To George Soros and all numerous friends who helped to carry out this project

BREAKING INFORMATION BARRIERS (PERSONAL COMPUTERS AND THE EAST-EUROPEAN DISSENT [1984-1990])

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A Personal Confession

Allow me to start my talk with a small personal confession. A few days ago I celebrated 67th birthday.

A year before I was born, in 1930, my father purchased Corona - a small typewriter made in USA. I inherited it from my father and was using it practically until 1970 – i.e. for 40 years. I don't need to advertise its quality – it was never sent to a repair shop.

In 1974 I was forced to emigrate and one of the first things I did in Copenhagen was to purchase an IBM ball-point electric typewriter with different letter balls – with Czech and Russian characters. I replaced this typewriter in about 3 years by another IBM with correction ribbon and in about another 2-3 years by IBM thermotronic based on a completely different technology (thermical attachment of the ribbon to the paper) with possibilities of switching keyboards between several languages and with English spelling control. This happened in 1981-82.

Since then I lost count of printing devices I used – they were replaced in an incredible pace: matrix printers, wheel printers, ink-jet printers, laser printers with different resolutionñ etc. etc. The development of printing technology was - and still is – incredible.

Man does not live with bread alone
(Íå õëåáîì åäèíûì æèâ÷åëîâåê)

In 1978 – twenty years ago – I founded in Stockholm the Charta 77 Foundation to provide humanitarian help to persecuted Charta 77 manifesto signatories and independent Czechoslovak intellectuals. The Foundation has developed – due to the solidarity of people in the West - rather well. It has soon provided regular financial help to several hundred people in Czechoslovakia.

In 1980-81 it becomes obvious than humanitarian financial help is not the only thing people needed in the country occupied in 1968 by the Soviet army. To quote the Bible: Man does not live by bread alone (íå õëåáîì åäèíûì æèâ÷åëîâåê).

The ideological censorship banned and destroyed thousands of book, papers, movies, theatre plays etc.

To keep the spirit of the nation alive in Czechoslovakia spontaneously started a huge production of samizdats. During the 20 years of the Soviet occupation much over a thousand samizdat books were produced.

For younger generation it might be necessary to say a few words about samizdat – a word of Russian origin which became – like perestrojka, trojka and others – commonly used in English and other western languages.

In the Czechoslovak samizdat manuscripts of books were typed on typewriters with 10 carbon copies on à thin paper, neatly bound and distributed. Of course, the circulation of these books was very limited and manufacturing of a new edition was very laborious.

Hundred of these samizdat books were smuggled out from the country and published in émigré publishing houses in Germany, Switzerland, Great Britain and Canada.

Publishing these books abroad was not an easy and safe task.

First of all, one had to smuggle the manuscript out of the country. Due to the vigilance of the ideological frontier guards looking more for a written word than for drugs or pornography it was not trivial to bring the manuscripts out and people were actually arrested and sentenced for doing this.

Secondly, it was necessary to set the book from often almost unreadable manuscript which created problems and mistakes.

Third, it was impossible to send proofs to authors. Consequently, the

Czech and Slovak books published abroad were full of errors and misprints.

Fourth, it was again difficult and dangerous to bring the printed books back to the country to their readers.

We have been looking for possibilities to change this situation. Several alternatives were considered: Copying machines, electric typewriters to produce more copies, electric typewriters with memory to print a new “editions” without retyping the whole manuscript.

Use of copying machines was, according to the existing legislation, illegal, the machines and toners and spare parts were difficult to get into the country, people using these machines were arrested and sent to jail etc.

The electric typewriter with or without memory was obviously just an interim solution.

In about 1983 we realized that one could find a completely new solution: a Personal Computer.

Computerization of Samizdat

Personal computers were so new that the communist party and the legislation in Czechoslovakia, and probably also in the rest of the Soviet bloc, were not aware and not prepared to meet the potential danger of computers for closed societies. The more unprepared since the production and the use of PC’s in the Soviet bloc was practically not existing.

Already in the beginning of eighties the situation with PC in Czechoslovakia was so catastrophic that the authorities were ready to attempt to improve it at least somewhat by tolerating import of PC’s. This was the legislative gap we decided to use.

The custom duties for PC’s were low, and sometimes just reflecting the ignorance of authorities. In about the middle of eighties the custom duty to be paid was related to the RAM memory. By taking out the memory chips it was possible to import a PC practically without any duties. The liberal attitude towards PC was even extended toward printers.

Why the personal computers were so attractive for samizdat?

- First of all they provided completely new approach to typing and editing texts
- They provided an easy and safe way of copying and distributing manuscripts and preserving them from Big Brothers vigilant eyes
- They provided an easy way to smuggle the manuscripts out of the country

- They allowed the authors to be fully responsible for proofreading and the final form of the manuscript
- They were preparing the powerless Czechoslovak intellectuals to be acquainted with fundamentals of modern communication technologies
- Introduction of Laptops provided another important dimension – a mobility

However, introduction and use of all these beautiful and attractive features of PC's in parallel structures was not an easy task.

The western computers were based on ASCII norm (ASCII means **A**merican **S**tandard **C**ode [for] **I**nformation **I**nterface). ASCII table contains 256 characters.

The first half of it, from 0 – 128, contains numbers, letters, and the most common signs and special signs used for computer comands like @, *, escape etc.

More special graphical signs and also special letters of some West-European languages (like aA, öÖ, äÄ, ß,¿, çÇ, æÆ etc) were placed in positions between 128-256 .

The Czech and Slovak languages possess many letters for which it was no position created in the original made in USA ASCII table:

The Czech language ìÌ šŠ èÈ øØ žŽ ýÝ áÁ íÍ éÉ úÚ ù Ù óÓ òÒ ïÏ •• òÒ

The Slovak language in addition also àÀ åÅ ¾ôÔ etc.

Obviously, it was impossible to produce literate Czech and Slovak texts with the existing character generators in 286 computers manufactured in the middle of eighties. The character generator was placed on a chip EPROM which – I am not sure that they are still used today – meant Erasable Programmable Read Only Memory. But EPROM's with Eastern European Characters were not available.

In 1983 I received financial means from George Soros for starting the samizdat computerization project.

The first thing I did was to contact the leading computer producers to ask them about their plans to design an EE PC. I contacted Ericsson and some other companies in Sweden. I even paid a visit to the director of the IBM ROECE Inc – office representing IBM in Eastern Europe in Vienna, Mr. Eugen Hahn. Neither the Swedish companies, nor IBM wanted to be engaged in such a project – all companies considered the idea to sell PC in Eastern Europe as a crazy and financially unsound project.

The graphical programs - like Lexicon, Ki-writer etc – were too slow, difficult to be exported, to be adapted for locally produced IBM compatible computers (Ryad series), used on typographical printing machines.

I succeeded to find a couple of computer fans – among them my son – who were ready to undertake the adaptation of PC to the Eastern European norms.

After long discussions the choice of positions for special characters and technical development two chips – one with Czech, Slovak and Polish characters, the second with Hungarian and Rumanian – was designed. The characters were placed on positions between 130-250, we have to learn how to shape the characters, we burnt the adapted character tables to EPROM and we replaced the character generator chip in the computer. The first models were produced even with a manual switch between different EPROM's which were placed on a little bridge with four EPROM's.

The creation of national keyboards was at that time, when DOS was still simple, not a difficult problem.

The next problem consisted in downloading EE characters to matrix printers. I remember that we have endless problems with IBM claiming that they are selling us downloadable printers. The technical personal in the shops was not well informed and we have to return several printers because they did not met the technical description.

The most popular word-processor at that time (1984) was WordStar 1.0. Unfortunately we discovered that this program was designed to use only the basic characters (under 128) and often collapsed when using characters above 128. I had many discussions with the staff developing WordStar in England trying to persuade them that their product does not meet our expectation. I don't think that we would succeed. Fortunately German, Swedish, French users had similar word processing problems and WordStar had to develop the version 2.0, where most of problems were removed.

OUT and IN

The first IBM 286 computer with eastern-europenized EPROM character generator was ready in summer 1985. It was inserted into the State-of–Art IBM PC. The following characteristics are still deep in my memory: hard disk 10 MB, two floppy disk station for 5,25 (360kB) inch disks, RAM memory was max 128 kB, oscillator frequency did hardly exceeded few MHz but I do not remember it exactly. It was accompanied with a downloadable Epson matrix printer with tractor. As the first recipient Václav Havel was chosen. When he heard about the tractor he sent me a panic letter telling that he has no experience in driving tractors.

When the computer was finally ready for shipment I suddenly discovered another serious problem: its export was subjected for US licensing as a strategic and sensitive technology.

I don't think that it would be difficult to send the computer out from Sweden. But I have chosen a 100% legality approach. It took me over three months to get an official waiver to so called COCOM regulations from Washington. To get an idea about the size of the problem I will name some people involved in helping to get the permission to send Havel a computer to Prague: US Ambassadors in Stockholm and Prague, State department in Washington, Swedish foreign office and many other good friends.

Finally, I got the waiver and we shipped the computer down to Prague. The custom clearing was done in few hours and Havel paid practically no custom duties since we took the memory out and he could declare a minimal one only.

This first swallow was soon accompanied by several dozens of desk top computers and by about two dozens of Toshiba LapTops (I have to note, that reprogramming the EPROM chip for Toshiba and getting him in was one of the hardest problem we had to overcome. It was almost impossible to buy special miniature EPROMs, a special device for burning the program into them was needed and finally 24 pins of the 1cm large EPROM must have been brazed to the plate).

The Toshiba LapTops became very popular and some of them are, 10-12 years later, still in use.

Let me state here that not only the president of Czechoslovakia, but even the Czech Prime-minister, the Foreign minister, Minister for Internal Affairs, the President of the Parliament and numerous others politicians who came to power after the velvet revolution, were using Desk-tops or Laptops received in the dissent time, in the first months in their offices. Because of their computer training before the revolution they were psychologically well prepared for a modern administration and communication.

A few computer were shipped also to Poland to the Polish-Czechoslovak Solidarity group and a few Toshiba Laptops to USSR (January 1988). I remember sitting in Andrej Sakharovs kitchen and asking him in writing as it was the habit of these years, whom I should give them. He discussed it with Elena Georgievna for a while and than I got answer written on a piece of paper: Lev Timofeev and Larisa Bogoras. Timofeev used the Toshiba LapTop and ink jet printer for printing his samizdat journal Referendum.

The beginning of EE desk-top publishing

During 1986-87 the EE exile norm and computers based on it became very popular in the Czechoslovak emigration in the West. Most of the Czech émigré publishing houses, journals and groups were using it.

The WordStar program was soon accompanied by specially adapted for EE Ventura program created in Vienna. Czech and Slovak spelling and hyphenation programs were also created in 1986-7.

In 1988 we were ready to start with the last stage of our computerization program: to publish abroad a manuscript fully prepared in Czechoslovakia. We have chosen a collection of papers, essays and forewords by Václav Havel. He prepared the complete manuscript, proofread it and sent it on diskette. In Scheinfeld, in the Documentation Center of the Czechoslovak Independent Literature the final lay-out of the manuscript was prepared using Ventura program and brought to a local typography equipped with Linotronic. The diskette was inserted and the linotronic started to produced films with Czech characters – the owner of the printing house could not believe his eyes.

The book ***Do rùzných stran*** was printed in the beginning of November 1989.

The first copy was brought to the author by the Swedish Foreign Minister Sten Andersson who came to Prague to deliver Václav Havel the Olof Palme prize on November 23, 1989.

Two days later the secretary general of the Czechoslovak Communist party Milan Jakeš resigned and the Velvet revolution became a reality and the personal computer project got à new dimension.