Madison Gurkha
Your Security is Our Business

HACKITO ERGO SUM 3RD EDITION

Lockpickito

ergo sum

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About me

- Walter Belgers
- Partner, Principal Security Consultant at Madison Gurkha (Netherlands) (penetration testing, social engineering, etc)

TOOOL
The Open Organisation Of Lockpickers

- 15+ years lockpicking experience
- Founder of the Eindhoven chapter of TOOOL, The Open Organisation of Lockpickers (2006)
- Best Dutch lockpicker for 5 years in a row ;-)

Outline

LOCKS!
LOCKS!
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LOCKS!
LOCKS!

Opening a lock

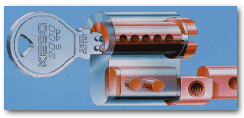
- Normal entry
  - Using the key and/or codes
- Forced entry
  - Using destructive techniques
- Covert/surreptitious entry
  - Not leaving obvious traces

Forced entry

- Attacking not the locking mechanism itself

Forced entry, protection



Covert/surreptitious entry

- Opening a lock without using the key/ knowing the correct code
- Without breaking the lock
- Without leaving (obvious) traces behind
  - Traces may be found upon close examination

Lockpicking

"The sport of opening locks covertly, with permission of the owner."

TOOOL
The Open Organisation Of Lockpickers

SPASS

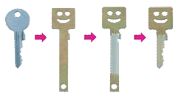
SPORTSFREUNDE DER SPERRTECHNIK - DEUTSCHLAND e.V.

FOOLS

Copying the key

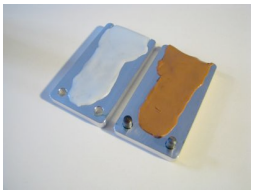
- Of course, if you have the key, you can copy it

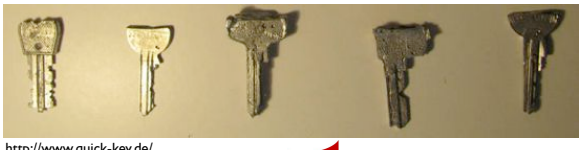




Copying the key

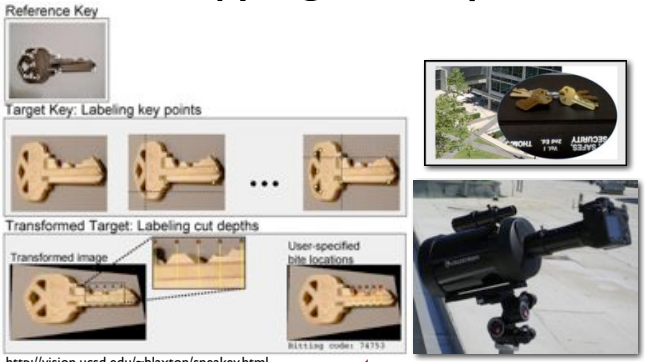
Copying the key





http://www.quick-key.de/

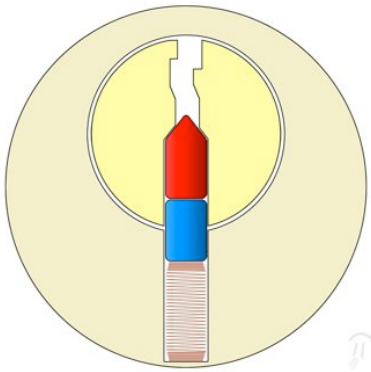
Copying the key



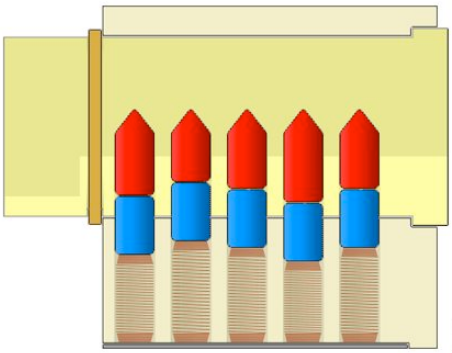
http://vision.ucsd.edu/~blaxton/sneakey.html

Lockpicking

- Understand how a lock works
- Think of ways to circumvent security
- This is actually "hacking"
- Circumventing security by thinking out of the box

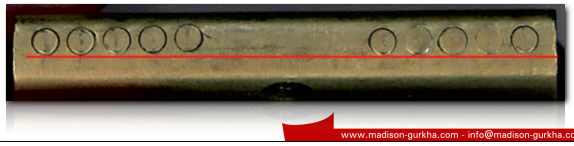


Animated pictures by Deviant Ollam

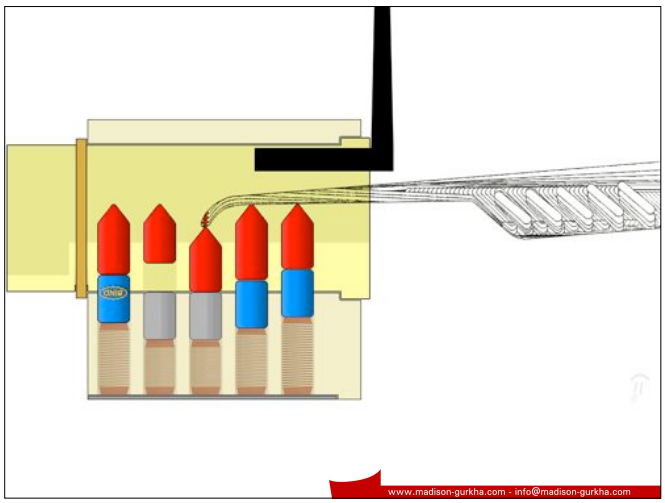


Alignment of plug holes

- Misalignment of plug holes makes it possible to open a lock by lifting the pins one at a time
- Mechanical/economical limitation

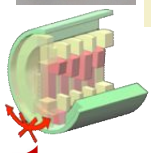


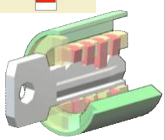
Tools used



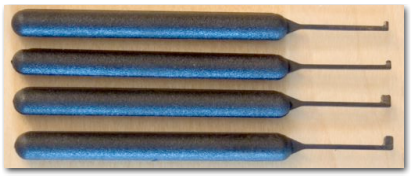
Lockpicking

- This technique works with:
  - Pin-tumbler locks (including padlocks)
  - Wafer tumbler locks
  - Dimple locks
  - Tubular locks





Dimple locks



Raking: a shortcut

- Using a technique called raking, we can try to set more than one pin at the same time
- With cheap locks, raking is all that is needed to open them
- With better locks, raking can still be useful
  - Rake 2, 3, 4 pins
  - Set the last one(s) using standard picking techniques

Raking tools

Countermeasures

- Drilling and pulling:
  - Harder materials
  - Special pins
- Key duplication:
  - Certificates
  - Specially formed keys
  - Patents

Countermeasures

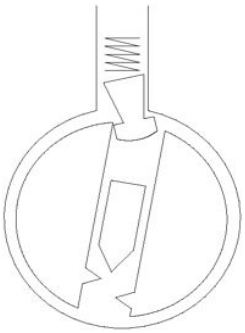
- Picking:
  - Mushroom pins
  - Awkward keyway
  - New design/technology

Mushroom pins

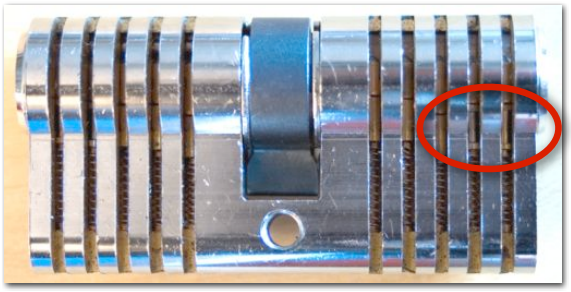
- Makes it harder (not impossible) to pick a lock
- Often just a few pins are mushroom pins

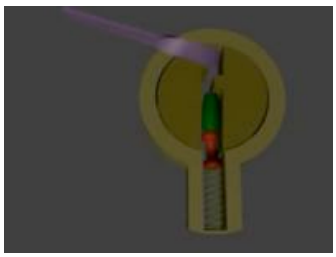
Pictures: Matt Blaze

Mushroom, Spool, Serrated



Spool pins



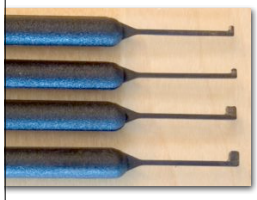


Tips

- Do not use too much pressure (both tensioner and pick)
- Do not use too much pressure
- Relax and do not use too much pressure
- When it doesn't work, reset and try again, but with less pressure
- Be sure that you are picking a lock that is not open already

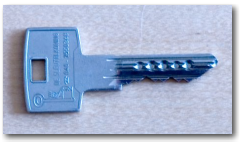
Multiple systems

- Mul-T-Lock: pin-in-pin system



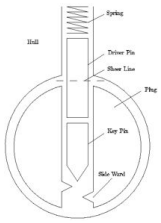
Multiple systems

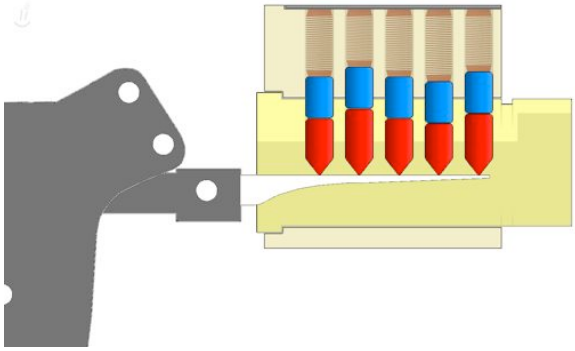
- Abus/Pfaffenhain: multiple rows of pins
- Second row on the side
- Awkward keyway



Pick gun

- Different technique
- Transfer the energy like with billiard balls



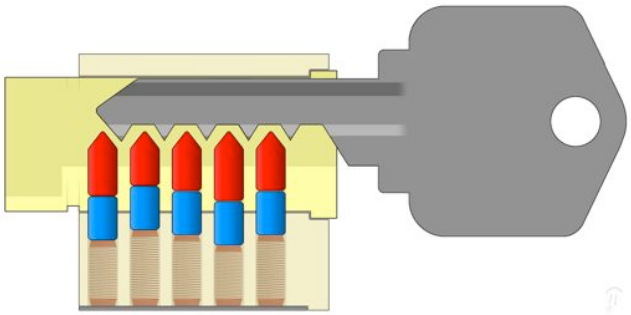


Pick gun

inventgeek.com

Bumping

- Pick gun on steroids
- Use a key as "pick gun", so awkward keyways are no problem (also works on dimple locks)



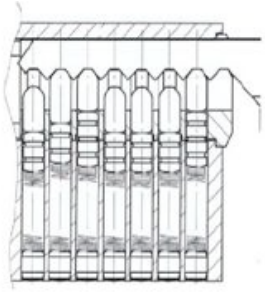
Kaba Quattro

GERA

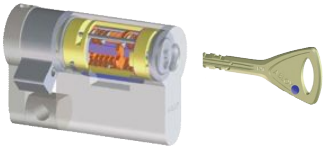
- Magnet in the key pulls one pin up
- (Patent!)

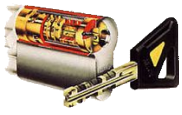
Defeating bumping

- CES: bump key does not touch all pins



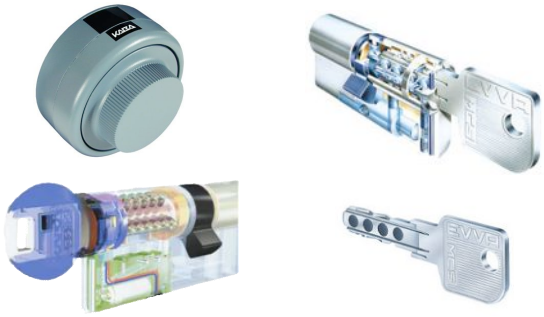
Rotating disc locks

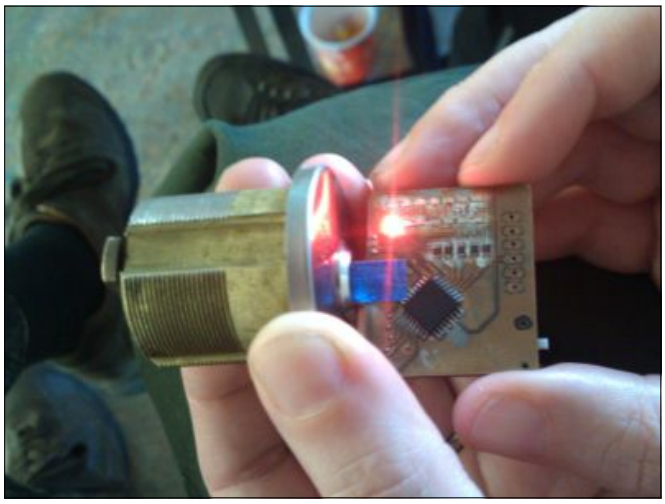


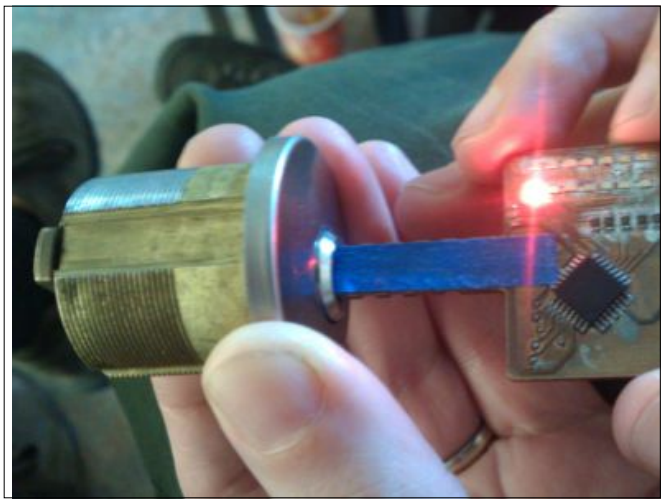


SEA

Magnetic/electronic







KABA E-plex 5800

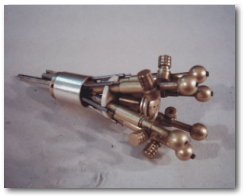
Defcon Lockpickers Open Card-And-Code Government Locks In Seconds

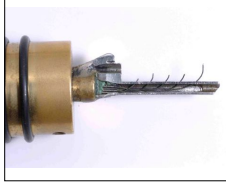
forbes.com

Decoding

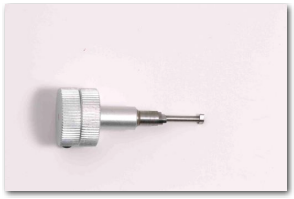
- Lockpicking, bumping, will open the lock only once
- *Decoding* is finding out what the key looks like
  - And maybe opening at the same time

Decoding - Sputnik

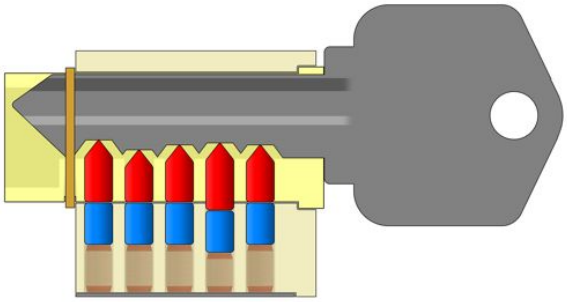




Decoding - ABUS

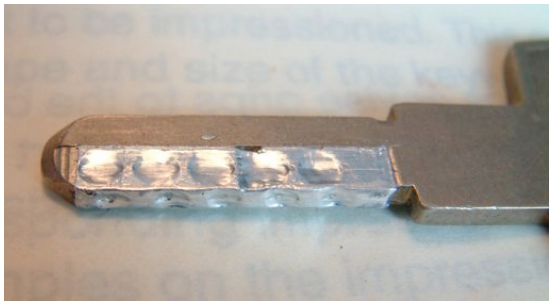


Decoding - Impressioning



Foil impressioning

Foil impressioning



KESO 3000 Omega

Concluding

- Locks can combine characteristics but must stay within space and money limitations
- Lock manufacturer chooses from his bag of tricks to build a lock with certain characteristics w.r.t.:
  - Price
  - Key duplication and lock copying (patents)
  - Resistance to force, lockpicking, bumping, decoding

Workshop

- Tomorrow & the day after tomorrow
- Between 13:00 and 16:00 (give or take)

- BYOL (Bring Your Own Lock) if you like

Thanks!

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