013. Edited by Michel Bierlaire, Andre de Palma, Ricardo Hurtubia and Paul Waddell, the book is involving 38 authors/contributors around the world (mostly from Europe and USA) with various expertise such as transportation, computer science, econometric, geography and other relevant research areas. Therefore, the book covers the land use and transport interaction modelling in various point of views, either theoretically or practically, and also the challenges experienced during the implementation of the model. These will be one of the advantages of this book, compared to any other similar books available in the market.

The book consists of twenty-two chapters which were distributed into five parts. The first chapter overviews the SustainCity project. Part one of the book discusses the-state-of-the-art review of agent-based land use transport interaction (LUTI) modelling and highlights the strengths and weakness of the selected disaggregate models such as ILUTE, ILUMASS and UrbanSim. With recognition of the different strengths, weaknesses, and emphasises of each model, the authors show their interest to UrbanSim to be used in the project. Further, the steps and processes in implementation of UrbanSim in Brussel is described and some problems are highlighted. The comparison written in this part could be a good reference for those who are interested in using the model elsewhere.

The Second Part is dealing with modelling and methodological contributions. Eleven out of all twenty-two chapters of the book are in this part, suggesting that this part is the most important part which highlights the methodological contributions of the presented studies in improving the existing models. Several methodological issues and challenges in the modelling are addressed. For me, the discussions made in this part are very rich and fruitful such as how to synthesise populations, population dynamics, intra-household decisions on investment, residential and job location, the life-cycle of firms and its effect on relocation choice, econometric issues and incorporating equilibrium aspects and indicator of sustainable development in micro simulation models.

The third part of the book deals with integration of transport and land use models. Starting from the use of Open Platform for Urban Simulation in adapting the UrbanSim to the European context, followed by explaining the integration of agent-based transport and land use models using MATSim and ended with describing the integration of METROPOLIS into UrbanSim. The fourth part of the book presents case studies of integrated land use and transport simulation in three European Cities i.e. Brussels, Paris and Zurich. From these parts, readers will be aid to feel and experience the complexity of the integration of land use and transportation in practice so that can contribute in extending the methodology for a better use of the model in the future. The last part of the book highlights the challenges and draw conclusions from the discussion on the transport and land use integration modelling.

Overall, the book is very well written and organised, combining a rigorous critical review of the available literatures, sound theoretical and methodological approach with interesting practical applications. The attention of the readers will be led to tough challenges in integrating the planning and modelling as many existing conflicts should be eliminated. Even though some of the collaborators intentions might not have been achieved as recognised by the authors, readers will learn a lot from the process taken in addressing the modelling and computational issues, and also from the achievement and contributions of the book to the knowledge.

Moreover, the book has been paving the way for a more accurate prediction of the land use transport interaction model, and describing some possible ways for next improvement of the existing model which might not been achieved within the SustainCity project such as integration of environmental and demographic simulation modules to UrbanSim. This may be of interest for the audience of Journal of Transport Geographic and would challenge transportation modelling experts to solve the outlined problems in the future.

Another importance attraction of the book is the large number of references reviewed and cited, indicating the seriousness and ambition of the authors in ensuring all possible and relevant studies have been considered. Readers will find here the most comprehensive review and effort in integrating transport and land use for a more sustainable city.

However, further discussion on the integration of environmental aspect and the applicability of the model in the context of the cities in developing countries would make the book complete. It is also worth to note that: as the book is an interdisciplinary collaborative work, a strong background in qualitative and quantitative modelling as well as computer programming is beneficial to follow the discussions chapter

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by chapter.

Nevertheless, the book offers knowledge that help us to better understand the fundamental theory and the challenges in implementation of the land use transportation interaction modelling in different context. I believe, the book is essential for transport geographers.

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