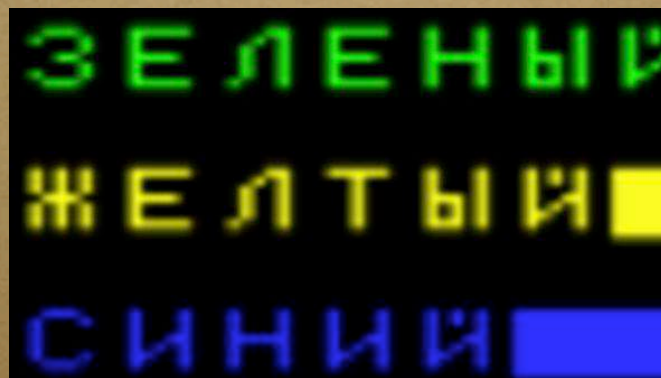


Apples behind the Iron Curtain

KansasFest 2024, Springfield IL



Apples behind the Iron Curtain

Index

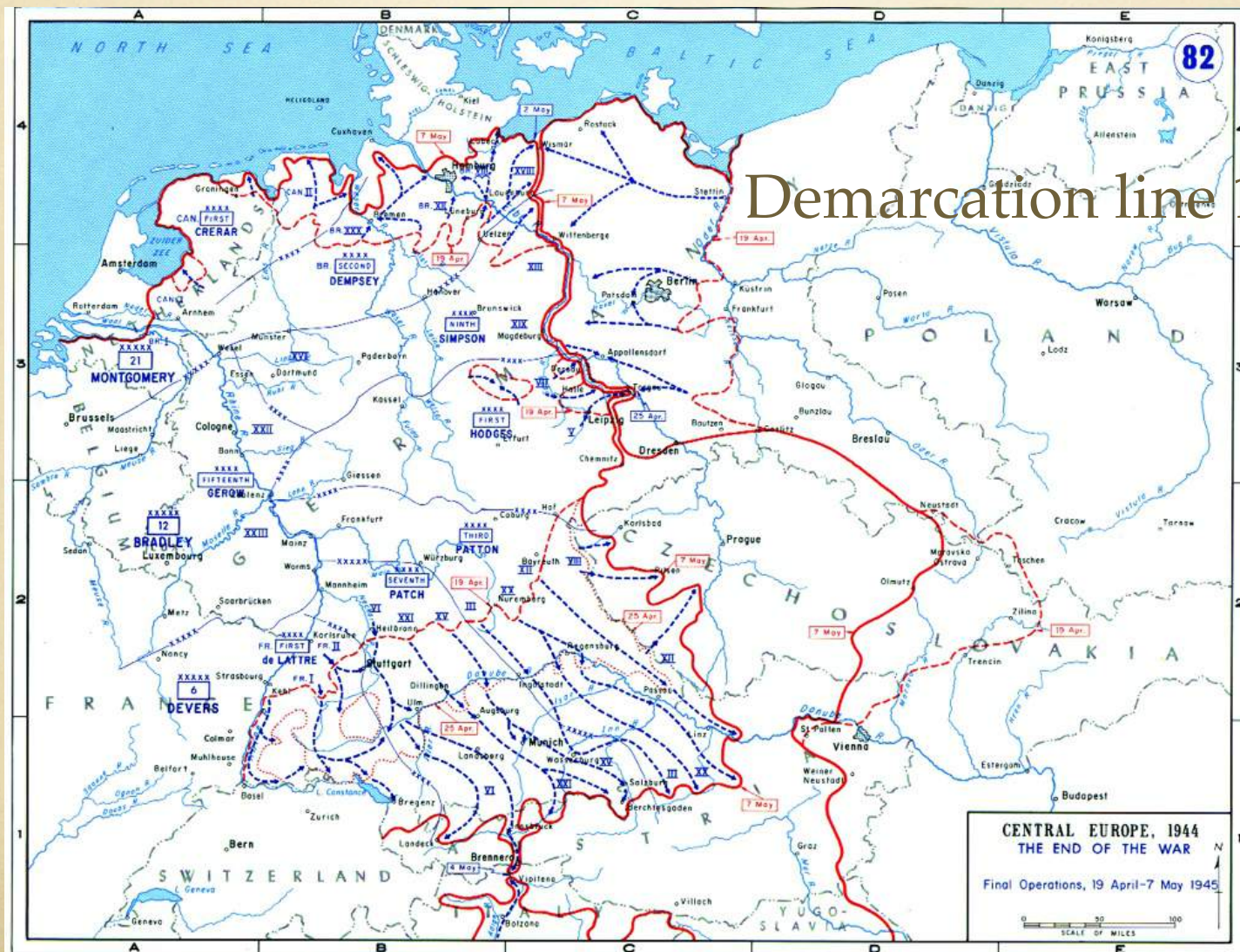
- **The short story**
- **The long story:** definitions, historical and economical background
- Technical parameters of Apple][clones in eastern (not central) Europe

The short story

- There were almost no Apple computers.
- And only few clones.
- Production of clones in eastern Europe only.
- Not available to buy for public (schools only).

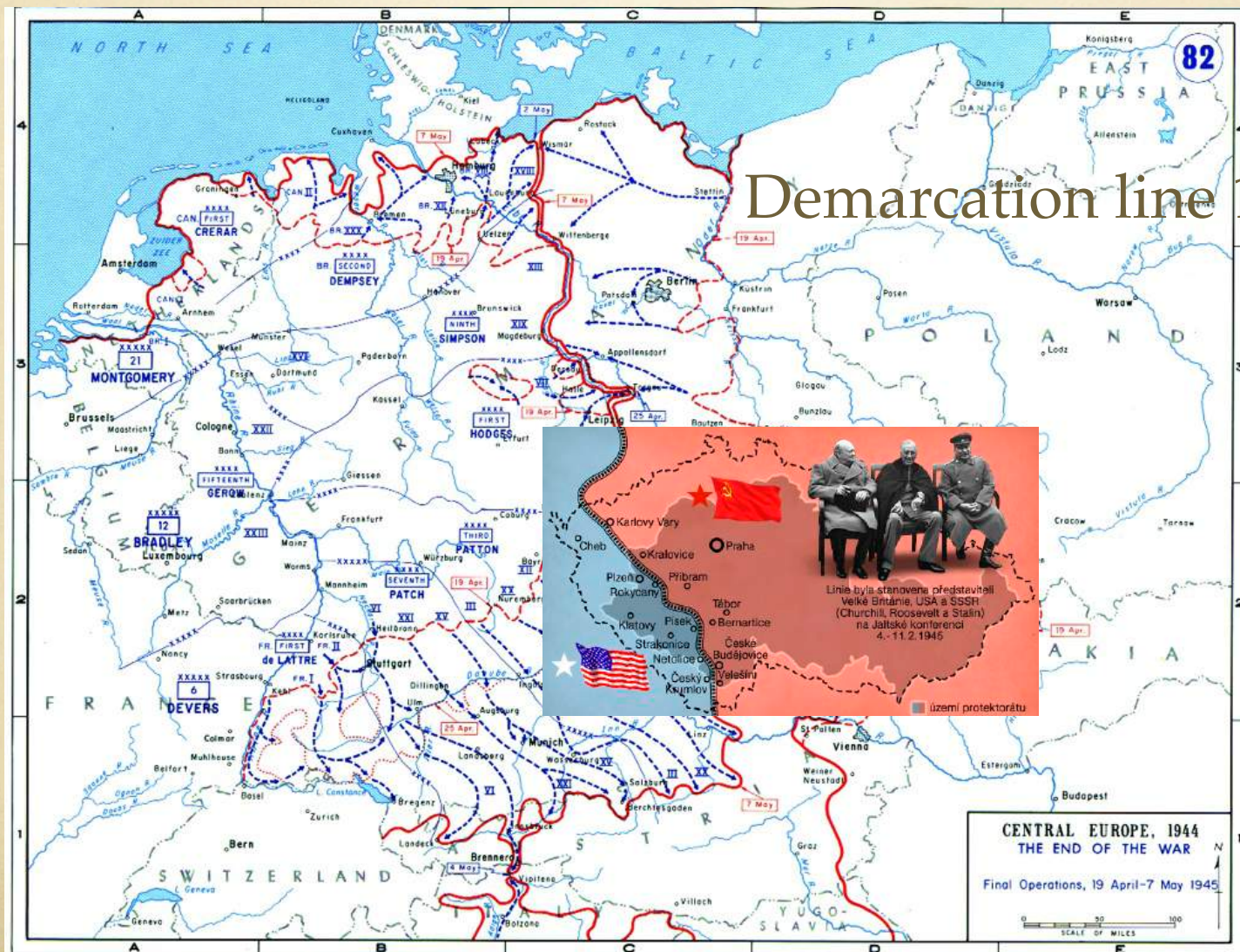
Iron Curtain

Demarcation line 1945

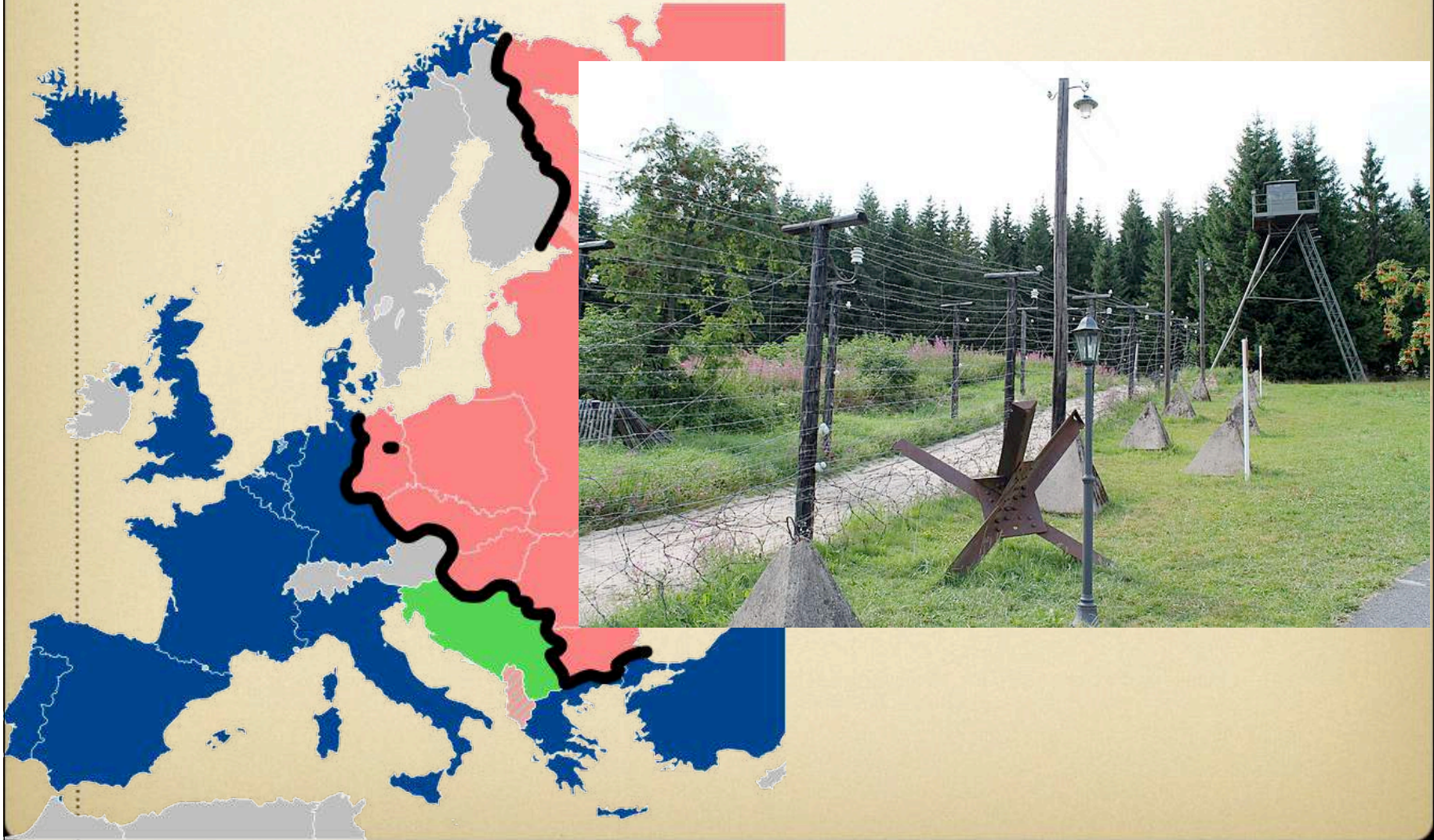


Iron Curtain

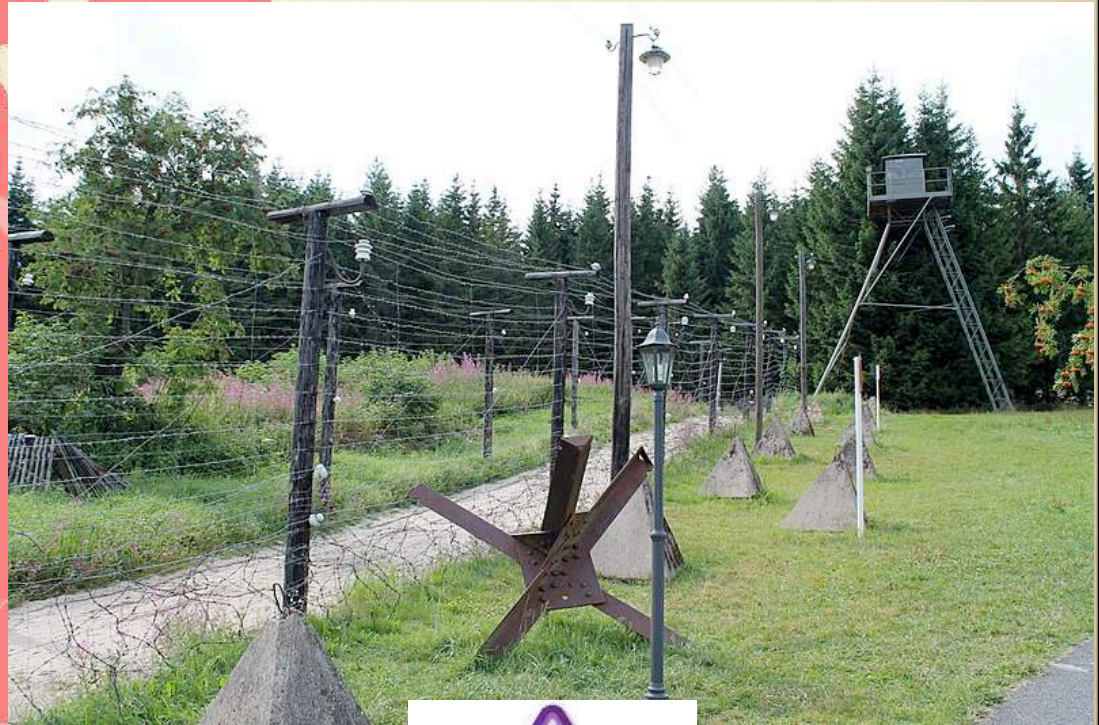
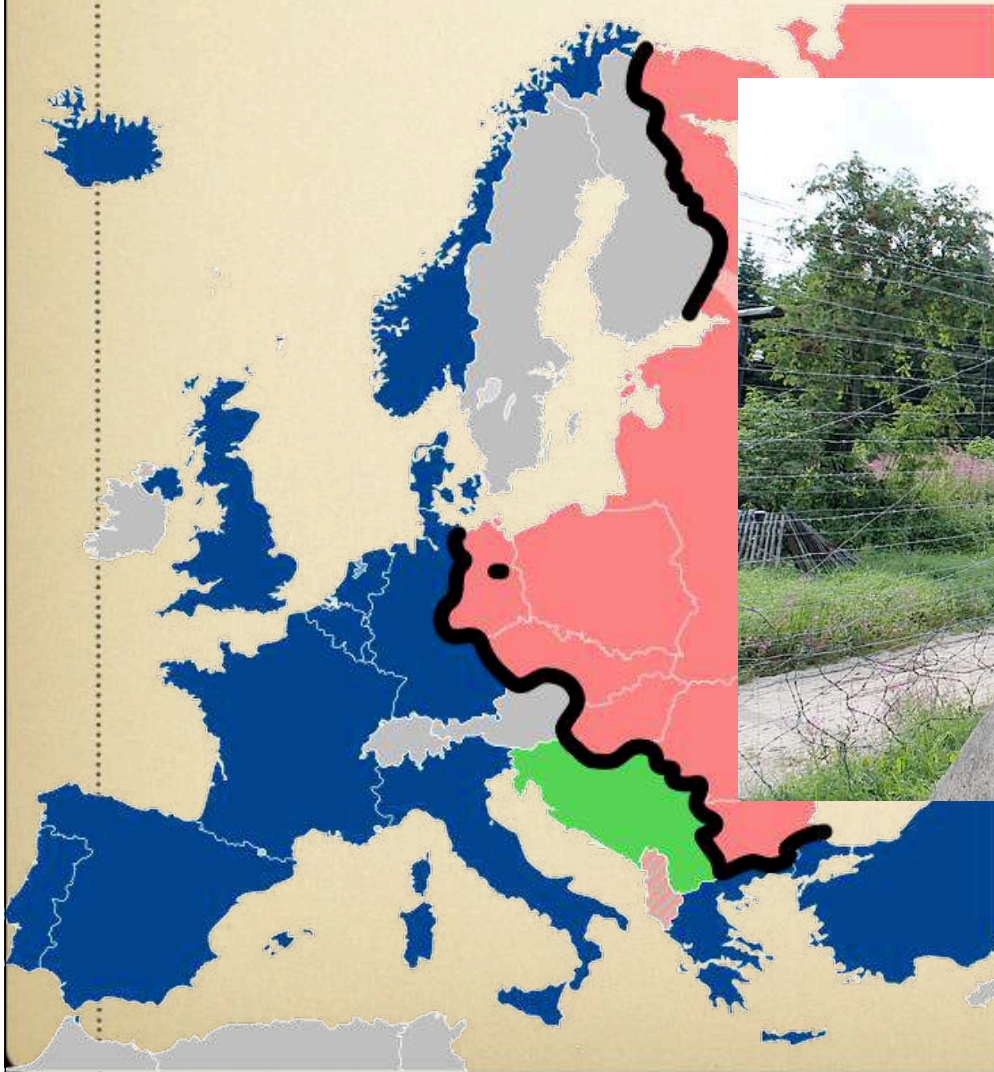
Demarcation line 1945



Iron Curtain



Iron Curtain



littérature recommandée

- War is peace.
- Freedom is slavery.
- Ignorance is strength.



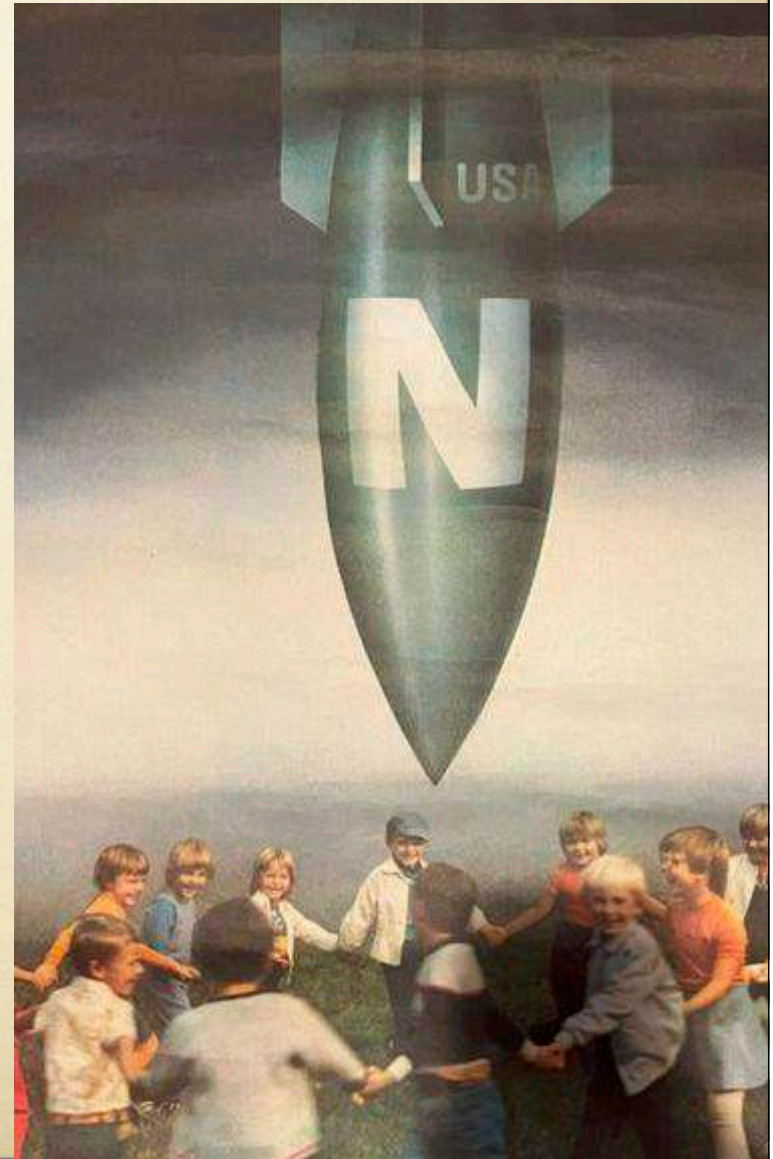
littérature recommandée

- War is peace.
- Freedom is slavery.
- Ignorance is strength.



Experience is untrasferable.

fear, paranoia



fear, paranoia voluntarily mandatory



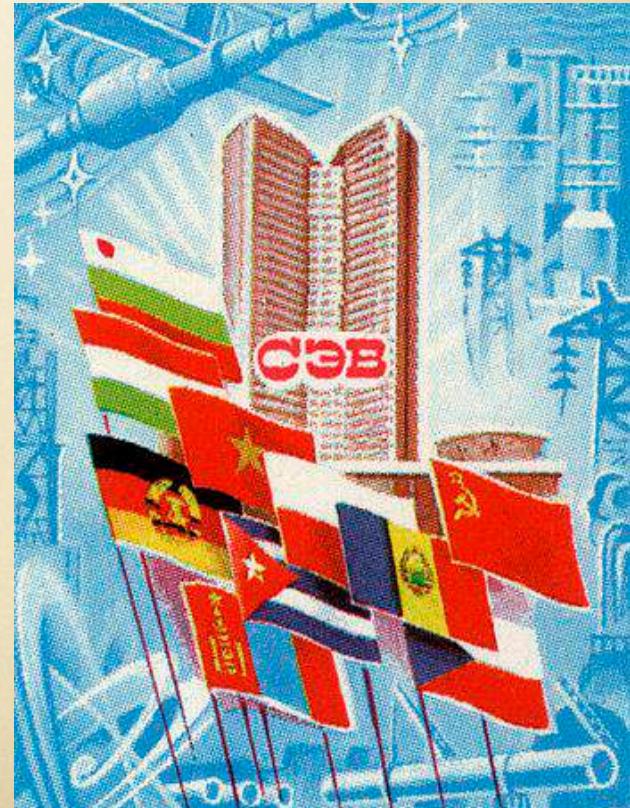
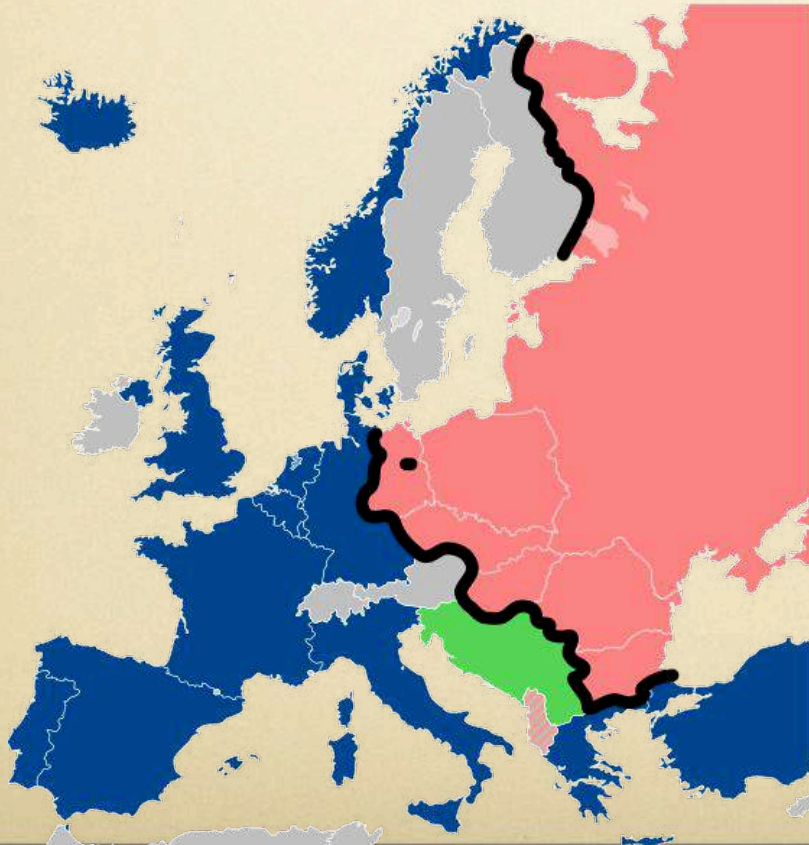
elections

- communist party is the leading party by constitution
- democracy-like appearance, no choice
- attendance 99%! voluntarily mandatory
- worst result 99.7% (200 000 invalid votesheets)
- postponed after Warsaw Pact invasion



COMECON

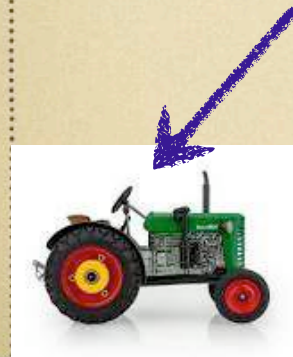
- The Council for Mutual Economic Assistance



COMECON

-
- centralised
- planned
- closed
- military oriented
- export with loss





USSR - 1969!
like emery paper





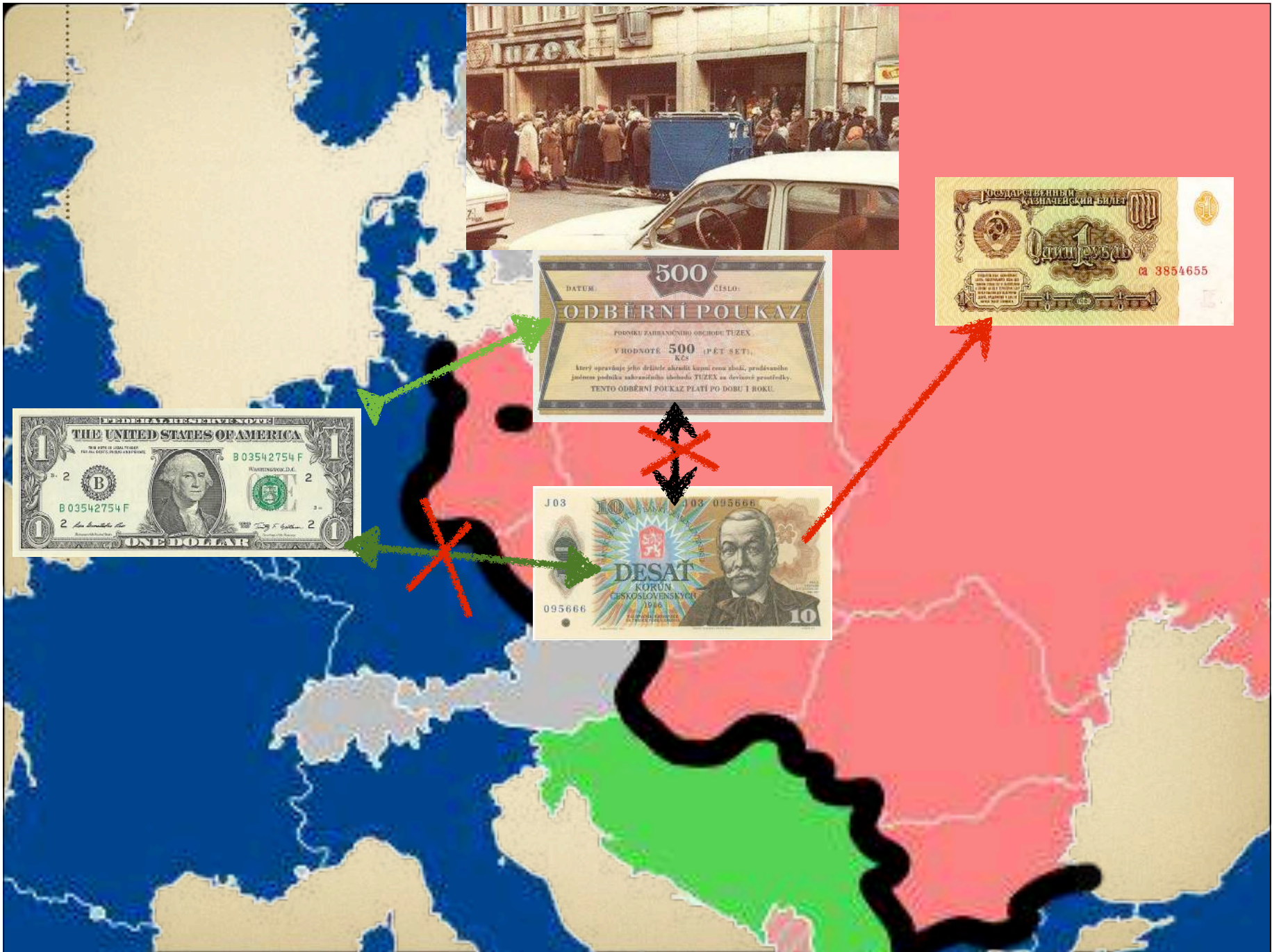
USSR - 1969!
like emery paper





USSR - 1969!
like emery paper





travel permission



promise of
foreign
exchange



apply in winter only
waiting list several years
\$300 per year max.



wooden kitchen utensils

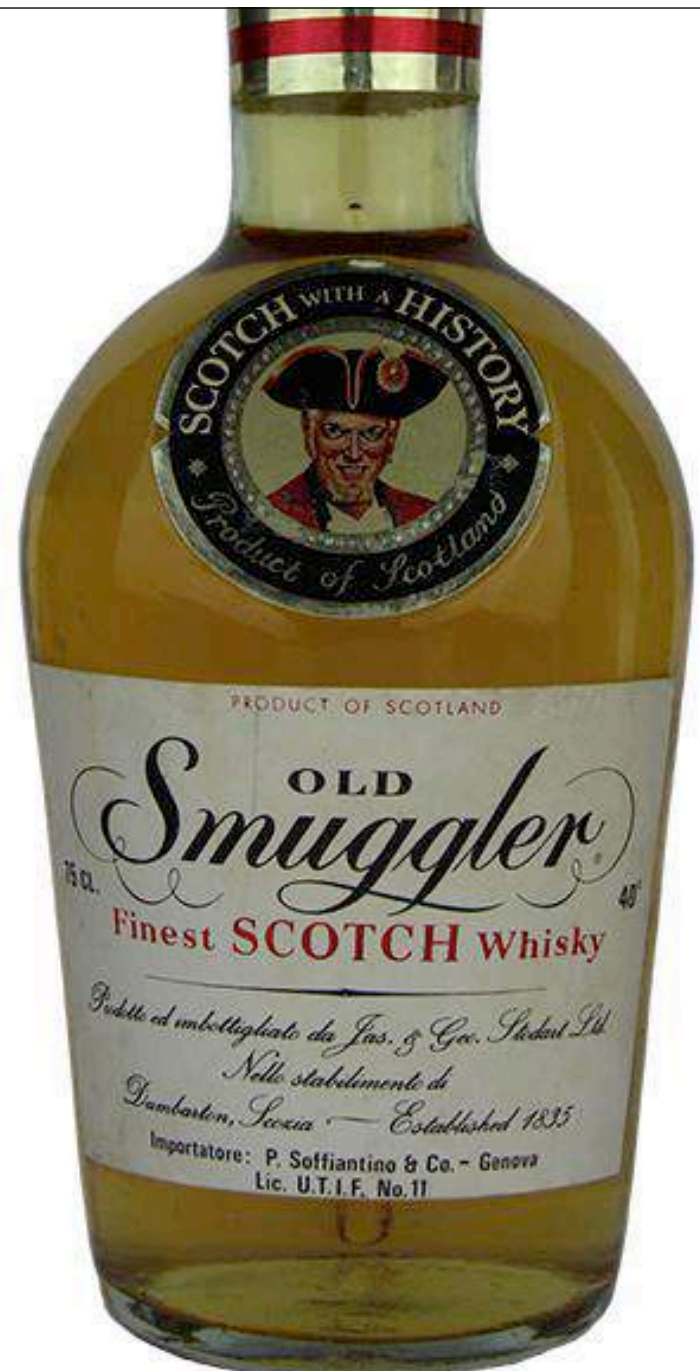


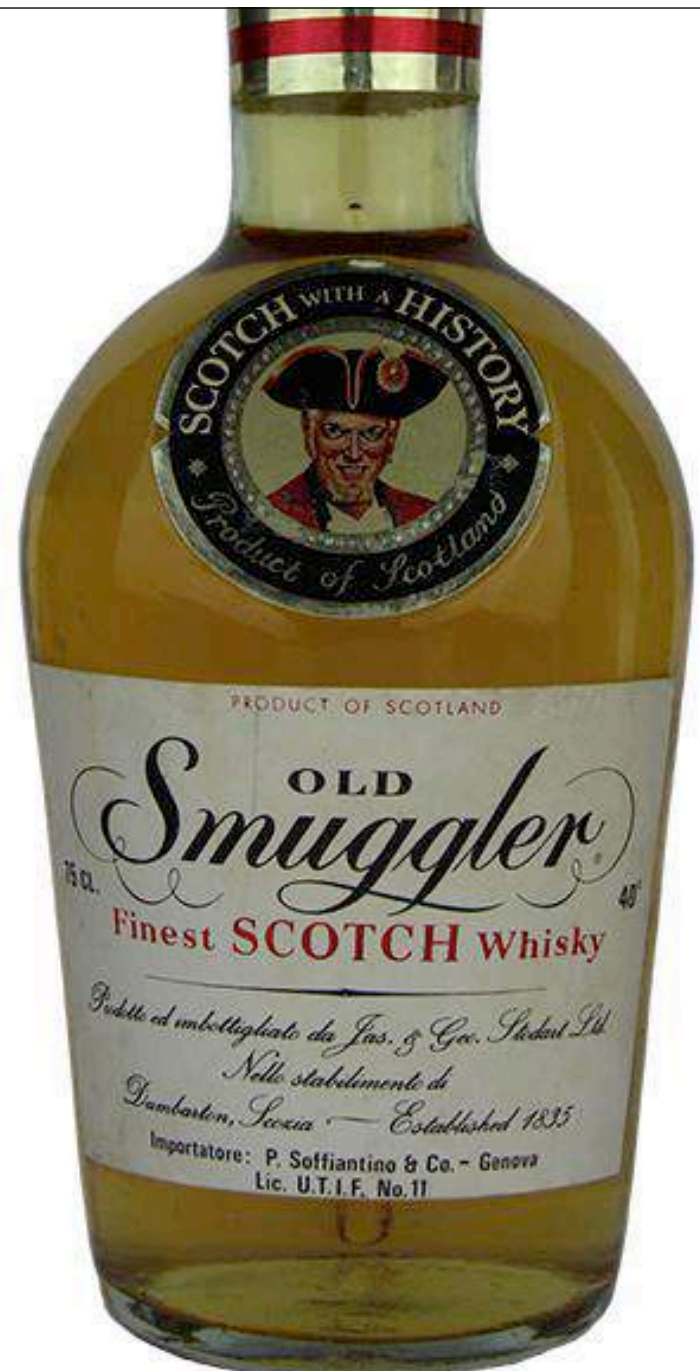
native copper



1984









30-60%



IBM 5285
1980

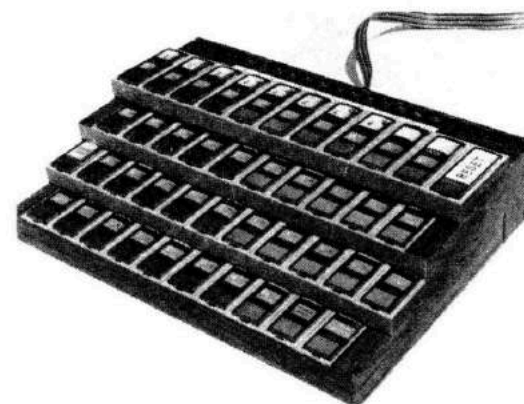


Consul 2715
1989

me tak levnou a spolehlivou
snice (viz obr. 1).

manic-
ní je
: dol-
oub-
i des-
řady
ovány
loušt-
a jsou
šrou-
kladní
řady
řádat
ytu a
ko. u
snice
dě lze

zníou slouží. Díky snadné rozestavi-
nosti klávesnice je možno kdykoli
zlepšit elektrický kontakt aplikací
běžných prostředků.



duchá
vesnice



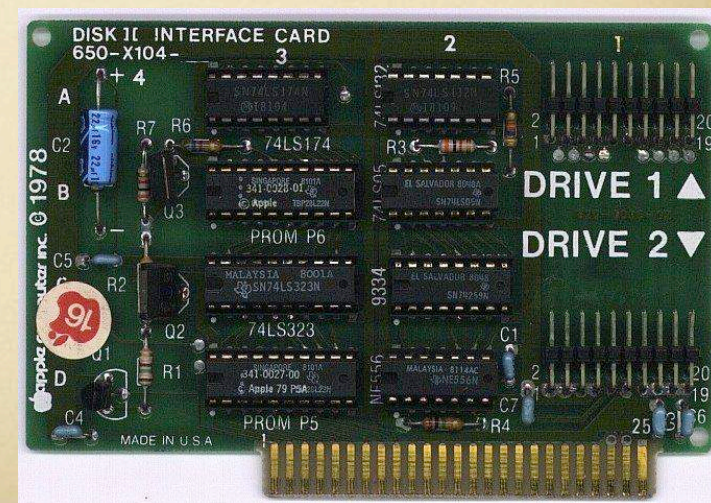
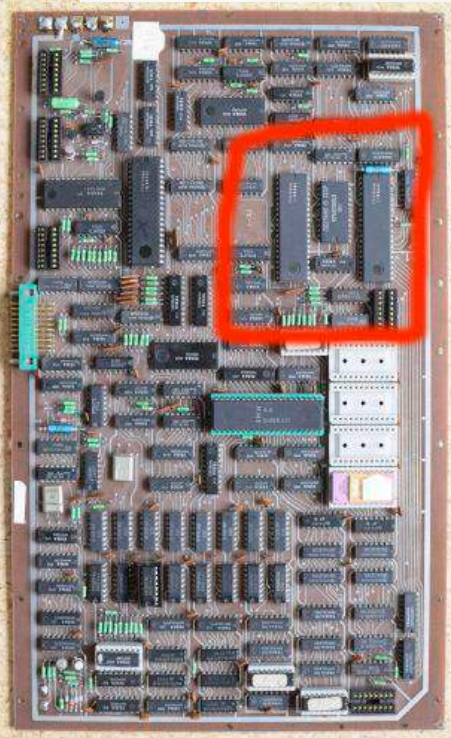
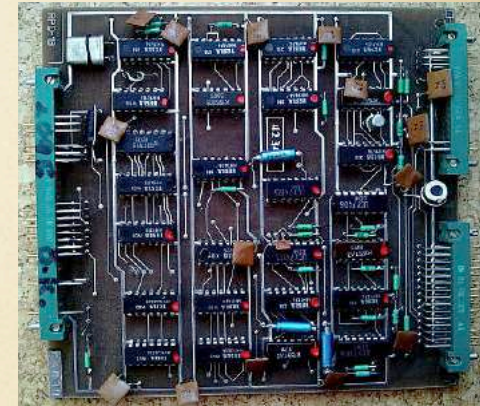
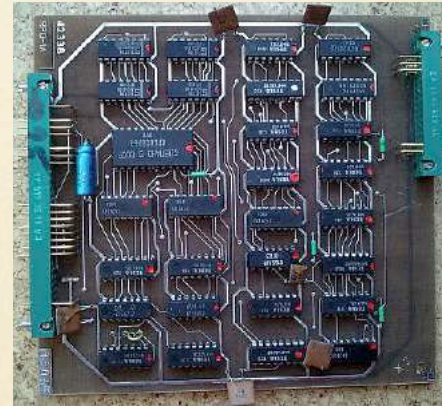
quality



quality

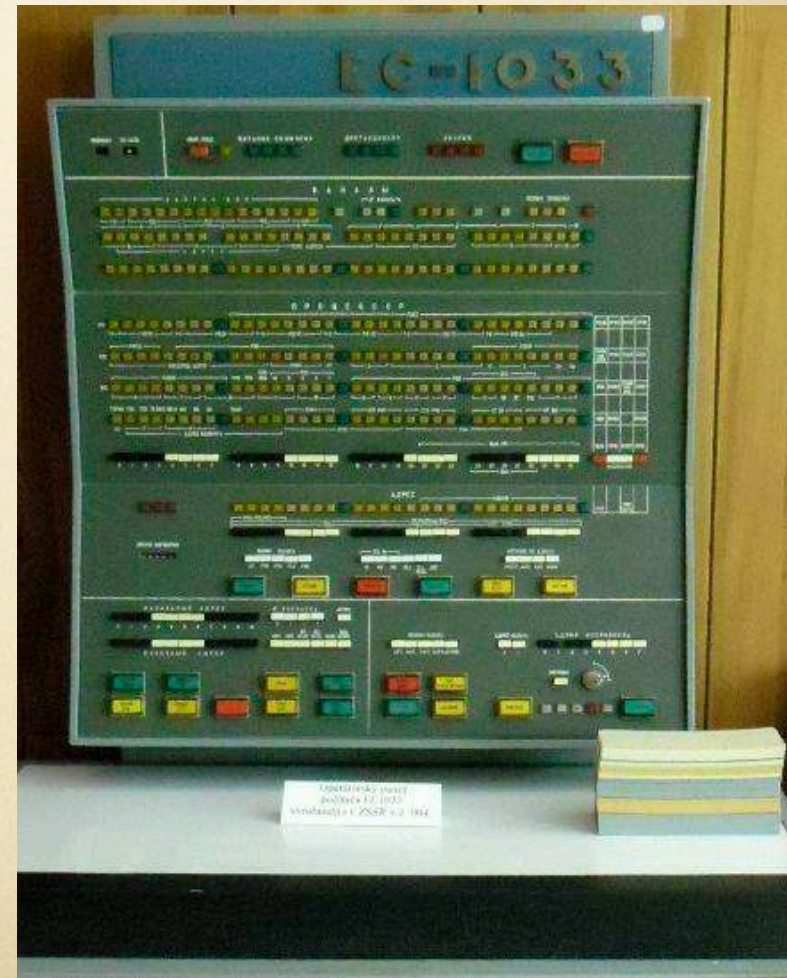


disk controller



mainframes

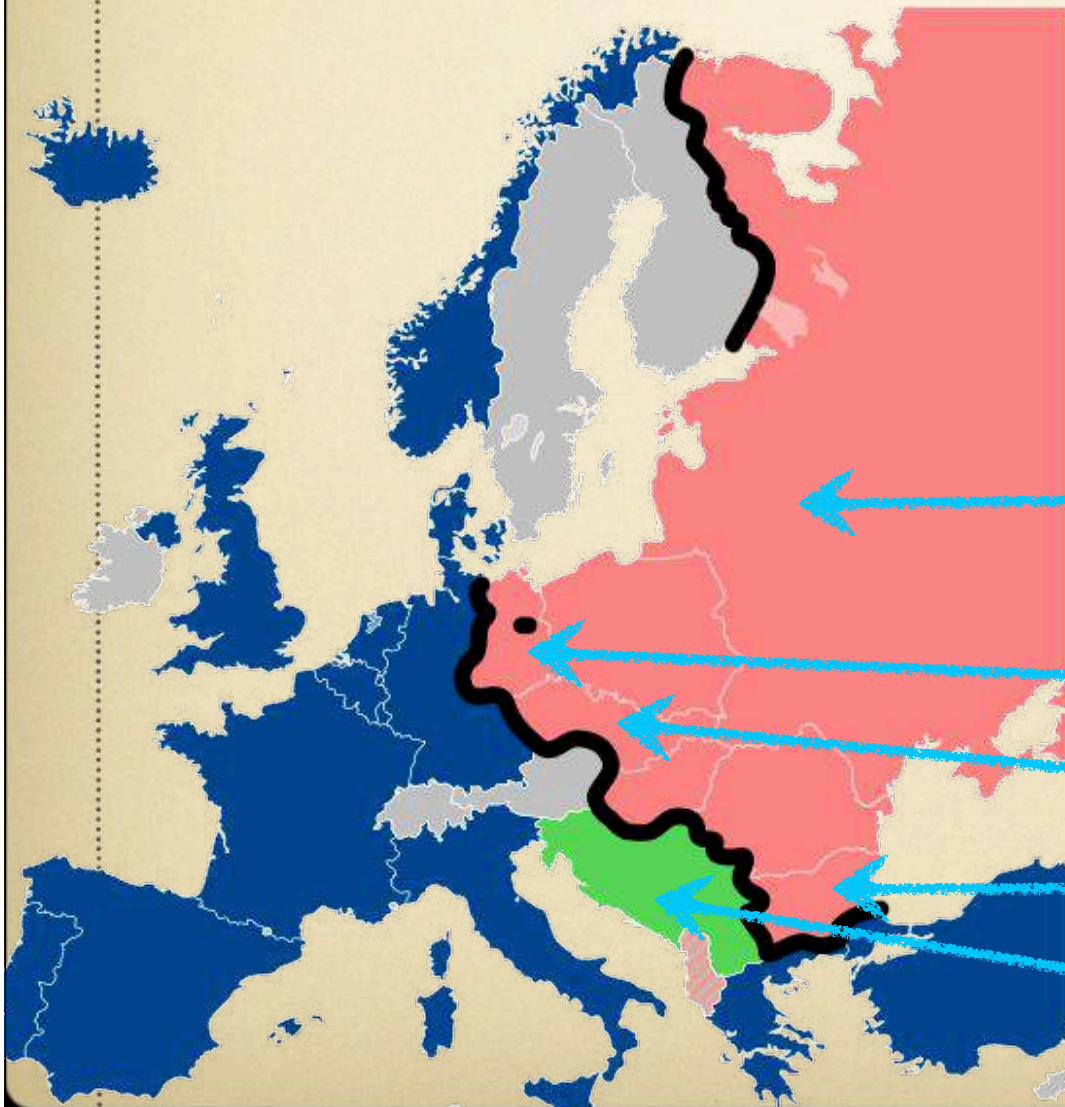
- own systems (Minsk, Ural, EPOS, ...)
- licences (Tesla 200 = GE Bull 140)
- copies (Odra=ICL)
- EC ЭBM - Unified system of electronic computers = IBM 360 / 370



mini computers

- ADT = HP 1000
- JPR 12 = Elbit 100
- TPA=PDP-8
- CM ЭBM - system of small electronic computers = HP 1000, HP 2000, DEC PDP-11, VAX, PC

micro computers



LSI-11, 8086,

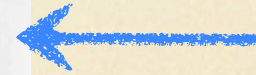
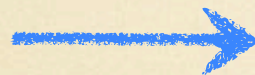
Z80 (KP1858BM),
8080 (KP580BM80A)

Z80 (U880D)

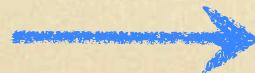
8080A, 3000

6502 (CM630P)

RCA 1802 (CDP 1802B)



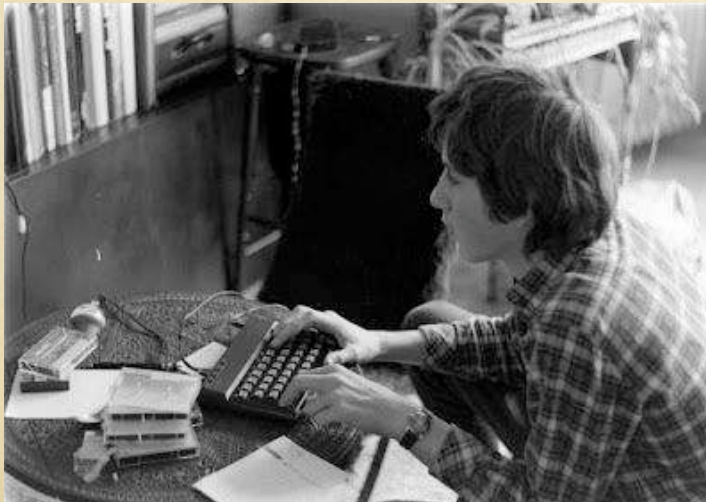
in-house design



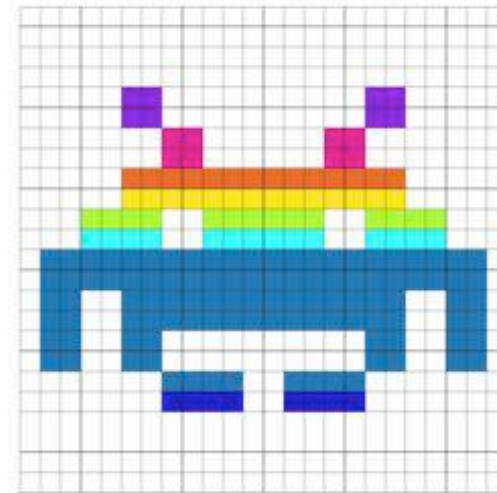
clones



littérature recommandée

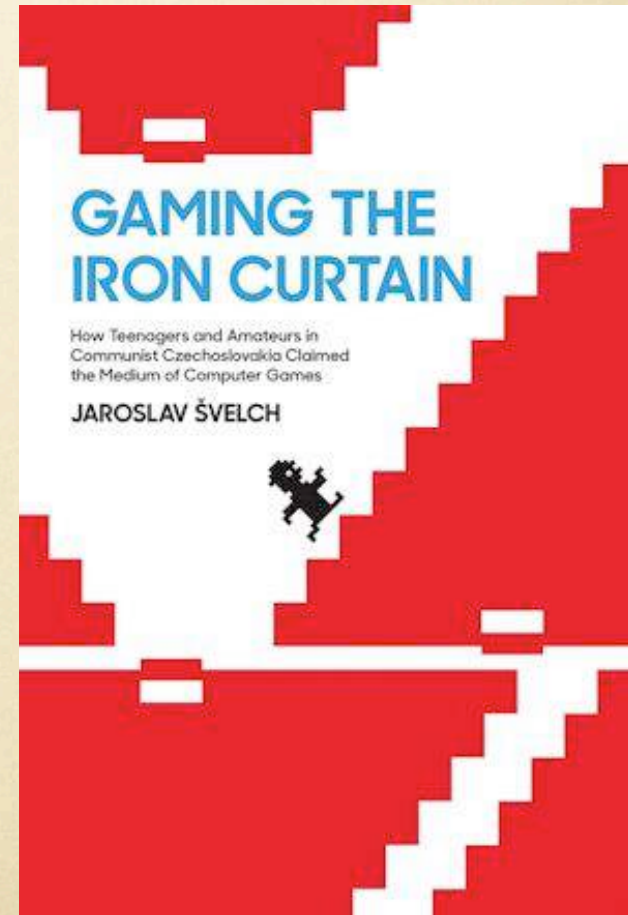
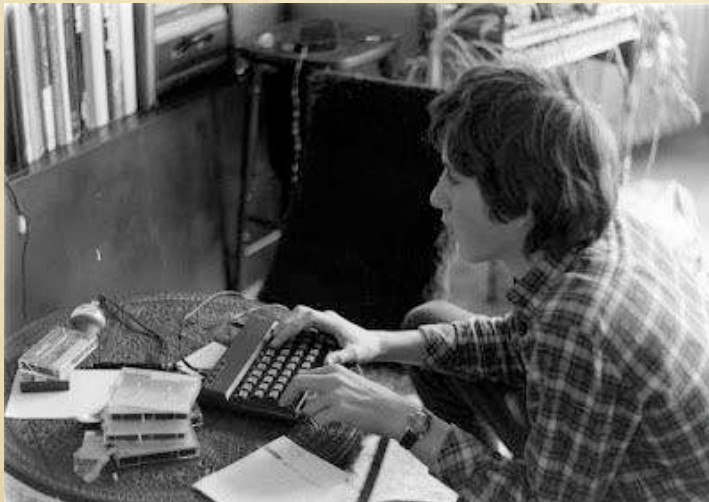


Akropolis
Edice #POPs

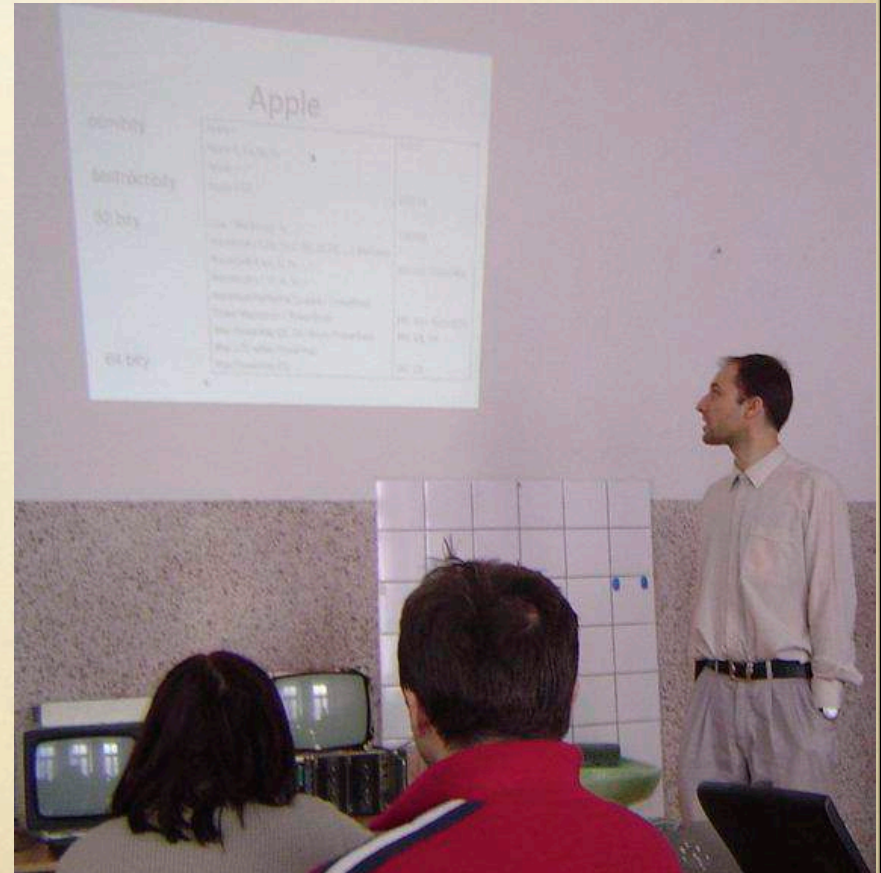
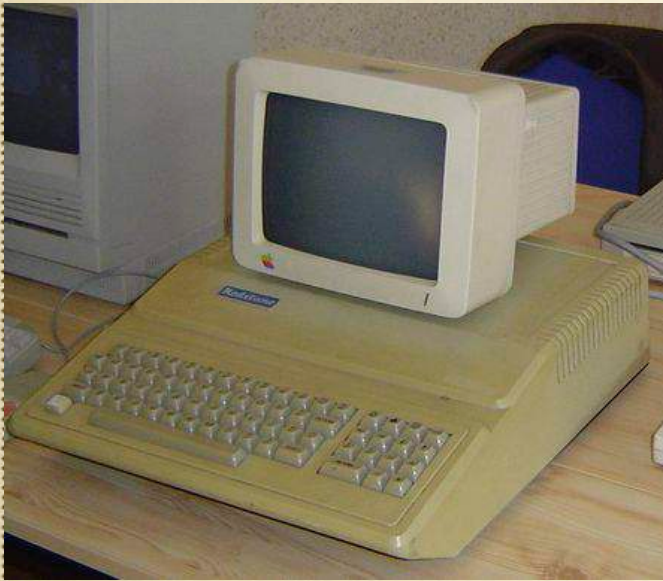


JAROSLAV ŠVELCH
Jak obehřát železnou oponu
*Počítačové hry a participativní kultura
v normalizačním Československu*

littérature recommandée



Apples



2005

Агат (Agate)



- first soviet microcomputer
- 1984
- 6502, in prototypes 588 (LSI-11)
- 3900 rubles (avg 250), wanted to export it for \$17 000
- approx. 19 000 produced 1984-1993

Агат (Agate)



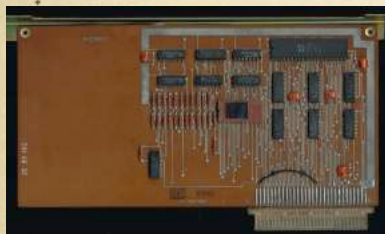
- 6502
- Applesoft Basic
- otherwise incompatible with Apple II
- no built-in Apple II text or graphics (except Агат 9)

Агат (Agate)



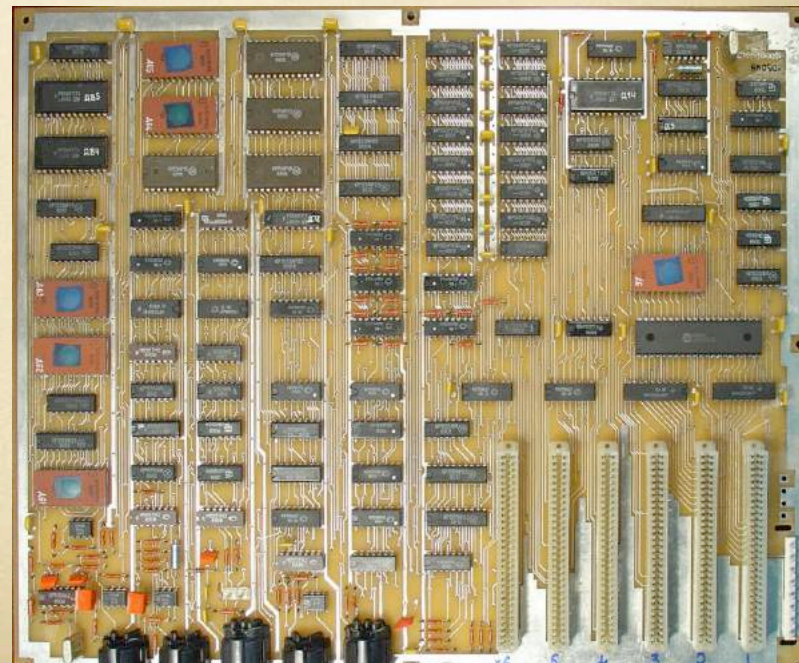
- Агат 4 - less than 100, limited expanding options, 64 KiO, cassette
- Агат 7 - 96 KiO, disk, most common, Агат 8 - 2 disks, printer
- Агат 9 - 6 slots, Apple II modes, 128 / 256 KiO, 2 disks

60 pin
processor on separate board (Агат 4, 7, 8)
disk controller EC-5088.02,
1987 EC-5323 2S / HD (840 KiO)



Агат 7

Агат 9



Агат (Agate)

- Агат 4



- Агат 7



- Агат 8



- Агат 9



“unit 121” - Apple][+ compatibility card

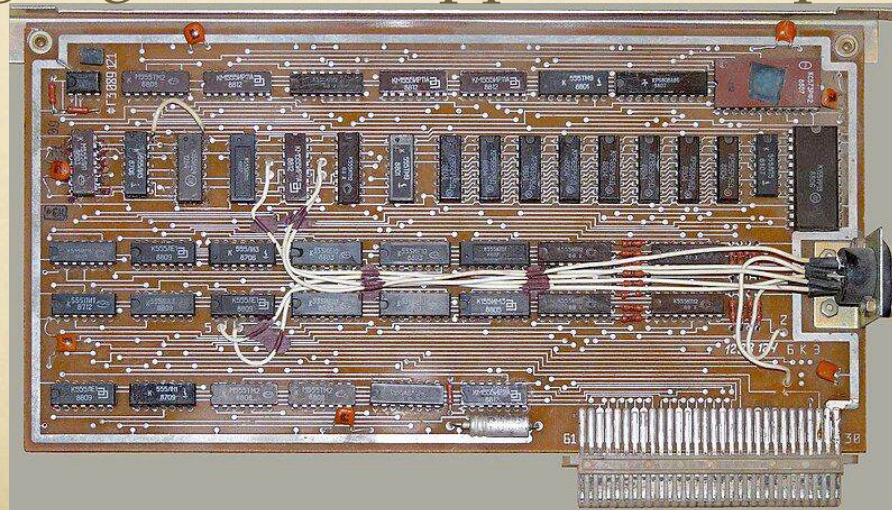
sold separately (onboard Atari 9)

own VideoRAM, Apple][+ modes

separate monitor output

requires reboot to compatibility mode

no Language Card support (except Atari 9)



Агат 9

- most Apple II+ compatible Агат
- less compatible memory paging with Агат 7
- lower case characters
- Processor, Unit 121, Language card onboard
- new modes (but one lost)
- interface card without serial, but Apple II Parallel Printer Card compatible

modes

Агат 4-8

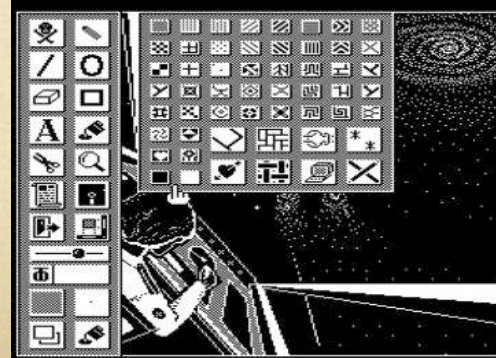
- text 32x32, 8 colors
- text 64x32, 2 colors
- graph. 64x64, 16 colors
- graph. 128x128, 16 colors
- graph. 256x256, 2 colors



modes

Агат 9

- lost lo-res 64x64 16 colors
- 256x256 4 colors
- 512x256 2 colors



Правец

- Bulgaria - 40-60% of COMECON computer production
- 5,25" drives!
- 1980 IMKO-1 - 50 produced, never sold, Apple II copy, cassette only
- Правец 8D - 1985, Tangerine Oric (GB) compatible
- Правец 16 - IBM PC clone

Правец

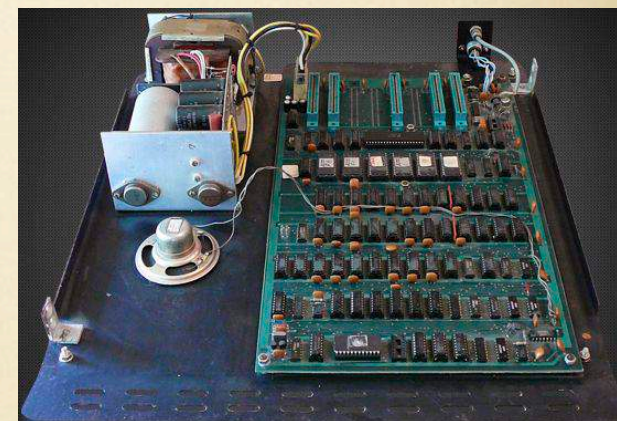
- Правец 82 - 1982, 60 000, based on IMKO-2 (60 pcs), Apple][+
- Правец 8M - Apple][+ with onboard Z80 (CP/M)
- Правец 8E - Apple //e, 1300 pcs, Taiwan, no cyrilic!
- Правец 8A - Apple //e
- Правец 8C - 3 slots, //e with integrated cards
- Правец 8S - //e



ИМКО-1



ИМКО-2



Правец 82



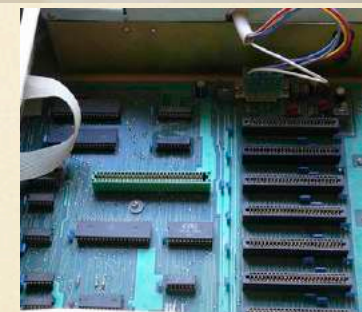
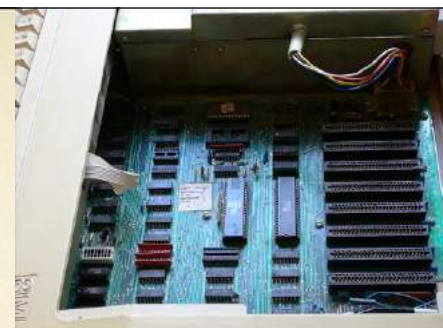
Правец 8Е



Правец 8М



Правец 8А



Правец 8С



Правец 8S



THE END!

