

ECE Distinguished Seminar Series

Beyond Consensus and Polarization: Complex Social Phenomena in Social Networks

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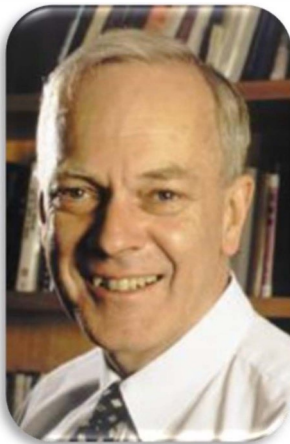
Oct. 14, 5:00 PM on Zoom

Zoom Meeting Link: <https://gmu.zoom.us/j/99553836123>

Abstract

Social network analysis is a rich and exciting area of interdisciplinary research that has been tackled by many different scientific communities. Much research draws on ideas of control and systems theory to infer how the opinions of a group of interacting individuals evolve, and to explain the resulting behaviour, often observed in experiments of sociologists, psychologists and the like, in terms of system dynamics concepts.

This lecture will survey several distinct recent developments of this character. We shall present an opinion dynamics model which describes how an individual's private and expressed opinions (which are not the same in general) evolve under pressure to conform to the majority opinion. In another direction we shall present new results on a recently proposed model which describes how an individual's self-confidence (termed social power) in his/her own opinion evolves over discussion of a sequence of topics in a group. One key finding is that every individual forgets his/her perceived (i.e. initial) social power exponentially fast, even when the network topology is dynamic. Lastly, we shall describe the opinion dynamics of interacting individuals holding logically dependent opinions on a number of issues rather than a single issue.



Brief Bio-sketch

Brian D.O. Anderson was born in Sydney, Australia, and educated at Sydney University in mathematics and electrical engineering, with Ph.D. in electrical engineering from Stanford University. He also holds honorary doctorates from a number of universities, including ETH, Zürich and Université Catholique de Louvain, Belgium. Following graduation, he joined the faculty at Stanford University and worked in Vidar Corporation of Mountain View, California, as a staff consultant. He then returned to Australia to become a department chair in electrical engineering at the University of Newcastle. From there, he moved to the Australian National University in 1982, as the first engineering professor at that university. He is now Emeritus Professor at the Australian National University. During his period in academia, he spent significant time working for the Australian Government, with this service including membership of the Prime Minister's Science Council under the chairmanship of three prime ministers. He

also served on advisory boards or boards of various companies, including the board of the world's major supplier of cochlear implants, Cochlear Corporation, where he was a director for ten years. His awards include the 2001 IEEE James H. Mulligan, Jr. Education Medal, the Quazza Medal of the International Federation of Automatic Control (IFAC) in 1999, IEEE Control Systems Award of 1997, and the Bode Prize of the IEEE Control System Society in 1992, as well as IEEE and other best paper prizes. He is a Fellow of the Australian Academy of Science, the Australian Academy of Technological Sciences and Engineering, the Royal Society (London), and a foreign member of the US National Academy of Engineering. He was President of IFAC from 1990 to 1993 and of the Australian Academy of Science from 1998 to 2002. His current research interests are in distributed control, localization problems, and social networks.