0.1 Sketch of algorithm used in simulations

Number of players: n

Mutation rate: ϵ

Number of periods: $t = 0, ..., T$

Initial condition: $z_0 =$ random fraction in $[0, 1]$

Fraction of s_1 players at t: $z_t \in [0, 1]$

Fraction of s_2 players at t: $1 - z_t$

Payoff from playing s_1 at t: $u(s_1, z_t)$

Payoff from playing s_2 at t: $u(s_2, z_t)$

Set $u_t(z_t) := (s_1, z_t) - u(s_2, z_t)$ where, for all t,

$$u(z_t) := \begin{cases} -1, \text{if} & z_t < z_* \\ 0, \text{ if} & z_t \in [z_*, z_*] \\ +1, \text{if} & z_t > z^* \end{cases}$$

For all t, set: $u(s_1, z_t) := \begin{cases} 2, \text{ if} & z_t < z_* \\ 2.5, \text{if} & z_t \in [z_*, z_*] \\ 3, \text{ if} & z_t > z^* \end{cases}$, $u(s_2, z_t) := \begin{cases} 3, \text{ if} & z_t < z_* \\ 2.5, \text{if} & z_t \in [z_*, z_*] \\ 2, \text{ if} & z_t > z^* \end{cases}$

$$z_{t+1} = z_t \left[\frac{u(s_1, z_t)}{z_t u(s_1, z_t) + (n - z_t) u(s_2, z_t)} \right] + \epsilon(1 - z_t) - \epsilon z_t \qquad (1)$$

- Starting with z_0, use iterative process above to compute z_t for every integer time period t, $t = 0, ..., T$

- Compute the fraction of time the system spends in each region R_1, R_2, R_3

- Compute the fraction of transitions from $z = 1$ to $z = 0$ that occurred directly, versus through $z \in [z_*, z^*]$