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## A website about map history for Hungarian pupils

*Keywords:* Cartography and children; map history in schools; web sites for children.

### *Summary*

The website site was developed to present basic concepts related to History of Maps for Elementary and High School pupils in Hungary. This homepage is the first member of a collection formed by three sites about three different themes (History of Maps, GIS and multimedia cartography). The research was divided into two main parts: first a theoretical study, second the design and making of the site. The theoretical research was initiated with the study of curricula, text- and workbooks of different subjects mainly related to Geography and History, in the interest of defining the content related to History of Maps that can be presented for the pupils. Later was determined the structure of the content, dividing the chosen themes in chapters or sections, redacting the texts of each theme and selecting the illustrations and examples to be included. Simultaneously was prepared the design and planned the structure of the homepage. This site was presented for the Hungarian teachers and pupils in different national events during 2005.

### **Introduction**

A long time ago the colleagues working at the Department of Cartography and Geoinformatics of Eötvös Loránd University aimed to popularize cartography for children and young people. Two events rise from the numerous activities programmed to reach this objective: the GIS Day organized every year in November and the Barbara Petchenik World Map Competition every two years. The making of educational cartographic materials in Hungarian language is also part of our activities. We can mention the multimedia CD “Map Tales” (published in 2003) and the “All about the maps” site accessible freely across the Web from 2001 (Figure 1):

(<http://lazarus.elte.hu/hun/dolgozo/jesus/gyerterk/princ/terktable.htm>).

In the “All about the maps” homepage you can find a chapter about history of maps. Its content is more detailed than the content about map history in school text books, but only a limited number of examples were presented within each historical theme contained in this homepage. One of the main aims of the present research was the more detailed presentation of the “History of Maps” chapter according to the map concepts learned by pupils in Hungary, that is: a) the planning and making of a separate site to present this topic, b) the determination of themes and the selection of appropriated illustrations and maps to be presented in the site and c) the search and selection of programming tools to create the website.

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## Theoretical research

### *Teaching of concepts related to Map History in schools*

During the last years we worked on different research projects to study the Hungarian curricula, textbooks, workbooks and school atlases to sum up the cartographic concepts taught in Elementary and Secondary Schools. After the detailed analysis of different curricula and specific themes presented in textbooks we concluded that Hungarian pupils learn basic map concepts between grades 3 and 6 of Elementary School. The major number of concepts is learnt in the 5<sup>th</sup> grade in the majority of Hungarian schools. These elemental concepts are reiterated shortly beginning the 1<sup>st</sup> year of Secondary School. Later they use these map concepts in their daily activities: first of all in geographical subjects (using maps and atlases in practice), but map use is included also in other subjects, e.g. in History [5, 8, 9, 10, 12, 13, 16, 17].

These basic concepts include also map history. The Hungarian pupils can learn separately map history only one time in Elementary and Secondary Schools: it is at grade 5, when the basic map concepts are presented in a separate chapter of Geography textbooks. We considered it very important to study how Map History fits in the geographical teaching process. We studied a selection of curricula, textbooks, workbooks and historical atlases that are listed in the references. The 1<sup>st</sup> table shows the concepts related to map history that are included (or at least mentioned) in Hungarian text- and workbooks. The starting point of this work was a previous research project made in 1998, when the cartographic content of school publications was analyzed to make the site "All about the maps" [12, 13]. In the table the results of this period are written using normal font. Five years after we got again the newest editions of these text- and workbooks to determine the changes occurred during this period of time. These changes (new themes added to the chapter about map concepts) are indicated with bold font in the table.



Figure 1. One of the pages dedicated to Map History in the "All about the maps" website.

BASIC CONCEPTS RELATED TO MAP HISTORY IN HUNGARIAN ELEMENTARY SCHOOLS	
TEXTBOOKS	THEMES
Környezetismeret (Learning about Environment) textbook for 10 year old pupils (4 <sup>th</sup> grade) Pauz-Westermann Publishing House, 2002	Chapter „Mapping of the Earth surface“: - <b>Babylonian clay tablet</b> - <b>Ptolemy's world map (Ulm edition, 1482)</b>
Természetismeret (Learning about Nature) textbook for 11 year old pupils (5 <sup>th</sup> grade) Apáczai Publishing House, 2003	10 <sup>th</sup> chapter „Orientation with maps and in nature“: - Title page: Lázár secretary's map (1 <sup>st</sup> map of Hungary, 1528) - Map sketches drawn in the sand by aboriginal people ( <i>only mention</i> ) - Stick map from the Marshall Islands - Mesopotamian world map from Nuzi - Turin Papyrus ( <i>only image</i> ) - Eratosthenes ( <i>only mention</i> ) - Ptolemy's world map ( <i>reproduction</i> ) - Tabula Peutingeriana ( <i>only image</i> ) - Middle Age: T-O map - 15 <sup>th</sup> century: Columbus and Magellan ( <i>only mention</i> ) - Mercator ( <b>Illustration: Mercator's world map from 1610</b> ) - Rule of the Netherlands and Germany in Map History ( <i>only mention</i> ) - Lázár secretary - János Zsámboky' Transilvania map ( <i>only mentioning his map made in 1571</i> )
Természetismeret (Learning about Nature) workbook for 11 year old pupils (5 <sup>th</sup> grade) Apáczai Publishing House, 2003	Chapter „Short history of Maps“: - Cross-word puzzle - Gap-fill exercises

Table 1.

*International experiences in the presentation of Map History: websites for children*

During the theoretical research we also visited those websites related to Map History and designed for children and young people. Our main aim was to know which concepts related to Map History are presented in these sites and which programming tools are used for their presentation. Some of the visited websites can be found in the “Links” chapter of the present homepage. Next some of them are listed briefly (Figure 2):

1. All about the maps: Maps then and now

[http://www.eoascientific.com/cartography/aaMaps\\_MI\\_thenandnow\\_Z.htm](http://www.eoascientific.com/cartography/aaMaps_MI_thenandnow_Z.htm)

A site about maps including an interactive timeline to present the most important moments of the history of maps:

- Mapping in the Ancient World
- Mapping in the Middle Ages
- Mapping in the Renaissance
- Mapping in the Modern World
- Mapping in the Future

2. The Atlas of Canada: Map Archives

[http://www.atlas.gc.ca/site/english/learning\\_resources/carto/index.html](http://www.atlas.gc.ca/site/english/learning_resources/carto/index.html)

A site presenting the history of the Canadian National Atlases. The visitor can see in a browser the maps of atlases made in different dates. This browse lets us magnify the image and the maps can be downloaded in a good resolution as a jpg or pdf file.



Figure 2. Collage of websites about Map History for children

3. A forma da Terra (The shape of Earth)  
<http://planeta.terra.com.br/educacao/formadaterra/>  
 Homepage about the history of the surveys made to determine the shape of our planet. It includes maps, images of old geodetic instruments, etc.
4. Descobertas e invenções portuguesas (Portuguese Discoveries and Inventions)  
<http://www.cienciaviva.pt/projectos/concluidos/inventions/caravela.asp?acao=cangelang&lang=en>  
 A short homepage including the methods used in surveys during the 15<sup>th</sup> and 16<sup>th</sup> centuries, presenting a brief characterization of the atlas made by Lopo Homem.
5. European Discoveries (written in Portuguese, English, French and Italian language)  
[http://encycloscience.eun.org/eun.org2/eun/en/index\\_encycloscience.cfm](http://encycloscience.eun.org/eun.org2/eun/en/index_encycloscience.cfm)  
 The previous homepage is part of this wider educative portal. This is a European project, which popularizes the European discoveries and invents, based on the active participation of the schools creating and designing this portal. In 2004 four countries (Portugal, Italy, France and Switzerland) participated in this project. Some pages are translated also into Spanish language. This portal contains the following homepages related to the history of maps: Cartography (Gerhard Mercator), Eratosthenes, Lopo Homem and survey methods.
6. Al-Idrîsî – la Méditerranée au XII<sup>e</sup> siècle (Al-Idrisi: The Mediterranean Sea in the 12<sup>th</sup> century)

<http://classes.bnf.fr/idrisi/index.htm>

Graphic presentation of Al-Idrisi's century, including his famous atlas, a detailed description of the Arabian geography and the T-O maps in the Middle Age.

#### *Determination of themes to present in the website*

Considering the content of Table 1 our starting reference, we determined the themes to be included in this new homepage. The result was a total of 39 themes divided in six chapters (the themes written with italic fonts are at least mentioned in the Hungarian textbooks):

1. Maps from the **Ancient Age**: Town Plan from Catal Hyük, rock map from Bedolina, *Mesopotamian world map from Nuzi*, Mesopotamian town map of Nippur, *Babylonian clay tablet*, *Turin Papyrus*.
2. **Hellas and Roma**: Pythagoras and the spherical Earth, Aristotle and Dicaearchus, *Eratosthenes*, *Ptolemy*, *Tabula Peutingeriana*, the first *T-O maps*.
3. **Early Middle Age**: Maps from the Middle Age, Monastery maps, Climatic zone maps, the Islam Atlas, *Al-Idrisi's works*, portulan maps, Catalan atlas, translations of Ptolemy's works.
4. The **Great Discoveries**: Portuguese discoveries, *Christopher Columbus*, *Discovery of the New World*, Cosa worldmap, Cantino worldmap, Waldseemüller and America, Piri Reis worldmap, Magellan and the circumnavigation of the Earth.
5. The **first atlases**: Mercator and Ortelius, *Gerhard Mercator's works*, Abraham Ortelius' works, Waghenaer's atlas.
6. The **first Hungarian maps**: the English Saxon map, Dulcert's portulan map, Cusanus and Fra Mauro, *Lázár secretary's map of Hungary*, details on the first Hungarian map, actual Hungary on the Lázár's map, János Zsámboky.

During the redaction of each theme we had to consider that the size of the homepage window should be fixed and the text should not exceed this window size. International research [7] certifies that children like better to read short homepages without rolling down. This research also emphasizes the importance of a similar proportion of text and images in homepages made for children and young people. Researchers found that in the specific case of homepages with long texts and few images a considerable number of the pupils did not read it all along. Based on these experiences, we decided to redact the content of our site using short sentences in an easy style and combining them with images.

#### **Making of the site**

##### *Structure of the homepage*

Two essential factors prevailed during the design of the site:

- The structure should be easily manageable by inexperienced users. Visitors should reach the desired theme with the fewest number of clicks using the mouse, and at any time they can return to the main page or the first page of the actual chapter.

- The structure, organization and design of this site should be familiar for users that have visited other homepages made at our department (e.g. the “All about the maps” site).

The website begins with an animated presentation, which can be omitted. The main page is formed by an upper and a left menu that always are visible. Starting from these menus the users can reach all the choices offered by the site (Figure 3):

- Upper menu: Here we can find a help that contains useful indications about the use of the homepage. Clicking on the “Links” label we can access a list containing the web addresses of other sites about Map History, mainly in English language. If we click on the “Térképtörténet” (Map History) title we always return to the main page.
- Left menu: Here are placed the icons symbolizing the different chapters of the site. These icons are similar to the images placed beside the titles of the chapters in the main menu. If we place the cursor over the icon, then appears the title of the chapter during five seconds. Clicking on the icon we can see the themes of the selected chapter on the main page. Visitors can send their opinions or questions by email clicking on the last bottom icon of this menu.

Clicking on the Copyright caption users can find a list of links to homepages that contains the original version of some of the images used as illustrations.

## **Technical solutions**

### *Graphic solutions*

The applied graphic solutions can be divided into three groups:

#### *- Edition of images:*

The two formats used for images were JPEG (Joint Photographic Experts Group) and GIF (CompuServe Graphic Interchange Format). This last format was used for those images that were designed in black and white or contain few colours. The more often used format to illustrate the chapters was the JPEG (a total of 134 images in this format and 56 illustrations in GIF format), because JPEG offers the more effective compression for colour images and it is a very wide spread format in the Web. Making the icons we used both formats in a similar proportion (32 GIF and 26 JPG).

#### *- Making of animations:*

The animations were designed in GIF89a format. This is the format used for easy animations, which contains images with few colours. In this format we presented (using different tween effects) at least three images related to that specific topic in only one separated window. These GIF animations can be accessed from the figures placed in the text. The introductory animation was made in Macromedia Flash.



Figure 3. Main page of the Map History site designed for Hungarian pupils

#### - Design of images maps:

The image map is an image divided in different areas. These areas are described using the HTML language, giving their coordinates in pixels and connecting them to an extern file. This file can be other image, HTML file, other homepage, video, etc. In this way, when the user clicks on the image map the connected file is opened in his browser.

In this site the image map was used to connect the different pages within a chapter, to access the next or previous page without using the main or the left menu (Figure 4). This image is composed by two angel heads blowing to left (previous page) and right (next page).



Figure 4. Image map used in the site

#### *HTML solutions*

The website was made using the HTML 4.0 language. The HTML file is based on the table structure. This structure insures the same design and organization of the content in any browser. The upper and left menus were delimited using this tool. In the main page the text is placed using tables without visible contours. The size of the browser window was defined in 650x650 pixels and it is constant: users can not modify it, because the window appears without the accustomed menus, icons and rollers of the browser. Using this solution the manipulation of the site becomes simpler and it is limited to the instructions explained in the help.

The use of JavaScript is fundamental for the presentation of more detailed and enlarged images in a separated window. We did not write a new Java Script subroutine to solve it: we found and modified a free module in one of the Java collections that can be accessed in the Web.

#### *Used software*

During the research we used the next software:

- Edition of figures and icons, preparation of animations: Adobe Photoshop, CorelDraw and different GIS software (ArcGis, MapInfo, etc)
- Creation of homepages: EasyHTML and Microsoft Frontpage
- Edition of animations: Ulead GIF Animator and Macromedia Flash
- Making of images maps: MapThis! software

#### *Future plans and web access*

Excepting the first chapter, this website focused the most important moments of Map History in Europe. The structure of the homepage let us widen the content with new themes. We would like to include new themes in a new chapter (or to create some new chapters) to present also the history of maps in other continents. At same time we plan to widen the Links chapter adding new web addresses: this chapter will be divided to several pages to keep constant the size of the window (see 3.2). The work has been presented in different events for Hungarian pupils and their teachers. This website is stored in the server of the Department of Cartography and Geoinformatics (Eötvös Loránd University) at the following address: <http://lazarus.elte.hu/hun/dolgozo/jesus/tt/tt.htm>

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