

The Identical Books Project: The New Knowledge

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The Identical Books Project has brought a number of tangible and intangible benefits both to The British Library and to the wider library and archive world. The British Library has been established as a serious player in conservation research, and is a sought-after partner in national and international collaborative projects. The spirit of collaboration between the legal deposit libraries has been developed, and awareness of the role of conservation research in libraries and archives has been raised. Good relationships have been established with universities and small-to-medium sized enterprises (SMEs).

We should contrast this with the situation five years ago, before this project started. At that time, The British Library had just appointed its first Head of Conservation Research, and although the library had been involved in various research activities, for example, the long-running graft copolymerisation project and the use of Raman spectroscopy for the identification of pigments on manuscripts, it did not have its own research strategy and it did not have an established research reputation.

The British Library therefore developed a research strategy, and, with the assistance of the Andrew W Mellon Foundation, it convened a meeting to identify the major research priorities for libraries and archives in the UK. This was the first attempt to engage with all the legal deposit libraries (National Library of Wales, National Library of Scotland, Cambridge University Library, Oxford University Library Services, Trinity College Dublin Library) and national archives (The National Archives (Kew) and the National Archives of Scotland). The relevance of the conclusions was validated by the participation of a number of international experts, from Europe and North America.

We were then fortunate in obtaining funding from the Mellon Foundation for the Identical Books Project (IBP), which started in earnest in October 2006. At the same time, we had become end-user partners in the EU-funded PaperTreat and SurveNIR projects, and we immediately recognised the synergies between these projects and the IBP. Bringing background knowledge and access to the BL's collections, we were able to contribute to the analysis methodology and development of the surveying tool. This helped to increase our standing and led to increased international recognition of the BL as a serious research player and of the IBP as a worthwhile project. As a result, we were able to contract with the University of Ljubljana and Morana RTD to carry out analyses that we had not envisaged at the start of the project, again increasing the value of the results.

It would also be fair to say that at the beginning of the IBP, the legal deposit libraries had not considered that conservation research had a significant role in their activities. They were at best passive consumers of research, and were not equipped or staffed to carry out research on any scale. In the same way, conservators did not consider that research was part of their function. As a result of this project, some at least of the conservators have been able to take part, and have learned new techniques that they

can apply in their daily work. By holding meetings and training sessions, we have fostered contacts between conservators in different libraries, so that collaboration becomes a more natural part of their approach.

Finally, we have established productive relationships with our academic partners in the UK (the University of Strathclyde and University College London) and abroad (University of Ljubljana), and with three SMEs, Morana, Owlstone and Syft. The two latter companies make specialised equipment for volatile organic compound analysis which is much in demand for security applications, as well as in the petrochemical and food sectors, but they are choosing to work with us, even though we have little money, because they find the idea of analysing the smell of old books fascinating.

Amongst the tangible benefits we can count the gathering of a very well-characterised collection of 370 identical books in the six legal deposit libraries. These are not only a rich source of data for this project, they are an invaluable resource for future materials science studies, and for long-term real-time ageing studies. Books are not only important for the text they contain, they are a sample of a number of different materials of known age: paper, card, adhesives, textiles, leather ... Their present state reflects the environments that they have experienced and the pollutants that they have absorbed. By characterising their present state, we have a baseline for future studies of the evolution of their condition, or the degradation of the different materials they contain. Another study in 50 or 100 years time will reveal how the materials have changed and, if environmental and useage data are collected and retained, our successors will be able to relate these changes to the conditions they have experienced. Finally, the data relating to these six collections is part of a growing international corpus of research data. By making the data available for study we enable other researchers to make correlations and to draw conclusions that we had not considered, or to use the data for entirely other purposes.

We have characterised the storage environments at the British Library, at St Pancras and at the National Newspaper Library, Colindale, and the National Library of Wales, in terms of the average conditions and their variation, and the level of air pollution. As far as pollutants are concerned, historic data show that until the 1960s SO₂ levels in London were 5 to 15 times higher than in Aberystwyth, but that now the levels of pollutants (SO₂, NO_x, ozone) are similar. However, the books in the British Library will have absorbed more SO₂ in the past, and this will still be actively degrading the paper, in spite of the lower current levels.

We can see that the environment at St Pancras is very tightly controlled, so that all storage locations are essentially equivalent, while at Colindale the environment is not controlled and there is a very marked difference between different locations, which implies similarly large differences in the rate of deterioration in these locations. In general, though, the variations within sites are greater than the variations between sites, which makes it impossible to draw conclusions about the effects of the environment on individual books. In addition, the unrecorded movement of books within stores compounds the difficulties.

However, we can measure systematic differences in the average condition of books stored at the BL and NLW, and we can also measure systematic differences between books in the same collection. We have confirmed the value of non-destructive testing,

using the SurveNIR instrument, to estimate physical and chemical properties of the book papers. This has complemented the micro-destructive measurements that we have been able to make – pH, degree of polymerisation of cellulose, and fibre furnish – and has provided an additional independent verification of the calibration of the SurveNIR instrument. This increases our confidence in the validity of the results obtained using SurveNIR, and enables the estimates of the parameters to be refined.

Together with our colleagues at the University of Strathclyde, we have been working on characterising the volatile organic compounds emitted by books. We have used a variety of techniques:

SPME (Solid Phase Micro Extraction)

SATVA (Sub Ambient Thermal Volatilisation Analysis)

FAIMS (Field Asymmetric Ion Mobility Spectrometry)

SIFT-MS (Selected Ion Flow Tube Mass Spectrometry),

which have allowed us to estimate the total quantity of VOCs being emitted and to compare the range of VOCs captured by each technique, since each of the sorbents is selective to a greater or lesser extent.

Although this work is still in its early stages, we have demonstrated that there are differences in the VOCs emitted by identical copies of the same book in the different libraries, and that there are differences between different issues of annual publications such as Whitaker's Almanac. There is much more to be done to understand the significance of these differences.

We are very grateful to our commercial partners, Owlstone and Syft, who have chosen to work with us because they find the smell of old books interesting, even though they have much more lucrative contacts with the defence and petrochemical industries. We believe that their instruments have the potential to be the basis of a practical nose for sniffing books, although there is much more development work to be done.

So, finally, what are the main benefits that this project has brought? Apart from the collection of analytical data, and the creation of a research archive, there is no doubt that the collaboration between the library partners has been vital and rewarding. People have perceived the value of the work and have supported it wholeheartedly. The collaboration with the university partners has brought invaluable expertise, again vital to the success of the project, and finally, the project has generated real interest in the wider research community. All this has been achieved in a comparatively short space of time, thanks to the generosity of the Andrew W Mellon Foundation.