Depolarizing effect of strategic anti-conformity

insights from the three-state q-voter model with bounded confidence
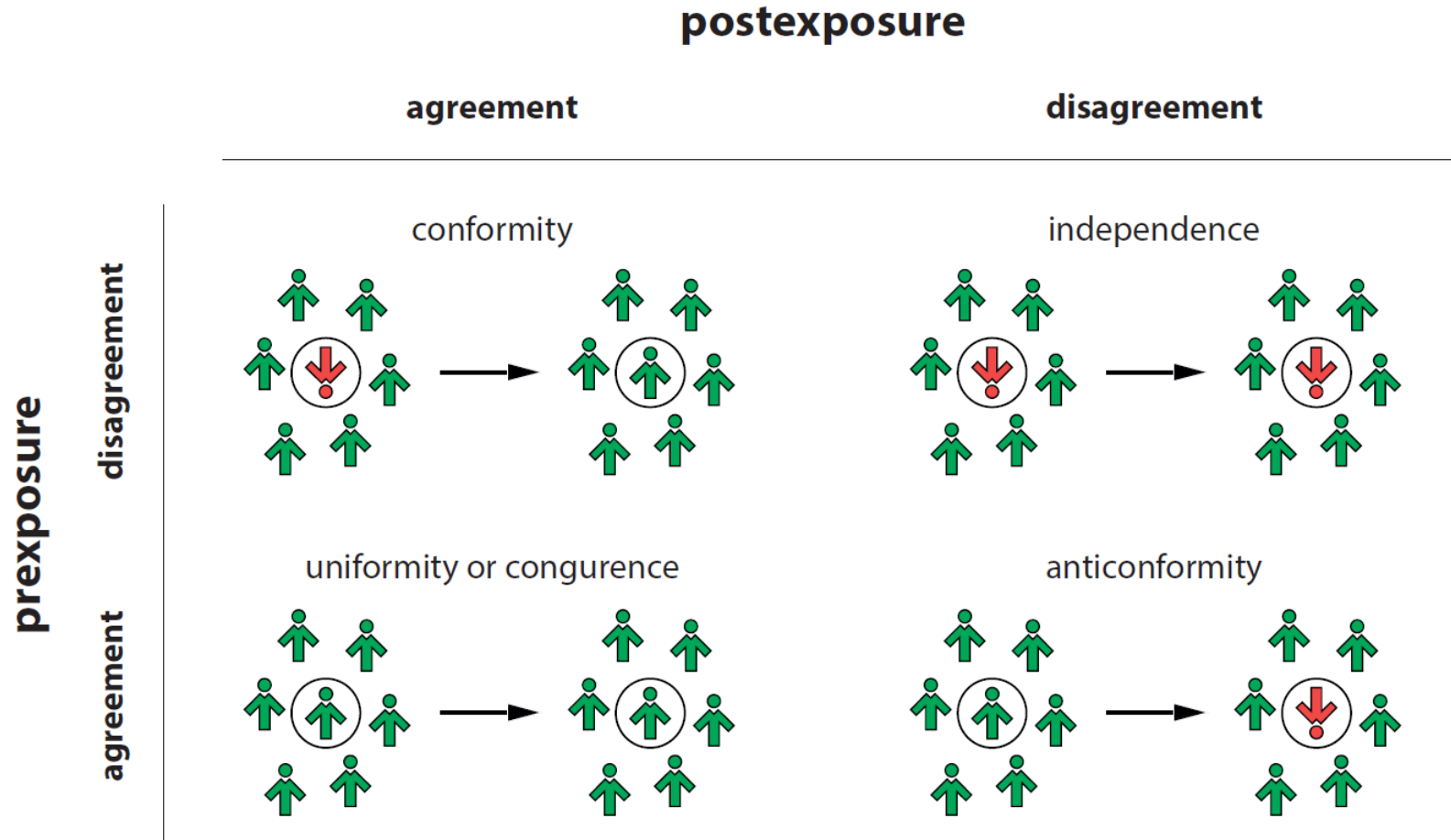
Katarzyna Sznajd-Weron
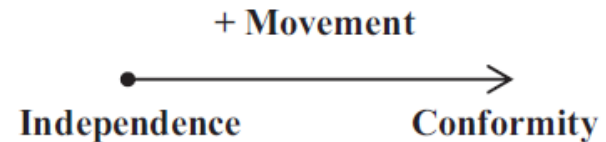
Faculty of Management

MMM ETH Workshop

What is (strategic) anticonformity?

Nail, P.R., Sznajd-Weron, K. (2016) *Rethinking the diamond model: Theory and research support self-anticonformity as a basic response and influence process*, in "**The Psychology of Consumer and Social Influence: Theory and Research**"
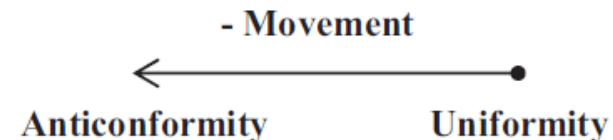
What is (strategic) anticonformity?

Model 4
Asch (1951)

+ Movement

Independence → Conformity

Model 5
Argyle (1957)

- Movement   + Movement

Anticonformity   Independence   Conformity
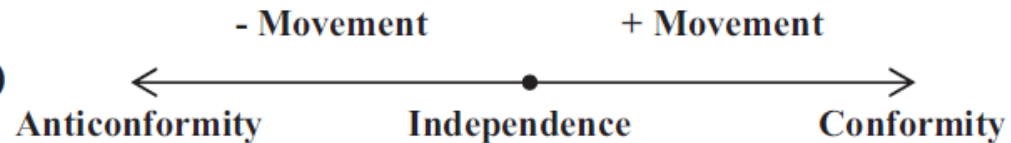
Model 6
Worchel & Brehm (1970)

- Movement

Anticonformity   Uniformity

Paul R. Nail et al. (2013) *Proposal of a Double Diamond Model of Social Response*
Review of General Psychology

3

What is strategic anticonformity?

- Advocating for a behavior that is different than the desired outcome

- The goal is to encourage the other person to do what is actually desired

Sushi

Steak or sushi?
Maybe steak?

MacDonald G, Nail PR, Harper JR (2011) *Do people use reverse psychology? An exploration of strategic self-anticonformity.* Social Influence

Polarization in the three-state q-voter model with anticonformity and bounded confidence

Arkadiusz Lipiecki, Katarzyna Sznajd-Weron [*]

Motivation

Harvard Business Review

Difficult Conversations

Managing a Polarized Workforce

by Julia A. Minson and Francesca Gino
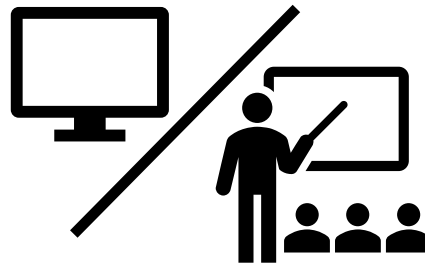
From the Magazine (March–April 2022)

„One of the most difficult challenges leaders of all organizations face is managing diverse perspectives"

Decision making

Example 1: teaching at the Wroclaw Tech (post Covid)
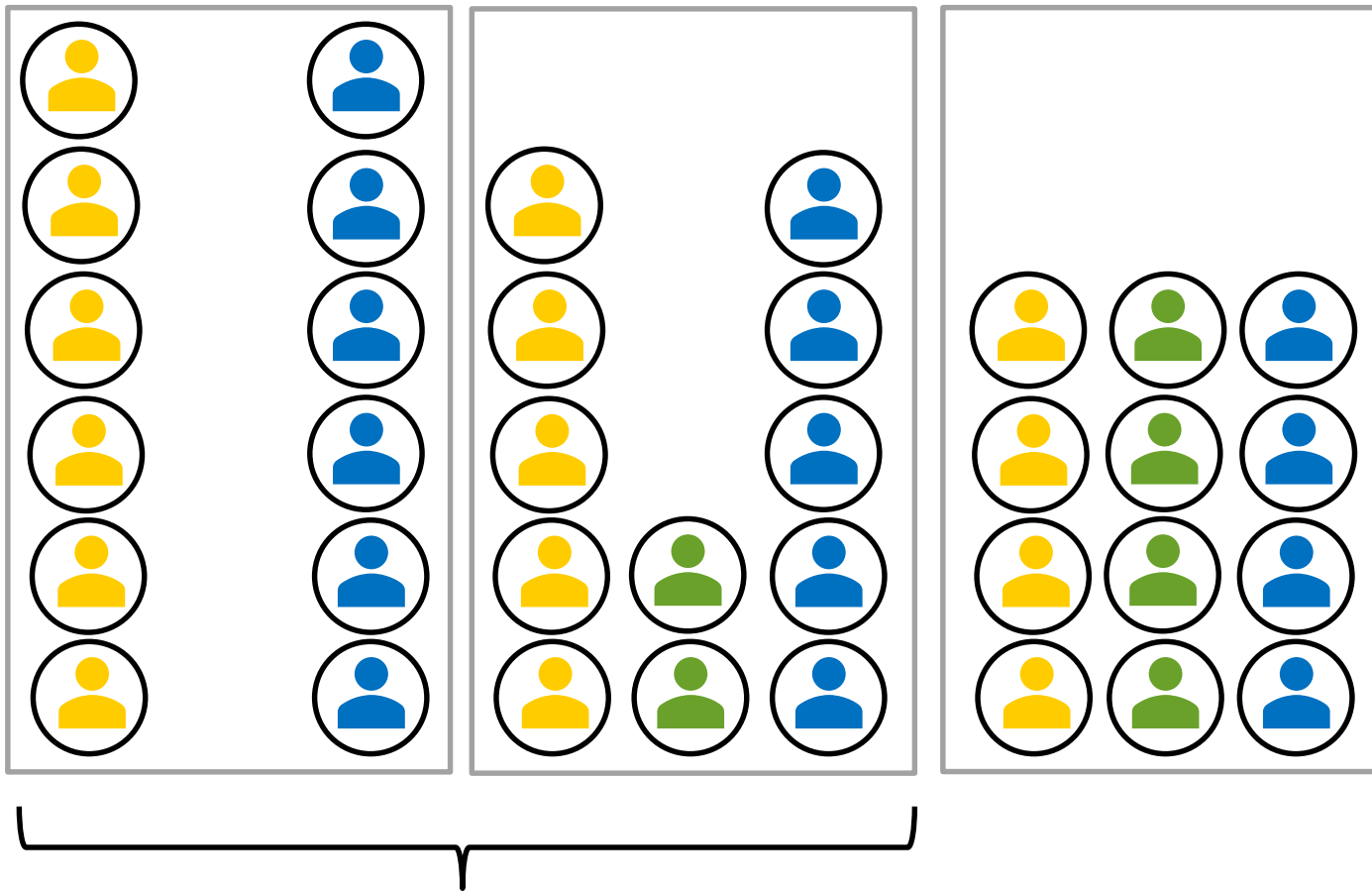
remote   hybrid   stationary

Opinion distributions (N=12)

Average opinion:

polarization

Questions:

1. Can strategic anticonformity depolarize the system?

2. Why is the system polarized?

Many conflicts grow as people on both sides talk mostly with like-minded others.

David G. Myers (2010),
Social Psychology, 10th Edition,
Page 282

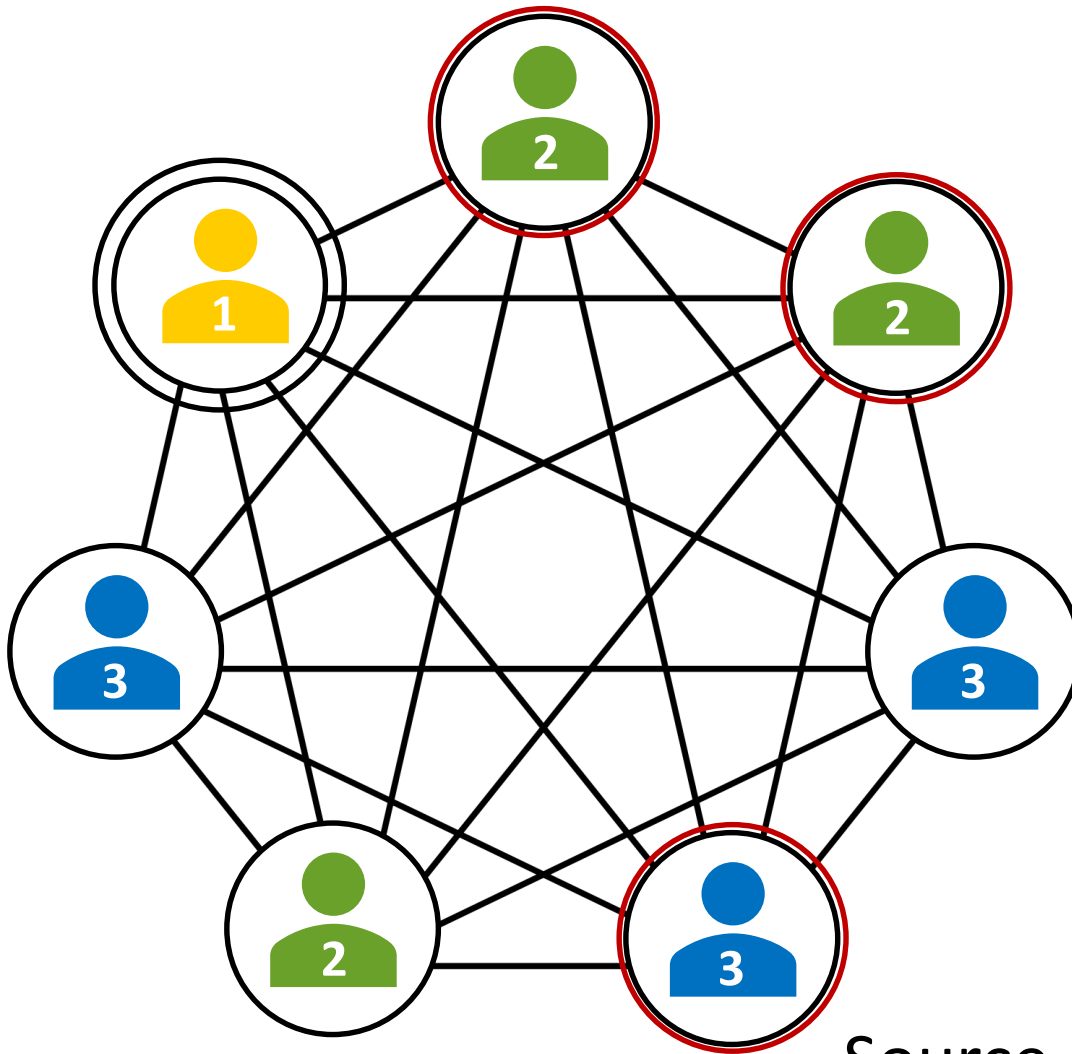# The three-state model

Assumptions:
1) Ordered/ranked opinions
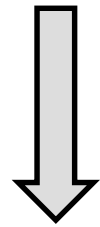   (2 extreme, 1 moderate)
2) Change only by one unit
    (**MAYA** = **M**ost **A**dvanced, **Y**et **A**cceptable)

Linear voter model: Vazquez F, Krapivsky PL, Redner S. (2003) Constrained opinion dynamics: freezing and slow evolution.

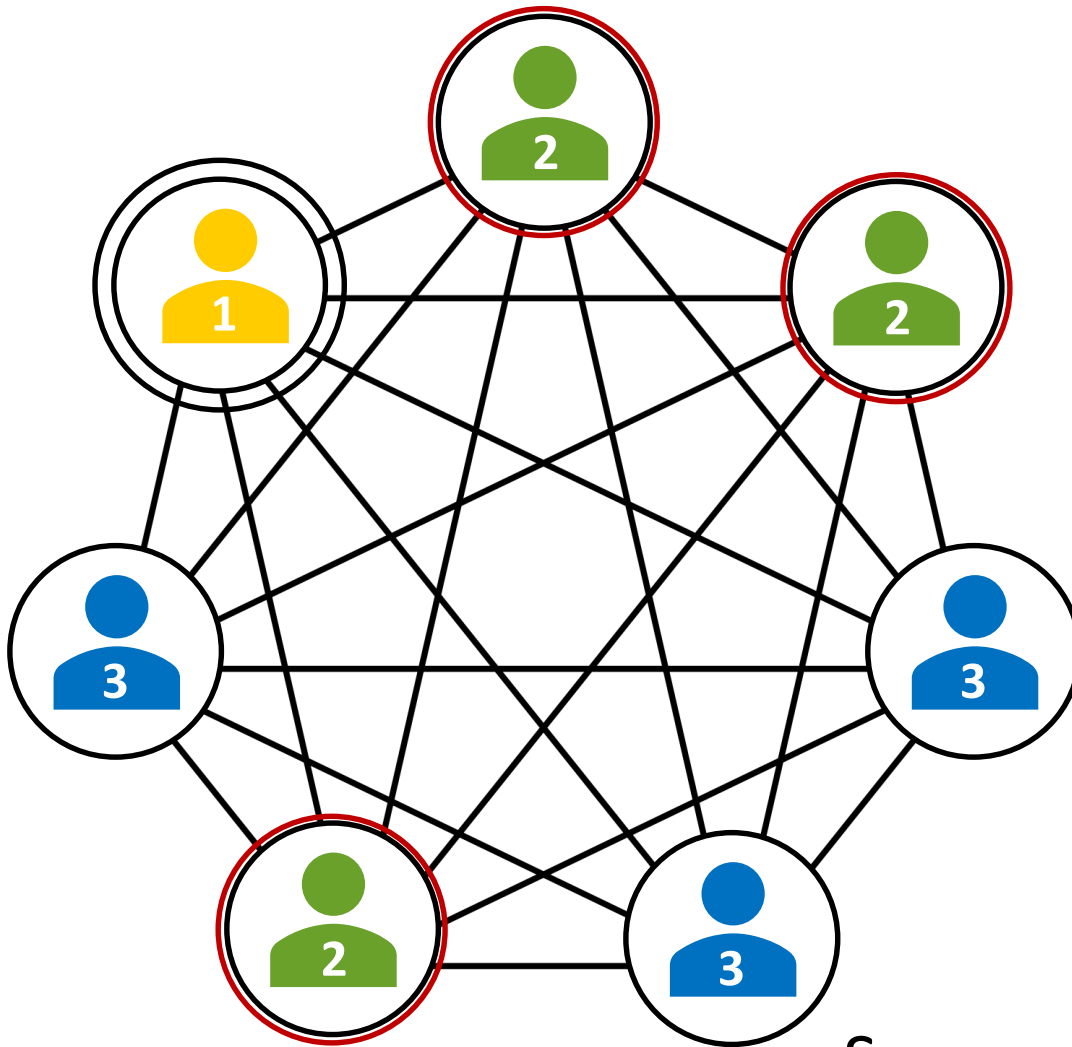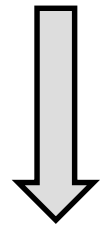# The three-state q-voter model

no unanimity

no influence

Source of influence = q-panel
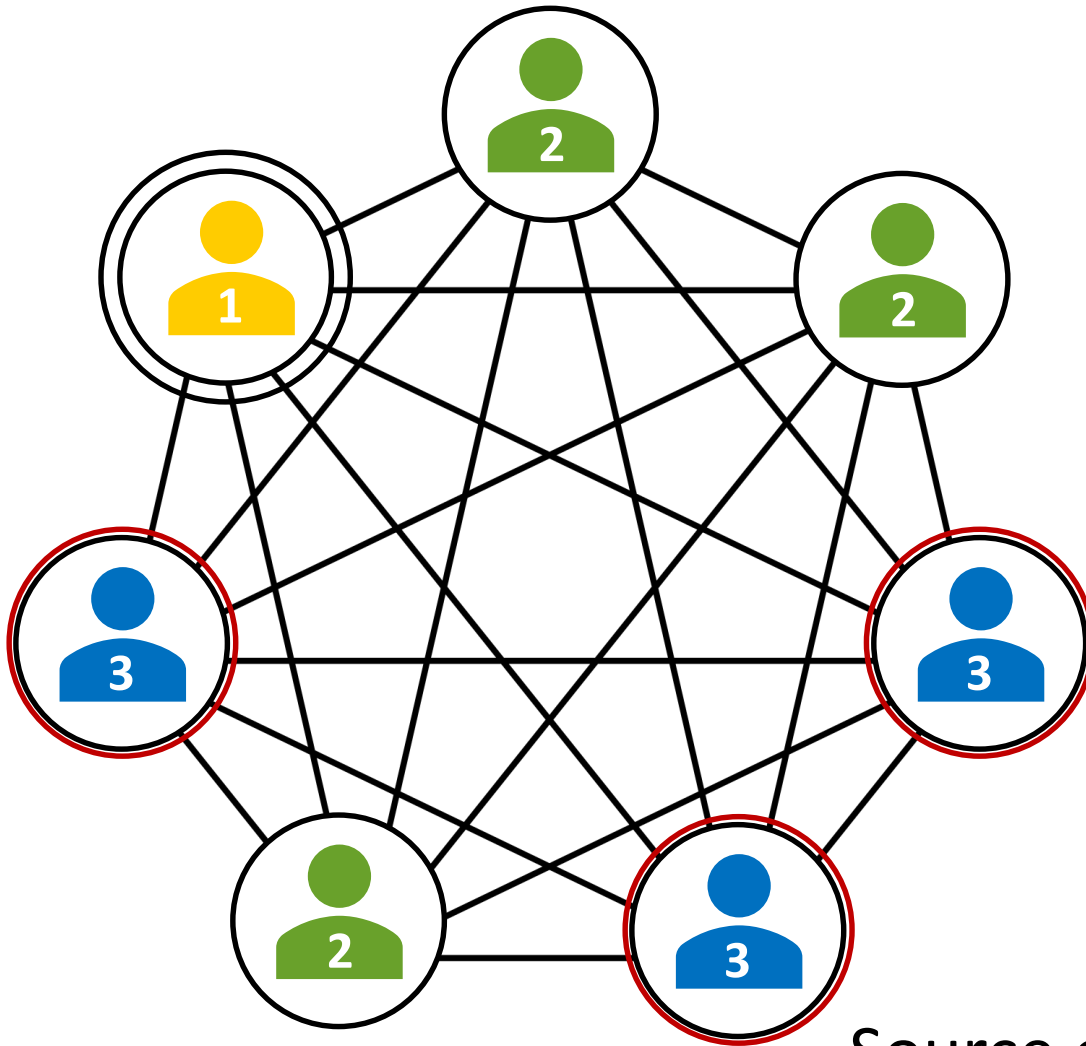Ex: q=3

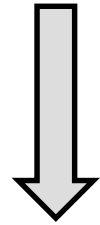# The three-state q-voter model

unanimity

influence

Source of influence = q-panel
Ex: q=3

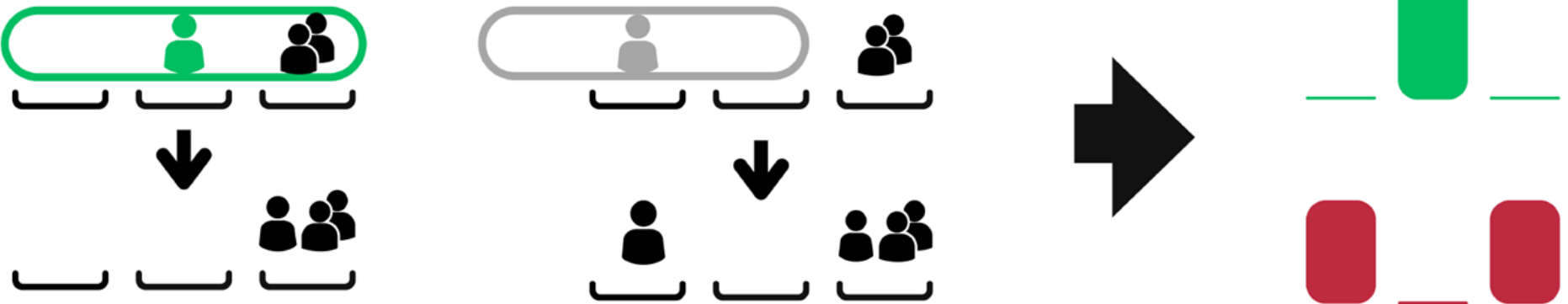# Conformity + bounded confidence

too different

↓

no influence

Source of influence = q-panel
Ex: q=3

Conformity + bounded confidence

Homophily is sufficient to obtain bi-polarization.

→ Increasing similarity with like-minded individuals.

(c) A.Lipiecki, 2023

Mäs M, Flache A. (2013) Differentiation without distancing, explaining bi-polarization of opinions without negative influence. PLoS One

Article

Consensus, Polarization and Hysteresis in the Three-State Noisy *q*-Voter Model with Bounded Confidence

Maciej Doniec [†] [iD]**, Arkadiusz Lipiecki** [†] [iD] **and Katarzyna Sznajd-Weron** [*] [iD]
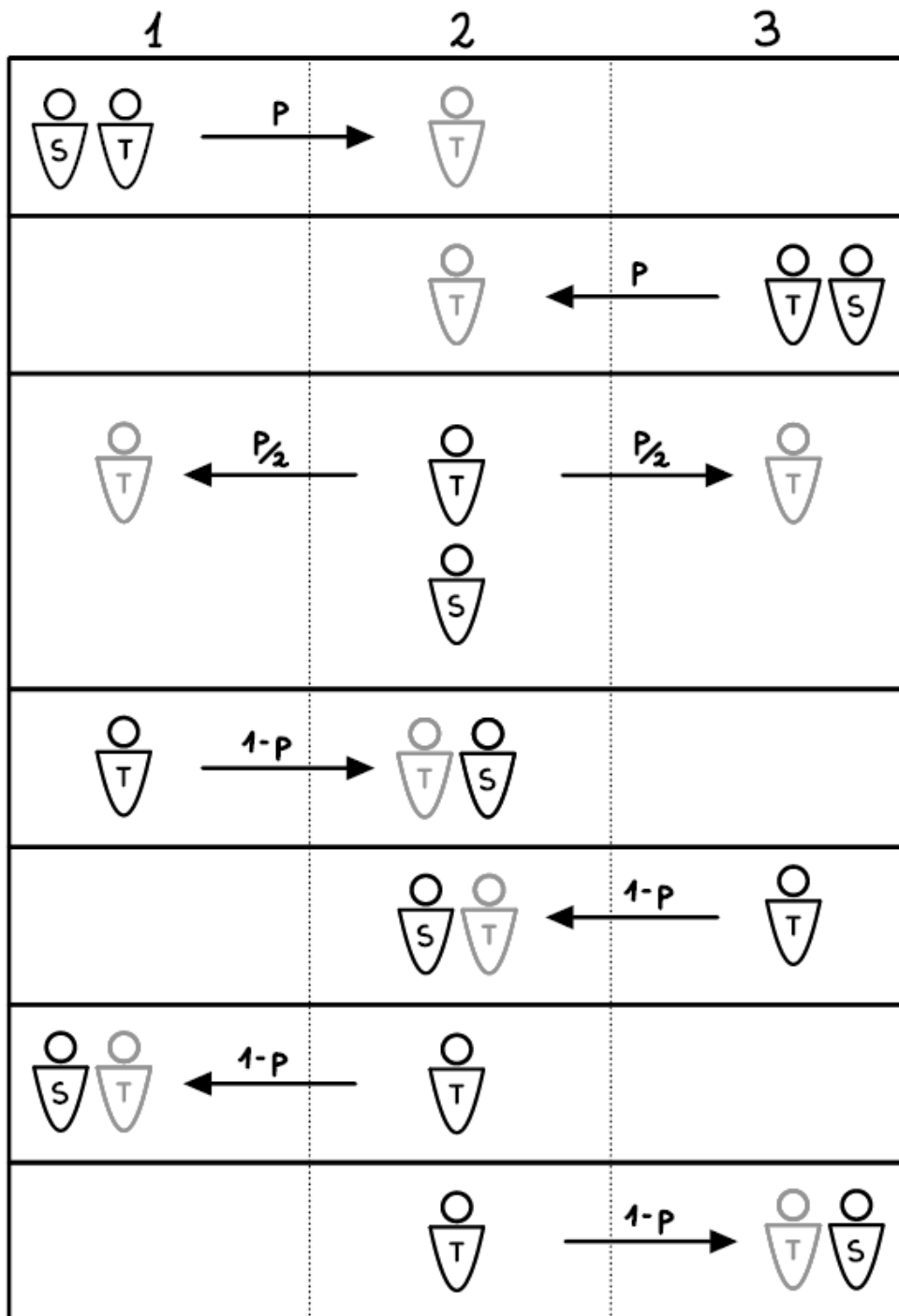
Anticonformity + bounded confidence

Can **asserting uniqueness** help to escape polarization?

Distancing from like-minded individuals.
Standing out from the crowd.

(c) A.Lipiecki, 2023

Grabisch M, Li F. (2020) *Anti-conformism in the Threshold model of collective behavior.* Dynam Games Appl

All possible changes
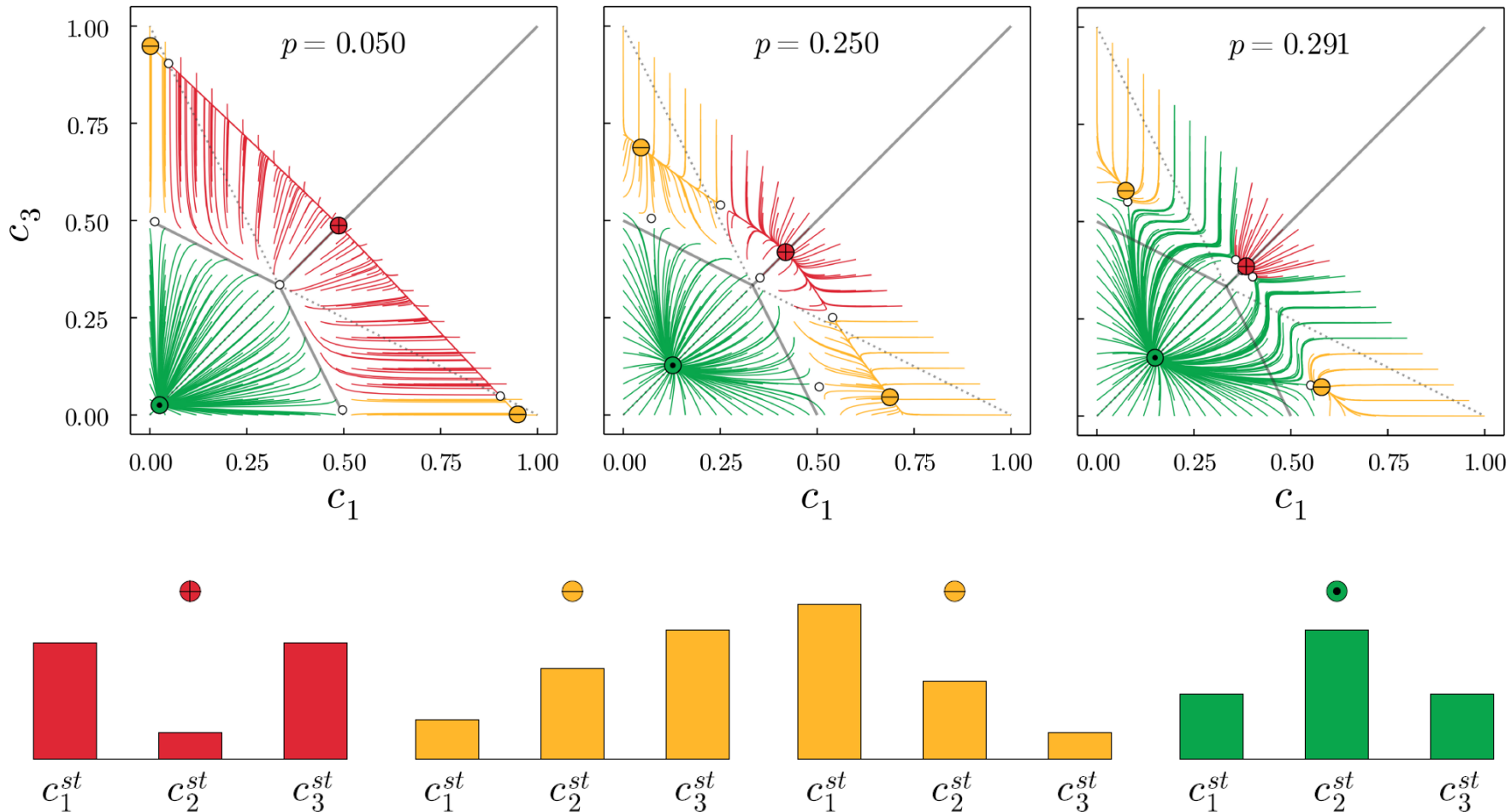
Legend:

Source: q-panel

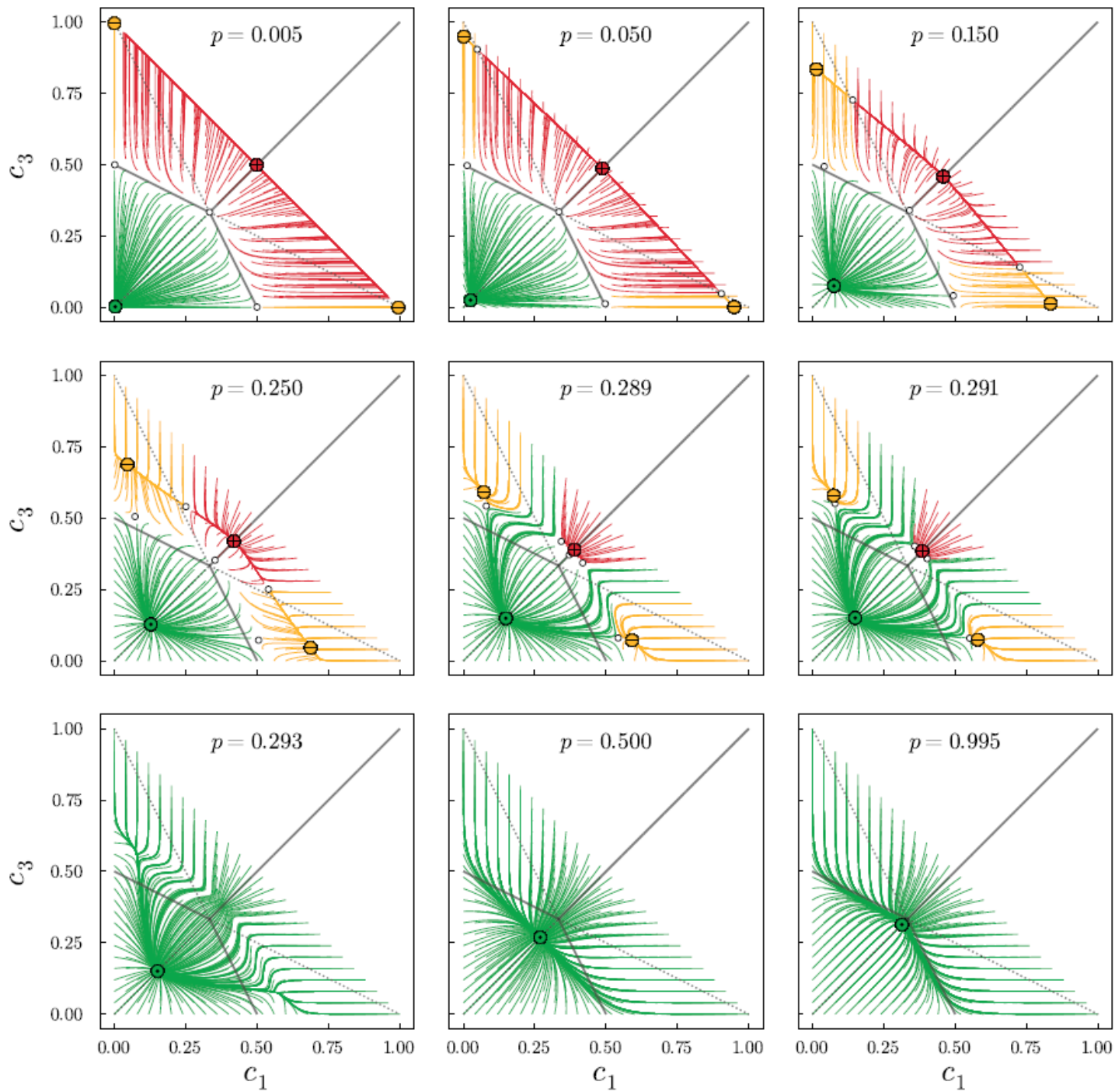Target „before"

Target „after"

Lipiecki, A., Sznajd-Weron, K. (2022) Chaos, Solitons and Fractals
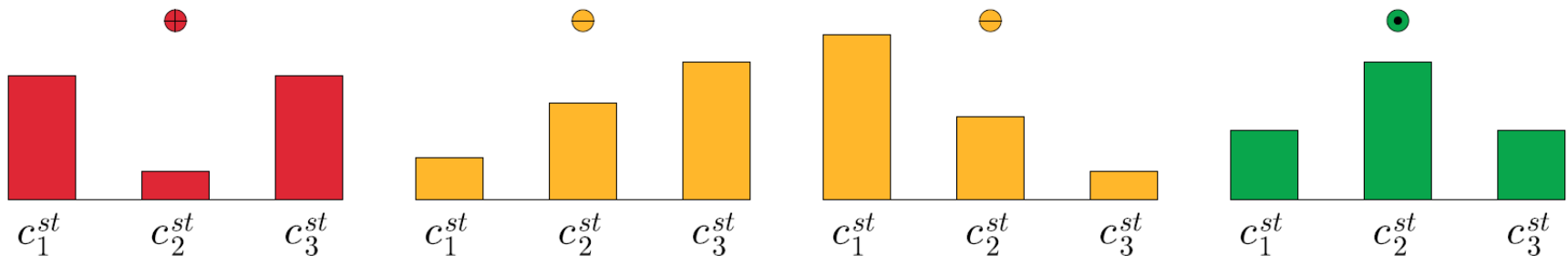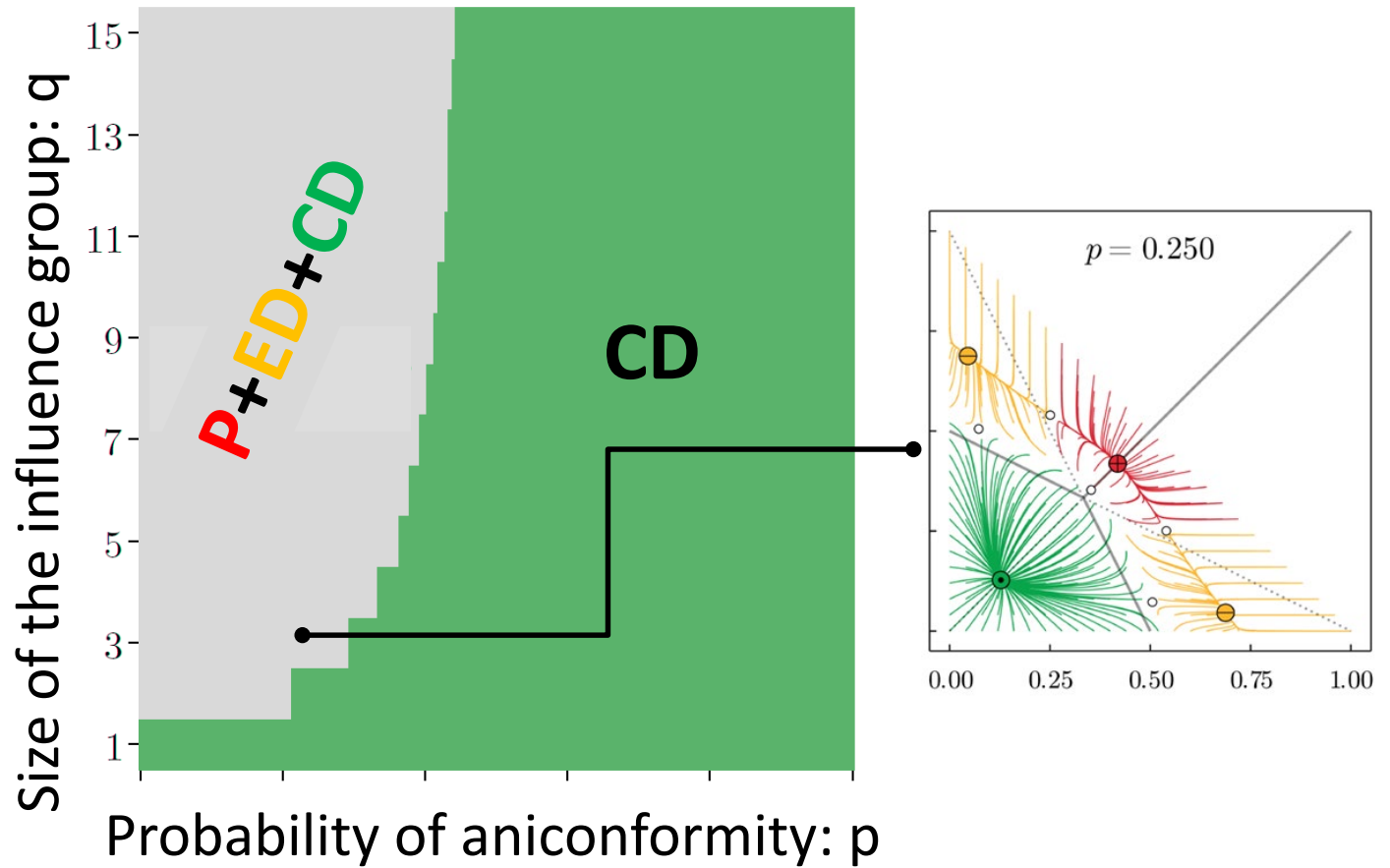
Results on the complete graph

- The size of the influence group (q-panel): q=3
- Probability of anticonformity: p
- Ratio of opinion $i : c_i = N_i(t)/N$

Critical p for agreement

How important is the influence group?

Size of the influence group: q

Probability of aniconformity: p

P+ED+CD

CD

$p = 0.250$

c_1^{st} c_2^{st} c_3^{st}

c_1^{st} c_2^{st} c_3^{st}

c_1^{st} c_2^{st} c_3^{st}

c_1^{st} c_2^{st} c_3^{st}
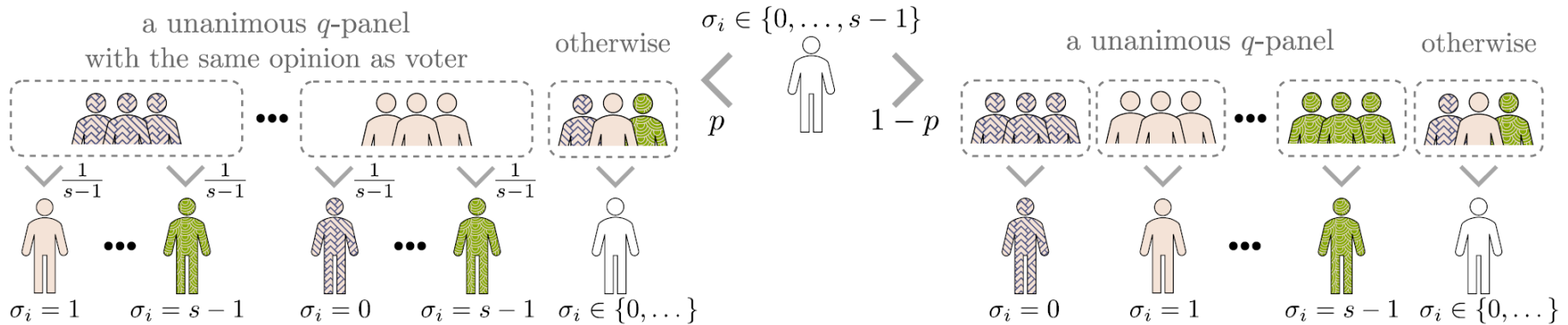
How important are model details?
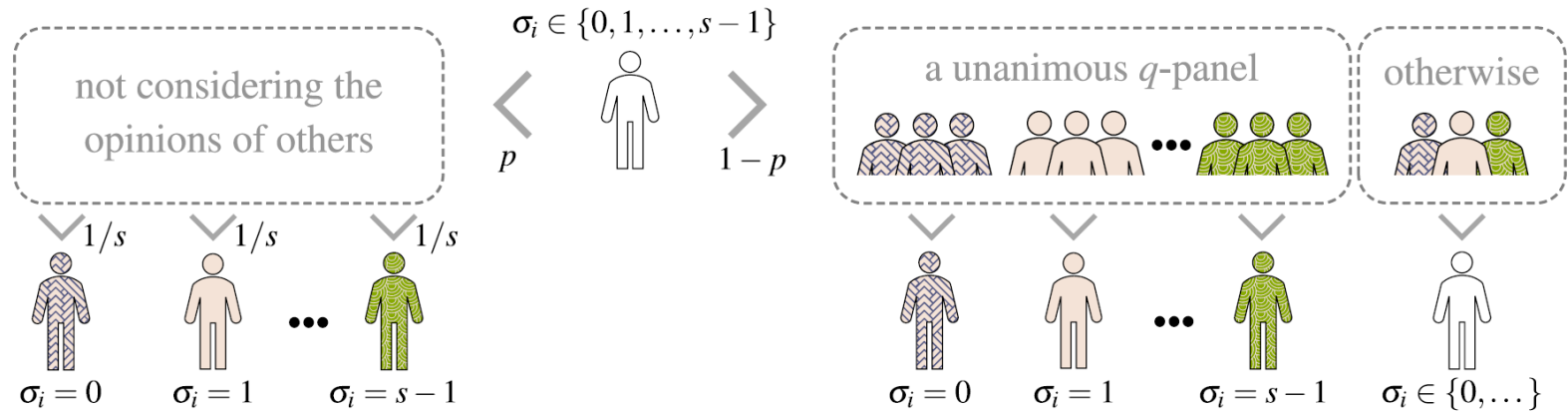
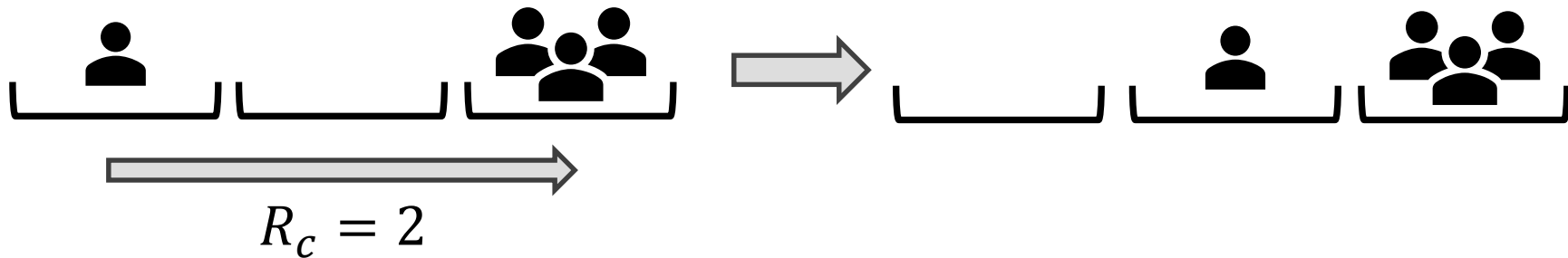Nowak, B., Stoń, B., Sznajd-Weron, K. (2021) ScieRep 11(1), 6098

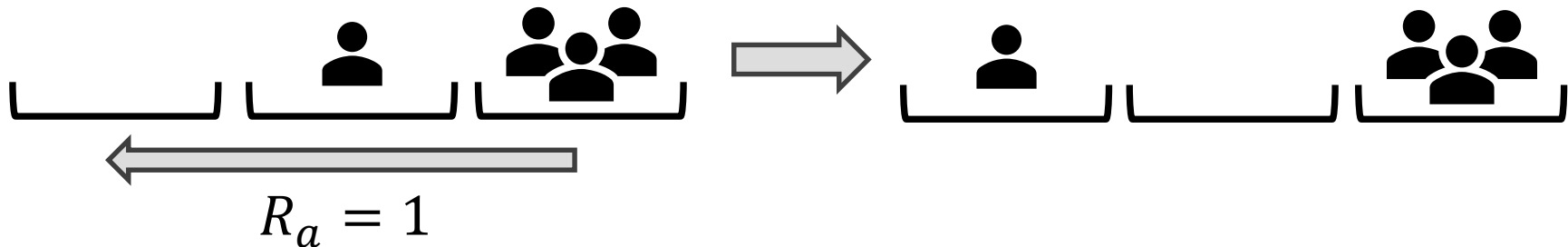Nowak, B., Sznajd-Weron, K. (2022) Physical Review E 106(1), 014125

No polarization without homophily!

General model with anticonformity

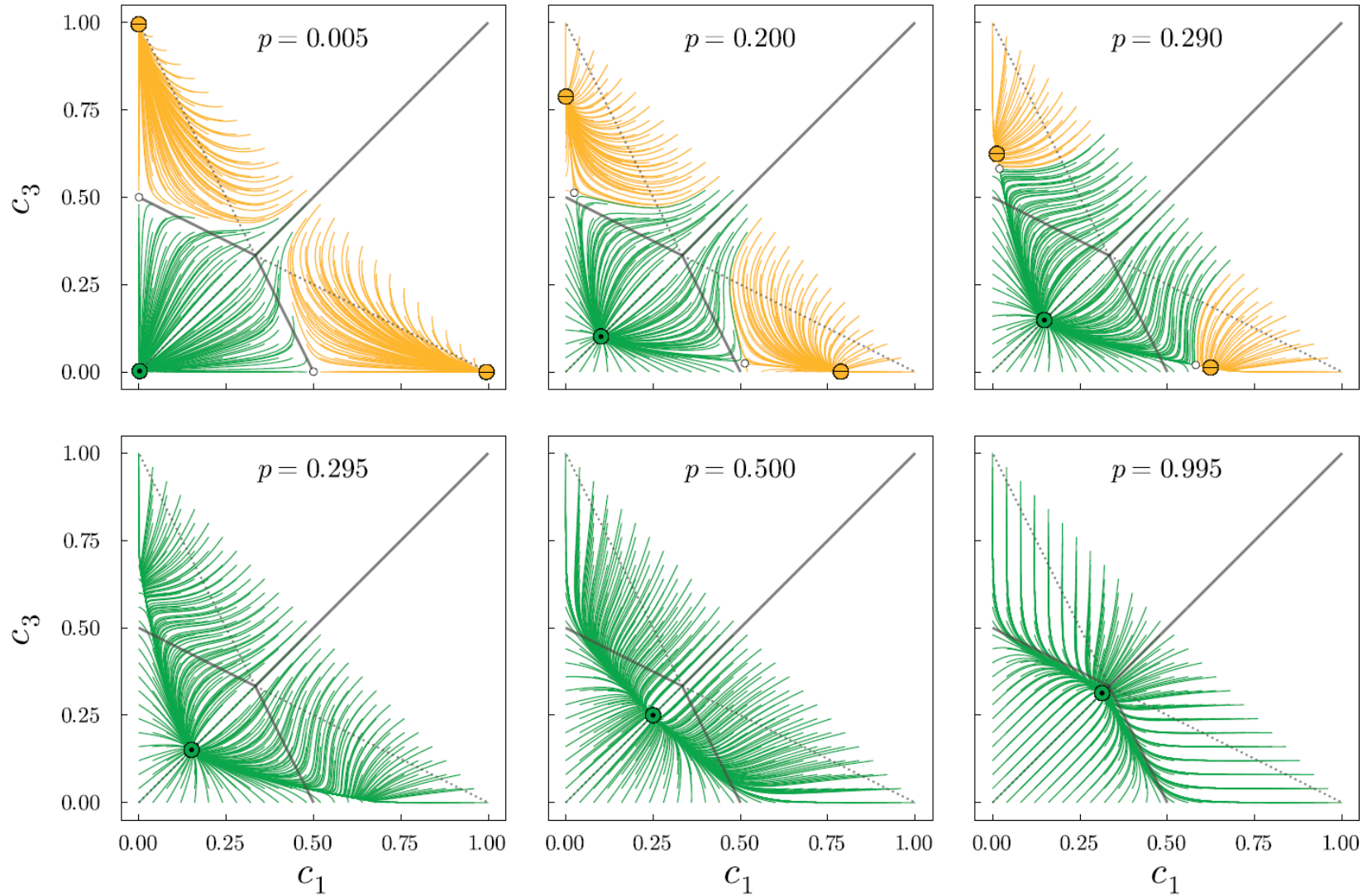Conformity = positive, attractive

$$R_c = 2$$

Anticonformity = negative, repelling

$$R_a = 1$$

- Lipiecki, A., Sznajd-Weron, K. (2022) *Polarization in the three-state q-voter model with anticonformity and bounded confidence*, Chaos, Solitons and Fractals
- Grabisch M, Li F. (2020) *Anti-conformism in the Threshold model of collective behavior*. Dynam Games Appl
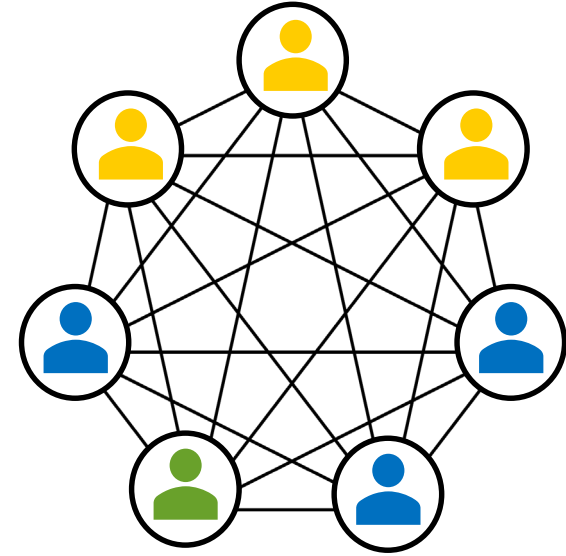
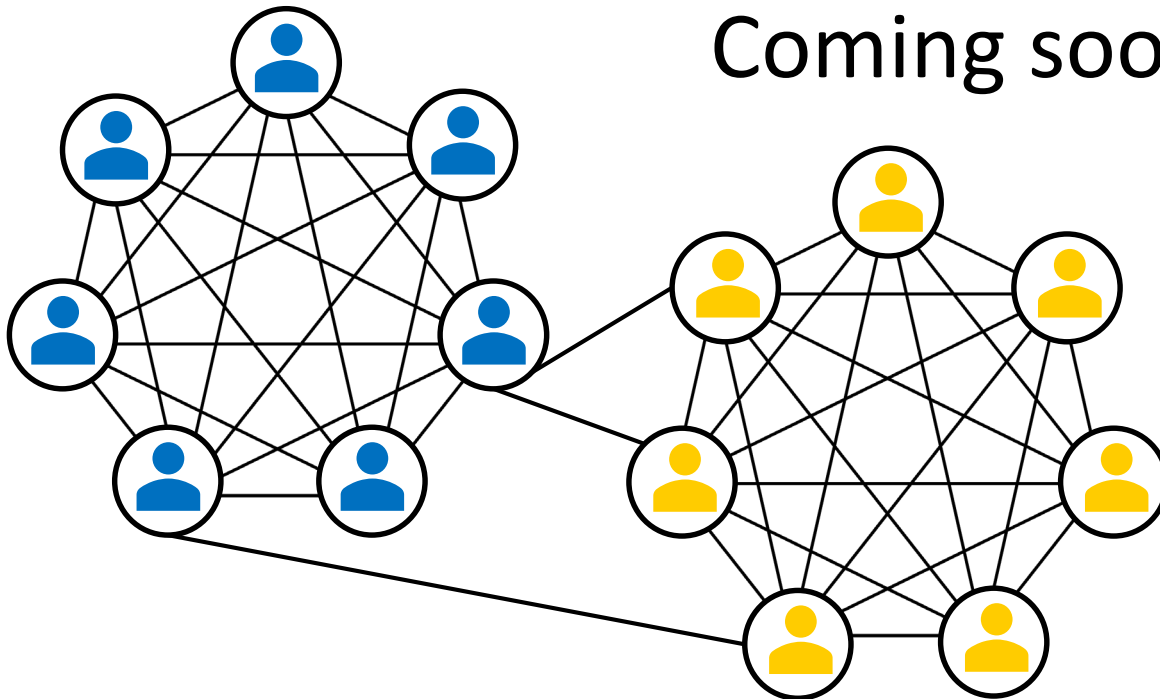# No polarization for $R_c = 2$ (no BC)

So far …

One community

Can we depolarize it?

Coming soon …

Summary

- No polarization without homophily (BC) [1,3,4]

- Shift by one (MAYA) is not needed for polarization [2]

- No extreme dominance without anticonformity [1,2]

- Smaller anticonformity = larger polarization [1]

- Polarization (social psychology) is a process …

- Critical level of anticonformity for agreement [1]

Literature on non-binary q-voter model
[1] Lipiecki, A., Sznajd-Weron, K. (2022) Chaos, Solitons and Fractals
[2] Doniec, M., Lipiecki, A., Sznajd-Weron, K. (2022) Entropy
[3] Nowak, B., Sznajd-Weron, K. (2022) Physical Review E
[4] Nowak, B., Stoń, B., Sznajd-Weron, K. (2021) Scientific Reports

Decision making

Example 2: Wildlife control method

(1) doing nothing	(2) nonlethal	(3) lethal

Public acceptance of management methods under different human–wildlife conflict scenarios

Vasilios Liordos [a], Vasileios J. Kontsiotis [b], Marina Georgari [a], Kerasia Baltzi [a], Ioanna Baltzi [a]

Decision making

Example 2: Wildlife control method

(1) doing nothing	(2) nonlethal	(3) lethal

Public acceptance and consensus

- Highly acceptable (2)
- Not sure (0)
- Highly unacceptable (-2)

Non-lethal control:
0.26
0.28
0.27
0.25
0.26

Do nothing:
0.26
0.29
0.26
0.25
0.16

Lethal control:
0.52
0.44
0.38
0.36
0.35

Legend:
- Corvids damage crops
- Starlings damage crops
- Starlings foul urban structures
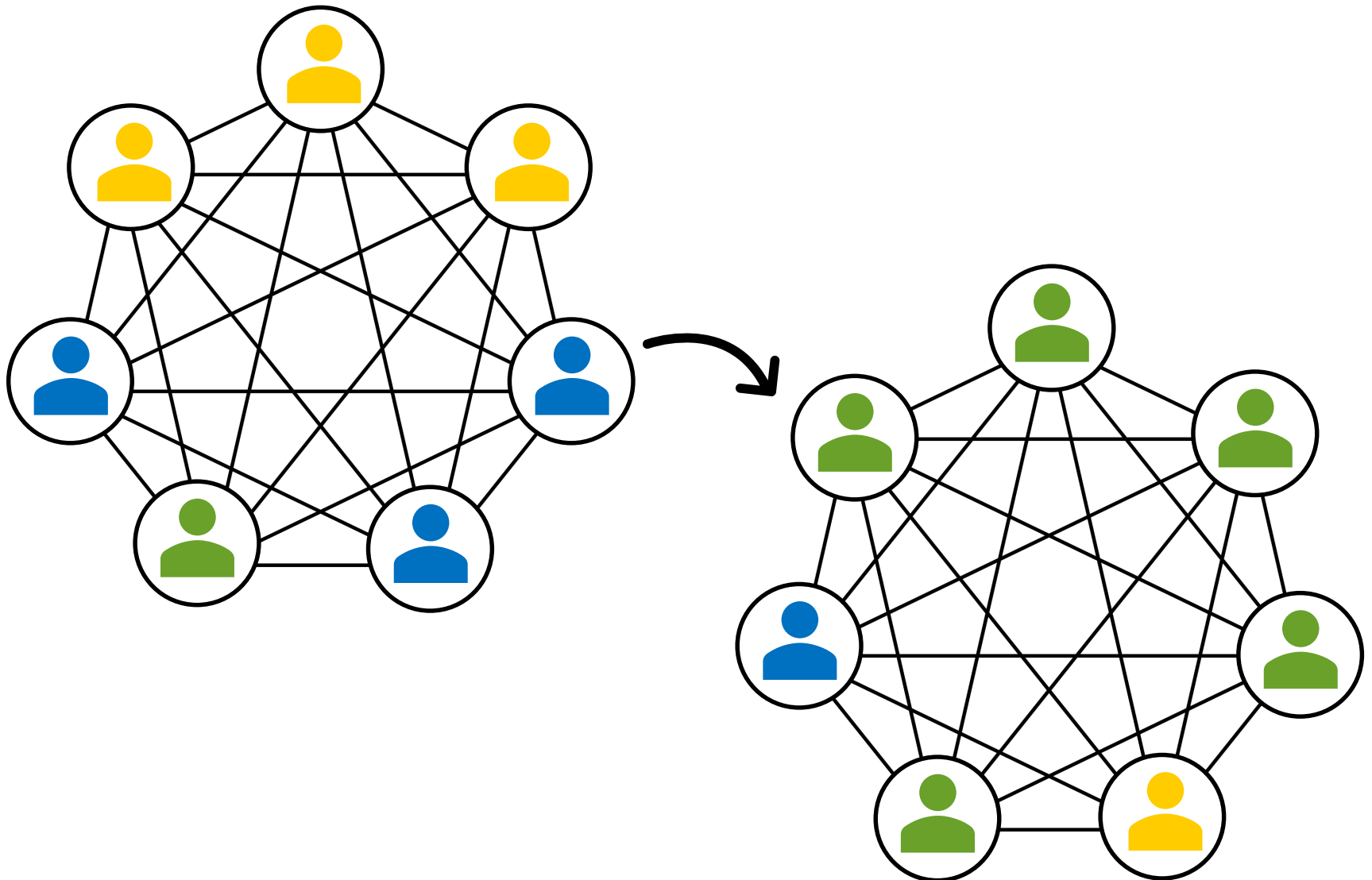- Coypus damage crops
- Coypus transfer disease
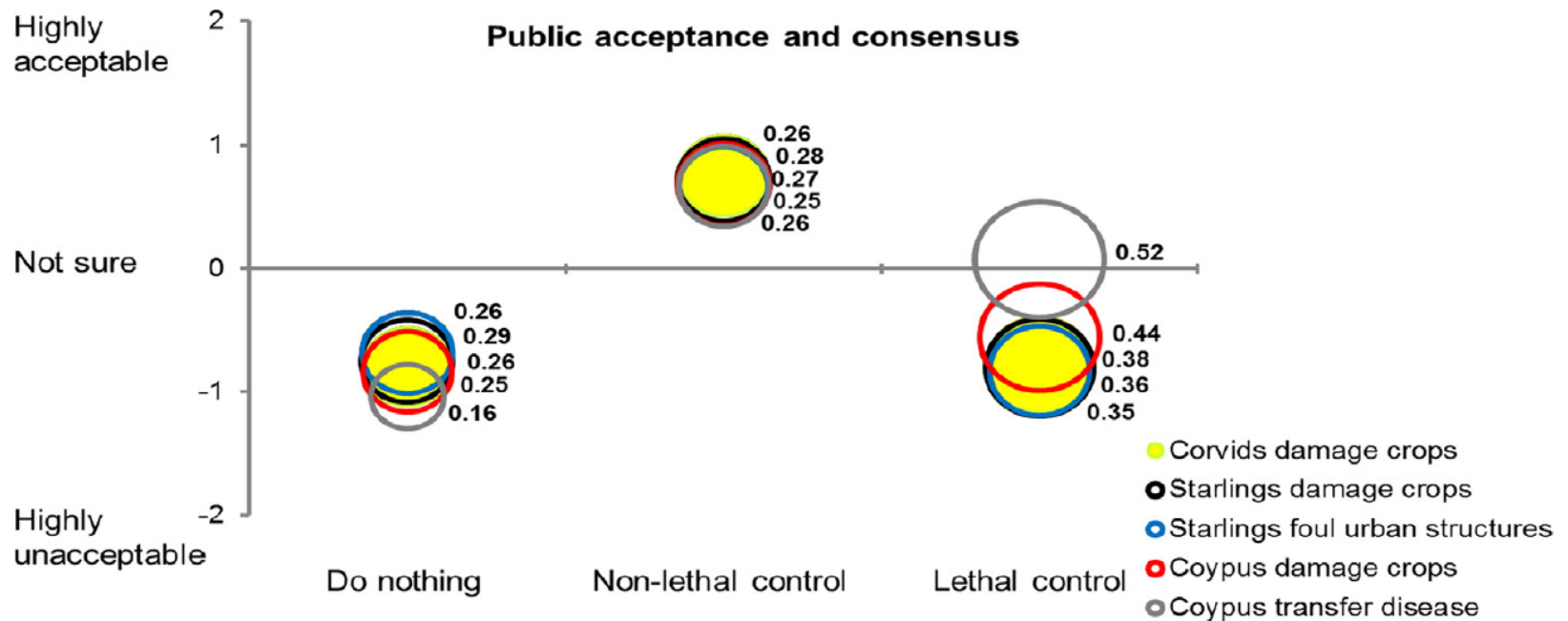
The M.A.Y.A. product design principle

"The adult public's taste is not necessarily ready to accept the logical solutions to their requirements if the solution implies too vast a departure from what they have been conditioned into accepting as the norm."

— Raymond Loewy (1951)

Can we depolarize community?

Cross-community polarization