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## How Identical are 'Identical' Papers? A Study of an Intact Ream of Paper in the Collection of the Koninklijke Bibliotheek in The Hague

The claim that different works of art are made on 'identical paper' can have a fundamental impact on our insight into an artist's studio practise, especially in establishing a chronological sequence or an artistic connection between individual artifacts. Comparison of works of art on paper, and heritage on paper in general, therefore requires clarity about the definition of what we perceive as 'identical paper'. The project presented here improves our understanding.

The Paper History Collection of the Koninklijke Bibliotheek (KB) holds a rare object preserved from the period of traditional paper making: a complete, intact ream of paper of the Dutch firm Pannekoek, dating from the early 19th century. The KB allowed us to open the ream and study its contents in full detail.

This offered the unique opportunity to investigate the construction and composition of an authentic ream, and compare the findings with data in the literature. The objective of the study was the verification of the alleged low paper quality in the outside quires of a ream as well as to determine the differences between a ream's individual sheets. Important properties such as weight, dimension, fibre composition, opacity, mould structure, watermarks, traces of sheet formation and further processing were determined by applying common techniques of paperhistorical research. These were combined with advanced imaging techniques, recently developed by the Klassik Stiftung Weimar.

As suggested in the literature, papers of low quality indeed were concentrated in the two outside quires, showing a variety of interesting defects. The range of variation we observed within the ream's 480 sheets of paper clearly demonstrated the limitations of uniformity. Intriguing was the difference in paper dimensions and altering position of the watermarks. Differences in the watermarks and mould structures allowed to estimate the number of vats and (twin) moulds operating in the Pannekoek mill. The results improved our insight in the concept of 'identical paper' and helps us to judge more reliably on the significance of differences found between individual sheets.

A case study will be presented, where the results of this project supported the comparative investigation of certain drawings by Rembrandt.

### *Keywords*

Ream composition, watermark comparison, (twin) moulds, paper analysis, Rembrandt drawings