**Search and the Evolution of Extremism**

Supervisor:

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**Overview**

One of the most threatening potentials of modern telecommunications networks is that this will allow individuals with extreme beliefs to find one another and produce revolutions similar to those currently observed in the Arab Spring and the Occupy protests.  However, a common claim of the modern 'networked' world is that this capacity to reach other individuals quickly and efficiently will lead to the homogenization of culture and beliefs.  These conflicting views suggest that the implications of modern networking on social networks and the evolution of beliefs and preferences of individuals in those networks is not yet well understood.

**Background:**

This project will focus on understanding how the evolution of search abilities in social communications influences the networks and beliefs of individuals in those communities. This project will involve agent-based modeling of individuals in a networked social environment (e.g., Hills, 2006; Hills & Pachur, 2012), where individuals can create and eliminate links with other individuals.  This modeling will also involve the incorporation of several fundamental psychological assumptions, including homophily (the tendency for individuals to prefer individuals like themselves) and group polarization (the tendency for individuals to become more like those with whom they are connected). In the past this approach has been used to understand marriage and divorce, and the evolution of altruism (Hills & Todd, 2008; Hills, 2006).

**Project Aims and Deliverables:**

1. Produce a set of simulations of publishable quality that will reveal how search influences the way social networks are structured in the world.
2. To understand how assumptions of human behavior (e.g., homophily and group polarization) lead to a rise or reduction in diverse perspectives in evolving social networks.

**Prerequisites** **and Future Prospects**

Students interested in this project should have a command of computer programming and be interested in learning about social network analysis and agrent-based modelling. This work has broad implications for understanding the evolution of culture and social networks in the modern world and could lead to future (Ph.D.) work understanding large-scale human behavior. Due to the increasing interest by governments in social unrest, this work is also likely to have significant impact.

**References:**

Hills, T. (2006).  Building "ethical agent" based simulations: A case study of a pathological problem in altruistic punishment.  Paper presented at ALifeX.

Hills, T., & Pachur, T. (2012). Dynamic search and working memory in social recall. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 38, 218-228.

Hills, T., & Todd., P.M. (2008). Population heterogeneity and individual differences in an agent-based marriage and divorce model (MADAM) using search with relaxing expectations. Journal of Artificial Societies and Social Simulation, 11(4).