Growing Sovereignty:

Modeling the Shift from Indirect to Direct Rule

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Outline

- Puzzle
- Explaining systems change
- A one-dimensional model of territorial systems change
- A computational model of territorial systems change
- Conclusion

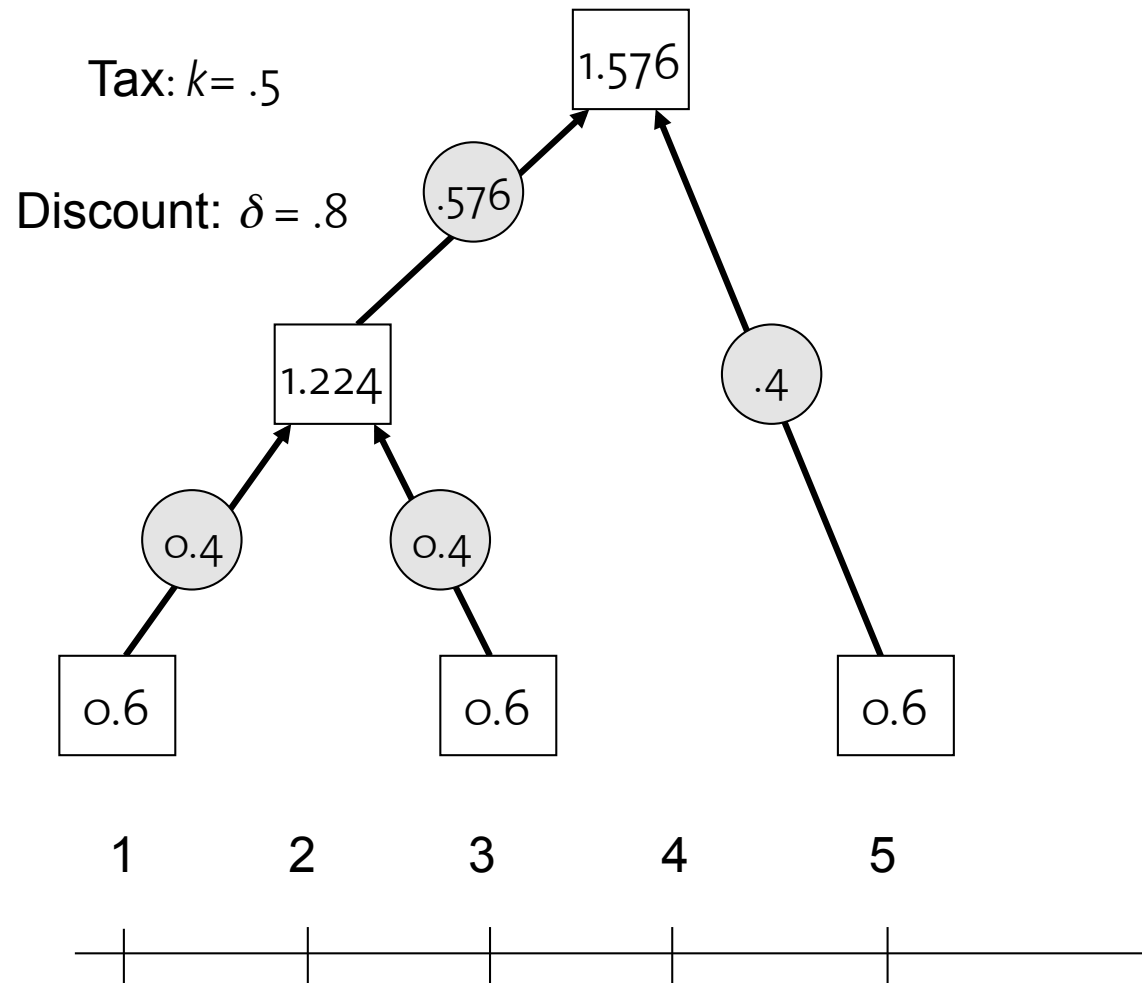Forthcoming in *International Studies Quarterly*

Puzzle

- How to explain the emergence of the territorial state?

- Following Tilly, we focus on the shift from indirect to direct rule within state hierarchies

- We show that direct rule emerges due to technological change, mediated by conquest and organizational bypass
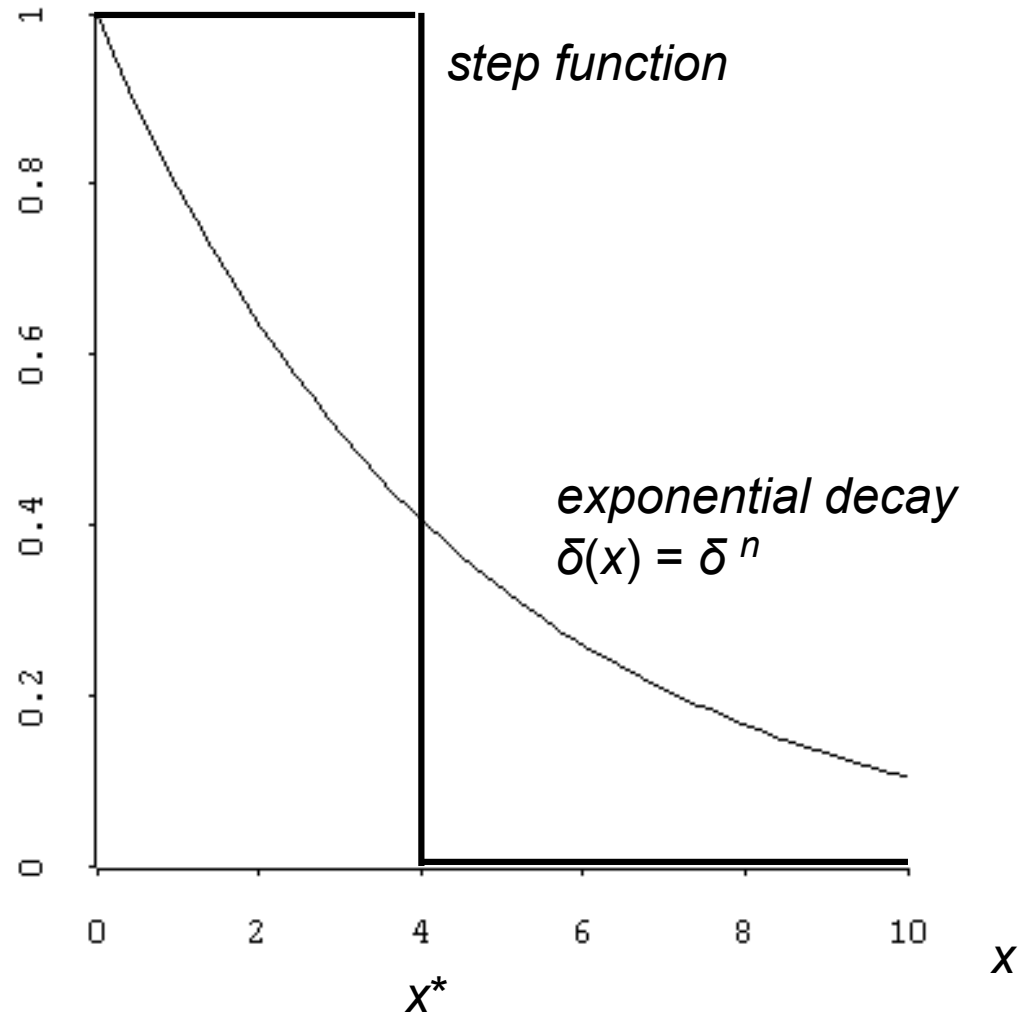
According to Gilpin (1981):

- **Systems change** concerns the nature of the units, e.g. the emergence of the state

- **Systemic change** relates to the governance of the system, e.g. the coming and going of specific units

- **Process change** involves behavioral interactions among fixed units, e.g. conflict and cooperation
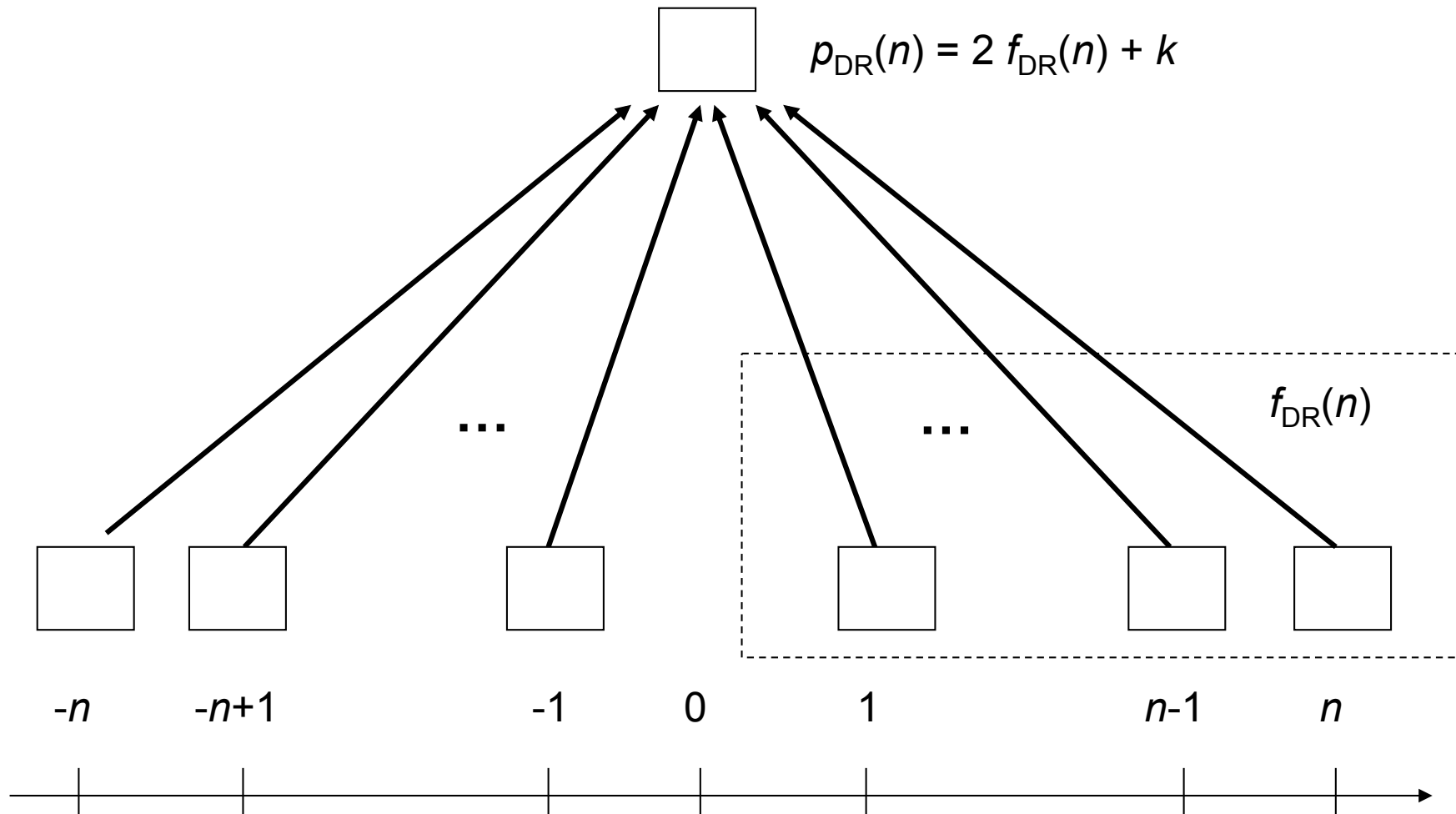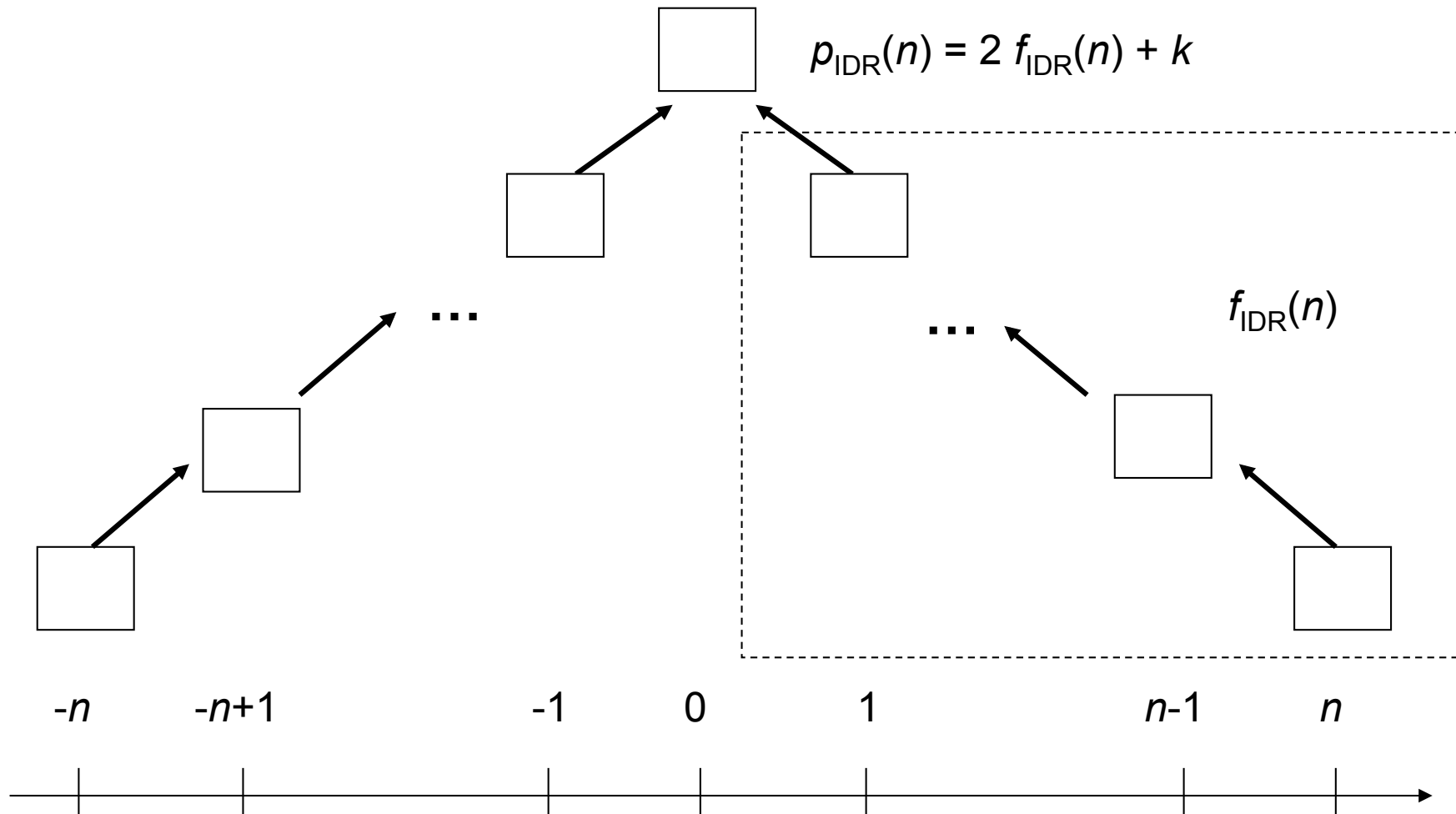
Taxation in a linear state

Tax: $k = .5$

Discount: $\delta = .8$

Loss-of-strength gradients

$\delta(x)$

step function

exponential decay
$\delta(x) = \delta^{n}$

x

x^*

A linear, directly ruled state

$$p_{DR}(n) = 2\,f_{DR}(n) + k$$

$f_{DR}(n)$

$-n$ $-n+1$ -1 0 1 $n-1$ n

A linear, indirectly ruled state

$$p_{IDR}(n) = 2\, f_{IDR}(n) + k$$

$f_{IDR}(n)$
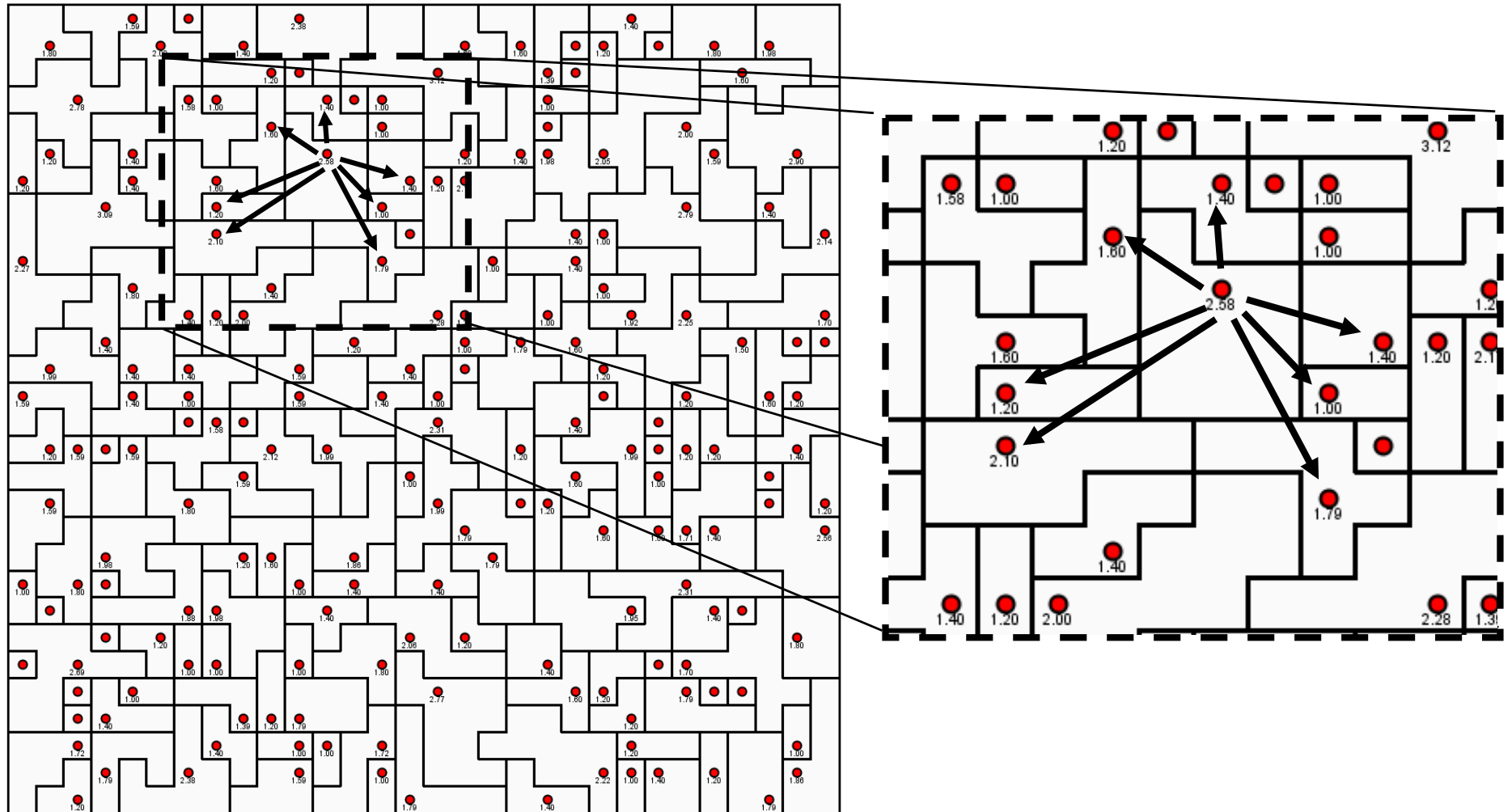
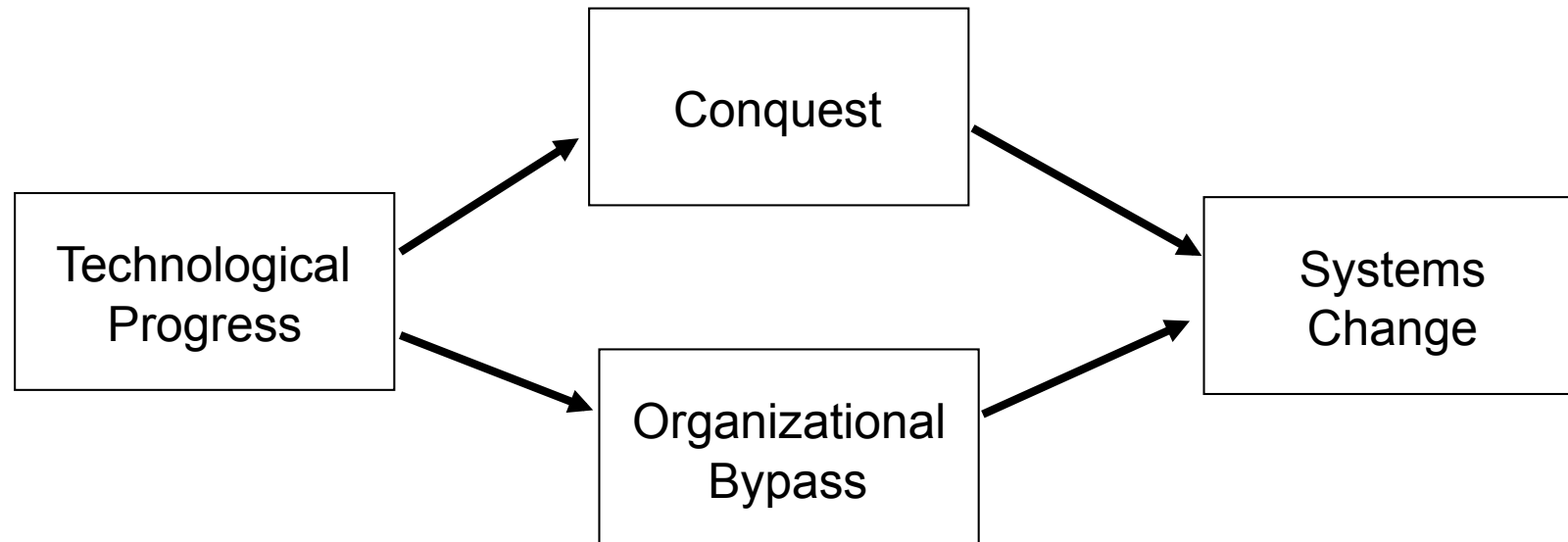-n   -n+1   -1   0   1   n-1   n

Results from the linear model

- **Proposition 1.**
  Assuming exponential decay, direct rule is always more efficient

- **Proposition 2.**
  Assuming a step function, indirect rule is more efficient for low threshold values x^*
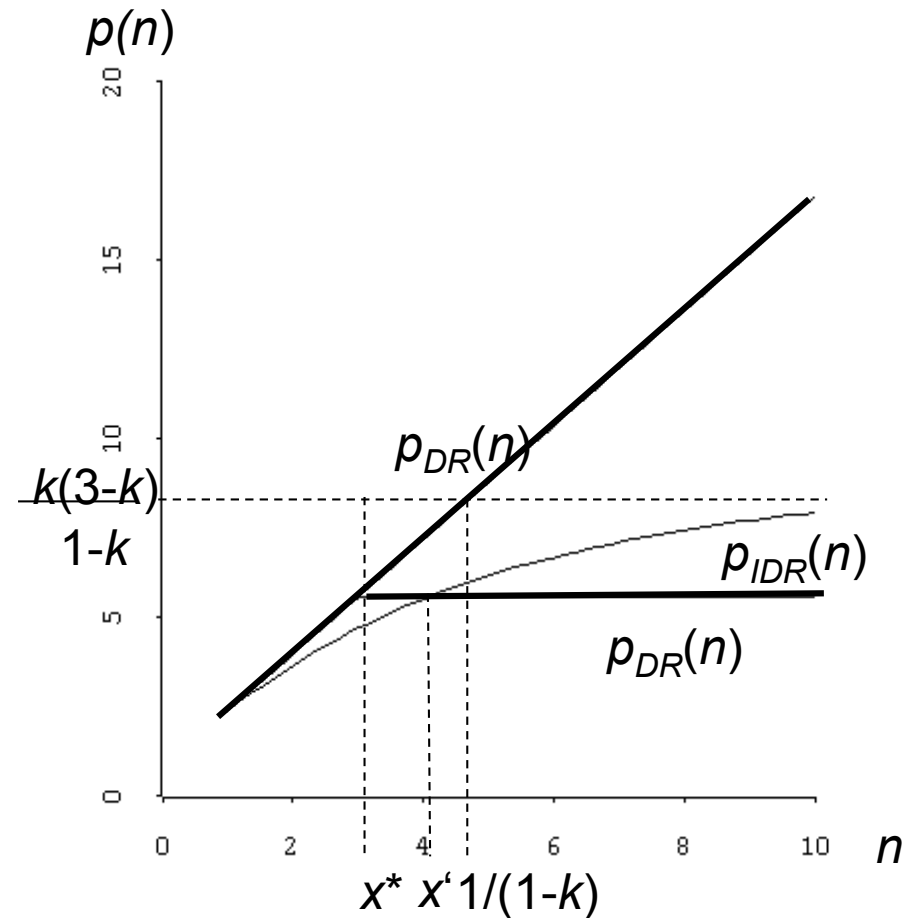
The initial state of *OrgForms*

OrgForms: Causal mechanisms

The two main mechanisms

- **Conquest**:
  - occurs if the power balance exceeds 2.5
  - implies that victim is "swallowed as a whole" and inserted where it is the most efficient

- **Organizational bypass**:
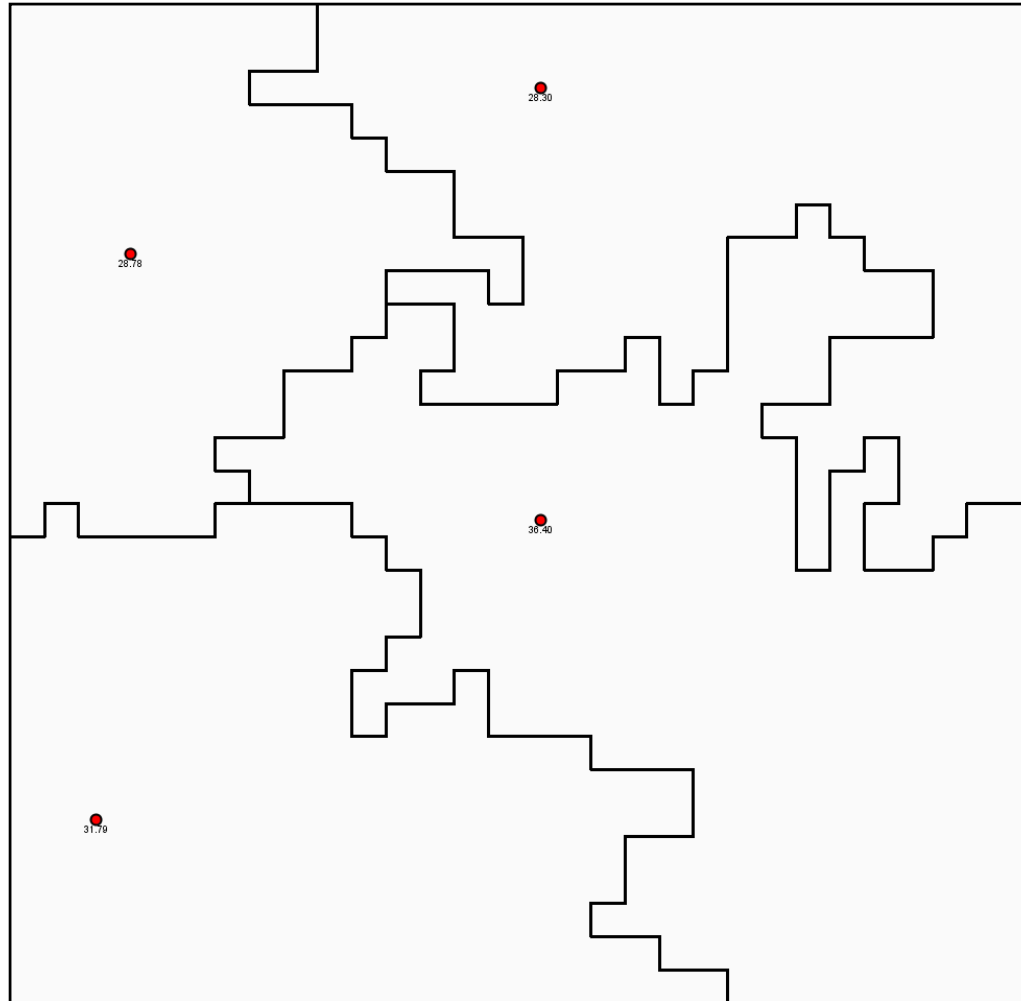 - occurs if the center is strong enough (2.5) and the operation yields a more efficient organization
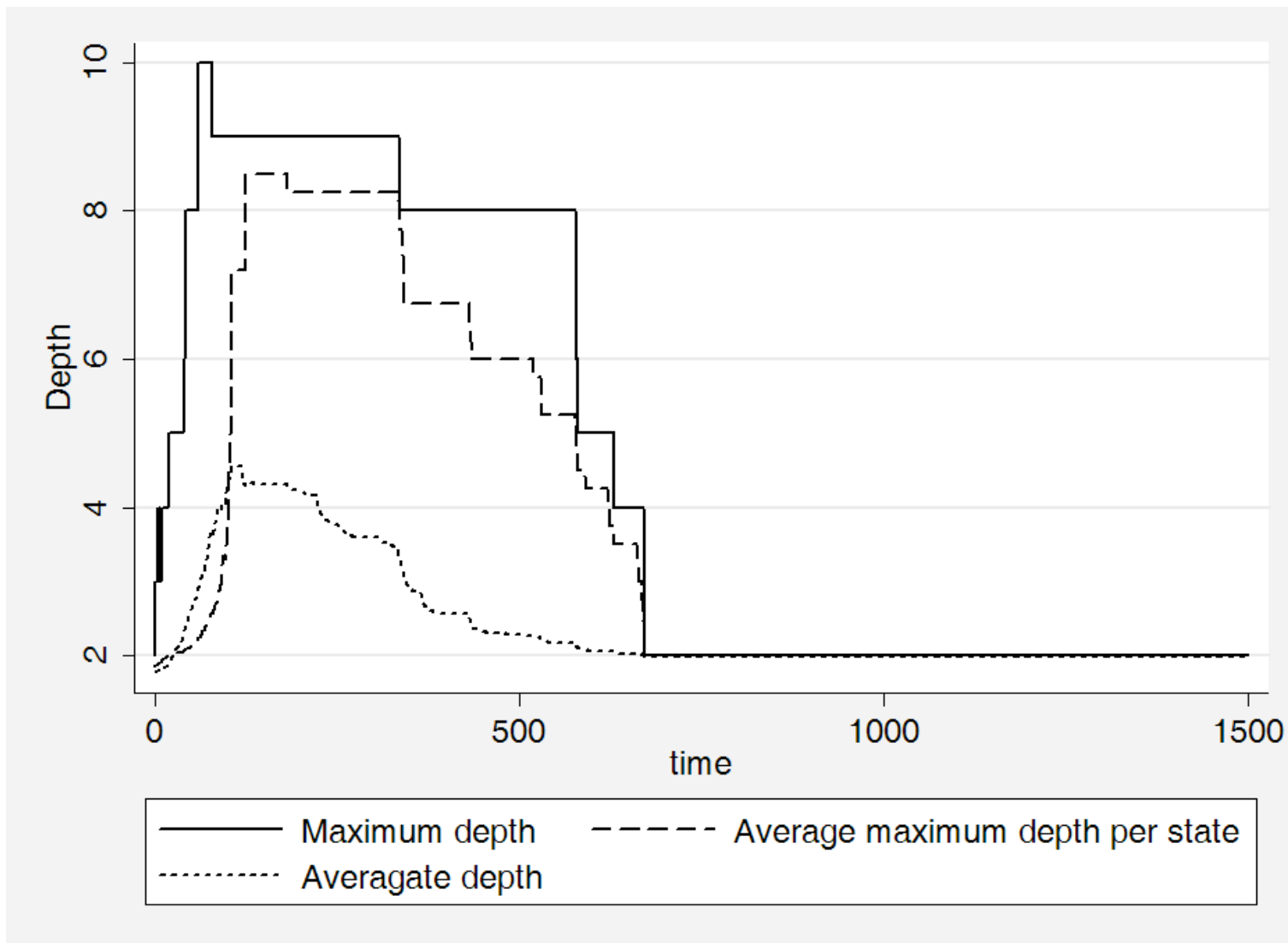
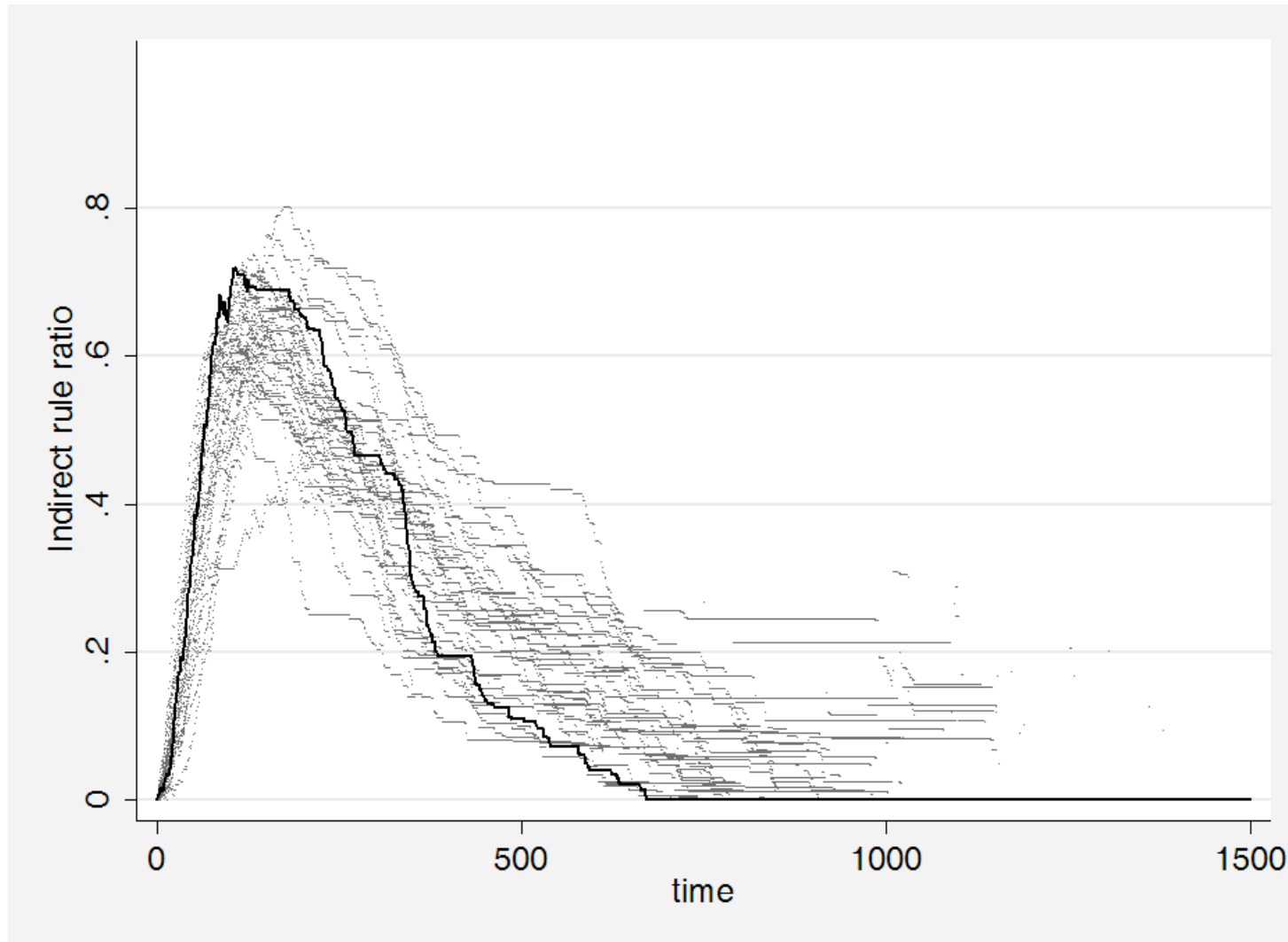# Modeling technological change
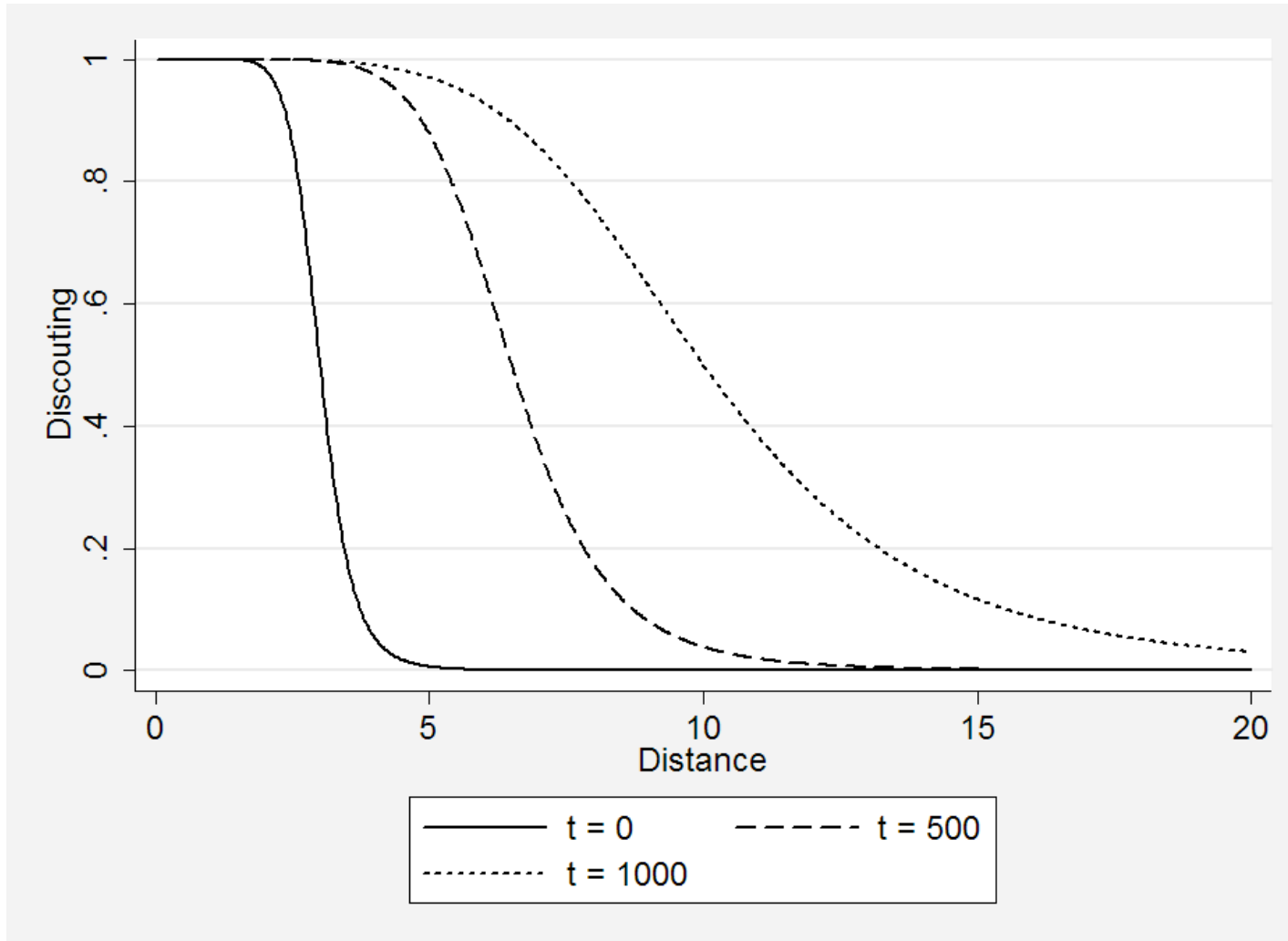
Indirect rule in the "Middle Ages"
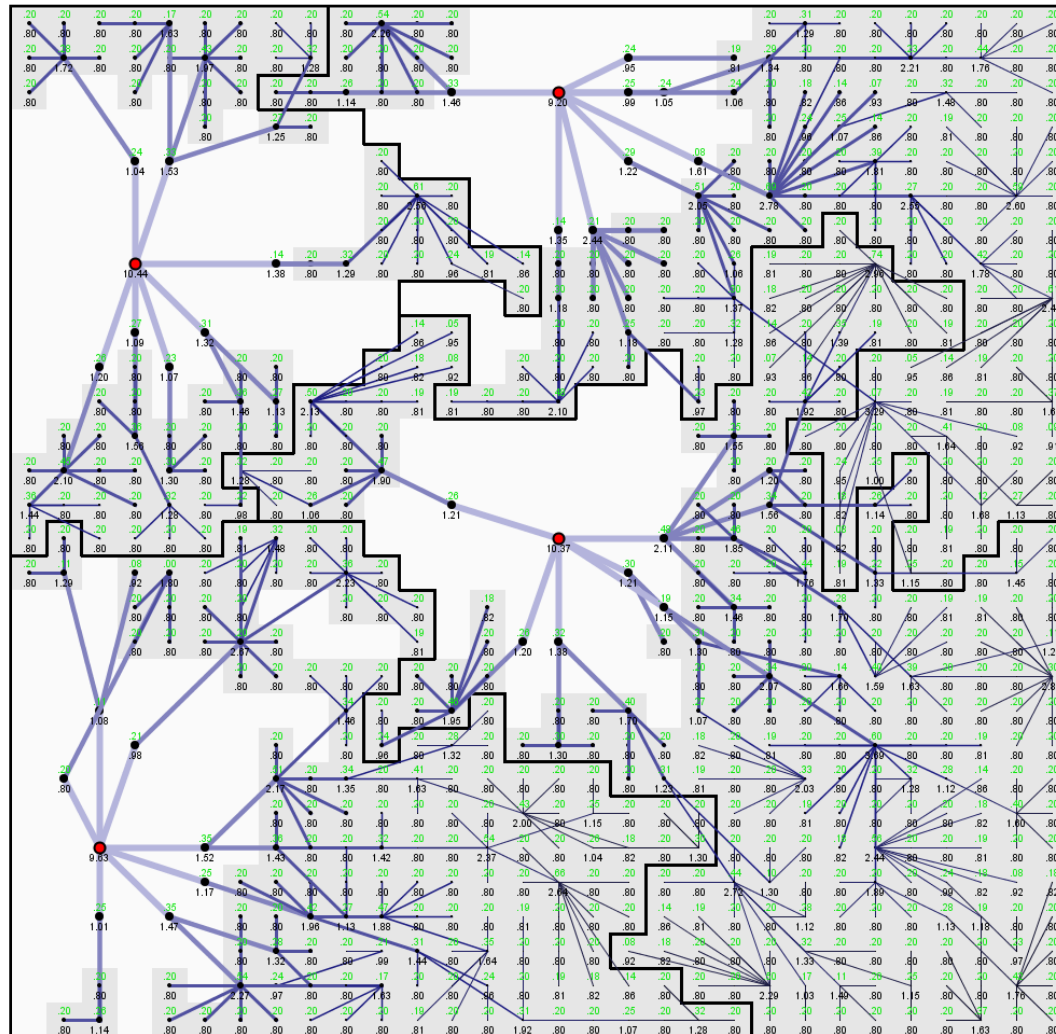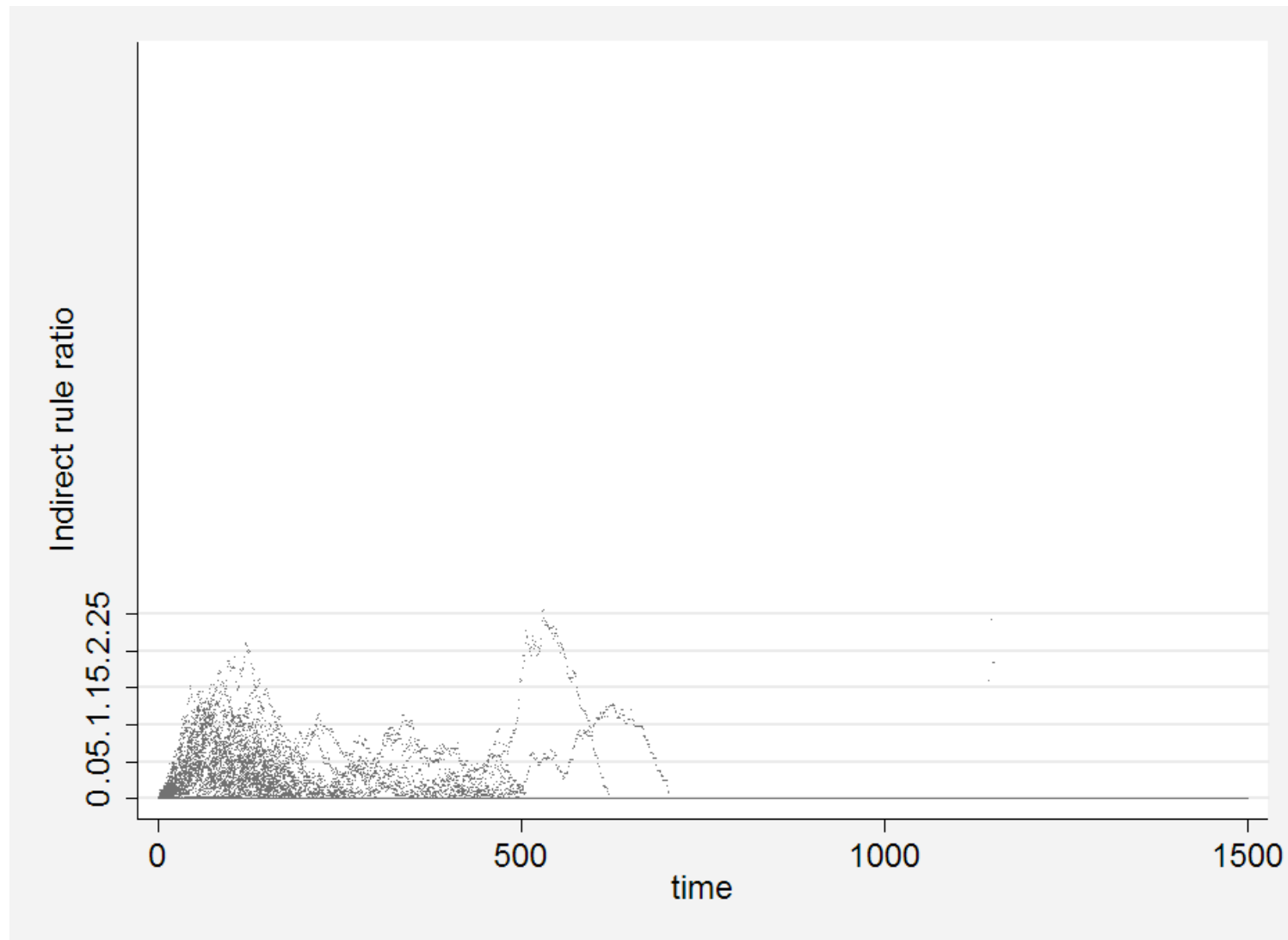
Direct rule in the modern system
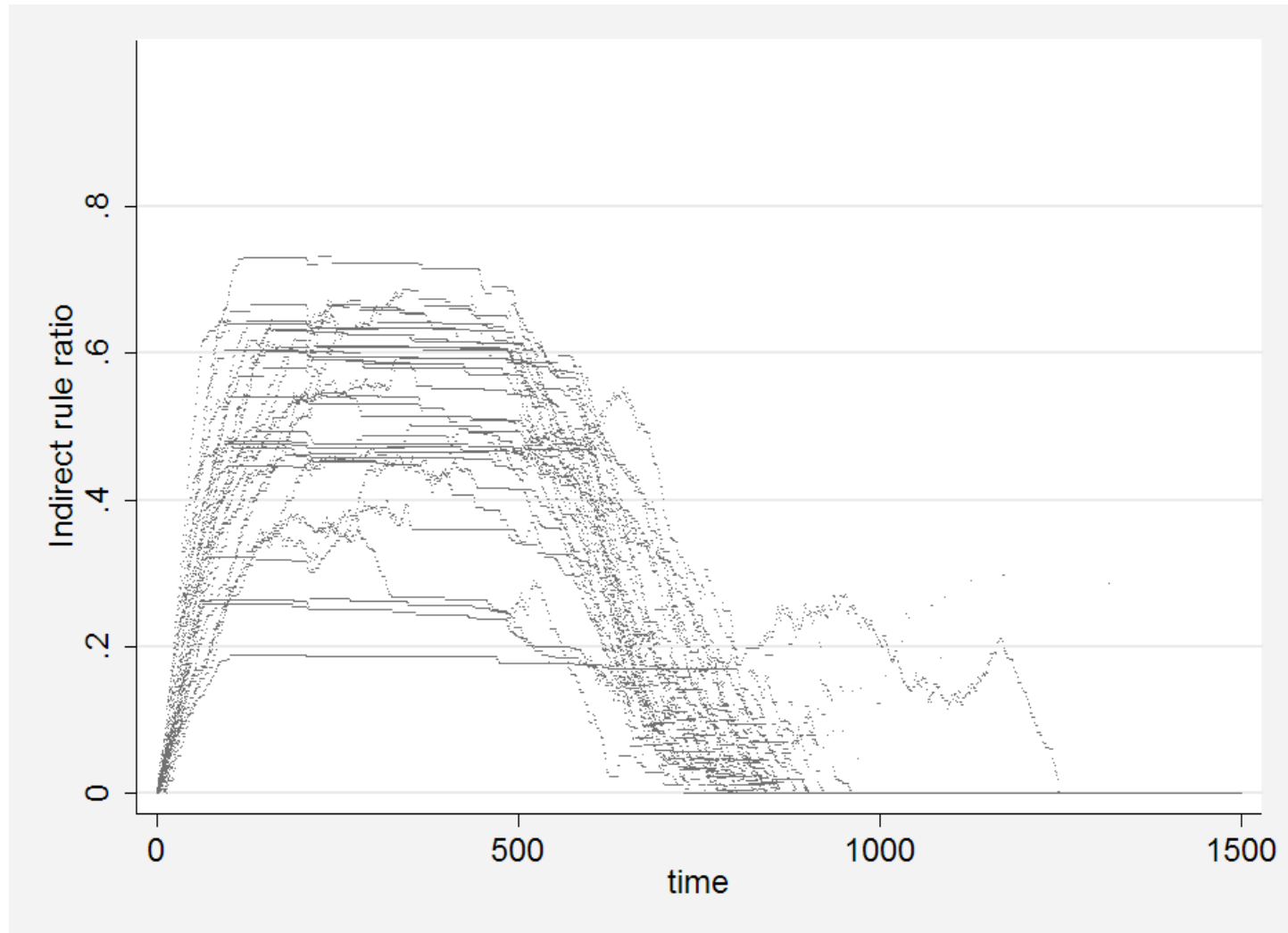
Tracing the sample run

Replications with moving threshold and slope

Replications with exponential decay

Replications with moving slope only

Conclusions

- *OrgForms* is the first model that captures the emergence of indirect to direct rule in a dynamic network

- Threshold in moving loss-of-strength gradient necessary

- Conquest and organizational bypass sufficient

- Extensions: emergent boundaries and organizational codes