

# Mental Models in the Cyber Domain



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Explorations in Cyber International Relations  
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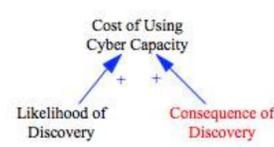
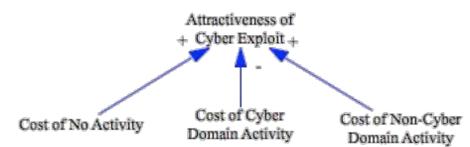
Cyber Security & the Governance Gap: Complexity, Contention, Cooperation  
MIT, January 6 and 7, 2014

## US President Barack Obama

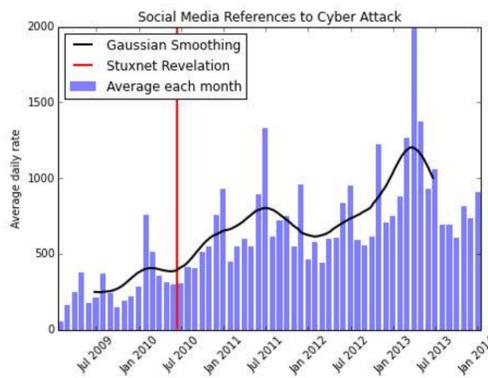
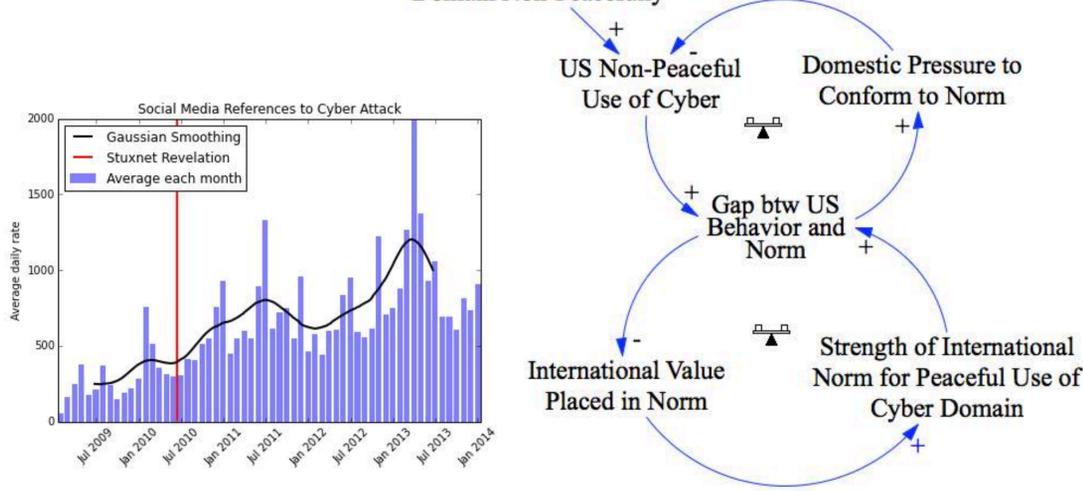


"If [cyber operations] failed, [Obama] told aides, there would be no time for sanctions and diplomacy with Iran to work. Israel could carry out a conventional military attack, prompting a conflict that could spread throughout the region..."

Mr. Obama ... repeatedly expressed concerns that any American acknowledgment that it was using cyberweapons ... could enable other countries, terrorists or hackers to justify their own attacks."  
- Sanger, NYT



## Motivation to use Cyber Domain Non-Peacefully



ADOBE READER	\$5,000-\$30,000
MAC OSX	\$20,000-\$50,000
ANDROID	\$30,000-\$60,000
FLASH OR JAVA BROWSER PLUG-INS	\$40,000-\$100,000
MICROSOFT WORD	\$50,000-\$100,000
WINDOWS	\$60,000-\$120,000
FIREFOX OR SAFARI	\$60,000-\$150,000
CHROME OR INTERNET EXPLORER	\$80,000-\$200,000
IOS	\$100,000-\$250,000

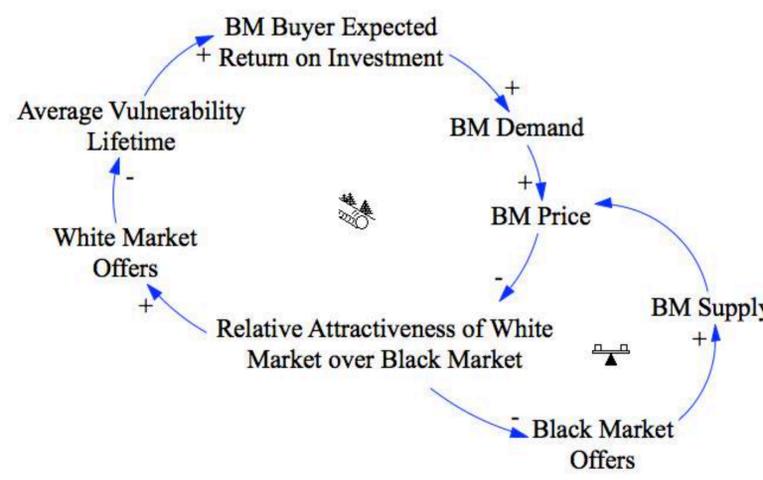
## Vulnerability Broker 'Grugq'



[A] South African hacker who goes by the name "the Grugq" ... has been ... acting as a broker for high-end exploits, connecting his hacker friends with buyers among his government contacts...

An exploit's price factors in both how widely the target software is used as well as the difficulty of cracking it...

'Selling a bug to the Russian mafia guarantees it will be dead in no time, and they pay very little money ... They monetize exploits in the most brutal and mediocre way possible.'  
- Greenberg, Forbes



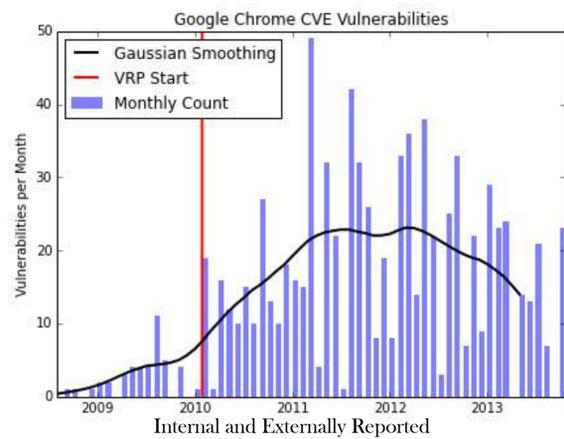
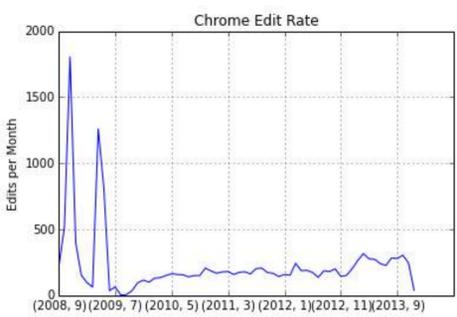
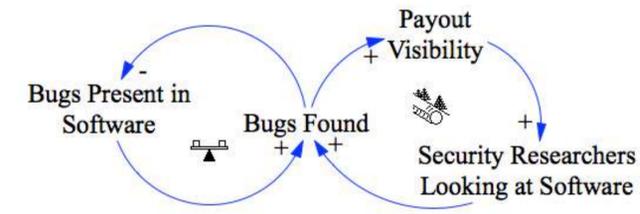
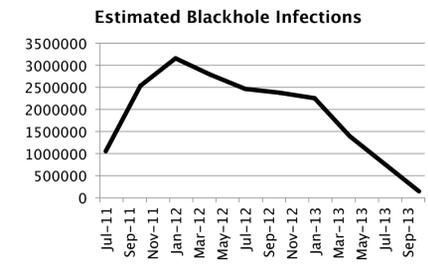
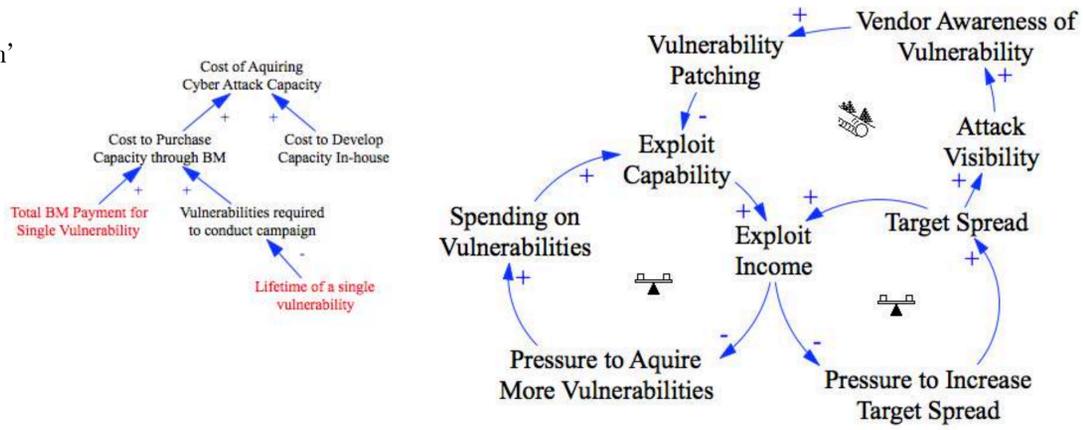
## Prominent Cybercriminal 'Paunch'



" 'Paunch' acknowledged being responsible for the Cool kit, and said his new exploit framework costs a whopping \$10,000 a month..."

Symantec estimated that [one of the users of 'Cool'] extorted from ransomware victims more than \$30,000 per day, and likely close to \$400,000 per month."

Paunch: "We are setting aside a \$100K budget to purchase browser and browser plug-in vulnerabilities..."  
- Krebs on Security



## Chrome Security Head Chris Evans



[The chrome team is] introducing an experimental new incentive for external researchers to participate... rewarding ... vulnerabilities reported to us by the security research community.

We are hoping that the introduction of this program will encourage new individuals to participate in Chromium security.

The more people involved in scrutinizing Chromium's code and behavior, the more secure our millions of users will be.  
- Chromium blog