

“Bernstein” has been an innovating project of integration in the field of history of written culture. We could realize it thanks to the watermark repertories already available on the Web, and to older repertories which could be transformed into databases. Unfortunately, it would be difficult to transpose this experience to other aspects of written culture. On one hand, the incunabula databases which are available at present could constitute a good starting base; on the other hand, nothing could be done now in the field of medieval manuscripts, except for the indexation of the German manuscript catalogues.

At the end of the contract we signed in 2006, I’m clearly not in the position of judging the global results of our enterprise. The only thing I can say is that there are clear results under our eyes. For example, you just have to compare the things you can do today with those you could do in 2006, especially if you look at the digitalization of the repertories and their Web availability. We made a big effort for unifying terminology, languages and, at a lower degree, classification. As a result, an integrated portal now allows us to make simultaneous searches in all the available databases; we can also locate the attestations of use of the paper in space and time and obtain some elementary statistics on the selected watermarks.

Now, I’d like to underline that there are different levels of integration.

At the lowest level, integration means just that there’s a link between two websites. This is surely a very simple operation, but it can become very useful if the link doesn’t just redirect the user to another website. Concerning “Bernstein”, I’ll take as an example the interrelation between WILC and the incunabula base ISTC. In WILC, each watermark has a direct link not to ISTC in general, but to the corresponding edition; and more: each ISTC edition has a link to the list of watermarks existing in WILC which are contained in the edition itself.

The intermediate level of integration could be defined as “soft integration”. In this case, the different databases keep their original form and autonomy, but they can indirectly communicate with each other thanks to a thesaurus of terms and expressions. In particular, the search engine has to be able to make simultaneous selections of watermarks having the same characteristics in all the databases. In order to do this, the typological classifications and the paths which allow us to select homogeneous groups must be harmonized. This is the solution we chose in the frame of “Bernstein”, due to the necessity of obtaining exploitable results at the end of 30 months. It works well, which means that it matches the needs of those who want to find a precise watermark inside all the databases for dating a written document. We

can't give the user any algorithm for dating a document: he just consults a list of similar watermarks, for each one of which exists an attested date and place of use.

Yet performing, this kind of “soft” integration has big limits too. For example, a simultaneous search in different databases can only be made for fields which have compatible contents. But there aren't many fields of this type: just the date of use, the height of the watermark, the distance between the chainlines and the place where the document is conserved. So, it isn't possible to filter watermarks according to the type of document in which they are contained – like archive documents, manuscripts, printed books, artists' drawings. It isn't possible either to group them according to the degree of reliability of the date –which can be attested or deduced. This constitutes an obstacle for dating a document using watermarks contained in another, exactly dated, one; especially if the latter, as it often happens concerning incunabula, has been dated using... precisely watermarks! These limits are due to the heterogeneous structure of all these repertories, which were created in different periods, with different criteria, without mutual connection and partially before the diffusion of informatics.

The aim of the work accomplished in the frame of WP4 is to prepare an integration of the databases at a higher degree; I think that such a kind of integration is crucial for the progress of historical research both on paper and on written culture in general. Just on a technical level, it's not difficult to achieve a deeper integration; but since it implies very much work, this aim could be reached only in a long time. From a practical point of view, the aim of this operation is the following: the creation of a new watermark “hyperbase”, using the databases already available in the frame of “Bernstein”. This “hyperbase” would contain new repertories, too, and all information contained in it would be standardized in order to be compatible. For example: the creation of a field called “user of the paper” based on the “Aussteller” field of POL gives us the possibility of an interconnection with the “Printer” field of WILC, if each printer is always called in the same way.

1. So, we've digitalized some new repertories for an integration at a higher level: Briquet and Likhatchev, but also Heitz (incunabula from Strasbourg), Mazzoldi (watermarks of the Garda lake, which means venetian ones) and Wittek (manuscripts of the Belgian Royal Library). As you surely know, other initiatives on watermarks contained in Spanish and English incunabula are under way; if they conform themselves to the same solid and rational structure of WILC, they could be easily integrated. Furthermore, the watermark corpus of our Rome colleagues should be integrated, too; and finally, I want to mention the 30,000 watermarks which haven't been reproduced by Briquet and which are now stocked at Virginia University.

2. We deeply restructured POL, which is the database containing the biggest quantity of watermarks, yet not formalized nor standardized at a high degree: we fractioned the fields where different types of information are mixed; we unified those containing the same type of information in different forms; finally, we created some new fields developing implicit information from other fields.
3. The georeference system has been highly developed. It constitutes now a sort of “hub” which allows us virtually to represent every event related to history of written culture on one map, without regard for the source of the information. This system has already been programmed for working with other databases which contain a “place” field: it can be incunabula repertories, repertories of authors published in incunabula or repertories of pest epidemics.

At present, the “Bernstein” project and our financing source have almost finished; in relation with that, many questions arise on the future of paper history. This meeting is probably our last occasion for discussing all this together. So, I think we should discuss several issues and for each of them we should choose between two options: *status quo* or a gradual advancement, according to the means and the will of the participants. However, one or more institutions should in any case act as a “guardian”, in order to avoid the loss of the accomplished work. So, the questions are: will there be a “Bernstein” institution, in charge of managing our achievements, our advancements and some new projects? Who will be responsible for it and how?

1. *Management of the achievements*: The “Bernstein” portal has been created for being useful. So, it has to be visible for potential users and well-functioning. Also, problems will arise at the time when the portal will be used regularly, and someone will have to solve them. If not, and if this portal will be less rapid and less performing than each single database on its own website, the users won’t work on it and the whole “Bernstein” project will have been useless. This is a big danger at present.
2. *Adding new, already digitalized, databases*: new databases can only be added if they are compatible with the already integrated ones. In particular, the typological classification and the research paths should be the same. The Heitz, Mazzoldi and Wittek databases already have a compatible form; on the contrary, very much work would be needed for Briquet. And the interface should be ready for the integration of these databases, too.

3. *Digitalization of the new databases*: These operations would need new financing. Concerning those who have already received it, it's important to be sure that their structures are compatible.
4. *Creation of a historical "hyperbase"*: Personally, I'm ready to go on working on this, in collaboration with POL and with all other interested institutions. But it's clear that we will work at a slower pace. In order to avoid any misunderstanding with the managers of the already existing databases, I want to make clear that:
 - a. Changing the existing databases isn't our goal. If we will think that there could be some useful improvements for a database, we will propose them ready for use to its managers. They will choose if they want to integrate them or not.
 - b. Even if we improve the databases, the content of the "hyperbase" – text and images- will be kept confidential; it will be published only with the permission of each manager.

Finally, I'd like to express my personal satisfaction concerning the spirit of initiative and collaboration which has characterized "Bernstein" from its beginning. I'm really glad about it and this lets me be less pessimistic about the future.