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A NEW SYSTEM OF SCHOOL MAPS AND ATLASES  
IN CZECHOSLOVAKIA

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The cartographic production in Czechoslovakia after World War II proceeded in three main stages of development.

The first stage, between 1945 and 1954, may be characterized by the use of pre-war maps made by various authors. The production of this stage is typically represented by the School Geographic Atlas by Šalamon and Kuchař /Publishers Orbis Praha/. School wall maps were printed and published by the State Pedagogical Publishing House, but their authors failed to retain a uniform concept and provide a linkage to the atlas currently used in schools.

The second stage in the post-war development of Czechoslovak school cartography was opened up by making it a centralized enterprise in 1954. In the 50's Czechoslovak educational authorities compiled new curricula and programs and edited new textbooks required by the expanding socialist educational system. This was also reflected in the production of three new geographic atlases by Czechoslovakia's centralized cartography during five years. In accordance with the national policy of the People's Democratic Republic of Czechoslovakia, two atlases appeared in Czech and Slovak languages and the one designed for low classes in basic education in the languages spoken by national minorities.

This set of atlases was intended for teaching geography at the primary and secondary levels. It was opened up by publishing the School Geographic Atlas for four - and five-year courses with the aim of showing the pupils the ways in which reality is interpreted cartographically, cartographic symbols, and also providing basic information on Czechoslovakia and the world. The children attending the six- and seven-year courses were taught world geography by means of the School Geographic Atlas containing general geographic, physical, political and thematic maps of the world, continents and European regions. It also included the solar system, examples of topographical maps, landscape types and their illustration on the map, and also geographic astronomical



tables. The atlas concluded with a register of geographic names. Its content was designed with a view to teaching world geography in secondary schools as well. The set terminated with the School Geographic Atlas of Czechoslovakia for the eight-year courses in basic education. Thirty-six map sheets of the Atlas showed basic physico-geographic data on Czechoslovakia, its climate, geology, reserves of economic deposits, agriculture, industry, transport, and demography. Maps and cartograms on a scale of 1 : 1 250 000 /a topographic map of Czechoslovakia/ to 1 : 5 000 000 were included. The diversified topics and content shown in the atlas also proved valuable to the students taught geography at the secondary level.

The wall school map continued to follow the pattern used in the previous map production, were supplemented by new data as required for teaching purposes, and served as a basis for deriving a set of handy maps.

For the first time the teachers demanded that the pupils' active handling of the map be developed. To this end, outline maps were produced together with geographic exercises containing maps selected from the school atlases to train the pupils in geography at school, in geographic circles and at home. These maps show drainage pattern, railroad, names of settlements, politico-administrative boundaries, and shading.

The set of cartographic guides to teaching geography was also complemented by new handy maps and three-dimensional tools, especially globes. The early sixties marked the rapid development of plastic map production for the educational demonstrative purposes.

This period of educational cartographic production made possible creation of the basic store of maps for teaching geography. At the same time, it provided the basis for checking these tools in the teaching process and for the work aimed at promoting further editorial activities. The purpose of this work was to set up a unified system of school cartographic

tools so as to encourage and increase their efficiency both in the instruction and in map production. The task was undertaken by a scientific team of the Research Institute of Geodesy, Topography and Cartography in close cooperation with production companies.

The proposal for the Unified system of school cartographic tools is based on the analysis of cartographic products currently used in schools, the general conditions issuing from the teachers' requirements for instruction, and the scheme both of cartographic production and of other scientific disciplines that contribute to map-making.

The following topics have been taken into consideration in formulating the concept of the system:

- education and instruction
- the standards of the system's content, the maximum coverage of the single topics, and the link between the single sections
- the content of cartographic tools, with special regard to the adequacy to pupils' age, stage of mental development, and educational standard
- methods of depicting topics
- standards of pedagogical psychology and school hygiene
- conditions stemming from teaching methods
- cartographic methods and techniques and conditions created for standardized map production
- the function of educational tools related to the teaching process and handling of map in instruction and education.

Basic prerequisites for using the Unified system of school cartographic tools are as follows:

1. The whole system is based on school map. The wall map is the most important aid in demonstrating reality; the map



included in an atlas is ready for use; and the outline map shown in a simplified form serves the purposes of active work as well as of strengthening the pupil's knowledge.

2. The system shall give a comprehensive and versatile picture of the world's geography in extending the knowledge of the homeland's life. It therefore depicts Czechoslovak regions in greater detail than the countries of both Europe and other continents.
3. The maps showing regions of the same order shall be drawn on a uniform scale or simply inter-related within the system. The same also applies to the scales used for the wall and atlas maps.
4. Cartographic projection must be chosen so as to obtain the lowest values of the angles, planes and lengths shown on a map; the network of meridians and parallels shall be as simple as possible and give an idea about the Earth's shape.
5. The whole system and each of its divisions shall be in accord with the content of the curricula and textbooks. It basically contains information given in the textbook and is complemented by the data required for making the teaching process up-to-date and encouraging the pupils to become individually interested in acquiring more profound knowledge of geography. The content of wall maps shall be in optimally full accord with that of atlas maps. Furthermore, the overlapping maps shall have a unified content with regard to the kind and scale of a single map. The symbols on the maps must follow the pattern used in textbooks.
6. Principal and typical features must especially be shown and clearly distinguished from less important phenomena on the maps. To this must be added the choice of map

symbols and colours. It is required to retain the principle of unambiguity for map symbols with a view to making them easy to remember. The way of depicting the features on the wall and atlas maps shall be uniform.

7. The map must be easily perceptible, easy to read and a distinction must be made between the colours without straining the eye under normal light conditions. The wall map shall be easily readable by the observer at a distance of 1 to 1.5 m from it.
8. The unification of both the scales and content, as well as of the methods of illustrating the map's content creates conditions for efficient technological production, standardization of paper and colour formats, and hence more effective cartographic production.

Our studies were checked experimentally on a large scale and resulted in a proposal of the system's composition, symbols and technological procedures used in map production.

#### A - School handy maps

##### 1. Atlases

- a) Geographic Atlas of the World
- b) Geographic Atlas of Czechoslovakia
- c) Atlas of Countries' Features

##### 2. Ready-for-use maps

- a) A set of Czechoslovakia's detailed maps /geography, history, economy, etc./
- b) A set of outline maps and geographic exercises

#### B - Demonstration tools

##### 1. Wall maps

- a) A set of world maps
- b) A set of maps of the continents /geographic, political and economic maps/



- c) A set of maps of countries /geographic and political maps/
  - d) A set of maps of Czechoslovakia
2. A set of maps for training purposes
  3. Three-dimensional tools
    - a) globes
    - b) plastic maps /continents, Czechoslovakia/.

At an early stage of the production emphasis was on the edition of a basic tool of the Unified system, that is, the Geographic Atlas of the World.

The Atlas contains 22 pages giving fundamental information on the universe, solar system, Moon and Earth. The physical and political maps of the world are included together with maps showing air temperature, rainfall, hydrology, climatic and vegetation zones, density of population, races and ethnic groups, exploration of economic reserves and main industrial regions, transport, soils and their use in agriculture. The thematic maps of the world are drawn on a scale of 1 : 200 000 000 and 1 : 80 000 000. The remaining 72 map sheets depict continents and the regions of both Europe and the U.S.S.R. in great detail. The continents are shown in the form of geographic maps and, except Antarctica, political and economic maps. Each continent /excluding Antarctica/ is shown on maps depicting topics such as climatic and vegetation zones, density of population, and nations plus ethnic groups. The large extent of Asia necessitated its subdivision into some regions shown on geographic and economic maps. The maps of continents are drawn at the basic scale 1 : 40 000 000 /Europe: 1 : 20 000 000/ and the thematic maps of continents at 1 : 80 000 000 /Europe 1 : 40 000 000/. The regions of the continents of Asia and North America are given at the



1 : 20 000 000 scale. European regions are shown on geographic and economic maps on scales of 1 : 5 000 000 and 1 : 7 500 000, respectively. The whole territory of the U.S.S.R. is at 1 : 20 000 000 scale and its European part at 1 : 10 000 000. There are only few exceptions to the scales mentioned above.

The three cartographic projections which were used in the Atlas are:

- polyconic projection for maps of the world
- azimuthal equivalent projection for maps of the Earth's hemispheres and continents
- equidistant conic projection with two parallels shown on principal scale for the other maps.

All projections are shown diagrammatically on the endpaper of the Atlas. The Atlas is supplemented by a register of geographic names and designations used for the Moon's forms. It appeared in Czech and Slovak.

The second atlas of the system is the Atlas of Czechoslovakia. Its content follows the pattern used in the Atlas of the World and leads the pupil to an understanding of the position of Czechoslovakia in the world and Europe; and shows him Czechoslovak territory in great detail. The maps of Czechoslovakia may be divided according to the topics into three groups:

- maps of physical features /mountains, rivers, climate, geology, pedology, phytogeography/
- demographic maps /population density, employment, national and age composition/
- economic and transport maps /industry, agriculture, energetic resources, railways, road, water and air transport/.

These maps were constructed on scales ranging from 1 : 2 000 000 to 1 : 6 000 000. Also included in the Atlas are the geographic and economic maps of Czechoslovakia at 1 : 1 000 000 scale, plans of Prague and Bratislava, and

an index of geographic names. The Atlas was published in both Czech and Slovak.

The two Atlases were issued together with wall and outline maps. The former may be divided according to their content and production technique into three groups:

- geographic and political maps derived from an Atlas map
- economic maps derived from an Atlas map and produced by combining the maps showing industry and agriculture
- thematic maps /maps of the world/ derived from an Atlas map and produced by combining topics depicted on some thematic maps.

The scale of wall maps is either four times that used on the corresponding Atlas map /maps of the world 1 : 20 000 000; U.S.S.R. and Asian states 1 : 5 000 000; European states 1 : 2 250 000 /or five times that used for the maps of continents /1 : 8 000 000/ and Europe /1 : 4 000 000/. The set of wall maps showing Czechoslovakia was drawn on a unified scale of 1 : 500 000.

Compilation and editorial work were facilitated, and full accord between an Atlas and wall map achieved, by drawing compilation manuscripts on the intermediate scale usually twice that of an Atlas map. An intermediate scale was also used for fair drafts by making negative scribing on the glass; filmsetting was employed for names. The planes were generally covered by a threecolour print /yellow, purple, azure/, Colour proof and revision were made on an intermediate scale as well. Line elements and lithographical masks were reduced and /or enlarged for an Atlas of wall map only after defects have been eliminated. This technological procedure has yet been used for producing more than 30 wall school maps which form an essential part of demonstration tools of the system.

The other elements of the Unified system of school cartographic tools in teaching geography are partly in production, partly still in the stage of development.



The aids in teaching history underwent similar phases of development as those used in teaching geography. After the geodetic and cartographic service of Czechoslovakia had been centralized in 1954 two new atlases were published for socialist educational system, namely, the School Atlas of World History and the School Atlas of Czechoslovak History. These were accompanied by a set of wall historical maps.

In the early 70's scientific research was initiated for the purpose of setting up a Unified system of school cartographic tools for teaching history. This system will consist of:

1. the tools for individual pupils' work /a historical atlas to be used in interpreting both world and Czechoslovak history/;
2. Demonstration tools
  - a) a set of synthetic wallmaps
  - b) a set of historical tables and cartograms
  - c) a set of monothematic map transparents.

As required by the Ministry of Education, particular attention is being paid to demonstration tools, especially the map transparents which permit the teacher to use an optical table. The system was therefore opened up by producing prototypes of three sets of map transparents for the following topics: World History in Classless Society, The Regional Development of Czech and Czechoslovak States, and CMEA Countries.

The Unified system of school cartographic tools is a comprehensive set of modern cartographic products based on pedagogical as well as didactical educational requirements and on extensive experiments made at the primary and secondary levels in Czechoslovakia. The results of such a long-lasting work carried out by research and developmental institutes and formulated in the system's principles, the scope, cartographic tools, and practical experience gained in production can all be used in a general way.