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RESTORATION OF THE SITE OF OLD MAPS, ENGRAVINGS AND PHOTOGRAPHS FROM THE CITY MUSEUM OF BELGRADE

Abstract. The purpose of this paper is to present the methods and tools used to adapt the outdated website of Old Maps, Engravings, and Photographs from the City Museum of Belgrade, built in the mid-1990s, to the modern web technologies. The Mathematical Institute of the Serbian Academy of Sciences and Arts initiated this project in 2019 and the upgrade was finished in March 2020. The adapted website is publicly available to visitors on the sub-domain of the Mathematical Institute.

1. Introduction

At the end of 1995, the Mathematical Institute of the Serbian Academy of Sciences and Arts initiated a pilot project with a goal to analyze and publicly present certain cultural objects through the means of the new electronic media. Apart from the obligatory equipment - an essential and principal prerequisite for work in accomplishing that task - it was also necessary to decide what kind and how many (number of specimens) cultural objects would be included, in order to represent them in the latest fashion to the public both domestically and abroad. After considerable examination, the choice has been to focus on two collections stored in the Museum of the City of Belgrade. A decision was then made to represent a selection of early maps and engravings to a wider audience, along with the author's selection of old XIX century photographs from the noted collections. [1]

However, an idea about publishing a catalog of engravings has always been present in the Museum. Unfortunately, it was not actualized due to insurmountable difficulties that appeared. The cost of such an endeavor was enormous - paper, prepress preparations, press, etc. Collections in various parts of the world, contained in libraries above all, had to be explored in order to resolve the heritage problem - the origin of engravings, taking over the motives, engraving copies, the type of their publishing, authorship, and all other data associated to similar endeavors. [1]

The electronic presentation was published on the CD along with a website that was hosted on the sub-domain of the Mathematical Institute of the Serbian Academy of Sciences and Arts. The original authors included: Žarko Mijajlović, Želimir Novaković, Miomir Korać and Zoran Ognjanović. The website was developed and realized by Uroš Milić, Katarina Tomašević, Saša Blagojević, Ivana Radovanović, and Ana Korać.

During the fall of 2019, it was decided that the original website, which had become outdated and insufficiently functional over the years, should be restored and adapted to the new web technologies. At the same time, it was also important that the look and feel of the old website remain the same, which eliminated the option of rebuilding the website along with its structure from the very beginning.

2. Changing the HTML structure of the website

The original website was built using the HTML4 standard for presenting its content. HTML4 was released by the World Wide Web consortium (www.w3.org) for web pages. HTML4 expanded upon HTML with mechanisms for style sheets, scripting, frames, embedding objects, improved support for right-to-left and mixed direction texts, richer tables, and enhancements to forms, all of which offered improved accessibility for people with disabilities. [2]

In order to preserve the look and feel of the original website, some of the HTML4 tags which have been since replaced in HTML5 (ex. frames and framesets) and which won't be supported in future versions of the modern web browsers, had to be properly updated to the new markup standard, since any removal of those elements would dramatically change the overall presentation of the site. Frames have been replaced with modern HTML5 elements and tags, such as iFrame elements. Therefore, the first part of this process was to replace these frame elements in a way that would not disrupt the presentation.

The markup itself was changed to fit the modern HTML5 markup. The general markup structure of the outdated website could be seen in a code snippet below.

```
<HTML>
  <FRAMESET COLS="*,510">
    <FRAME NAME="ind" SRC="sad/sad.htm" NORESIZE FRAMEBORDER=1 BORDERCOLOR="BCB4A0">
    <FRAME NAME="gl" SRC="sad/uvod.htm" NORESIZE FRAMEBORDER=0 BORDERCOLOR="BCB4A0">
  </FRAMESET>
</HTML>
```

Using HTML5 markup, the same page with the same content, but displayed in a markup that is supported by modern browsers, is illustrated in the following snippet.

```
<html>
  <head>
    <meta charset="utf-8">
    <title>Old engravings and photographs from the collection of Museum of the City of Belgrade</title>
    <link rel="stylesheet" href="style.css">
  </head>
  <body>
    <iframe name="ind" class="sad" SRC="sad/sad.htm" scrolling="yes">
    </iframe>
    <iframe name="gl" class="gl" SRC="sad/uvod.htm" scrolling="yes">
    </iframe>
  </body>
</html>
```

One impactful visual change was done to the width ratio between the menu and the main page. Figure 1 shows how every page on the outdated website appeared to the viewer. It is evident that not many websites today use this ratio of the side-menu and the main page content. The main content was condensed into a small part of the page and the side-menu - which should be used only for navigation and not take up too much space -was occupying more than half of the page. Additionally, some of the links displayed its content in the menu itself (ex. the information about the authors) while some of them displayed it in the main content area. This is counter-intuitive to the modern web-page design, which has strictly defined content areas. From the user experience point of view, this practice has generally become obsolete.

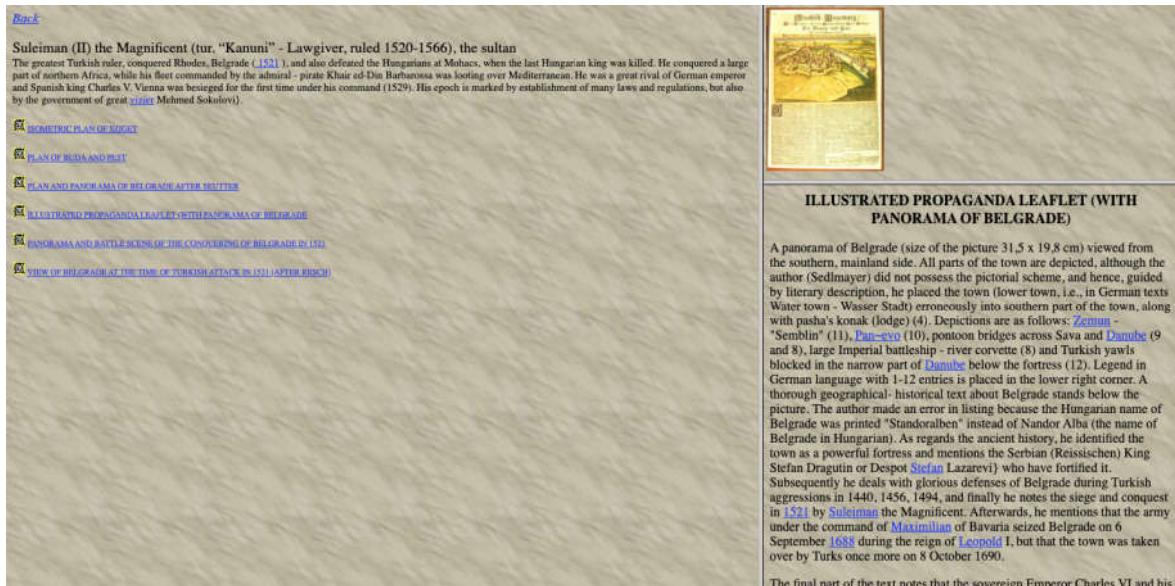


Figure 1. The width ratio between the menu and the main page on the outdated website

This wasn't ideal and one of the first goals after the initial update of HTML markup on the website was to change this appearance and make it more compact and visually pleasing to the eye.

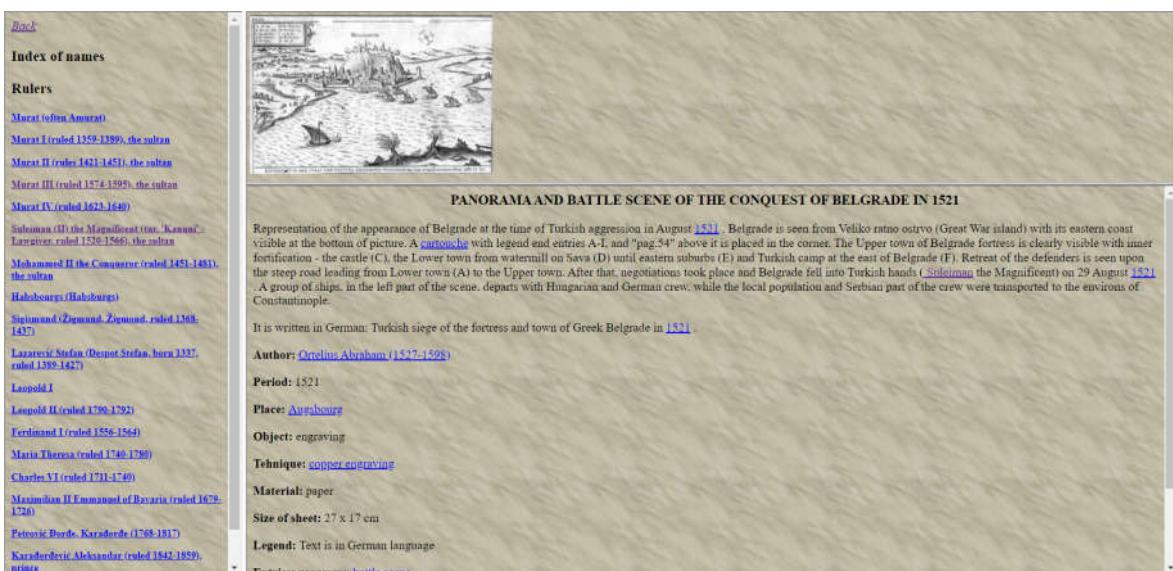


Figure 2. The width ratio between the menu and the main page on the new website

Figure 2 illustrates the changes that were made. The width ratio was altered in a way that the side-menu now took up only about 20% of the entire page, and it only displayed menus and indices. Any content about the authors or entries themselves was displayed in the main content area of the page, which now had much more space and it displayed the information to the website user in a more presentable way.

3. Changing the text format of the website

The second phase of the restoration process consisted of adapting the text characters to the new UTF-8 (8-bit Unicode Transformation Format) format.

The outdated website used YUSCII (Yugoslav Standard Code for Information Interchange) for 7-bit character encoding. YUSCII was an informal name for JUS I.B1.002 (Latin script, used for Serbian, Croatian and Slovenian language) and JUS I.B1.003 (Cyrillic script, with variants for Serbian and Macedonian language), national variant of ISO 646, 7-bit Latinic character encoding standard, and used in Yugoslavia before the use of later ISO-8859-2, Microsoft and Unicode standards became widespread. It was named after ASCII, having the first word "American" replaced with "Yugoslav" - "Yugoslav Standard Code for Information Interchange." It maintained the same codes for all essential characters and replaced a number of symbols with letters specific to languages spoken in Yugoslavia. [3]

YUSCII was originally developed for teleprinters but it also spread for computer use. This was widely considered a bad idea among software developers who needed the original ASCII such as {, [, },], ^, ~, |, \ in their source code (an issue partly addressed by trigraphs in C). However, an advantage of YUSCII was that it remained comparatively readable even when support for it was not available, similarly to the Russian KOI-7. This standard was especially important for Serbian Latin characters, such as č, č, š, ž, etc. These special characters were typed in using the symbols, such as @, {, }, ~, etc, and were then converted to special characters using the YUSCII encoding. Numerous attempts to replace it with a better alternative kept failing due to limited support.

Eventually, Microsoft's introduction of code pages, appearance of Unicode, and the availability of fonts finally spelled the certain (but nevertheless still slow) end of YUSCII.

Figure 3 shows how these special Latin characters are being displayed on modern web browsers.

Even though the text was still readable, and the words that contain these characters can be understood from context, this generally did not look pleasing and it had to be replaced by UTF-8 standard.

The naïve approach to solving this would be to just replace special ASCII characters that used to represent Serbian Latin letters in the YUSCII standard with those letters themselves. That, along with an HTML markup for using UTF-8 standard would work on servers that had been configured to display Unicode pages. However, that was not the case on the Institute server.



Figure 3. Display of Latin Serbian characters in YUSCII format in the new browsers

The correct way to display special UTF-8 characters (and among them Serbian Latin characters) is by using HTML codes that represent them (UTF-8 Latin Extended A). Every special character in Unicode has a unique code that tells the HTML parser to replace that code on the page with a corresponding letter or symbol. That means that a Serbian character Đ is represented in HTML as Đ. All the pages in the original website were converted to the new format using this technique. Figure 4 shows how those pages look like now.



Figure 4. Display of Latin Serbian characters using UTF-8 codes

4. Adding supplementary content

Aside from implementing steps to adapt the outdated website to modern web technologies, one of the new requirements in this project was to add another grouping category for all the entries on the website. The idea was to group entries in centuries, based on the time they were created. Therefore, all the entries were grouped into four centuries:

- XVI century
- XVII century
- XVIII century
- XIX century

Additionally, the website was expanded with Groman's photo album. Old photographs of Russian military photographer I. V. Groman have an important place in presenting Serbian views of the XIX century. The photographs are valuable for many scholars, often being a decisive, if not the only historical source about the period of their creation. Moreover, their artistic value must certainly not be neglected either. Groman is not well known, however it has been established that he arrived in Serbia after the outbreak of the Serbian-Turkish war (1876-1878). Photographs of the environment of Belgrade with many public buildings from the end of the XIX century predominate, along with those made at numerous battlefields of Serbia, i.e., in the valleys of Timok, Morava, then at Jagodina, Paraćin, etc. Besides Belgrade City Museum, Groman's photographs are also kept in the Military Museum in Belgrade, while photos from the library of daily paper "Borba" in Belgrade, it seems, are lost. Groman's work also exists in Moscow (in the former Central State Historical Archive of USSR). The importance of Groman's photographs may be appreciated if it is taken into account that the first photographs were created during the second part of the XIX century. His importance also may be confirmed if the interest of the learned and the wider public for pictorial evidence about Belgrade and Serbia in the XIX century is taken into account. This electronic album contains all 110 photographs from collections of the Belgrade City Museum and the Military Museum in Belgrade. [1] The album is available as a PDF download from the website.

References

- [1] Old Maps, Engravings and Photographs from the City Museum of Belgrade, <http://www.mi.sanu.ac.rs/muzej.beograd>
- [2] Web Content Accessibility Guidelines 2.0, W3C World Wide Web Consortium Recommendation 24 December 1999 (<https://www.w3.org/TR/html401/intro/intro.html>)
- [3] Russel, J., Cohn, R., 2012: Yuscii. Book on Demand, ISBN-10: 5511314358, ISBN-13: 978-5511314358.

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