

# The effect of the political transition of Hungary on map publishing

László Zentai<sup>1</sup>

<sup>1</sup> Eötvös Loránd University, Department of Cartography and Geoinformatics, Budapest, Hungary

**Abstract.** During the Cold War era, map publishing was a strictly controlled state activity in the socialist countries. As the traditional cartographic production was a very infrastructure-demanding process, only large institutions, such as civil or military national mapping agencies were able to afford it. This was the situation in Hungary too, where only two governmental NMAs and a few other professional institutions had the suitable infrastructure to manage the complete map production process. However, practically Cartographia Company (the Hungarian Company for surveying and mapping) was the only map production organization in Hungary: they produced all kinds of educational maps, and all other types of maps for civil use.

The political transition process in Hungary in 1989 luckily coincided with the technological transition process from the traditional to the digital map production. In a relatively short time (2-3 years), cartographers formed small firms (mostly based on digital technologies only) or started a 'one-man firm' (sole proprietorship).

This was also the time when GIS started to become more and more popular in the country. As governmental institutions were not really dealing with GIS, there was much more space for real private firms in this field, though there were also a lot of small private firms in map publishing.

**Keywords.** Hungarian cartography, digital cartography, Cold War

## 1. End of the Cold War era

In 1946 the former British Prime Minister Winston Churchill delivered his famous "Iron Curtain" speech in Fulton, Missouri. The speech called for an

Anglo-American alliance against the Soviets, whom he accused of establishing an "iron curtain" separating the east part of Europe from the other parts of the continent. The answer of the Soviet Union was to establish Cominform (the Information Bureau of the Communist and Workers' Parties). Soviet leader Josef Stalin called the conference in response to divergences among communist governments on whether or not to attend the Paris Conference on Marshall Aid in July 1947.

The next decades were the time of Cold War (sometimes with real wars outside of Europe), where cartography had a specific role: there was an increasing need for larger scale and up-to-date maps. Finally, space technology and satellite images have totally changed the cartographic data collection methods, and these have contributed to the decline of secrecy in topographic mapping.

In the socialist countries, map publishing and map production was a strictly controlled state activity in the Cold War years. The traditional cartographic production was a very infrastructure-demanding process, therefore, only large institutions, such as civil or military national mapping agencies were able to afford. This was the situation in Hungary too, where only two governmental NMAs and a few other professional or educational institutions (e.g., the Geological Institute of Hungary and the Department of Cartography at Eötvös Loránd University) had the suitable infrastructure to manage the complete map production process. However, practically Cartographia Company (Kartográfiai Vállalat) was the only map production organization in Hungary: they produced all kinds of educational maps (school atlases, wall maps), city maps, tourist maps, country maps and globes for civil use. Thanks to Alexander Radó's (who died in 1981) professional-political background, his connections and international reputations, Cartographia Company had very good international relationships also with Western countries.

This paper focuses on the last years of the Cold War era, after 1985. Although Hungary was treated as the happiest barrack of the socialist countries ("Goulash Communism"), there was no liberalization in map production before 1985. Hungary launched a New Economic Mechanism in 1967, which gave producers the freedom to decide what and how much they produce and offer for sale, and also to establish commercial or co-operative relationships; however, most of the reform measures were cancelled or weakened due to Soviet pressure. This was the time when the recent civil NMA (Institute of Geodesy, Cartography and Remote Sensing = FÖMI) was established by re-organizing the old hierarchical structure, giving the supervision of civil cartography, especially the land cadastre to the newly named Ministry of Agriculture and Food.

The civil and military national mapping agencies had a stable structure until 1985, although the military mapping agency started to be re-structured continuously. We can state that there were no other map producers and map publishers in Hungary even in 1985. (As for orienteering map production, it was organized by the Hungarian Orienteering Federation in cooperation with the military mapping agency; however, these maps were only used for competitions and they were not for sale).

## **2. The time coincidence: start of the digital era in the Hungarian cartography and the era of political transition**

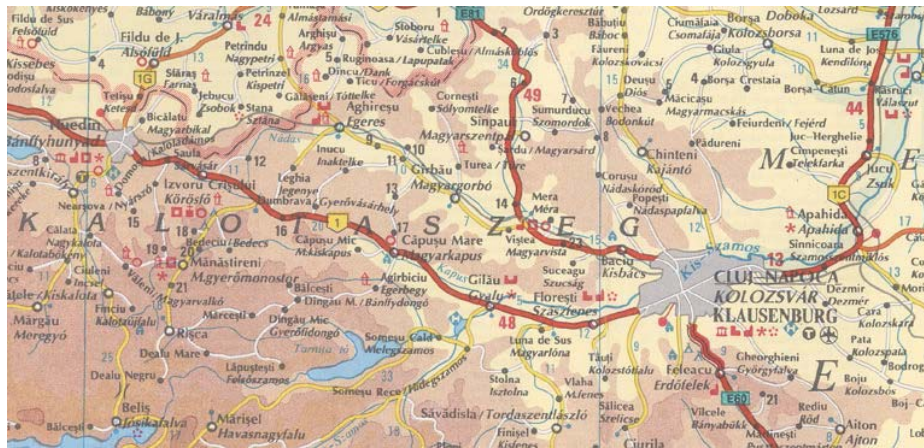
### **2.1. Business in the last years of the Hungarian socialism**

The economic difficulties, the slow growth of the economy, the decreasing level of the state investments forced the Hungarian governmental and political leadership to experiment with market reforms around 1980-1982. The experts not only suggested the improvements of state economy's efficiency, but were allowed to suggest changes on the property ownership, allowing private and partly private ownership for small firms (such ideas would not have been possible in the previous years).

The first Hungarian GIS company, Geometria Ltd. was established in 1986. Since its foundation, Geometria has had a determining role in network information and has been the leading service supplier of GIS applications in Hungary. The company developed alfaGrafik and topoLogic, their first basic GIS software, which reached significant success in various professional forums including the International Cartographic Conference in Budapest in 1989. This was the time when Geometria created the National GIS Basic Data-base (OTAB), which was the digital version of the 1:100 000 scale civil topographic map (all content except the relief). Completing the digital topographic map of the entire country constituted a very important step in the development of GIS in Hungary, although this database was yet not used for map production.

The Hungarian socialist system began transforming itself almost from its inception. After 1982, private entrepreneurs were permitted to cooperate in various forms of partnerships, and the formal private sector expanded dramatically. One of these forms was the so-called 'enterprise work team' (economic productive communities of the enterprise), which was in fact a private firm using the infrastructure and personnel of the company outside regular working hours. Cartographia Company also allowed such internal firms (after 1984), first of all with the purpose of giving their employees the opportunity to earn extra money and meet the large number of orders. One of the

most prominent examples was preparing the *Multilingual map of Transylvania*. This was a relatively large-scale map (1:400 000) of Transylvania presenting all city names in three languages (Romanian, Hungarian and German), published by the enterprise work team not to harm the sensitivity of the Hungarian–Romanian political relationships. This map was published first in 1991 only. The first editions were made by using traditional map production technologies (Figure 1).



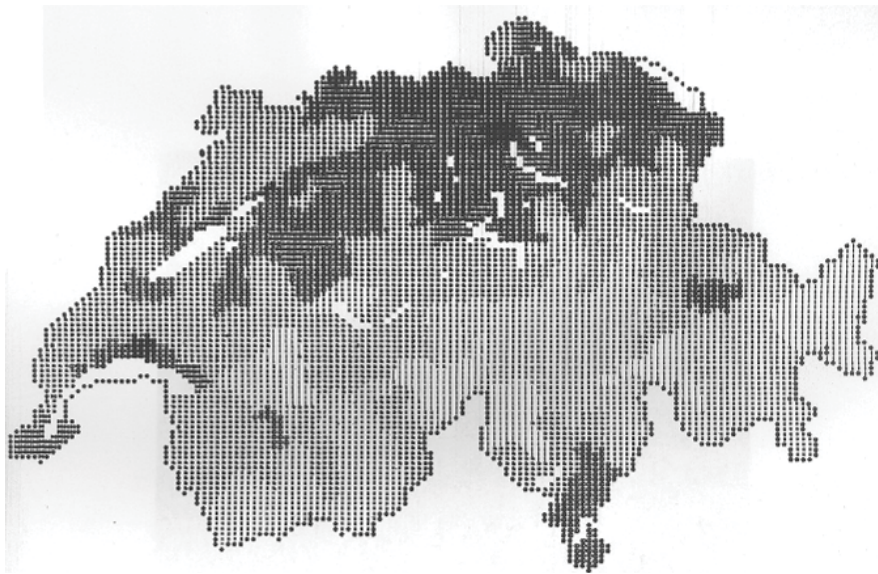
**Figure 1.** Multilingual map of Transylvania, first edition, 1991.

## 2.2. The beginning of digital cartography in Hungary

The first GIS software applications became available in Hungary in the middle and at the end of the 1980's. Although this was the last decade of the Cold War period in this part of Europe, the access to high tech devices (including computers) for the Soviet bloc countries was very much limited. The most developed Western countries formed the CoCom (Coordinating Committee for Multilateral Export Controls) to put an arms and different developed industrial technologies embargo on Soviet bloc countries.

One of the very first Hungarian cartographic/GIS software products was COMAPO, which was developed at the Department of Cartography, Eötvös Loránd University, Budapest, in 1972. The computational capabilities were good enough to manage analysis on different statistical data, but the main drawback was the lack of suitable output devices (printers). The COMAPO application was similar to the well-known SYMAP systems, which used line (dot-matrix) printers to produce thematic maps. Computer output, on monitors and printers, was limited to typical typewriter characters (letters, numbers, and simple ASCII symbols). These limited symbols could be used to create area patterns on maps. A modification of the line printer hardware and some programming allowed the overprinting of characters.

COMAPO was mainly the output system of an application which was developed by an institute of the National Planning Office (Országos Tervhivatal). This was a set of methods to print thematic maps which were created for analysing and researching regional planning data. The only method for producing such maps was the traditional (analogue) paper map production process, which was very time consuming. Although the digital method required very expensive infrastructure, on a state level they could afford for such equipment. Because these thematic maps were used for planning purposes and were not published in books or atlases, the low quality of visualization was not a problem (Figure 2).



**Figure 2.** COMAPO thematic map (Switzerland).

To start modern map publishing, Hungary had to wait until the personal computer era arrived. As mentioned, due to the CoCom measures, Hungary was not allowed to have access to high technology IT devices quite until the political transition process. Thanks to the IBM strategy on personal computers, which allowed the cloning of hardware components, it was possible to import the components and assemble a PC and sell it on the Hungarian market. This was they that companies and institutes were able to buy personal computers since 1985.

Cartographia started to use PCs in its map production process in this time, but their usage was limited to certain phases of the production:

- Phototypesetting machines revolutionized the typesetting of cartographic products, but converting this process to the computer-based platform was another challenge. Phototypesetting was particularly important for book and daily newspaper production, so when such service became available in Budapest, Cartographia started to manage the phototypesetting of their maps in this way.
- Maps with lots of geographic names (like World Atlas, Road map of Hungary, Budapest map) set another important task: to compile the index section. If all the geographic names were digitally stored in a computer environment, it was also logical to manage the sorting of geographic names in alphabetic order. In the case of the large world atlas of Cartographia, this job required the sorting of about 100 000 names; this used to be an extremely time consuming process in the analogue era.
- Probably, the first elements of paper maps where IT methods were used to produce a part of the printed map were the title pages of city maps or tourist maps. Formerly, these maps were printed by limited spot colours, but in the digital era the printing technologies were improved considerably and CMYK printing became widely used. This method allowed using colour photographs on maps, which first appeared on the title pages of the Cartographia maps.

### **2.3. The role of secrecy**

Secrecy has not really influenced negatively the map production process in Hungary in the mid or late 1980s. The topographic maps were classified, but soon after the political change both the civil and military maps became publicly available. In August 1989, I had the opportunity to visit Czechoslovakia together with the head of the Hungarian military mapping authority, who was very much surprised when we recognized that in Czechoslovakia the military topographic maps were already publicly available. This experience may have speeded up the process of the public availability of topographic maps in Hungary; even so, it took another year to complete this process.

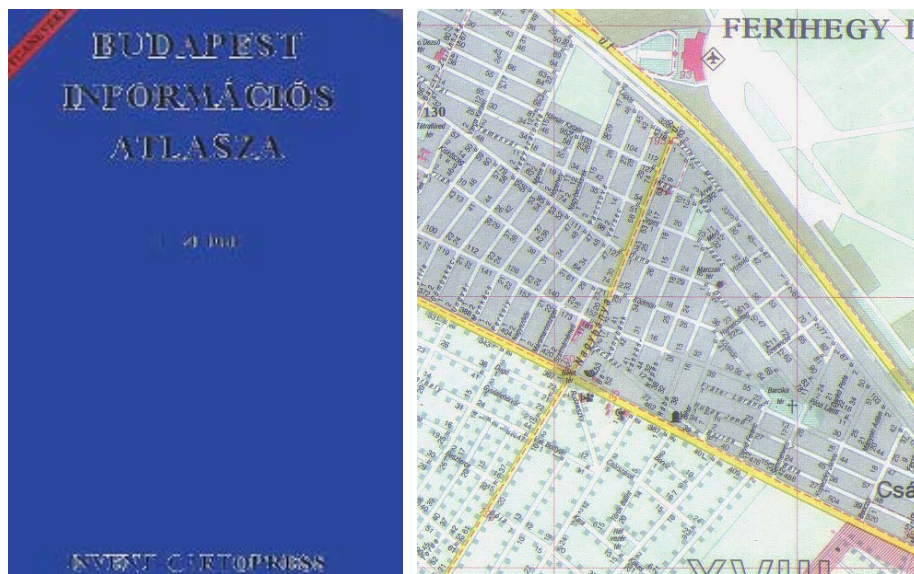
## **3. Private firms in map publishing**

The political transition process in Hungary in 1989 and the technological transition process from the traditional to the digital map production luckily coincided with each other. In a relatively short time (2-3 years), cartographers formed small firms (mostly based on digital technologies only) or started a 'one-man firm' (sole proprietorship). The digital technologies, however, were not yet suitable to manage the whole map production procedure

of larger projects, like road maps or tourist maps. With a very limited IT experience and skills as well as with less powerful computers it was possible to produce only graphically very simple maps.

It is worth mentioning that some maps (large map projects) were produced by new companies and alternative map publishers (rather marketing firms) using exclusively traditional map production techniques. The Multilingual map of Transylvania was mentioned as an example.

One of the most prominent examples was the production of a 1:20 000 scale atlas of Budapest published by a newly formed marketing company, which collected enough advertisement to finance the whole project. The map part of the atlas was created by a small group of individuals, who had just left Cartographia, where they were employed as map editors or draughtsmen (Figure 3).



**Figure 3.** The title page and an example of an atlas page (Budapest Information Atlas, 1990), published by Invent Cartopress.

As Hungarians were not accustomed to having the opportunity of buying maps from various companies, it can be stated that the market was not prepared for such liberalization. However, these small or one-man firms were very flexible to start publishing maps if their income did not depend on selling maps only. The most typical products of this time (1990-1995) were city maps, where the production cost was covered by the income of advertising.

### 3.1. Legal issues

One of the most prominent manifestations of the political transition process was the nearly complete change of legal measures. As the laws and decrees focused on the political issues in the first years, Hungarian cartography had to wait for laws on cartographic and surveying activities. Establishing the legal background of the new economic system was a most prominent change. Various forms of enterprises were made available at that time, and all cartographic firms had to select one of these businesses (these forms were changed in 1997, when Hungary started the EU membership negotiations and started to harmonize the national measures to the EU regulations):

- Sole proprietorship (self-employment): this form of entrepreneurship was really suitable for individuals to test their skills. This is a type of business entity that is owned and run by one natural person and in which there is no legal distinction between the owner and the business. The owner is in direct control of all elements and is legally accountable for the finances of such business.
- Limited partnership firm: these firms were mostly family based small companies. If the entrepreneurs had very limited financial resources, they regularly choose this form, but their general partner's liability was unlimited for the partnership's obligations.
- Limited liability company: it can be established with a predetermined amount of initial capital provided by its founders. The liability of its members was limited to the provision of the company's initial capital. As a general rule, members are not otherwise responsible for the company's liabilities. Due to the very limited capital, only few companies (mostly owned by foreigners) were formed in cartography.

An interesting, though embarrassing part of the measures was the policy of using state cartographic data. All firms had to pay a fee after publishing maps based on state topographic and cadastre data, and a similar fee was to be paid where such data were used in GIS environment. The most important objection from the private firms was that actually the national mapping agencies formed the state cartography and they formulated the measures. The private firms had to prove that they had not used state cartographic or GIS data when they published their maps, although the national mapping agencies mostly focused only on detecting the illegal use of GIS data. The national mapping agencies were allowed to pay a discounted fee when they used state cartographic data (which was nevertheless created by them); this meant that one of the basic principles of the new political and economic system, the compet-



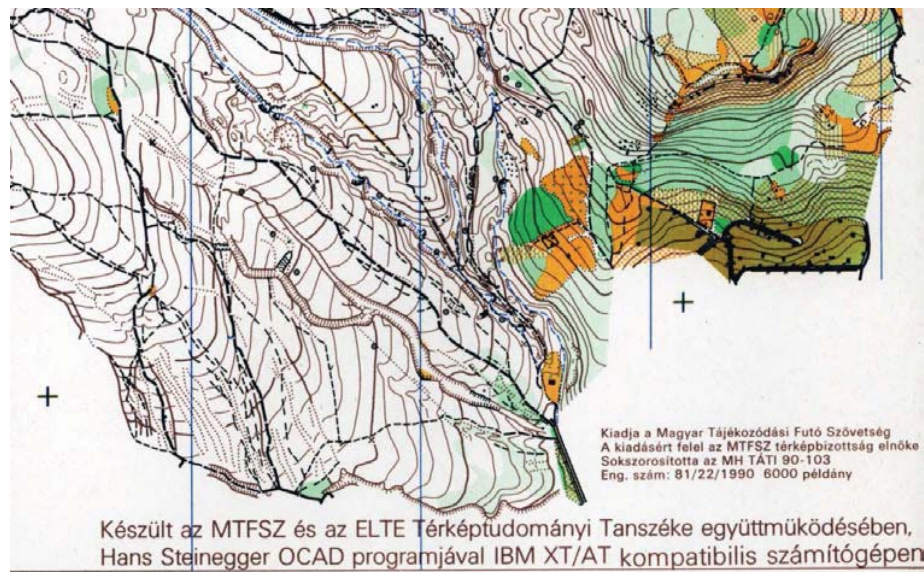
itive neutrality, was damaged. However, the small firms had only limited opportunities to squeeze the measures, and even nowadays this principle is still valid in similar measures.

### 3.2. General observations

The most prominent observation on the Hungarian cartographic firms in these years is the **large number of firms**. It looks that the freedom given by the political transition was not just a feeling of the freedom in the private life, but also the freedom of enterprise. A lot of employees (mostly graduated cartographers, editors) felt that they had their own ideas which were worth dealing with in an independent company. Most generally, the majority of these early firms employed only one or two persons. These small firms or individual enterprises mainly concentrated only on a specific segment of map production and tried to guarantee their business share on that small area. Very few of these early firms existed for more than five years.

On the other hand, the number of published maps increased dramatically. Lots of city maps, recreation (biking, water sport) maps of smaller areas were published; the more experienced the map makers were, the most chance they had to publish the most profitable products: the road network of Hungary and the street map of Budapest. The firms soon realized and understood that the market was limited: no matter how many firms would publish new maps or atlases, the number of sold copies would be about the same. Another experience that they had to learn was that the selling of maps was a business different from map making, and that the income cannot be regularly realized by the map production company, but by the marketing firm.

The **first digital map** where the complete technological process was already digital was an orienteering map (Lajosforrás, 1990) drawn by the author, though it had only minor effect on other map publishers (Figure 4). A map drawing program developed especially for orienteering maps was released in 1989. Orienteering maps have a unified map specification all over the world, so this software was suitable for all countries. (First of all, because there are no texts on orienteering maps, so the software developer did not have to deal with handling text, which would have been a quite complicated task in those years). It is important to note that creators of orienteering maps switched to making their maps completely digitally in less than five years, although the number of orienteering maps published annually in those years was somewhat more than thirty. As soon as computer printers became more powerful and affordable, more and more orienteering maps were printed by computer printers instead of offset printing.



**Figure 4.** Part of the first Hungarian digital map (Lajosforrás orienteering map, 1990).

The **first digital city map** was produced by a German-owned company (Katicom Ltd.) in 1991. The company was not really present on the Hungarian market: they produced only German city maps (making use of the much lower salaries of the Hungarian employees). This city map represented Hévíz, a small Hungarian city, a famous spa. The company used Apple-McIntosh computers, which were not easily purchased in Hungary due to the constraints by the CoCom list. Probably, this was the first company in Hungary which used general graphic software for map production.

These small firms were much more flexible than the large Hungarian map producers. It took much longer time for Cartographia Ltd. and for the national mapping agencies to change their production line from analogue to digital. It is also true that some of these one or two-men private companies still focused on analogue maps. They were partly elderly people, who thought they would not want to invest in buying computers, or they simply thought that it would be too complicated for them to learn using computers. Even till the end of the 1990's, these very small firms were able to find analogue jobs, but doing this job was not enough for most of them for survival.

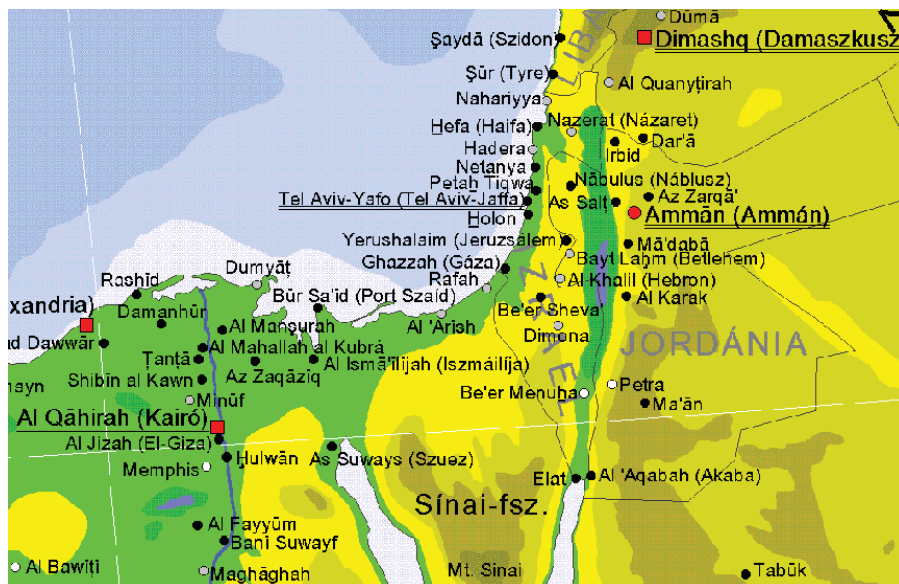
### 3.3. Major firms of the early digital years

**Cartographia** was still the dominant map production company of Hungary. For several years Cartographia had been a state-owned company, which was sold only after 2000. Cartographia produced its first totally digital map in 1992 (A Dunakanyar információs térképe). To convert their existing maps

into digital form took several years. As tourists maps are complicated maps, both their digitizing and updating were very much time-consuming; this is why the production of tourist maps remained the 'privilege' of Cartographia Company for several years. There were, however, a few tourist maps produced by other companies (for example for Transylvanian areas).

- The first important private cartographic firm was **Agát-Topográf Ltd.** Most of the four founders of the company were former employees of Cartographia. They started to produce city maps in the first years: maps of smaller towns, especially places around Budapest, like Törökbálint, Herceghalom, Budaörs, which did not have maps in the previous times (Cartographia published maps for larger cities only). This was not only a map production job, because the firm also had to find enough advertisers to finance the publishing of maps. The map production in the firm was based on Apple-McIntosh computers.
- **Dimap** was founded in 1994, though the key person was already active as a sole proprietorship after 1990. It had only very few employees (former Cartographia employees, who initiated the publishing of the already mentioned Multilingual map of Transylvania) and produced mostly Hungarian city maps and maps of Transylvanian regions. This firm created the first digital map and atlas of Budapest (1995) and atlas of Hungary (1996), which were different from those of Cartographia. Their key software for these two atlases was AutoCAD; later, they began to use other graphic software to produce their city and tourist maps. From 1995 they began the collaboration with the Hiszi-Map (see below) to produce a series of county atlases of Hungary. The first one (Békés County atlas) was published in 1995.
- **Hiszi-Map** was also formed in 1994. They made county atlases, including maps of all villages and cities. In some years they produced the maps of all Hungarian villages. These maps were made mostly by non-cartographers, and their maps were not really suitable for GIS systems, although there was a need for such database.
- **András Szarvas** has been acting as a private cartographic publisher, map maker and map trader since 1991. He has more than 100 titles (Hungarian hiking maps, city maps, road maps and atlases of Eastern European countries, World atlases etc.). His maps were regularly reprinted, and by now his name is a kind of brand, mostly because his maps have been available in several shops. He formed one of the first webshops for map trade.

- There were few GIS companies which were interested in map production (not in the production of paper maps, but some other products). It is important to mention the **first Hungarian cartographic CD-ROM**, which was a vector-based World Atlas created by a GIS firm, Rudas&Karig Ltd., and the Department of Cartography, Eötvös Loránd University in 1994. This product preceded its age, because there were only few CD-ROM drives in Hungary; this explains why very few copies were sold (Figure 5).



**Figure 5.** A screen shot of the CD-ROM World Atlas. It was a real challenge to represent all special characters in PC environment in 1994.

- Although maps are rightly considered culture-related products, only a few **foreign companies** tried to find a map production business in Hungary in the early years of digital map production. They soon recognized that the difference between the price levels of Hungary and the Western countries was too large at that time, so it was not profitable for them to “convert” their home (Western European) products and sell them in Hungary, because the prices would have been too high for the Hungarian market. Nevertheless, larger cartographic products, such as world atlases and hand books were translated into Hungarian. This was a kind of market for small Hungarian firms as all geographic names had to be translated or transformed into Hungarian. Such products were not quite successful at that time: they were published only once, and the foreign companies were not

able to realize enough profit to re-publish the book or atlas. Their attempt rather turned out to be a financial loss. It took several years for the Hungarian market to be matured: such products (world atlases) became successful after 1999, but few atlases were already published in 1991-92. Exceptions were also the school atlases: the first foreign-based company school atlas was published in 1994.

#### 4. Conclusion

It was a strange coincidence that the political transition process and the process of changing the analogue map production technique into digital happened at the same time, around 1985-1992. The political transition process made the establishing of private companies available, but without the technical opportunities of desktop map production even the most experienced individuals would have not been able to manage the whole process.

One of the most important reasons of writing this paper is to have a written documentation of this era from the eyewitnesses. Most of the information in this paper were collected in interviews (oral history). The private firms were not interested in writing a scientific paper: they were busy to learn how to survive in the business environment, where most of them had no practice at all (maybe they did not even want to share their business experience with their rivals).

#### ACKNOWLEDGEMENT

The present study was sponsored by the Hungarian Scientific Research Fund (OTKA No. K100911).

#### References

- Reyes J (2006) Multimedia Cartography for Hungarian pupils, In: Zdravko R (ed.) Modern technologies, education and professional practice in Geodesy and related fields. Prague: European Academy of Architecture (EUROARCH), ISBN:80-903478-3-5, 240-248.
- Zentai L (2014) The Evolution of Digital Cartographic Databases (State Topographic Maps) from the Beginnings to Cartography 2.0: the Hungarian Example, Modern Trends in Cartography, Selected Papers of CARTOCON 2014, Editors: Brus J, Vondrakova A, Vozenilek V, ISBN 978-3-319-07926-4, 81-92.