

# HEAVY CONTEXT DEPENDENCE - DECISIONS OF UNDERGROUND SOLDIERS

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# talk burdened with historical context

An attempt is made to simulate the process of

**disclosure of underground soldiers** in terms of theory of networks.

The coupling mechanism between the network nodes is the possibility that a disclosed soldier is going to disclose also his acquaintances.

We calculate the fraction of disclosed soldiers as dependent on the fraction of those who, once disclosed, reveal also their colleagues.

The simulation is immersed in the historical context of the Polish Home Army under the communist rule in 1946-49.

## method

*I'd prefer:* interviews, decision graphs, analysis of possible outcomes

*Here:* analysis of documents (legal articles 1945-49, interviews and monographs) + **simulation**



*Outcome:* only one! „a predictable machinery”



Home Army  
August 1944

390.000



compulsory mobilization

Polish Worker's Party –  
- installed by Stalin

January 1942	founded
July 1944	20.000
April 1945	300.000
December 1948	1.000.000



# outline

1. Motivation ✓
2. Cognitive context – the Stalinist reality
3. Social context – a personal network
4. Decision tree and the Maslow hierarchy
5. The simulation – three kinds of agents
6. Results: the fraction of disclosed soldiers
7. Final remarks

*Cognitive* - the human mind categorises kinds of situation which it is able to recognise later  
*Social* – these categories are shared and synchronized with other people

[B. Edmonds, *Context and social simulations*, CPM Report No.: 10-210, 30.03.2010]

# The Stalinist reality

## POLAND

- 21,857 **murdered** in Katyń in mid-March 1940 by the Soviet security forces;
- Home Army soldiers were treated like terrorists; summary executions took place, but the majority of those arrested, about 60,000, were **sent for the Gulag**.

## BULGARIA

- by the end of November 1944 approximately 5,000 Bulgarians were **killed**, including teachers, priests, civil servants, writers, journalists and civic leaders;
- all 2800 members of all governments and all parliaments in 1941-44 were **sentenced to death** –and the verdicts were carried out immediately;
- anyone who had opposed the communists were subjected to: life imprisonment (more than 2,000 defendants), deportations (5,000 families were sent into internal exile), and incarceration (by the end of 1945 approximately 10,000 people languished in concentration camps).

## CZECHOSLOVAKIA

...

## ROMANIA

...

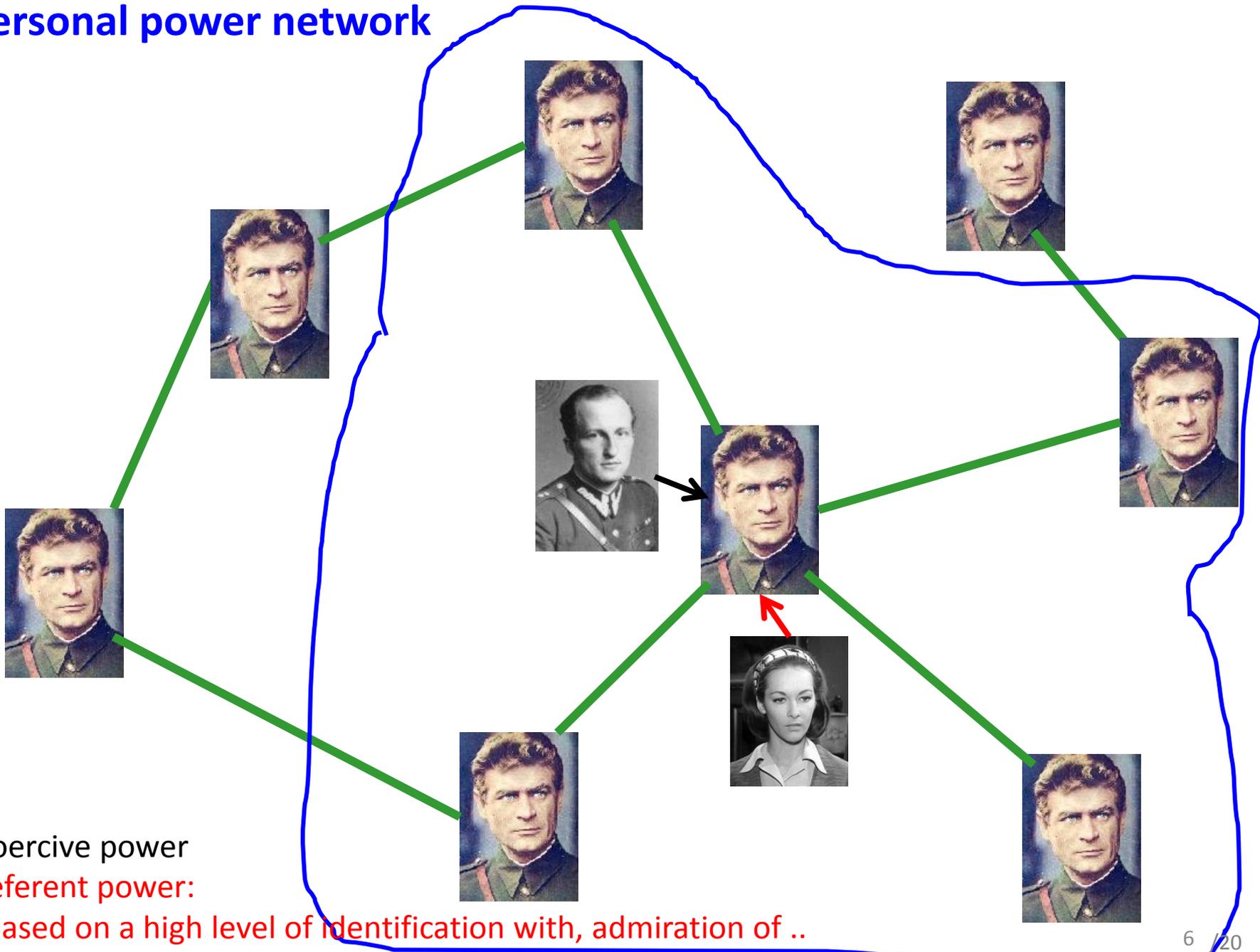
## HUNGARY

...

...



# Personal power network



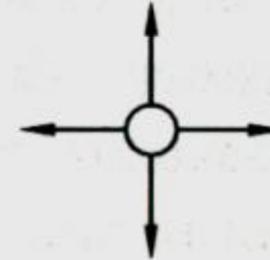
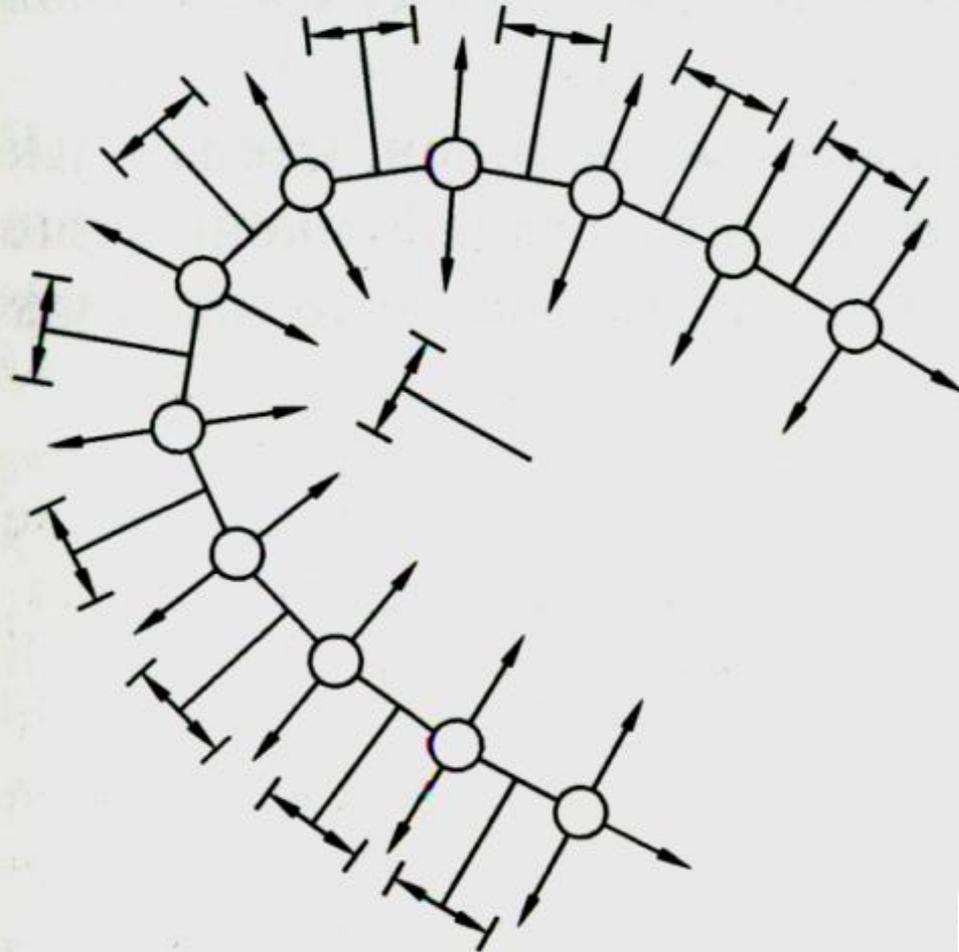
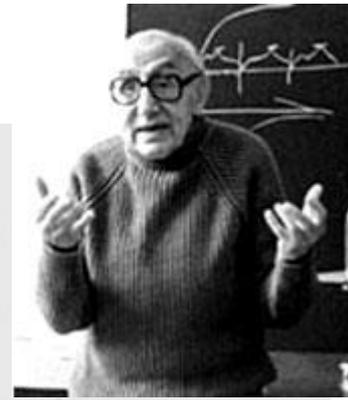
coercive power



referent power:

based on a high level of identification with, admiration of ..

# Social figuration



Individuum  
(„ego”)



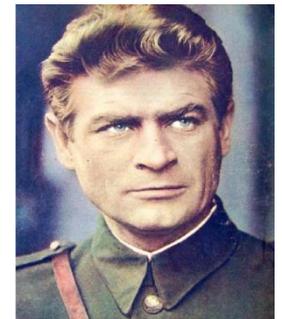
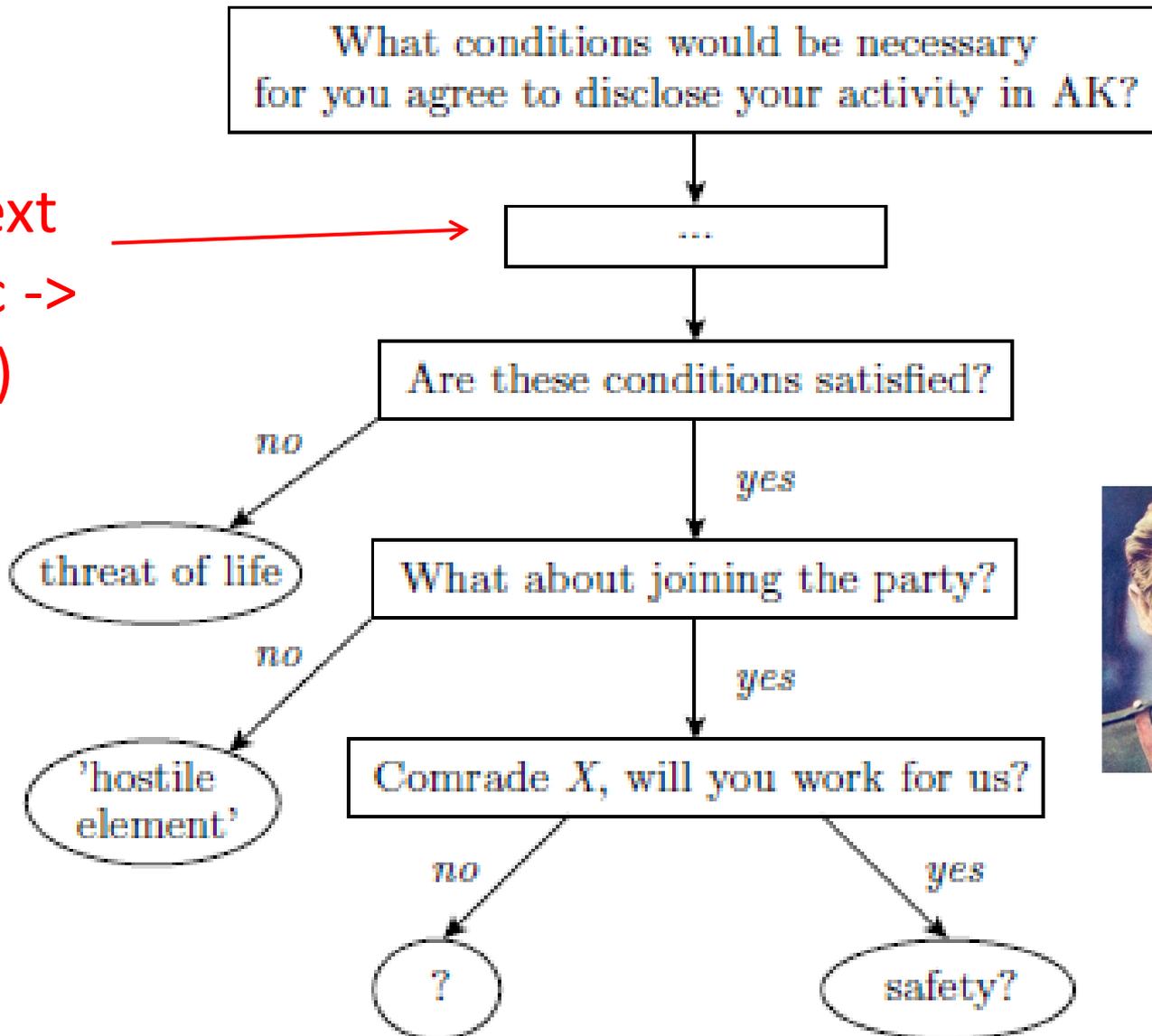
Symbol of more or less unstable  
equilibrium of forces



open (non-saturated) valence

Norbert Elias, *Was ist Soziologie?* 1970

choice of  
the context  
(linguistic ->  
cognitive)



## the context choice

- safety modifies belongingness and excludes esteem
- „if a package of knowledge from one cognitive context does not seem to allow a decision to be made then another cognitive context may be sought which makes this possible”

[B. Edmonds, Comput Math Organ Theory 18 (2012) 5]



[Abraham H. Maslow, *A theory of human motivation*, Psychol. Rev. 50 (1943) 370]

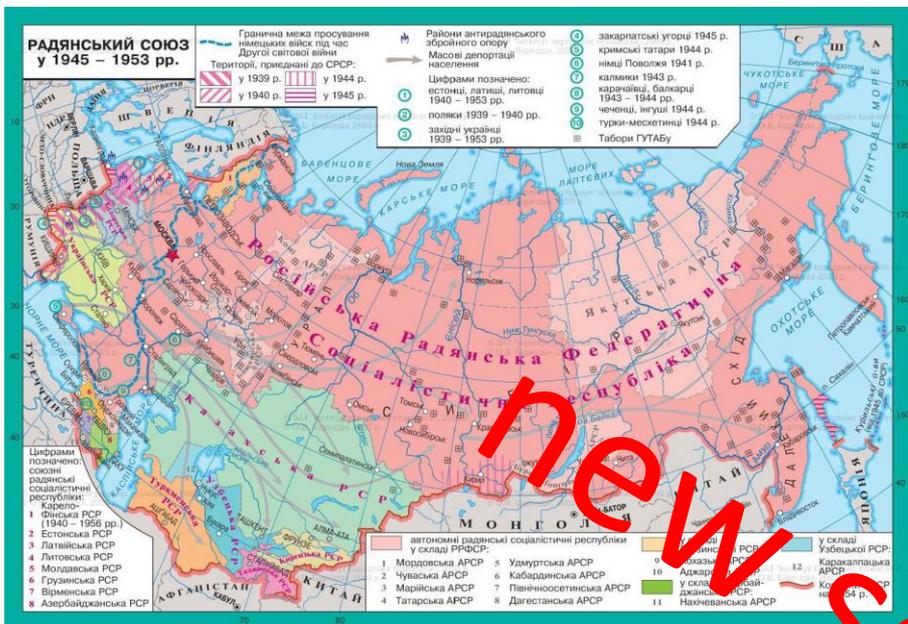
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Stalin gets Polish emblem in Nov. 1944



Warsaw 1947



Volunteer Reserve Militia in Poland, 1947 11 /20

## The simulation - three kinds of agents



A – disclosed or not, does not reveal anything



B – once disclosed, informs about neighbors



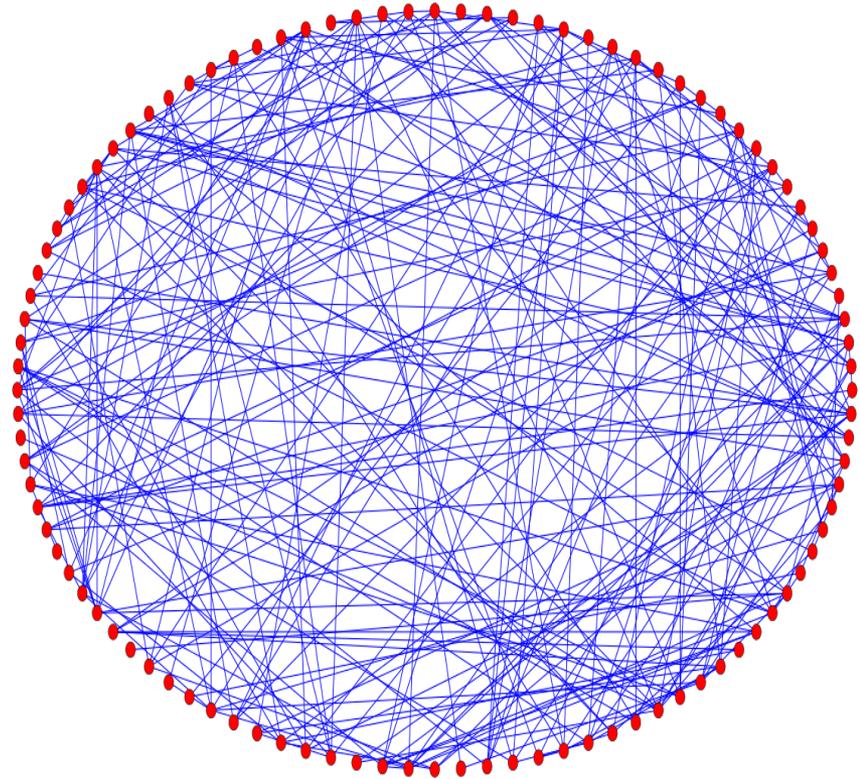
C – spontaneously informs about neighbors

# Erdős-Renyi network, $N = 1000$ , $\langle k \rangle = 5$

a link between the pair  $(i,j) \equiv i$  can disclose  $j$  and the opposite  
(both in the country, addresses known etc.)

$$p_c = \frac{\langle k \rangle}{\langle k^2 \rangle - \langle k \rangle} = \frac{1}{\langle k \rangle}$$

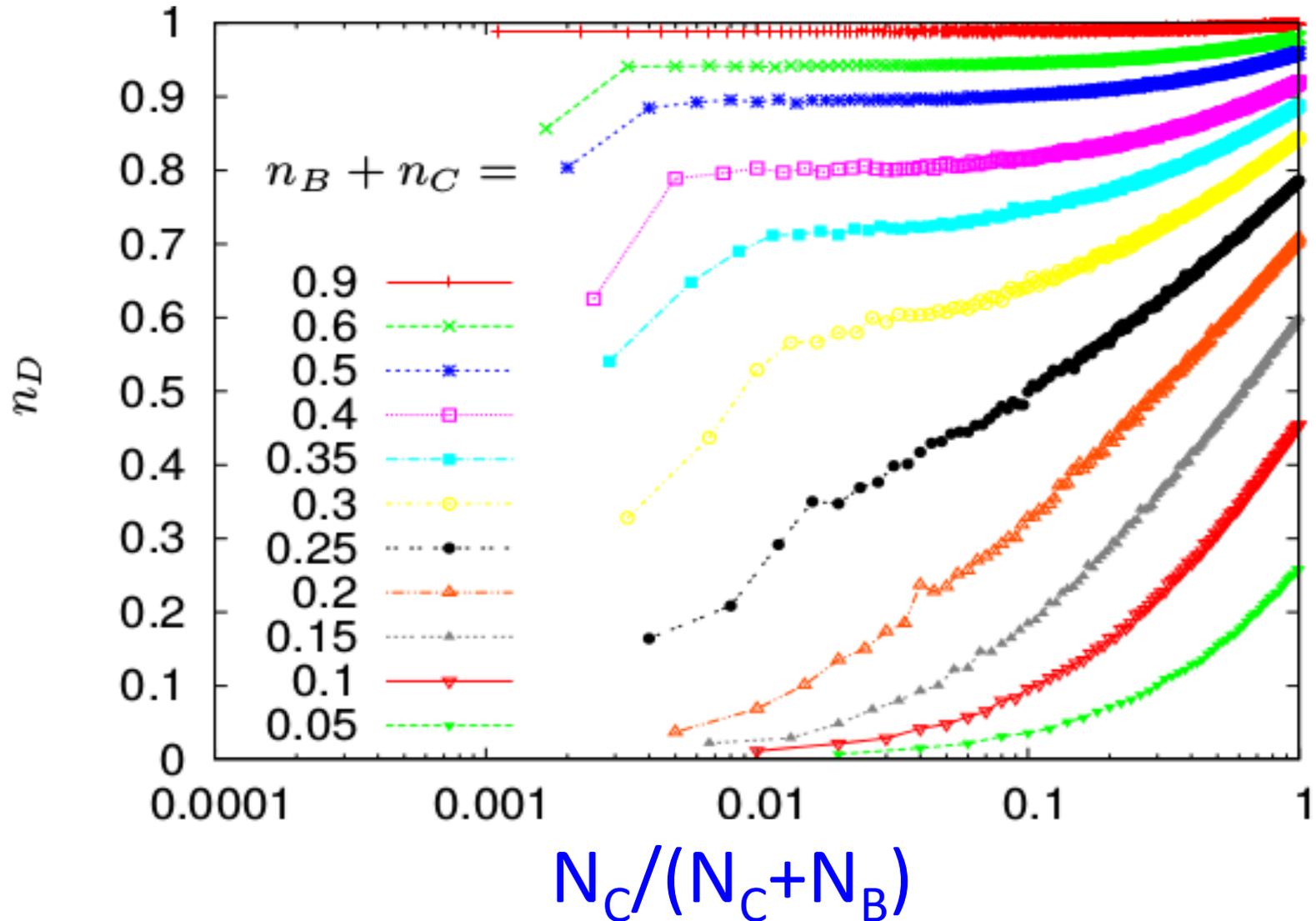
Poisson distribution



Pajek

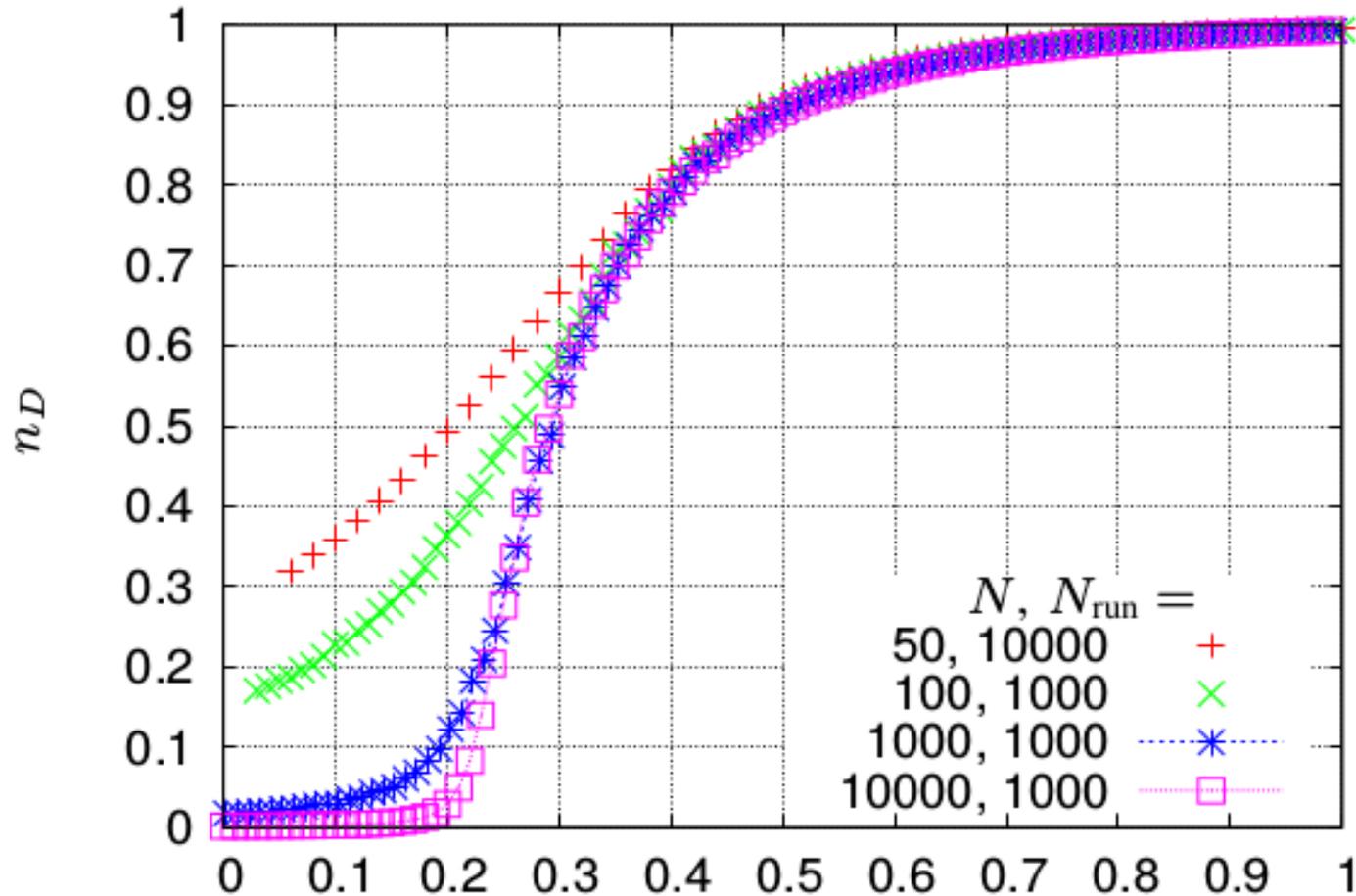
results

fraction of disclosed soldiers,  $N_{run} = 100$



results

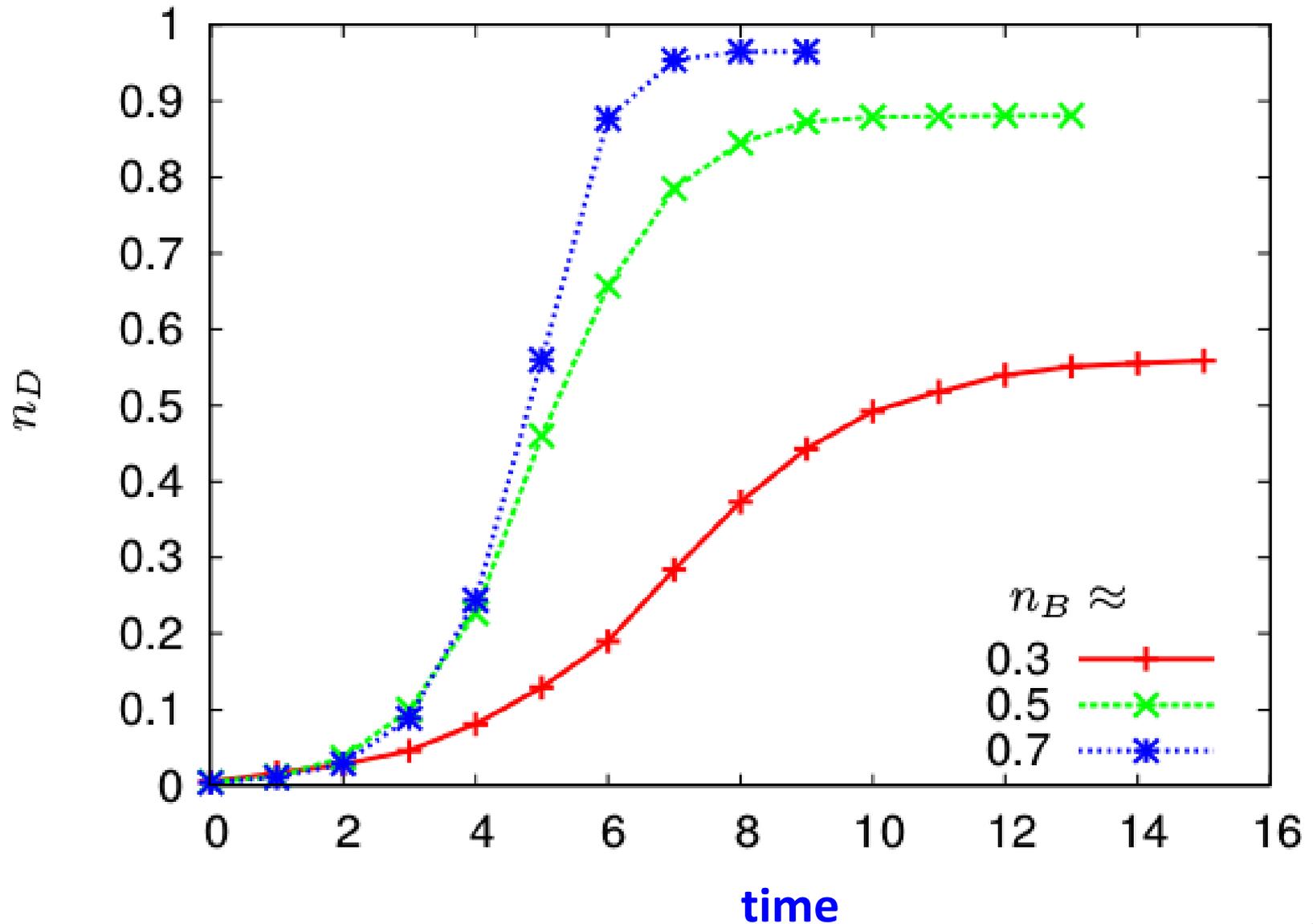
## fraction of disclosed soldiers



$(N_B + N_C)/N$   
(fraction of informers)

results

fraction of disclosed soldiers for  $N_C = 1$



*To hide my emotional bias (science is value-free), the following example is presented from the perspective of a security officer:*



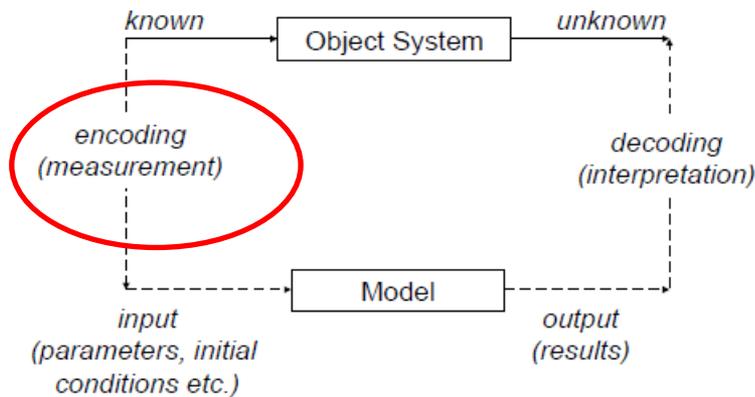
A simple evaluation of  $N$ :

- one spontaneous informer, we got 33 prisoners, 10 of them inform, hence  $n_B = 0.3$ ;
- each informer reveals 5 others in the average, hence  $\langle k \rangle = 5$ ;
- cross-information is rare but it happens;
- having arrested  $N_D = 300$  we have no more dossiers.

The result:  $N = 600$  at most.

Concluding, the historical process of gaining control by a prevailing power over opposing groups of people is described in terms of percolation theory. We have discussed political and psychological conditions and mechanisms which made the process inevitable.

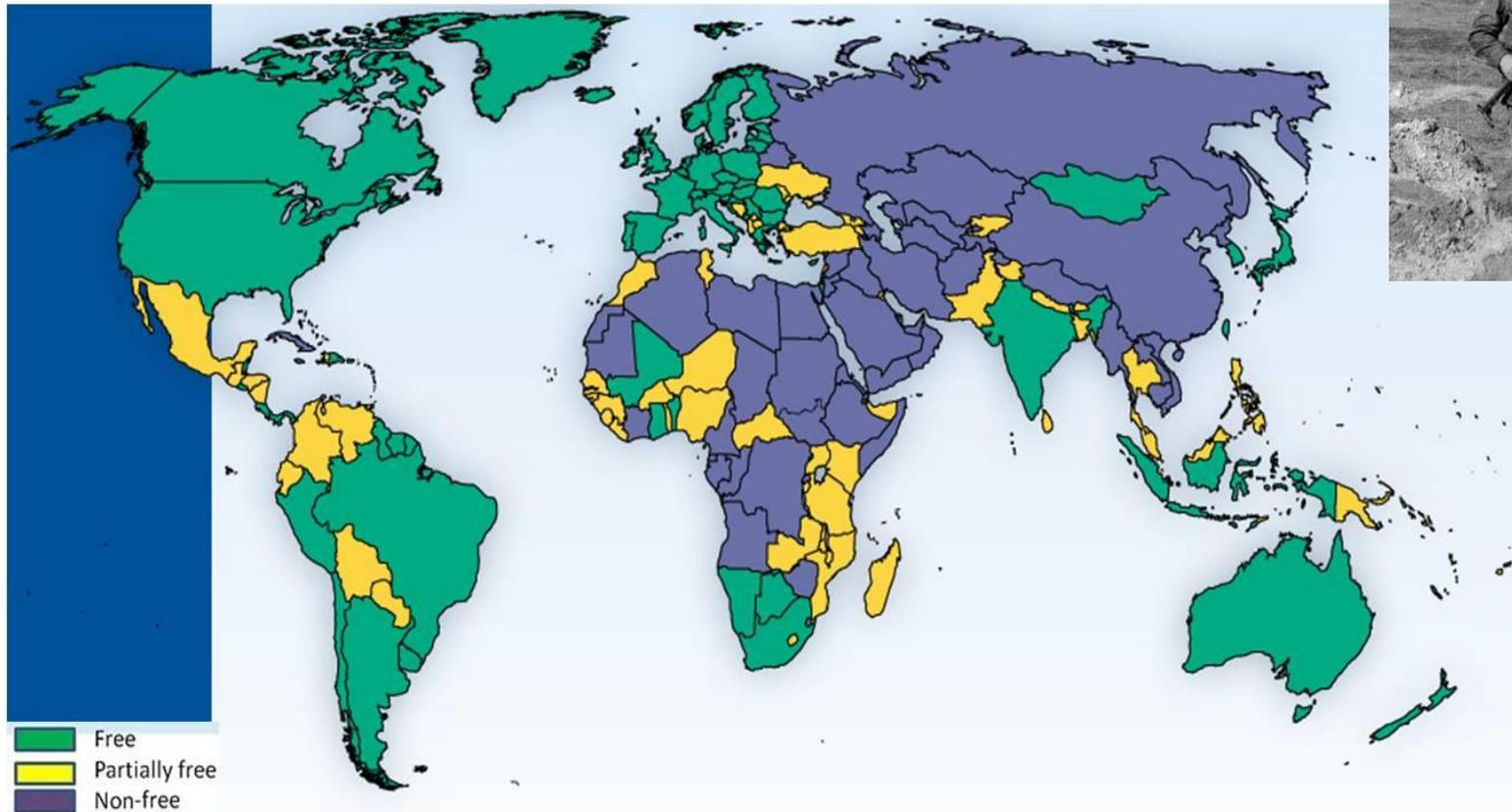
### Modelling parts and relations



The Impossibility of Social Simulation, Bruce Edmonds, ESSA Summer School, Surrey, 2011. Slide 16

*The Impossibility of Social Simulations,  
B. Edmonds, Surrey, 2011*

# Is it our problem?



[[www.democracyw.com/2011/07/freedom-map.html](http://www.democracyw.com/2011/07/freedom-map.html)]

Freedom House is an independent watchdog organization dedicated to the expansion of freedom around the world. (...) Founded in 1941, Freedom House was the first American organization to champion the advancement of freedom globally.

**prevailing power out of democratic control**



The main task of the theoretical social sciences (...) is to trace the unintended social repercussions of intentional human actions.

[Karl Popper, 1963]



[*Modern Times*, 1936]

**thank you for attention**

**Благодаря**

## To show only in the case of a methodological discussion:

The more usual, or at least currently fashionable, practice is to devote at least a chapter of your book or Ph.D. thesis to a tortured, self-flagellating disquisition on the ethical and methodological difficulties of (.....). Although the whole point of (...) is to understand (...), you must spend a good three pages explaining that (...) probably make it impossible. It is then customary to question the entire moral basis of (...), and, ideally, to express grave reservations about the validity of modern western 'science' as a means of understanding anything at all.

[Kate Fox, *Watching the English. The Hidden Rules of English Behaviour*, Hodder & Stoughton, 2004]

(...) fill up