Spread of Crazes
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One of the common themes of human society is how rapidly ideas and crazes can catch-on and spread through the population – fashion and fads are clear examples. However, this spread of the new must be balanced against the desire of (most) people to conform to the norm. How can we reconcile these two opposing ideas?

This project is based around the use of "household-type" models, in which small groups of tightly interacting individuals are modeled explicitly, with the assumption that there are (infinitely) many of these groups who interact weakly and randomly. The method comes from epidemiology, where the household is a key location for transmission; however here we view the household as a social clique. If we now refine our model, such that individuals wish to conform to the norm of their social clique, then it becomes far easier for new ideas to become established.

This project will develop mathematical models for the spread of ideas within social cliques, together with the desire for conformity. The techniques involve will range from model development, numerical solving of ODEs, stability analysis, and potentially simulation.

There is vast scope within the household-type model problem to extend this work to a PhD.

T. House, (2011) "Modelling behavioural contagion," *Journal of the Royal Society Interface* **8,** 909-912
T. House and M. J. Keeling (2008) "Deterministic epidemic models with explicit household structure," *Mathematical Biosciences* **213** 29-39.