



Joint seminar of PRI and PWS

Asura International Seminar/ PRI Seminar

Cedric Sueur, PhD

Institut Pluridisciplinaire Hubert Curien (France)

“Mechanisms of evolution of social networks: a focus on socio-ecological pressures”

Monday, July 30th 2018

16:00- (17:00)

Large Conference Room, PRI

Social networks – i.e., how frequently individuals interact, and with whom – may be affected by socioecological factors: food distribution, predation, access to reproduction, disease pressure, and access to information. These socio-ecological pressures affect individual social behaviour that increases the benefit-costs ratio of group-living and can be reflected in individual fitness. However, social information and/or infectious agent that an individual is exposed to, and so the fitness consequences of these factors, are not entirely dependent on the individual's own social interactions, but is also affected by the topology on the entire network. It is therefore crucial to understand how network properties might co-vary with socio-ecological factors as determinants of survival and fitness of social animals. This paper reviews how the five aforementioned ecological pressures may affect social network topology and discuss how evolutionary processes, specifically genetic (i.e., genes) and cultural (i.e., learned behaviour) evolution, may even result in a specific composition of individuals' social strategies that produce network topologies optimized to specific ecological conditions. We conclude that studies focusing on whether and how well networks resist to changing conditions (i.e. socioecological pressures) might provide a better understanding of the rules underlying individual behaviour that influences network topology, a process that we have called network evolution. Evolutionary processes may favour a group phenotypic composition, thus a network topology. This has been referred to as a “collective social niche construction” .



andrew.j.j.macintosh@gmail.com