Honor Among Thieves
A Common’s Analysis of Cybercrime Economics

Sadia Afroz, Vaibhav Garg, Damon McCoy, Rachel Greenstadt
Tragedy of the commons
Farmers and cows

Underground forum

What is the relationship?
• Cybercrime is **limited resource economy**

• **Underground forums** facilitate sharing of stolen resources
== Underground forums

== members of the forums

== members of the forums
Why is this important?

- Well-defined criteria to estimate sustainability in the physical world
- Are cybercrime communities sustainable?
Why would we care?

- Sustainable communities are more economically efficient
- Can we make these communities unsustainable?
Framework for sustainability

• Ostrom’s framework for sustainable community:
  - Low cost of monitoring
  - Moderate rates of change of the resource/resource consumers
  - Frequent communication between resource members
  - Low costs of enforcement
  - Exclusion
• Which underground forums meet these criteria?

• Are these forums successful?
Data

5 forums
Data

5 leaked forums
Data

5 leaked forums

(Russian)
Data

5 leaked forums

(Russian)

Antichat
(May 2002-Jun 2010)
5 leaked forums

(Russian) Antichat (May 2002-Jun 2010)

(English) BlackHat (Oct 2005-Mar 2008)

BadHackerZ (Nov 2003-May 2008)
Data

5 leaked forums

(Russian)
Antichat
(May 2002-Jun 2010)

(English)
BlackHat
(Oct 2005-Mar 2008)

BadHackerZ
(Nov 2003-May 2008)

(German)
Carders
(Feb 2009- Dec 2010)

L33tCrew
(May 2007-Nov 2009)
Members

- Antichat: 15,165 members
  - Active members: 25,871
  - Lurkers: 3,026

- BadhackerZ: 3,097 members
  - Active members: 4,229
  - Lurkers: 4,489

- Blackhat: 3,097 members
  - Active members: 4,489
  - Lurkers: 5,328

- Carders: 9,528 members
  - Active members: 9,306
  - Lurkers: 5,123

- L33tCrew: 9,528 members
  - Active members: 9,306
  - Lurkers: 5,123
What is a successful forum?

- Long lasting and engaged
- “Small world”
Small world

1. Members are part of a connected group
2. Distance between any two members is small
What is a successful forum?

• Except **BadhackerZ** all shows “small world” effect

• **BadhackerZ** is an unsuccessful forum

• The rest of forums are successful
Low cost of monitoring

• 3 ways of monitoring:
  - admins and mods
  - automated filtering
  - community driven
Low cost of monitoring

- BadhackerZ had admins and mods
- Rest of the forums used all ways
Moderate rates of change of the resource consumers.
Frequent communication between resource members

% public posts

% private posts

Time (year-month)

0 25 50 75 100


Antichat BadhackerZ Blackhat
Carders L33tCrew

Time (year-month)

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Antichat BadhackerZ Blackhat
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Low cost of Enforcement

- Bots
- Community driven: special threads for complaints
- Punishment is either monetary or temporary/permanent bans
Exclusion

- Anybody can join!
- But access is restricted based on rank
Summary

- Successful/sustainable forums have:
  - Easy monitoring
  - Moderate increase in members
  - Frequent communication
  - Limited privileged access
  - Strict enforcement
Future work

- Analyze more forums
- Use different measures of success
- Identify economically efficient ways to dismantle underground communities
Thanks!
sadia.afroz@drexel.edu
mccoy@cs.gmu.edu
me@vaibhavgarg.net
greenie@cs.drexel.edu