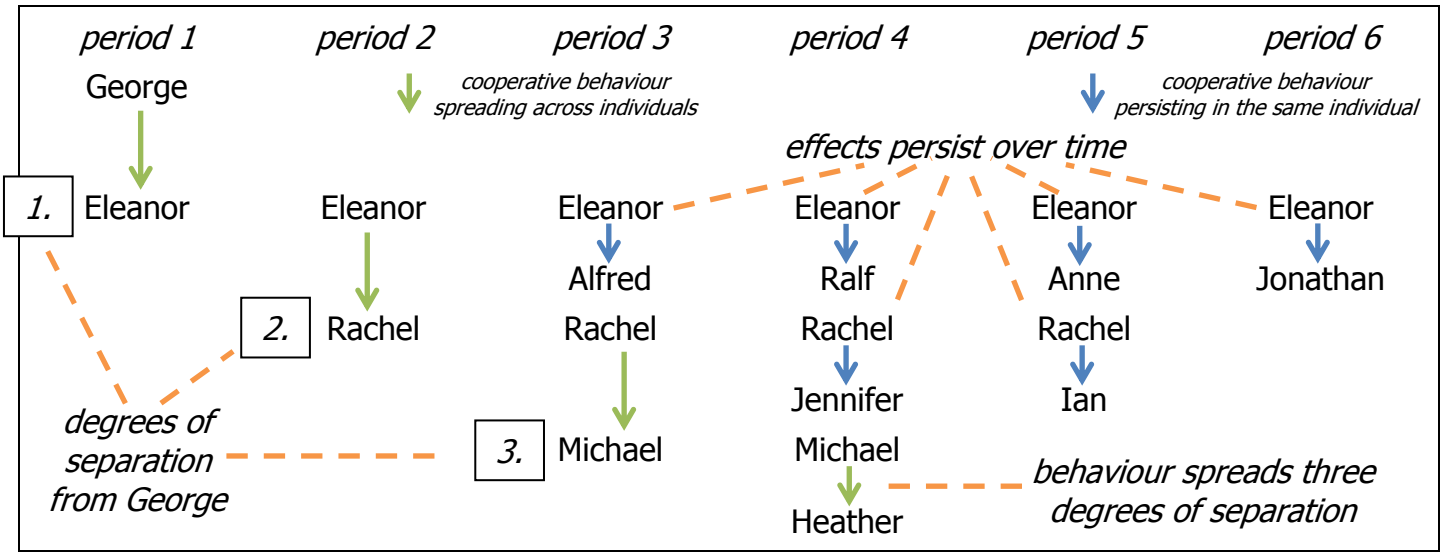
"cooperative behaviour cascades"

"No act of kindness, however small, is ever wasted." Aesop

"Keep on sowing your seed, for you never know which will grow – perhaps it all will." Einstein

Our kindness (and unkindness) ripples outwards. A group of people – or a broader society – survives because its members manage to act cooperatively. There are a series of mechanisms that help maintain healthy groups despite a tendency for members to act selfishly sometimes in ways that can be "antisocial" (Sherratt & Wilkinson, 2010). One particularly interesting mechanism involves the "infectiousness" of behaviour. We can be inspired or dispirited by the actions of others – and we too can inspire or dispirit those we interact with. Even more interestingly behaviours reach out not only to those directly affected, but also to at least another two degrees of separation. If you are kind to me, I am significantly more likely to be kind to others, and those others (who you may never meet) are significantly more likely to be kind in their interactions, and then those others too pass on the good in turn. Unfortunately the same is true for unkindness. These findings are reported in Fowler & Christakis's 2010 research paper. They analysed individuals' behaviours across a series of six "public goods" money games. The games involved groups of four people where each individual in the foursome had the opportunity to act selfishly or in a way that would benefit the other three players (at a cost to themselves). The players in all groups then changed to new games with fellow group members who they hadn't played with before. Again people had the option of acting selfishly or for the "public good". Then players were shuffled once more and joined fresh groups, and so on. What the diagram below illustrates is that if you're generous and act for the "public good", everyone who was in that particular game with you will be significantly more likely to be generous in the next game that they're involved in. This tendency for them to be touched by your kindness persists for all further five games that your initial fellow group members play.



Even more fascinatingly their kindness too continues to ripple outwards - so in the diagram above if George is generous in the game played at period 1, then Eleanor who was in this first game with him is significantly more likely to be generous in the next game she's involved in in period 2. Now Rachel experiences Eleanor's kindness and is more likely to be kind in the next game she participates in in period 3. Then the same is true for Michael, touched by Rachel's generosity, when he is involved with Heather in period 4. Kindness ripples out to three degrees of separation (as too does unkindness). In this set of studies, a money unit generously contributed by George in period 1 leads to a total of three more money units being contributed to the "public good" (over the next five games) by people – who George affected directly and at up to three degrees of separation – than would have occurred without his original generosity. It seems the most likely explanation for this effect is that we are inspired or dispirited by others' behaviour. If this occurs in a laboratory experiment with complete strangers in a set of limited artificial "games", how much more powerful it may be in the real world, experiencing the behaviour of friends, family, and colleagues with no limit on how far and for how long the effects can ripple out!

[cont.]

Fowler, J. H. and N. A. Christakis (2010). "Cooperative behavior cascades in human social networks." Proc Natl Acad Sci U S A 107(12): 5334-5338. *The full text of this article – and related work – is downloadable from Professor Christakis's website – http://christakis.med.harvard.edu*

Theoretical models suggest that social networks influence the evolution of cooperation, but to date there have been few experimental studies. Observational data suggest that a wide variety of behaviors may spread in human social networks, but subjects in such studies can choose to befriend people with similar behaviors, posing difficulty for causal inference. Here, we exploit a seminal set of laboratory experiments that originally showed that voluntary costly punishment can help sustain cooperation. In these experiments, subjects were randomly assigned to a sequence of different groups to play a series of single-shot public goods games with strangers; this feature allowed us to draw networks of interactions to explore how cooperative and uncooperative behaviors spread from person to person to person. We show that, in both an ordinary public goods game and in a public goods game with punishment, focal individuals are influenced by fellow group members' contribution behavior in future interactions with other individuals who were not a party to the initial interaction. Furthermore, this influence persists for multiple periods and spreads up to three degrees of separation (from person to person to person to person). The results suggest that each additional contribution a subject makes to the public good in the first period is tripled over the course of the experiment by other subjects who are directly or indirectly influenced to contribute more as a consequence. These results show experimentally that cooperative behavior cascades in human social networks.

Sherratt, T. N. and D. M. Wilkinson (2010). Cooperation and Sociality. Encyclopedia of Animal Behavior. D. B. Michael and M. Janice. Oxford, Academic Press: 396-401.

Societies comprise aggregations of individuals interacting cooperatively with one another, but it is not immediately clear why such systems are not undermined by free-riders that accept cooperative acts while giving little or nothing in return. There are several ways in which cooperation can emerge and remain stable within societies despite self-interest. Kin selection may help explain much intraspecific cooperation, but it is not the only mechanism, and sometimes cooperation can be maintained by a complex interplay of several types of interaction, including reciprocity, partner choice, and the threat of punishment.

This handout is based on a blog, posted at www.stressedtozest.com on 18.10.10.