

# The psychology of security

Matúš Madzin

April 28, 2010

- psychology in different way
  - trade-off
  - examples
  - conclusion
  
- subjective view & discussion

There is nothing such as an absolute security. Security involves some sort of trade-off.

Questions:

- Is this effective again ...?
- Is it a good trade-off?

Example: bulletproof vest, house security system

Security is a **balance** between cost and benefits.

# Conventional Wisdom About Risk

Most people are more afraid of risk that

- is new than old (viruses)
- is man-made than natural (radiation of nuclear waste x sun)
- is imposed than chose (pollution in workplace x smoking)
- doesn't bring benefits (living in San Francisco, Los Angeles)
- can kill them in awful ways (being eaten by a shark)

# Conventional Wisdom About Risk II

- personified x anonymous
- beyond their control x under their control
- talked about x not discussed
- man-made x natural
- affecting them personally x affecting others
- new or unfamiliar x familiar
- uncertain x well understood
- directed against their children x directed towards themselves

## **emotional x logical aspects**

example:

window story

conclusion:

bad experience → not logical decision

- prospect theory
- cost heuristics
- heuristics that affect decisions

## Experiment:

- Alternative A: A sure gain of \$500
- Alternative B: A 50% chance of gaining \$1000
- Alternative C: A sure loss of \$500
- Alternative D: A 50% chance of losing \$1000



Experiment:

- Alternative A: A sure gain of \$500
- Alternative B: A 50% chance of gaining \$1000
- Alternative C: A sure loss of \$500
- Alternative D: A 50% chance of losing \$1000

Theory: A and C same probability.

Experiment: 84% A, 70% D

## Experiment:

- Program A: 200 people will be saved
- Program B: There is a one-third probability that 600 people will be saved, and a two-thirds probability that no people will be saved
- Program C: 400 people will die
- Program D: There is a one-third probability that nobody will die, and a two-thirds probability that 600 people will die

## Experiment:

- Program A: 200 people will be saved
- Program B: There is a one-third probability that 600 people will be saved, and a two-thirds probability that no people will be saved
- Program C: 400 people will die
- Program D: There is a one-third probability that nobody will die, and a two-thirds probability that 600 people will die

Theory: exactly same chances

Experiment: 72% choose A over B, 78% choose D over C

## Experiment:

- Trade-off 1: Imagine that you have decided to see a play where the admission is \$10 per ticket. As you enter the theater you discover that you have lost a \$10 bill. Would you still pay \$10 for a ticket to the play?
- Trade-off 2: Imagine that you have decided to see a play where the admission is \$10 per ticket. As you enter the theater you discover that you have lost the ticket. The seat is not marked and the ticket cannot be recovered. Would you pay \$10 for another ticket?

Theory: same cases

Experimental:

- Trade-off 1: 88% said they would buy the ticket anyway
- Trade-off 2: 46% said they would buy a second ticket

# Heuristics that Affect Decisions

If you want your boss to approval your \$1M security budget.

Set of options:

- \$250K, \$500K, \$1M
- \$500, \$1M, \$2M

# Heuristics that Affect Decisions

If you want your boss to approval your \$1M security budget.

Set of options:

- \$250K, \$500K, \$1M
- \$500, \$1M, \$2M

You have better chance of getting the second set of options

Rule : avoid extremes

People are not adept at making rational security trade-off.

Security costs:

- money
- time
- capabilities
- freedom
- ...



# Questions & Discussion

Thank you for your attention