# Models for Dynamic Networks

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## Abstract

Models for networks, especially dynamic networks, are an important and growing area of interdisciplinary research. Statisticians have made important contributions, introducing the p* model, the exponential random graph model, and various forms of latent space models. Other disciplines developed scale free models, agent based models, and domain-specific theories for the mechanisms that drive growth and change in a network. This talk reviews the work that has been done and the range of applications. It draws specifically upon dynamic models for baboon troop interactions and the evolution of the Wikipedia network (in which each article is a node, and links between articles are edges). The sense from these applications is that although general theory provides a useful framework, in practice each application requires substantial one-off modeling and some kind of goodness-of-fit assessment. The theoretical basis for such tuning and testing is very incomplete, and this talk emphasizes challenges for new research.