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Modelling Choice with Several Choice Heuristics in the Population: Theoretical and Empirical Identification

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Date:	**23 May 2019** (Thursday)
Time:	**17:00 – 18:00**
Venue:	***Room N002, G/F, Block N,*** *(Venue revised)*
	The Hong Kong Polytechnic University,
	Hunghom, Hong Kong

Speaker's Biography

Prof. Juan de Dios Ortúzar got his PhD from Leeds University in 1980, became Full Professor at Pontificia Universidad Católica de Chile in 1986 and Emeritus in 2017. He was awarded a *Doctor Honoris Causa* (Universidad de Cantabria, Spain) in 2018, the *Life Achievement Award* (International Association for Travel Behaviour Research) in 2012 and the *Humboldt Research Award* (Alexander von Humboldt Foundation) in 2010. Prof. Ortúzar pioneered the development of discrete choice modelling techniques and their application to determine willingness-to-pay for reducing externalities (accidents, noise and pollution). The valuation methodologies developed with his research team have been applied in Australia, Colombia, Germany, Norway and Spain. Founding member of the *Institute in Complex Engineering Systems* (2007); of the Chilean team leading the *Centre of Excellence BRT +* (funded by the Volvo Research & Educational Foundations), with MIT, Sydney University, University of Pretoria and EMBARQ (2010), and of the *Centre for Sustainable Urban Development* (CEDEUS) at PUC (2012). He also led the interdisciplinary project *Understanding Wine Preferences* with the *Centre for Aromas and Flavours* at PUC and the participation of the Beijing Agricultural University.

He has formed several generations of professionals and specialists (including 15 PhD and 45 MSc) with a profound service vocation, who work in academia, government and professional practice in Chile, Latin America and Europe. He has published over 180 papers in archival journals and book chapters. Co-author of *Modelling Transport*, a book published by Wiley reflecting the state-of-practice in this discipline, which has sold over 20,000 copies and is now in its fourth edition. Finally, he is currently Co-Editor in Chief of *Transportation Research A* and member of the editorial board of several international journals.

Abstract

Choice processes may follow alternative paradigms. The most popular one, for many decades, has been *utility maximizing*; however, it is clear that in some choice situations (i.e. when individuals face too many alternatives) this paradigm is not sensible and alternative ones, such as *elimination by aspects* and *satisficing* may be more adequate. In this presentation we consider the possibility that the above mechanisms may co-exist in a given population. The increase in data sources, mathematical tools and computational power have allowed to examine this problem. Preliminary results have shown that (latent class) specifications including various choice heuristics in a single discrete choice model, are subject to identifiability issues. To analyse this problem formally, we first develop a theoretical framework to understand both theoretical and empirical identifiability in multiple heuristic models and how it relates to the various heuristics used. The theoretical framework enables us to hypothesise the degree of identifiability of the various choice heuristics. Then we analyse the empirical identifiability of models of this type using a synthetic population based on a realistic context. We conclude by showing that – in principle – it is possible to estimate sophisticated class membership functions and choice heuristics. Identifiability is possible even if the same variables affect the selection of the heuristics and the choice sensitivities. However, for the model to be identifiable, the choice heuristics must differ significantly in their outcome. Finally, for each choice heuristic tested, we studied the sample size required to identify the complete model.

*** All Interested Are Welcome ***
For further information, please contact Prof. William H.K. Lam at Tel. 2766-6045.
Free Admission. Please reserve your seat with Ms. Connie F.Y. Lam by email: fyc.lam@polyu.edu.hk.
Certificates of attendance will be provided to participants who attend the whole seminar.