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Modeling Social Interventions for Insider Threat

Motivation

What is “Insider Threat”?

“a **current or former employee**, contractor, or business who has or had authorized access to an organization’s network, system, or data and **intentionally exceeded or misused** that access in a manner that negatively affected the confidentiality, integrity, or availability of the organization’s information or information systems” – CERT Guide to Insider Threat

Insider Threat has a **low base rate** of occurrence and is **difficult to detect**.

Doing experiments regarding the interplay of people and organizations on a meaningful scale could prove difficult or impossible: approaching the study of insider threat as a **modeling problem** is ideal.

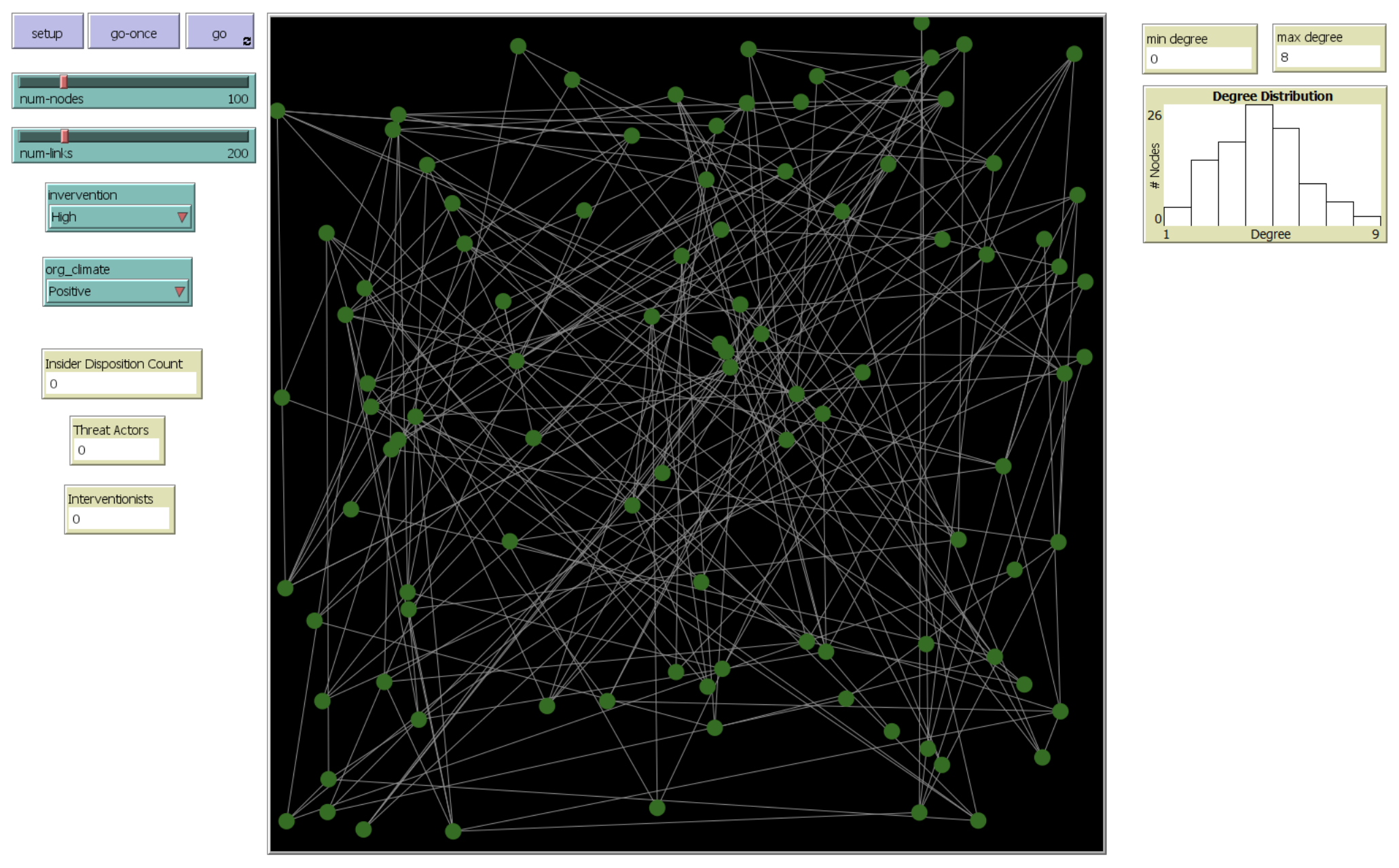
Can we use modeling to explore and demonstrate possible social interventions to prevent or lessen incidence of insider threat?

The Model

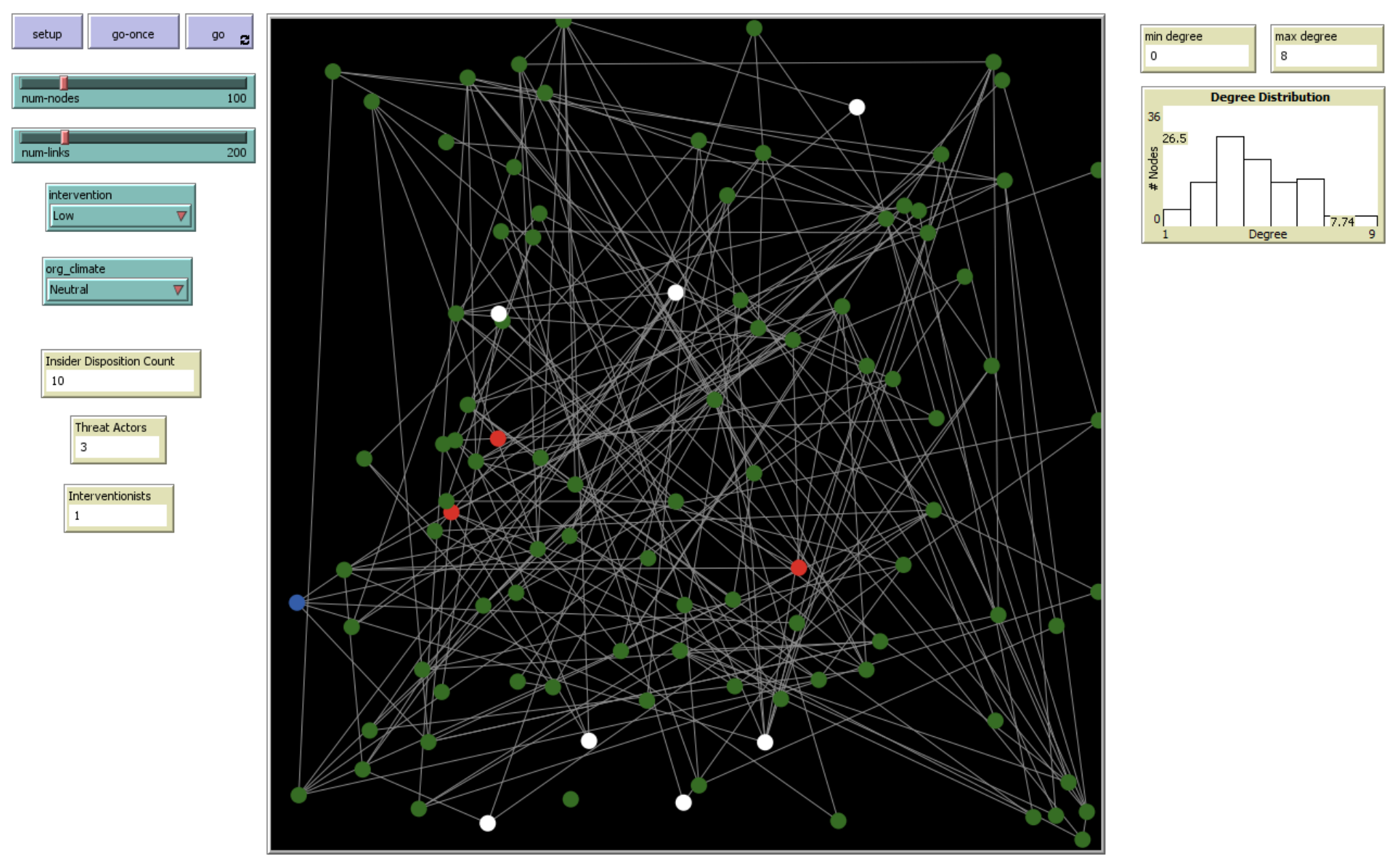
Base Run Details

	Time 1040, 1 run	Time 1040, 20 runs
Intervention level	Off	Off
Organizational climate	Neutral	Neutral
Interventionists	0	0
Agents with disposition above threshold	28	22.65 (avg) 4.09 (stdev)
Active malicious insiders	7	8.8 (avg) 2.82 (stdev)

Model Setup



Results of Base Run



Virtual Experiment Results

Negative Organizational Climate with Low Intervention

	Time 1040, 1 run	Time 1040, 20 runs
Intervention level	Low	Low
Organizational climate	Negative	Negative
Interventionists	1	1
Agents with disposition above threshold	17	15.6 (avg) 3.73 (stdev
Active malicious insiders	9	7.05 (avg) 2.31 (stdev)

Negative Organizational Climate with High Intervention

	Time 1040, 1 run	Time 1040, 20 runs
Intervention level	High	High
Organizational climate	Negative	Negative
Interventionists	3	3
Agents with disposition above threshold	0	2 (avg) 1.55 (stdev)
Active malicious insiders	0	.85 (avg) 0.81(stdev)

Conclusions

- Social interventions can help to reduce or eliminate instances of insider threat which feature social isolation as a precursor.
- Even a low intervention rate can reduce the number of malicious insider occurrences
- Provides a strong proof-of-concept for realizing the the social interplay at work in organizations, the cause and occurrence of malicious insider attacks, and possible intervention strategies.

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