

NEW HISTORICAL ATLASES FOR EDUCATIONAL NEEDS

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Abstract

Bulgaria is a country with one thousand and four hundred years history and one hundred years tradition in cartography for education needs. But ten years ago only one state cartographic company was working in Bulgarian market as a monopolist. Its production did not change a lot during all fifty years of its existing. The new technologies connected with geographical information systems, the new ideas and cartographical concepts were alien for all cartographers working in this company.

Now the situation is changed and Bulgaria has free market. This fact has created concurrent firms making new, modern and more attractive atlases for children and education needs. The history as a subject in the schools also has developed itself and some new topics were represented in history curriculum and textbooks. The first lessons and historical maps appear in textbooks and atlases for school years 3 and 4 grade (ages 9-10 and 10-11, respectively) and the last ones - for school year 12, last grade of Bulgarian high school education (ages 18-19, respectively).

The proposed atlases, discussed in the report, are designed by the author and published by DataMap-Europe Ltd in Sofia, Bulgaria. They are designed for every school year of education and are accompanied with blind maps and wall maps for the most important periods. A technology for their creation includes GIS (Geographical Information System), rich geographical data base, historical sources and works with different specialists: history professors, teachers, GIS specialists, cartographers, artists, designers and specialists in pre-publishing and publishing process.

The first historical maps follow the logic and historic succession of studied themes for school years 3 and 4 (ages 9-10 and 10-11, respectively) of Bulgarian schools. They are connected with the reach history of Bulgaria. Each of the atlases for school years 5 and 6 (ages 11-12 and 12-13, respectively) contain about forty maps and every session is designed with different colour frame and starts by a chronology for the presented historical period. This is done for easy orientation in the atlases. The pages are designed accompanied by photos around the maps. This fact makes the atlases more interesting, beautiful and more informative school aids.

Some new topics are developed for the first time not only for Bulgarian but as well as for world cartography as a Trojan war, represented by Homer's poem. Another new element in creation of historical atlases and wall maps for Bulgarian education is the research questionnaire experiments with their users, students. The questionnaire is made with school year 5 (ages 11-12, respectively) students. The maps are prepared exactly for these ages. All results are analysed in the paper and on this base some corrections are made before publishing of the atlases. All atlases and blind maps are compiled under the instructions of school curriculum and have all elements represented in text books for every year. They are also approved by the Ministry of Education in Bulgaria.

The whole process of atlases' creation, from the idea to their publishing, is described in the report. The new developed topics are presented. They are well accepted by teachers, students and parents in Bulgarian market.

1. Introduction

We are living in a time of rich information society in a global world with many communication possibilities. Cartography is developing incredibly in the technology aspect. Old paper version products started to be not enough attractive to students. The tasks of cartographers have to find a closer way of communication with students in historical lessons and this could be achieved by quality information representation and attractiveness of cartographic products. In some studies we can find that the communicative map quality means the effectiveness to what extent the information transfer occurs. And all this could be a part of the total quality of a map with communication purposes. Also some authors speak about another aspect of cartographic quality as attractiveness of the map (Vansteenvoort Liesbeth, De Maeyer Philippe, 2005). Combining all these tasks and using curriculum in history, as well as a new design and high quality printing it is achieved the great students' and teachers' interest



Figure 1. Some covers of educational Atlases in a Poster

by the new paper version atlases for education on history in Bulgaria.

2. Presentation of the new paper version atlases on history in Bulgarian education

The atlases are proposed by Prof. Matanov (Professor on history in Sofia University) and the author of the report (Assoc. Prof. on cartography) and all process of their creation are led by the author. Designer-specialist is responsible for pre-publishing and publishing process. All products are made in a private cartographic company in Bulgaria and all of their description could be seen on www.datamap-bg.com. All of them are approved by the Ministry of Education and science and improved after experimental research with students. The pages are designed by different colours for every of chapters for better orientation in the Atlas contents.

The atlas “History and civilization” (32 pages, sizes 31x24 cm, published in 2007) **for school year 5** (ages 11-12, respectively) contains 40 maps. The topics are represented in four chapters: Ancient civilizations to IV c.; Bulgaria in Medieval, IV – XI c.; Bulgaria in XI-XIV c. and Bulgaria under Ottoman Imperia, XIV – XVII c. Every chapter begins with a chronology of the historical events. For this goal the time line is designed. The pages are compiled with photos for the represented historical period and they make the Atlas informative, nice and interesting school issue. A page from the atlas representation can be seen on Figure 2.

The atlas “History and civilization” (32 pages, sizes 31x24 cm, published in 2007) **for school year 6** (ages 12-13, respectively) contains 38 maps. The topics are represented in four chapters: Revival period of Bulgaria; Leaders of the Bulgarian National Revival, Bulgaria to middle of XX c. and Bulgaria after Second World War.

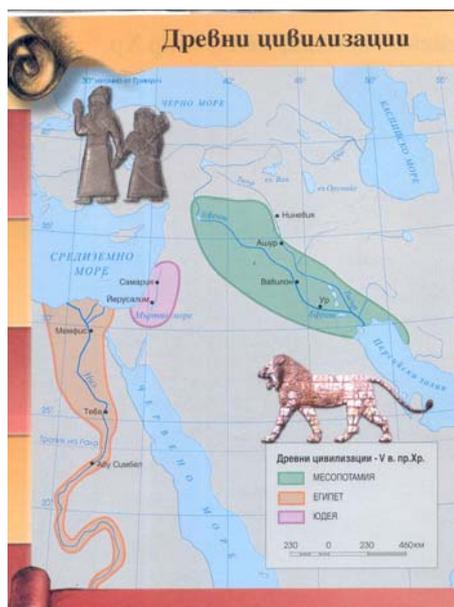


Figure 2. Ancient civilizations mapped in history atlases for school year 5.

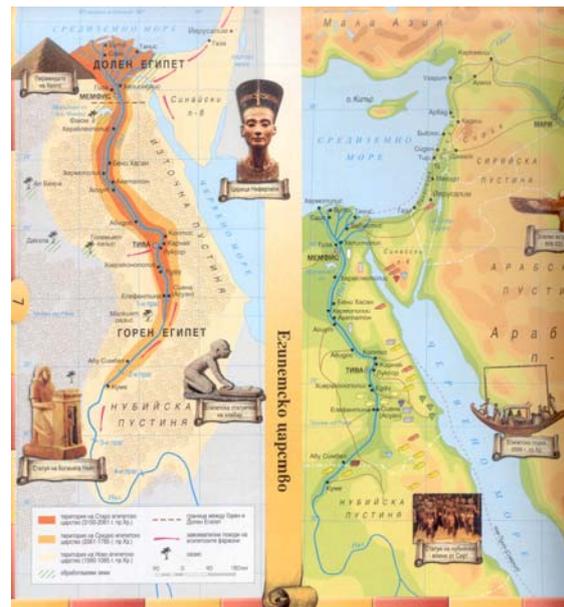


Figure 3. Ancient Egypt mapped in history atlases for school year 7.



Figure 4. A blind outline map for Persian Imperia for school year 7.

The atlas “History and civilization” (32 pages, sizes 31x24 cm, published in 2008) **for school year 7** (ages 13-14, respectively) contains 50 maps. The topics are connected with dynamic societies in prehistory and ancient world for the period IV millennium B.C. – V c. The maps are divided in the following chapters: Prehistory; Ancient East; Ancient Greece, Ancient Roma. Geographic Information System, computer generated shade relief, modern design and high quality paper publishing are used for map and atlas compiling. A page from the atlas representation can be seen on Figure 3.

The atlas “Blind outline maps” (16 pages, sizes 31x24 cm, published in 2007 / 2008) is designed **for school years 5, 6 and 7**. Every school atlas is supported by Blind outline maps. When students use them, some special skills for working with historical maps are acquired, space orientations is helped. For easy working with these maps, some short and clear tasks, instructions, indications, additional explanations are written. One example is that students can use blue colour only for hydrology representations. Other one is that arrows and symbols should be draw and colour in one and the same way and size on the map and on the legend. Places and instructions for legends making are also done. On this way the students can compile a map. In the beginning of each chapter time line is represented. Students have a task to fill in missing dates and events. An example of such map can be seen on Figure 4.

3. New ideas and maps in the Historical Atlases

The old historical atlases were criticised mainly by teachers in some directions: to many represented object from general geographic base, a lot of information represented in atlases for young students (for example, the history maps of Bulgaria for school years 5

and 11 have similar contents), too many symbols in common legend. The authors tried to avoid these difficulties and the new historical atlases are compiled on different way:

- clear general geographical base: only the biggest rivers and these ones with importance to theme of the map are represented, the shade relief replaced a lot of mountains names;
- different representation of one and the same theme for different school years: maps, compiling atlases for high school have more rich contents according to studied topics;
- not so many symbols (only the most associative ones, for example, symbols represented state border, city, capital, etc.) are represented in the general legend.

Other new idea for atlas compiling is connected to representation of specific themes in the Atlases. Such theme is the Trojan War which is not represented in any atlas or encyclopaedia. It is mapped according to information taken from the Homer's poem "Iliad". The result could be seen on Figure 5.



Figure 5. A map for the Trojan War published in the Historical Atlas for school year 7.

4. Research Experiment with Students

Four maps from the Atlas for 5th year of Bulgarian education have been chosen for research experiment. These maps represent a lot of information in the periods when our country changed its borders very often. This fact makes the represented information difficult for understanding and fast information extraction.

Because of this a questionnaire with nine questions were prepared for every of these four maps. The aim of questions is that cartographers should understand if students understand represented information and how fast they extract it. Fifty five students from school year 5 of their education took participation in the experiment. Some problems have been identified after receiving their responses:

- Students don't know some historical terms appeared in the legend text explanations;
- Students would like the represented period to be mentioned in maps' titles;
- The borders represented by hachure are uneasy for reading;
- The symbol representing battle is not enough visible;
- Stronger contrast between yellow and green colors which represent neighbor territories;
- Shade relief representing mountains is not enough clear for geographical orientation.

All these difficulties should be taken in attention and maps should be improved in the direction to minimize them. Other remarks came from history teachers, show not enough geographical understanding and they have not been accepted: for example the north direction was not represented additionally to the maps because meridians are the correct lines that show north direction. Other recommendation of history teachers was the text "Bulgaria" to be situated on the maps. The reason that I do not accept this recommendation is because all represented maps in the atlases are concerned to the Bulgaria as a territory in different historical periods.

Twenty six students from school year 9 also participated in the experiment. No problems in fast reading and map understanding have been indicated. The maps are enough clear and easy understandable for these ages. The conclusion is that for older students the maps could be complicated and more information could be represented for experiment maps.

5. TECHNOLOGY FOR CREATION OF NEW ATLASES

The methodology of atlases and maps creation is developed in its first version only as working steps in [Bandrova, T., Dinev, C. (2005)]. The proposed technology was working perfectly in the process of geographical atlas compiling. The atlases for geography cover all school years of Bulgarian education: from school year 1 to 12 and

the proposed atlases cover one or two school years. Here the complete technology is expanded with participants and used software. It is shown in Table 1 and the steps of it started from the idea and finished with pre-publishing process.

No	Working steps	Participants	software
1	Idea	author	-text editing program
2	School curriculum and its analyses	author, teachers and inspectors of history	text editing program, Excel
3	Atlas and maps' contents	Authors: historian and cartographer	text editing program, Internet
4	Currently statistical and text data and GIS cartographic vector data base	author, cartographers, historians, GIS specialists	GIS MapInfo, Excel, additional private software
5	Draft representation of the contents	author, cartographers	GIS MapInfo, Excel, CorelDraw
6	Test analyses on the base of student reaction and information extraction	author, teachers, students	text editing program, Internet
7	Atlas and contour maps compiling	author, cartographers	GIS MapInfo, CorelDraw
9	Modern design	author, designer, artists	CorelDraw, PhotoShop
9	Editor process and process of Approving by Ministry of Education	historians, inspectors	text editing program, Internet
10	Pre-publishing and Publishing processes	publishers	Pre-publishing software

Table 1 Technology for atlas creation consists working steps, participants and used software

The proposed software is used for creation of the paper atlases presented in this study. It could be replaced with similar software of other companies. Private software is done especially for atlases creation, respectively in specific topics as map projection which is suitable for world map presentation and it is not proposed in GIS market. Other specific software is produced for automatic generalization of available database.

6. CONCLUSIONS AND DIRECTIONS FOR FUTURE WORK

The proposed technology for atlas creation give a base for some different tasks and works on the base of paper version atlases and as well as of production of electronic version ones. Considering paper version atlases, the achieved results and cartographic products allow the following:

1. Updating of the atlases and maps in every new edition and publication;
2. Creating of similar atlases on different languages;
3. Creating of different thematic atlases.

GIS database and as well as computer designed atlases' pages allow developing of the technology to creation of electronic version of atlases for Bulgarian education. Facilities of such maps and atlases are described as dramatically changing of maps. Design of electronic atlas should response of the facilities. (Friedmannova, L., Konecny, M., Stanek K. (2005a) and (Friedmannová L., Konečný M., Staněk K. (2005b)). It means that the electronic version of the future atlases will not be simple production of raster versions of atlases' pages. The vector and raster data will be used for new designed view of the atlas included 3D models, animation, sounds and interactive cartographic work with GIS elements by teachers and students.

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