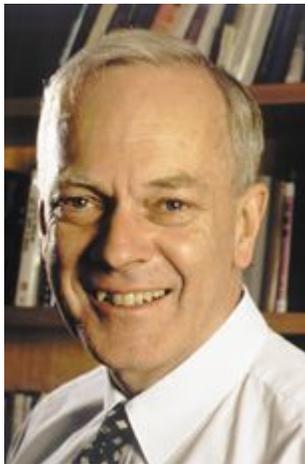


Title: Beyond consensus and polarisation: complex social phenomena in social networks

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 behavior, 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 the recently proposed De Groot-Friedkin 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. 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 multiple and logically dependent opinions on a number of issues.



Biography: Brian D. O Anderson was born in Sydney, Australia, and educated at Sydney University in mathematics and electrical engineering, with PhD in electrical engineering from Stanford University. He is an Emeritus Professor at the Australian National University (having retired as Distinguished Professor in 2016), Distinguished Professor at Hangzhou Dianzi University, and Distinguished Researcher in Data61-CSIRO (formerly NICTA). His awards include the IFAC Quazza Medal, the IEEE Control Systems Field Award, the IEEE James H Mulligan, Jr Education Medal, and the Bode Prize of the IEEE Control System Society, as well as several IEEE and other best paper prizes. He is a Fellow of the Australian Academy of Science, the International Federation of Automatic Control, the Australian Academy of Technological Sciences and Engineering, the Royal Society (London), and a foreign member of the US National Academy of Engineering. He holds honorary doctorates from a number of universities,

including Université Catholique de Louvain, Belgium, and ETH, Zürich. He is also an honorary professor of Harbin Institute of Technology and Zhejiang University. He is a past president of the International Federation of Automatic Control and the Australian Academy of Science. His current research interests are in distributed control, sensor networks, social networks and econometric modelling.