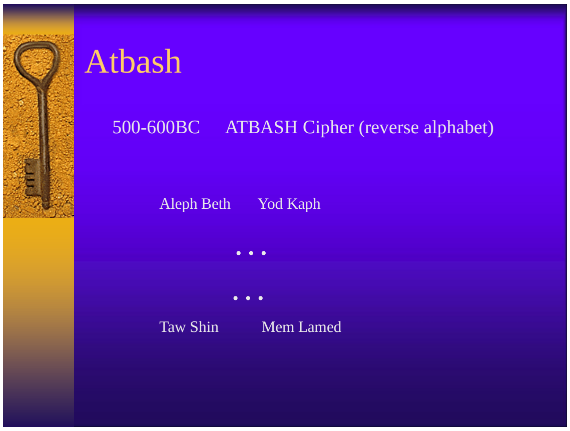


Atbash

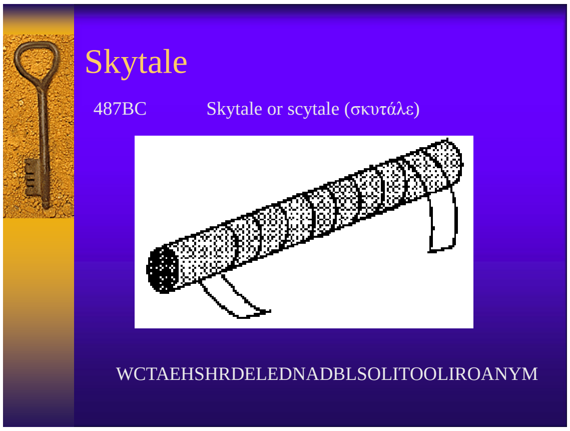
500-600BC ATBASH Cipher (reverse alphabet)

Aleph Beth Yod Kaph

. . .

. . .

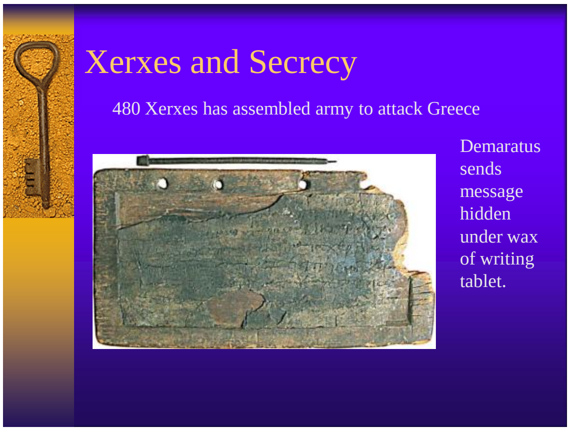
Taw Shin Mem Lamed



Skytale

487BC Skytale or scytale (σκυτάλε)

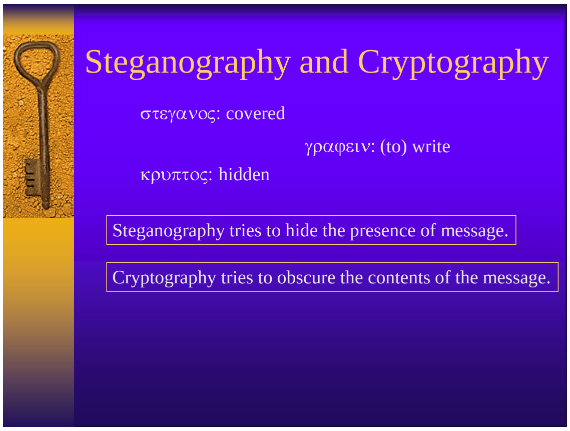
WCTAEHSHRDELEDNADBLSOLITOOLIROANYM



Xerxes and Secrecy

480 Xerxes has assembled army to attack Greece

Demaratus sends message hidden under wax of writing tablet.



Steganography and Cryptography

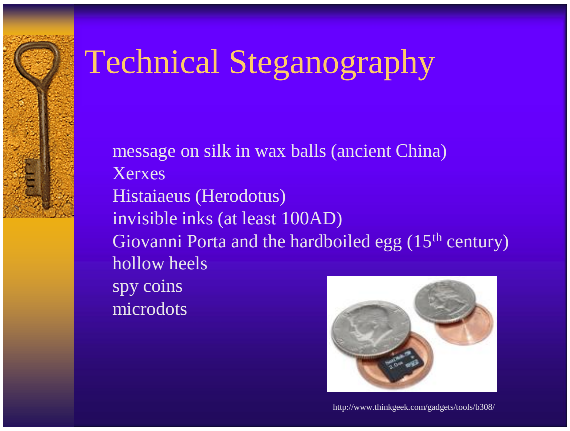
στεγανος: covered

γραφειν: (to) write

κρυπτος: hidden

Steganography tries to hide the presence of message.

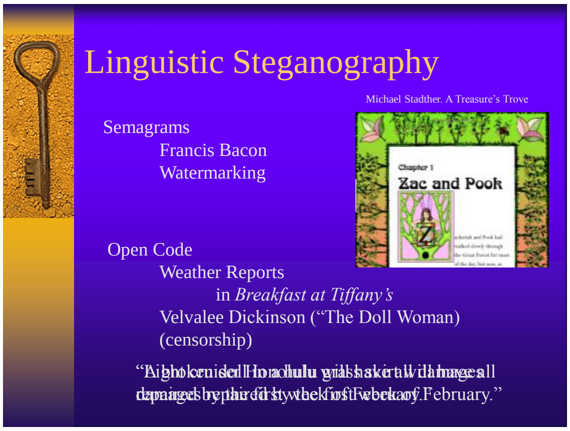
Cryptography tries to obscure the contents of the message.



Technical Steganography

message on silk in wax balls (ancient China)
Xerxes
Histaiaeus (Herodotus)
invisible inks (at least 100AD)
Giovanni Porta and the hardboiled egg (15th century)
hollow heels
spy coins
microdots

http://www.thinkgeek.com/gadgets/tools/b308/



Linguistic Steganography

Michael Stadther. A Treasure's Trove

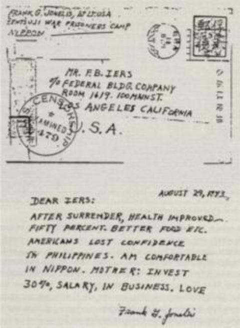
Chapter 1
Zac and Pook

Semagrams
Francis Bacon
Watermarking

Open Code
Weather Reports
in *Breakfast at Tiffany's*
Velvalee Dickinson ("The Doll Woman)
(censorship)

"Light cruiser Honolulu will have all damages repaired by the first week of February."

Linguistic Steganography



FRANK G. JONELIS, 2ND LT. USA
ZENTSUJI WAR PRISONERS CAMP
NIPPON

MR. F.B. IERS
c/o FEDERAL BLDG. COMPANY
ROOM 1619. 100 MAIN ST.
LOS ANGELES CALIFORNIA
U. S. A.

CENSORSHIP
EXAMINED
4270

AUGUST 29, 1943.

DEAR IERS:

AFTER SURRENDER, HEALTH IMPROVED FIFTY PERCENT. BETTER FOOD ETC. AMERICANS LOST CONFIDENCE IN PHILIPPINES. AM COMFORTABLE IN NIPPON. MOTHER: INVEST 30%, SALARY, IN BUSINESS. LOVE

Frank G. Jonelis

Polybius' Cipher

200 BC

	1	2	3	4	5
1	a	b	c	d	e
2	f	g	h	ij	k
3	l	m	n	o	p
4	q	r	s	t	u
5	v	w	x	y	z

331515143234331554

- Bipartite substitution cipher
- used with torches in antiquity
- Prisoner's Cipher (see Koestler's *Darkness at Noon*)
- Nihilist cipher based on it

Substitution and Transposition

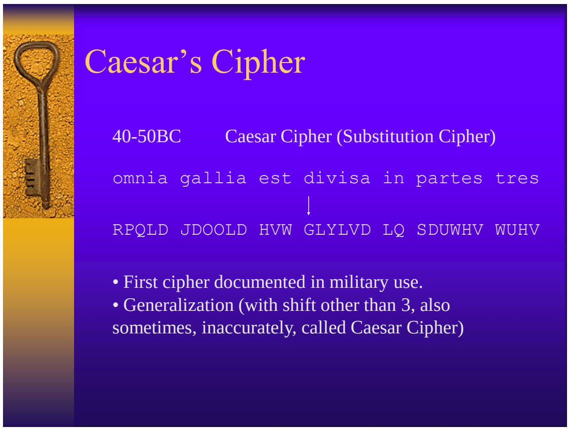
Two basic methods of encryption

Substitution

- Replace letter/symbol/text with other letter/symbol/text
- leads to *confusion*

Transposition

- Rearrange the order of letters/symbols in the text
- leads to *diffusion*



Caesar's Cipher

40-50BC Caesar Cipher (Substitution Cipher)

```
omnia gallia est divisa in partes tres
                 ↓
RPQLD JDOOLD HVW GLYLVD LQ SDUWHV WUHV
```

- First cipher documented in military use.
- Generalization (with shift other than 3, also sometimes, inaccurately, called Caesar Cipher)