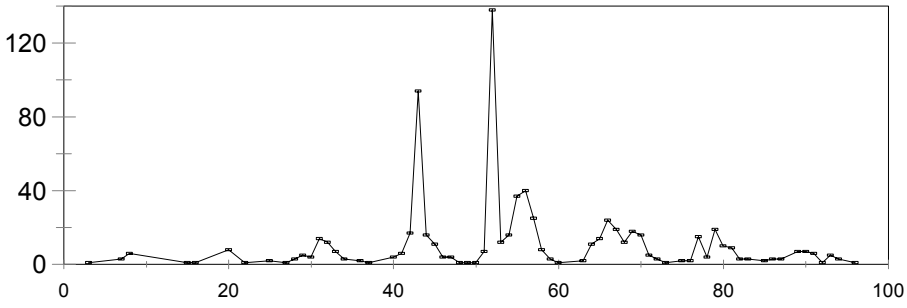
Figure 1. 1960s riots by month (top panel) and week (bottom panel).



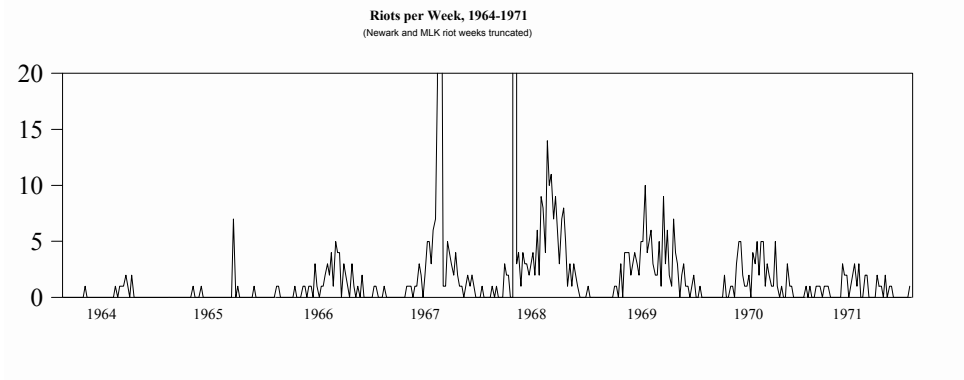


Figure 2. German new social movements protests. (Source: Ruud Koopmans)

Figure 3. Sample plot of random events. 50 actors, p=.02, moving sum of 10 time periods.

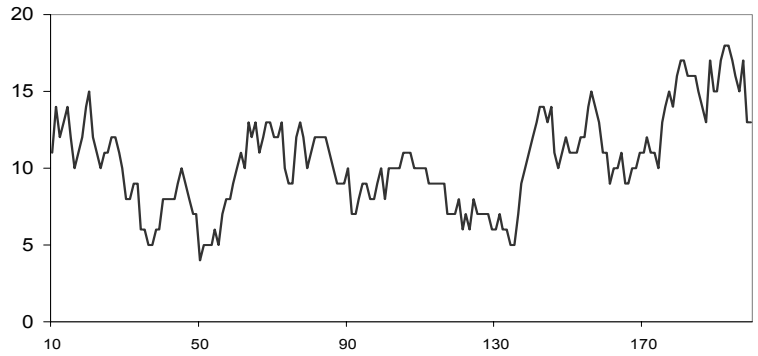
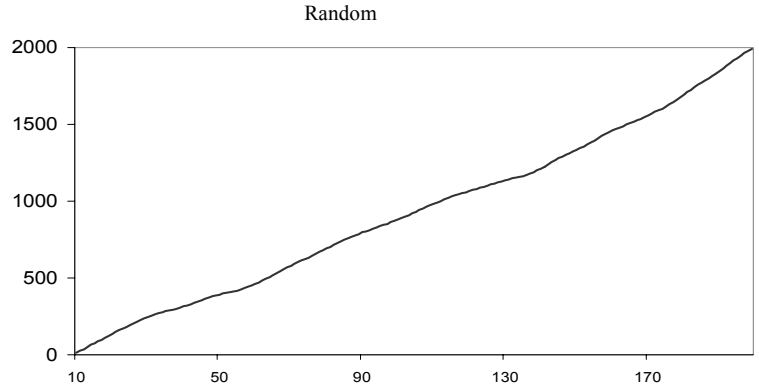
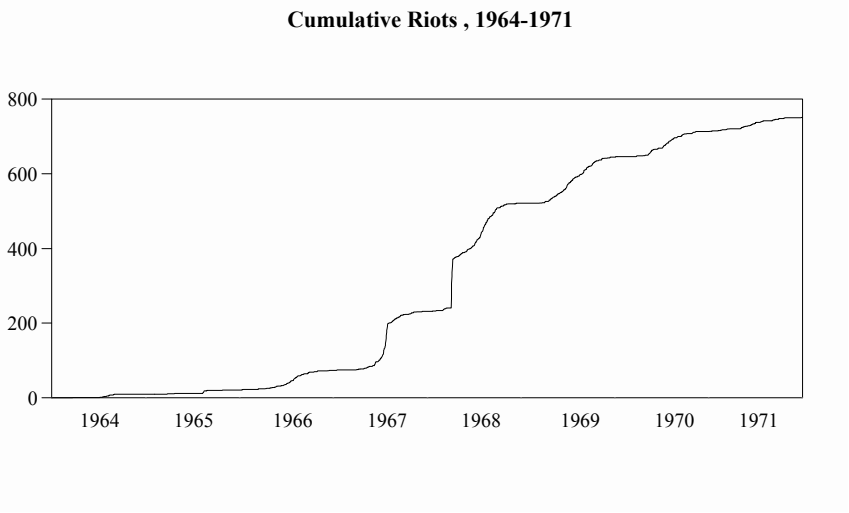


Figure 4. Cumulative distributions for random series (top panel), 1960s riots (middle panel), and German new social movement protests (bottom panel)





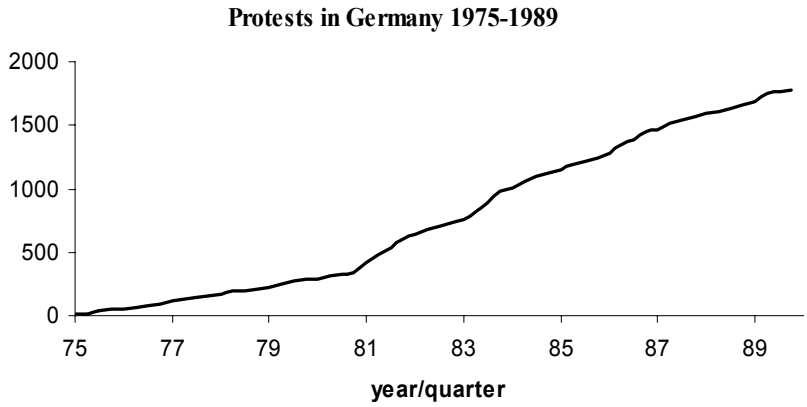


Figure 5. Example trajectory of a diffusion process showing event counts and cumulative distribution. 50 actors, initial probability .02, diffusion effect=1, negative ratio=1, sum across 30 time periods. This mechanism produces oscillations around an equilibrium, but the cumulative distribution is linear. Top panel shows whole series, bottom panel shows a close-up of the oscillations after equilibrium.

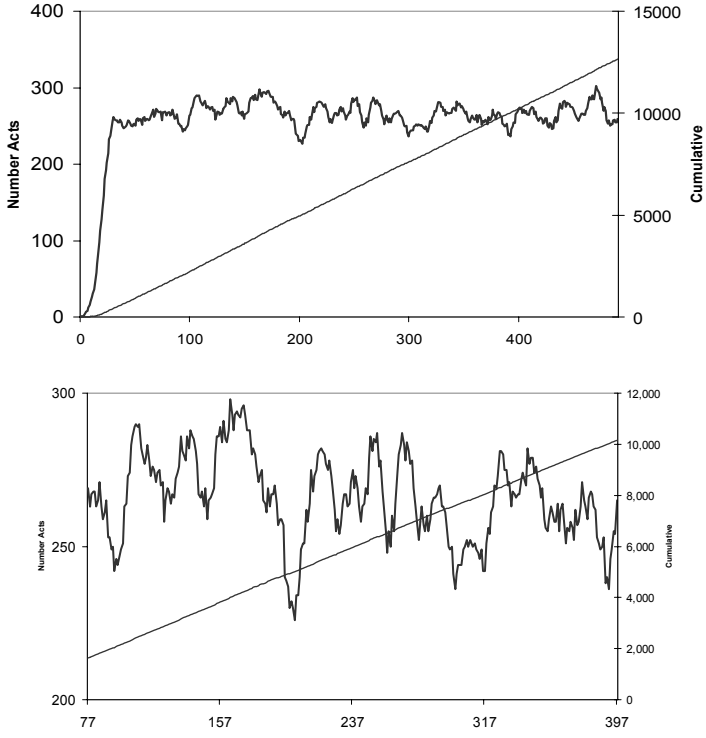


Figure 6. Rare random external reinforcement and high responsiveness produces bursts of activity. Each graph shows event counts and cumulative distribution. Top panel is the sum across five actors. Plots for individual actors show that two were reinforced and three were not. This mechanism produces spiky event distributions with waves and S-shaped cumulative distributions.

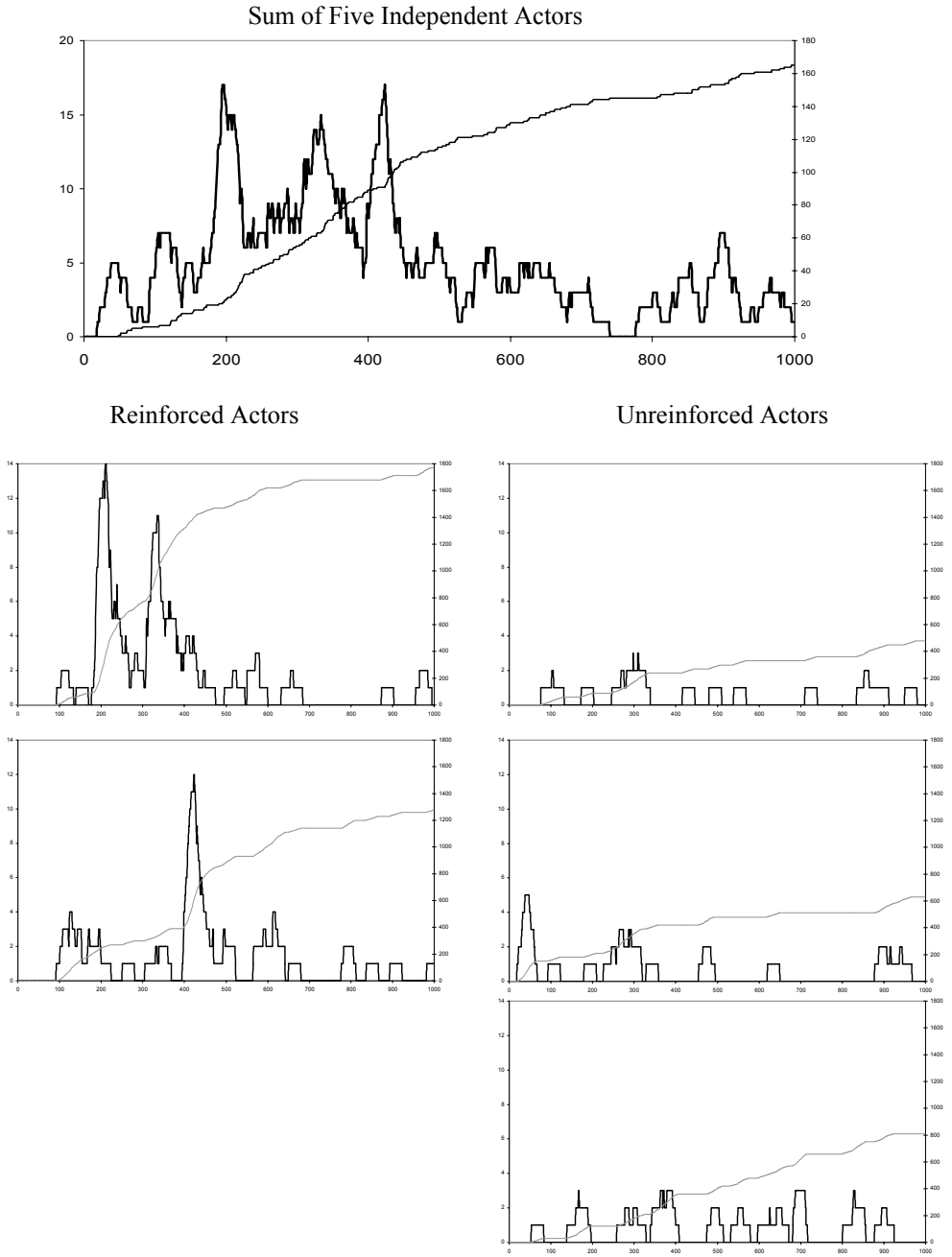
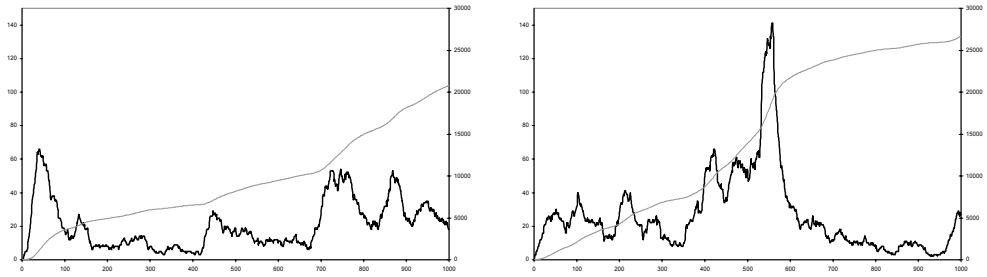


Figure 7. Event counts and cumulative distribution for fifty actors who experience random reinforcement. Upper panel example assume reinforcement in common and response proportionate to the number who acted. Lower panel assumes independent reinforcement. Cumulative totals are higher for independent reinforcement, but the range of variation in the level of action is much smaller. Initial probabilities of action and success are .02 in all cases, and response is high.

Reinforcement in Common



Independent Reinforcement

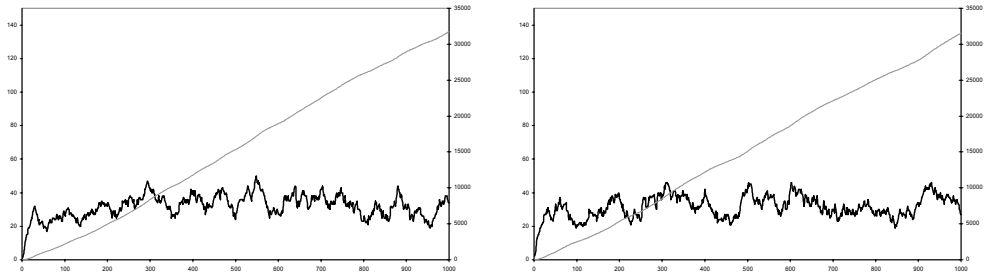


Figure 8. Mutual reinforcement, event series and cumulative counts. Top panel: if there is only positive reinforcement, the first success quickly creates a mutual spiral toward constant action and constant success. Bottom panel: If there is both positive and negative reinforcement but a low negative to positive ratio, the system oscillates around equilibrium probabilities of action and success.

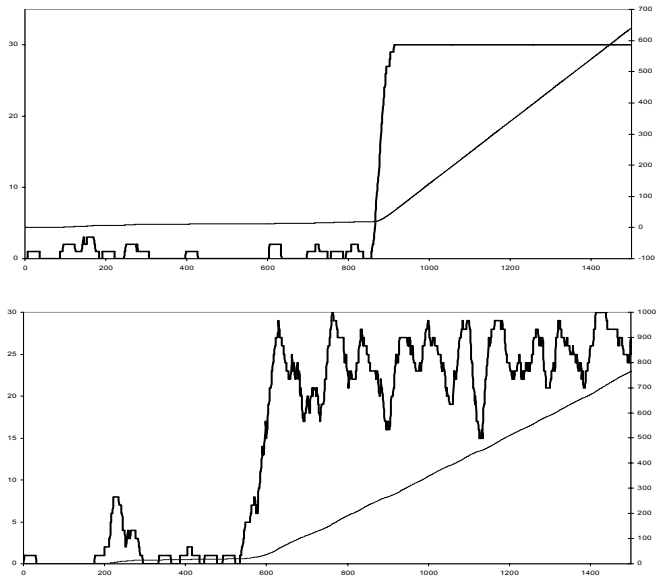


Figure 9. Mutual reinforcement event series. When initial probabilities of action and success are low and the ratio of negative to positive reinforcement is high, mutual reinforcement produces occasional bursts of activity and success off a low baseline. Actors are independent. The final plot compares the cumulative distributions.

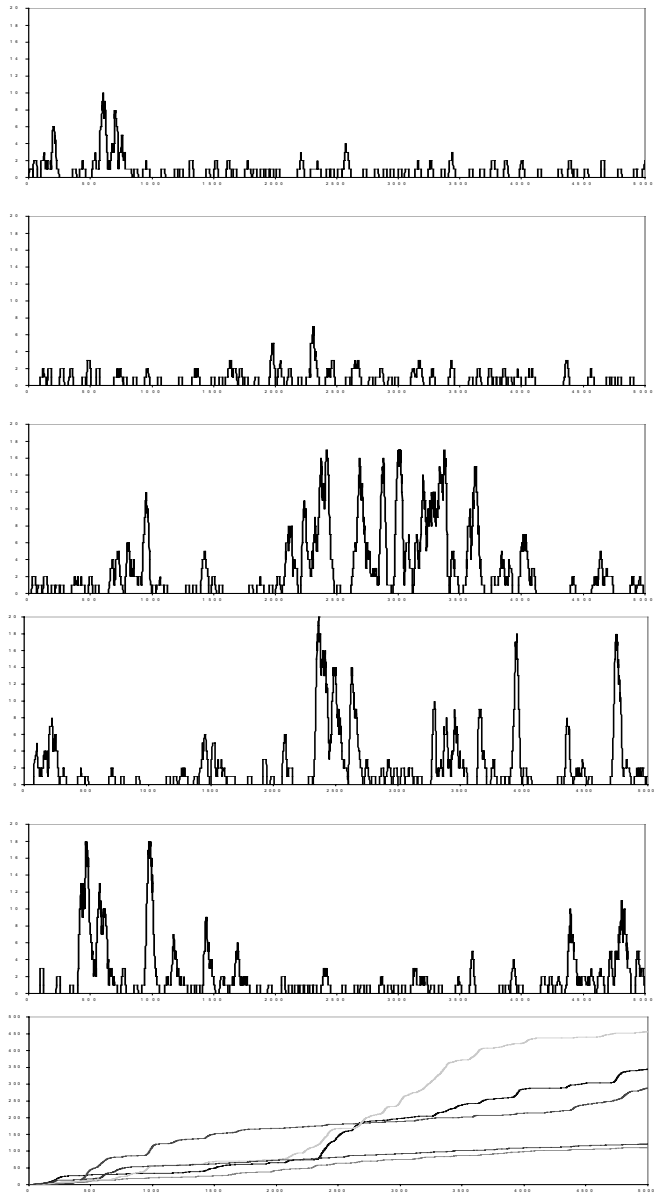


Figure 10. Five actors in mutual reinforcement relation with an external regime compete with one another for success under conditions in which each would otherwise maintain high levels of action and success. Bottom panel compares the cumulative distributions.