9.S916, Fall 2016, Homework 2

Roger Levy

Disseminated 29 September 2016 – Due 13 October 2016

This homework assignment is **graded**, and I would like you to work in pairs. It has both a conceptual component and a technical (programming) component, so if you are not so comfortable with programming then make sure to pair up with someone who is more comfortable.

Axelrod (1986) states (p. 1102) that his metanorms model "makes the critical assumption that a player's vengefulness against nonpunishment is the same as a player's vengefulness against an original defection", and that (p. 1103) that "[t]he model suggests norms can be supported if people tend to have correlated degrees of vengefulness or anger against someone who violates a particular norm and someone who tolerates such a violation". However, he never shows us a variant of the metanorms model in which ordinary vengefulness and what we might call "meta-vengefulness" are distinct, so his simulation results don't actually speak to the conditional (post-"if") part of this second assertion he makes.

1 Problem 1

Give a conceptual argument for or against Axelrod's assertion that the correlation between vengefulness and meta-vengefulness is critical for establishing the norm.

2 Problem 2

Implement Axelrod's meta-norms model, and a minimal variant in which vengefulness and meta-vengefulness are distinguished. In the variant, let meta-vengefulness be represented exactly the same way as boldness and vengefulness, as a three-bit string mapped to probabilities between 0 and 1 in 1/7 increments, and subject to the same mutation rule. Compare the behavior of the original model and the variant. What do you see? Does it support the conceptual argument you gave in Problem 1?

3 Problem 3

Speculate further on the relationship between norms and meta-norms, in any way that seems appropriate to you!