



*The Universe between Felt and Wire: a New Look into the Typology of Western  
Made Paper*

S.T.J. van Velzen

# the universe between felt and wire: a new look into the typology of western made paper

## summary

By studying Western papermaking in its main aspects and variations, and both critically evaluate and systematically structure the acquired information, this thesis will provide those in paper conservation and allied fields the necessary knowledge and tools to better understand, describe and preserve for posterity this complex and diverse substrate, which is often the carrier of imagery or texts of cultural significance. The knowledge required to describe such paper is developed in seven chapters.

- chapter one begins with a short development history of paper conservation and the paper conservator. The research plan is then described, and also how this changed over the course of the research.
- in chapter two, the types of paper that appear on the conservation workbench are analysed. A classification of paper types is given. Next, the steps in the papermaking process and the traces they leave behind are described systematically. Each phase of papermaking is described in order to explain how and which traces may or may not occur in the paper.
- the third chapter sets out the papermaker's considerations and the choices they make when making a paper with the properties desired by the user. To this end, the role of rag sorting in the papermaking process is investigated. Also described is how the Hollander beater as pulping machine extends the papermaker's possibilities. The transition to new, modern fibre sources, which are mainly wood, and the resulting consequences for the paper thus made are further examined. The chapter ends with a look at the effects on paper properties of using fillers and coatings.
- the fourth chapter is devoted to the fibres in paper. Studying its fibre composition reveals the inherent properties of paper. For this, samples must be taken. The method for obtaining an optimal sample is set out, taking into account the potentially destructive nature of sampling. The use of polarisation microscopy combined with the  $\lambda$ -retardation plate is described and recommended for obtaining a clear and fast sample analysis. To underpin this method, fibre samples and their characteristic elements are typified by means of micrographs. Additionally, micrographs of the most commonly occurring fibre types are described in more detail in appendix XXV.
- chapter five treats the use of micro-chemical stains in determining the composition of paper. The aim was to investigate whether other, simpler tests could be found that were less hazardous to the conservator, and that could reveal the major properties of paper fibres. Six tests were selected, but it emerged that only one produced a satisfactory result under the given conditions. The traditional tests, with all their drawbacks, continue to prove their worth.
- chapter six binds together the preceding findings and systematically expands on the paper typologies given in chapter 2. This involves describing the paper types under four major properties: pulp sort, sizing, surface structure, and the range of paper weight.
- the final chapter contains conclusions and suggestions for future research. Due to the potential implications for collection management, the most important of these is closer research into the pulping method of wood pulp types, due to the possible negative ageing properties of acidic-pulped pulp types.