Insights in terrorist networks using MABS

MIJKE VAN DEN HURK
Content

Me, myself and my work

Counter Terrorism Extremism and Radicalization at the NP

My research
- Theory
- Model
- Simulation
- Conclusion

Future work
Me, myself and my work

2013 Bachelor Mathematics

2015 Master Artificial Intelligence (MAS)

*Master thesis: Social simulation on the glass ceiling phenomenon (Lisbon)*

2016 Trainee ship Data Science (police)

2017 National Police, Data Intel Team

2018 (Oct) Start PhD at UU
Simplified structure of police
Counter Terrorism, Extremism and Radicalization

Radicalism (AIVD): Support of radical changes in society, with potential danger for the democracy

1. Activism: legal means
2. Extremism: (non-)violent undemocratic means
3. Terrorism: (non-)violent undemocratic means, creating fear
Problems

“What happens when current detainees are freed?”
Problems

“How to avoid radicalization or make that people deradicalize?”
Problems

“What is the effect of an intervention on a network?”
Problems
Research on terrorism != easy

No clear definition
- “One man’s terrorist is another man’s freedom fighter”
- When is someone a terrorist?

Multi disciplinair research, not working together

No (or little) collaboration between academic researchers and intelligence agencies.
My research (I)

Build a fundamental model of radicalization (pt 1) that can be used for counter terrorism purposes (pt 2).
Radicalization

“Behavior with actions that undermine goals that matter to most people”

- Common process: Anorexia, committing suicide, football hooligans
- Degrees of radicalization
- Focal goal for terrorists instead of personal traits
Theory ¹

Quest for significance

Social group

Goal

Significance

Ideology
Need for significance

A fundamental need of feeling important

Gaining significance
- Being praised by others
- Doing something unique

Losing significance
- Personal: Being fired or getting a divorce
- Group: Public humiliation

Need for significance as focal goal
- In case of big loss
  ➢ How to reach this goal?
Ideology

- Collection of norms, values and behavior
- Sacred values
- Gives a means for reaching your goals

How to get committed to this ideology?
Social groups

- Ingroup/outgroup effect
- Feedback
- Identity fusion$^5$
Main question

How do individual and social processes together make that someone radicalizes?
The model

Goal: Keep level of significance high, by doing actions described by ideologies.

Social surrounding exists out of the eight surrounding agents.

1. Level of significance randomly decreased
2. Performing (trivial) actions to reach high level
3. Choose action based depending on:
   ◦ Gain described by ideology
   ◦ Number of ingroup/outgroup agents
   ◦ Number of agents performing the same action
4. Switch ideology if outgroup gives a higher gain

Action $a(t,I)$ at tick $t$ within ideology $I$ only performed if
- expectation $a(t,I) > 0$
- gain $a(t,I) - a(t-1,I) < c$
Simulation

(a) Tick 0  (b) Tick 1  
(c) Tick 4  (d) Tick 14
Conclusion

1. Combination of personal and social factors trigger radicalization.

2. Radicalized agents lead to the formation of isolated bubbles

3. Not all agents with a low level of significance are able to gain it back

4. All depending on initial situation

5. Difficult to escape the process
Extensions of the model

1. Integrate other needs

2. Expand the mechanism of values and behavior

3. Make actions have consequences

4. Let agents have skills
Future work

Further development depending on needs at the police:
- Why does not everybody become a terrorist?
- What kind of roles are needed to form a stable network?
- Are there characteristics of the network that has been formed?
- Which personal traits accelerate the radicalization process?

Validation with police data

Integrate models in the intelligence process of the CTER department
Literature


