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КИРИЛО-МЕТОДИЕВСКИ НАУЧЕН ЦЕНТЪР ПРИ БЪЛГАРСКА АКАДЕМИЯ НА НАУКИТЕ
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и информационните технологии**

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Сборникът съдържа материали от конференция, посветена на разработването и създаването на съвременни средства за съхраняване, описване, обработка, анализ и публикуване на ръкописни и старопечатни книжовни паметници и исторически извори, а също и на въпросите за подготвянето на електронни ресурси в областта на хуманитаристиката и тяхното използване в научните изследвания и преподаването.

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An Internet Portal for Watermarks

Emanuel Wenger

Watermarks, paper history, manuscripts, databases, internet, standardization

Watermarks are important for dating and identifying of manuscripts and documents on paper. Nowadays, the investigation of watermarks is a common practice in codicology and other research areas. This contribution presents the internet portal *Bernstein – the Memory of Paper*, a powerful tool for the search of watermarks and, hence, the dating of undated manuscripts.

The portal is multilingual (English, French, German, Hungarian, Italian, Russian, and Spanish) and allows the centralized, simultaneous search in twenty distributed watermark databases containing more than 200,000 watermarks.

Watermarks are important for dating and identifying paper manuscripts, documents, drawings, letters, prints, etc. The investigation of watermarks is a common practice in codicology and other research areas. This contribution presents a powerful tool for the search of watermarks and the dating of undated manuscripts.

Before the electronic age, watermarks were published in numerous printed catalogues in German, English, French, Italian, Russian, Spanish, and other languages, as well as in a huge number of specialized publications. The search and identification of a watermark in these many printed publications is time-consuming and quite often ends without any result. With the emergence of databases and the internet, scientists have begun to record watermarks digitally, add them to databases and make them available online. In the last fifteen years, a couple of such databases of watermarks have been put online. Now, instead of consulting many catalogues, it is now necessary to search in a growing number of databases. The building of a unified database of watermarks is nearly impossible because of different languages, traditions, terminologies and copyrights, and because of the lack of an accepted classification standard. The main idea of the project 'Bernstein–The Memory of Paper' is to build a portal which allows for simultaneous search across distributed watermark databases.

The portal is open to a variety of heterogeneous watermark databases distributed over the internet. A search operation through the portal is sent to all linked databases, and the responses from them are collected and passed to the user in the form of a list, a statistic summary or a map. The technical realization is done by gateways which translate a search query specific to each database and have permission to read the data from the involved databases.

The portal builds on Bernstein, a project financed by the European Union's eContent-Plus program from 2006 until 2009 [Rückert, Hodecek, and Wenger 2009]. At the end of the project (in 2009), there were four online watermark databases searchable by the portal; as of March 2014, the portal gives access to twenty databases with nearly 200,000 watermarks. The number of databases, and consequently the number of watermarks,

accessible online is continuously increasing. At the moment, additional databases from Russia, Hungary, Italy, Germany and Spain are in preparation for inclusion in the portal. This is a proof that the idea of building a portal was correct and successful.

A portal for simultaneous search across distributed databases must be open to heterogeneous data collections, but it must also provide some level of standardization in order to allow search queries over many databases. The watermark and paper history community is missing a globally accepted standard for watermark description and a unified terminology. One of the first steps of the Bernstein project was the harmonization of the terminology for classifying watermarks—work that continues as part of the German project WZIS. (While some watermark databases describe paper with and without watermarks using a standard from the International Paper Historians, not all do.)

The Bernstein project developed a multilingual vocabulary for watermark description in English, French, German, Hungarian, Italian, Russian and Spanish. All user interfaces are also implemented in these seven languages, with queries in the recommended vocabulary automatically translated for search in the distributed databases. For example a search for the watermark motif *Meerjungfrau* in German invokes also a search for *mermaid, sirène, sirena, sirena, cupena and sellő*. Bernstein has also search fields with geographic content, such as the place of usage, depository (library, archive, museum etc.) and the paper mill. The geographic names are also translated automatically.

Nevertheless, databases which do not conform with the vocabulary and systematics of motifs can still be connected with the portal and are searchable. This makes sense because besides the textual search fields like the watermark motif there are also numerical, language-independent search parameters such as the width and the height of the watermark, the distance of the chain lines, the density of laid lines, the date and the shelf mark.

References

- [Rückert, Hodecek, and Wenger 2009] *Bull's Head and Mermaid. The History of Paper and Watermarks from the Middle Ages to the Modern Period*. Rückert, P.; Hodecek, S., Wenger, E. (Eds.), Stuttgart and Vienna, 128 pages, 2009, ISBN 978-3-00-026960-8.