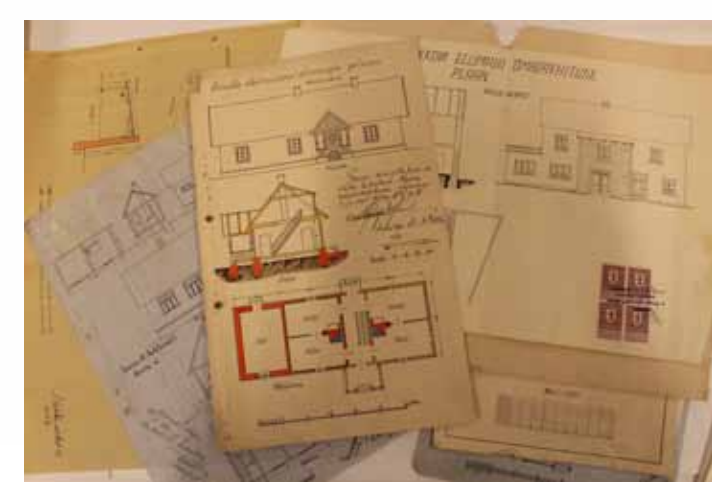


How to maintain the transient: the art of collaboration and the secrets of photocopies

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This poster introduces a collaborative research project between memory institutions, such as museums, archives, and conservators and other specialists in Estonia. Our aim is to analyse and gain knowledge of *historic copying (reproduction) techniques*, namely photocopies that have been processed using *diazographic method*. This collaboration is an example of developing a practical guide for museums and conservators who face similar problems in their work.

Research process



Originally, this project began in 2015 when the urban planning department of the local town council of Keila (a small town in the northern part of Estonia) purchased new filing cabinets and "re-discovered" over 165 historic architectural drawings. These sketches were of houses that were built in Keila in 1920 to 1940. This collection offered insights into the realms of rural architecture and hence the drawings were handed over to the Harju County Museum for future exhibiting and preservation.

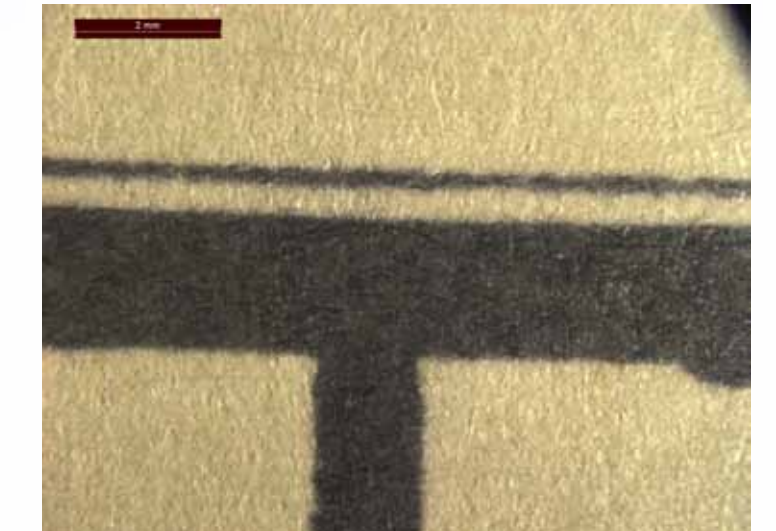
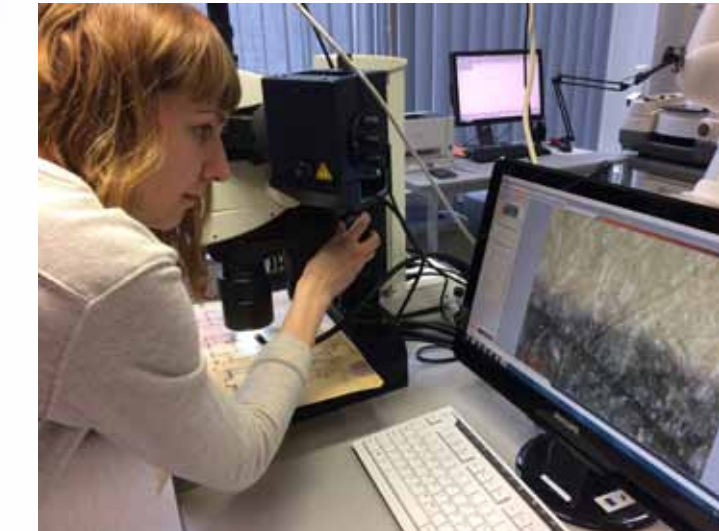
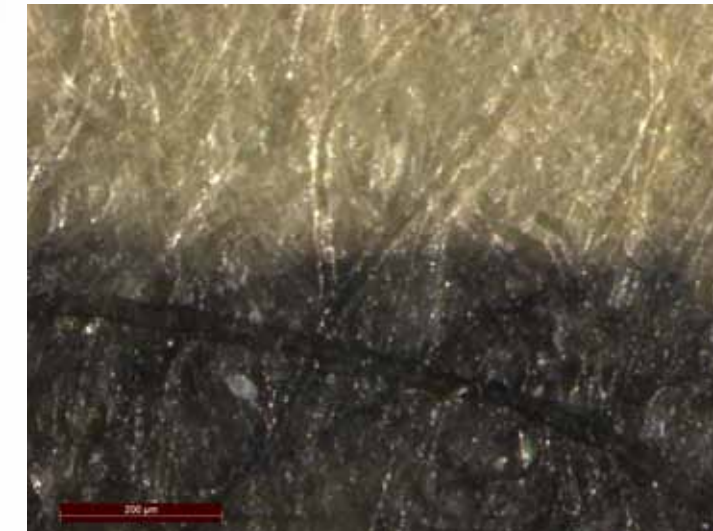


The Harju County Museum gave 45 more damaged drawings to the Conservation and Digitisation Centre Kanut. Due to their heavy workload, the museum employees (researcher Liis Serk, the head of collections Ann Aaresild) helped in restoring the sketches. They learnt basic paper conserving skills and carried out simpler tasks.



Conservators identified 23 drawings as photocopies. The Harju County Museum's researcher Liis Serk and the Kanut's paper conservator Tea Šumanov decided to join forces to discover the history, identification, and preservation of such photocopies in Estonia.

The gravest doubts arose when we started to classify the early copies from the 1920 and 1930s that were of such high quality (contrasting and clear black lines, clean background) that at the first glance they seemed to be original drawings in Indian ink. Under the microscope, however, features characteristic of diasotypes appeared.



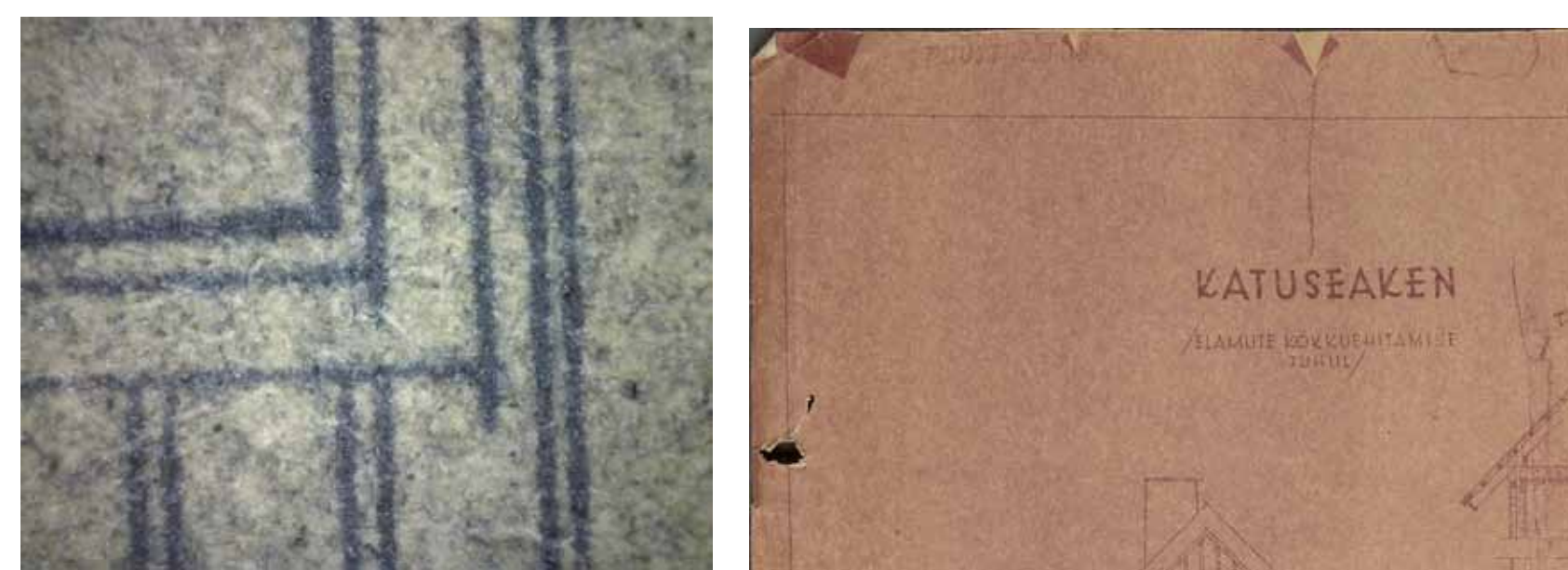
The lines of the image form inside the paper, not layer-like on its surface, as is common to ink or printing ink.



The sheet is lighter on the reverse side.

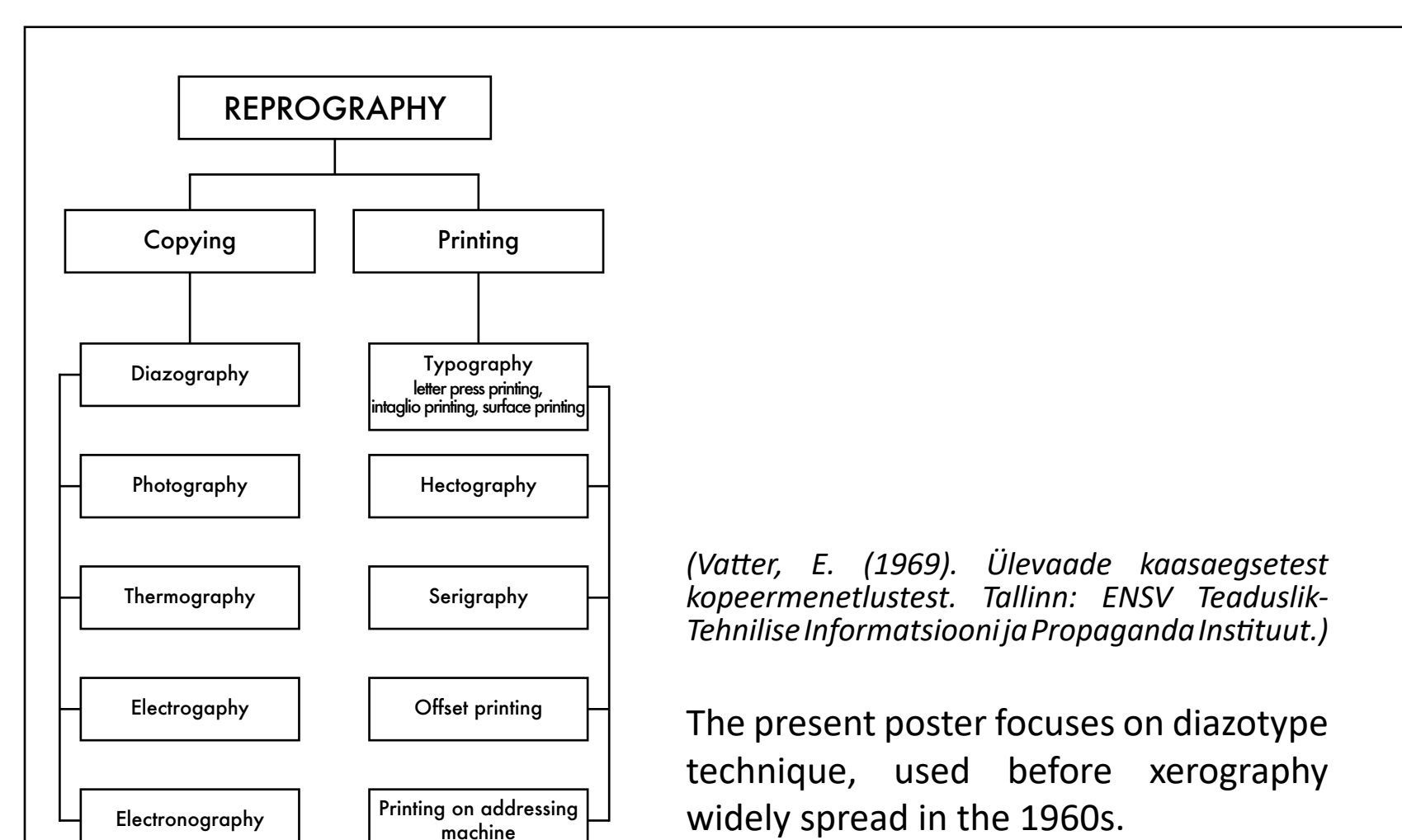


The light framing lines, i.e. the edges of the original drawing (the tracing paper), are visible on the copy.



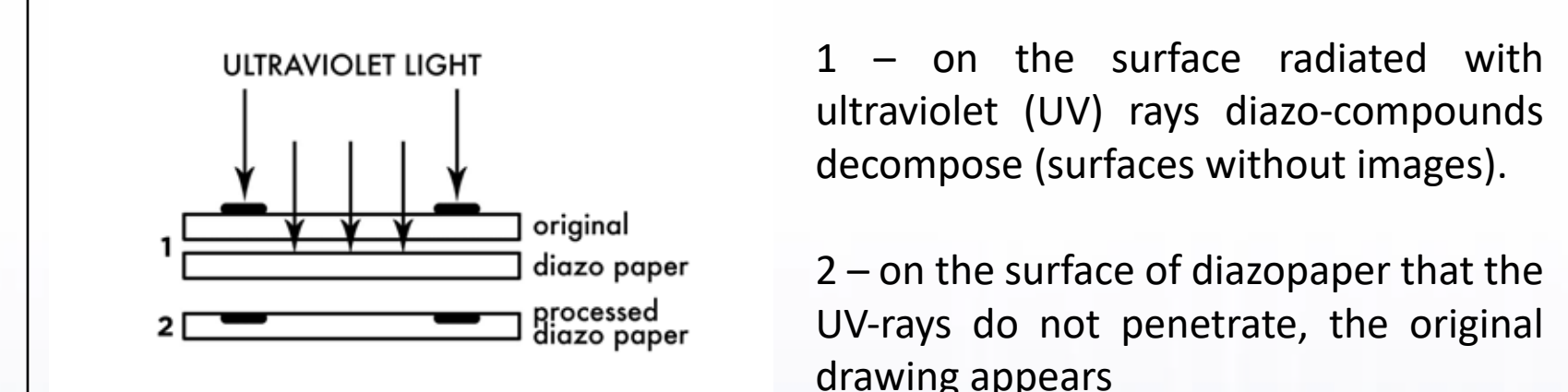
- In addition to the already described features, several copies had
- soiled, frizzled background
 - visible tears and broken corners in the tracing paper
 - acrid chemical smell irritating mucous membrane. Some copies have stronger, some weaker smell but it is always the same.

What is the difference between prints and copies?



What are diazotypes?

"Diazotypes are printed using non-silver photographic process, utilizing a paper or cloth support that has been sensitized with light-sensitive and alkaline sensitive chemicals. The treated support is exposed to ultraviolet radiation through a transparent or translucent original object. A colorless substance is formed in those areas. The print is then exposed to ammonia to form an azo dye in image areas, resulting in a positive image in relation to the original. The prints may be processed wet, semi-wet, or dry, using ammonia fumes. The resulting image is embedded in the paper fibers. The sensitizing chemicals and any stabilizers or other additional chemicals remain in the paper, as there is no rinsing step in the copying process (Dinaburg 1964). Diazotypes come in numerous colors including blue, maroon, brown, black." (Melina Avery, *Ozalids in the Music Library: Life Before Xerox*. The Book and Paper Group Annual 31 (2012) 17).



(Vatter, E. (1969). *Ülevaade kaasaegsetest kopeerimenetlustest*. Tallinn: ENSV Teaduslik-Tehnilise Informatsiooni ja Propaganda Instituut.)

Taking the Harju County Museum's collection for a research basis, the microscope for a tool, and *Architectural Photoreproductions: A Manual for Identification and Care* (1999) for a manual, we first separated "copies" from the "originals".

Studying and describing the drawings under a microscope
Miscope DinoCapture 2.0.



We visited libraries and archives to find direct sources of the reproduction processes and techniques. We also visited the National Archives of Estonia (Tartu, Tallinn), the Estonian Maritime Museum (Tallinn), the University of Tartu Museum (Tartu), and the Estonian Theatre and Music Museum (Tallinn) to survey other photocopies and their current state in other memory institutions.



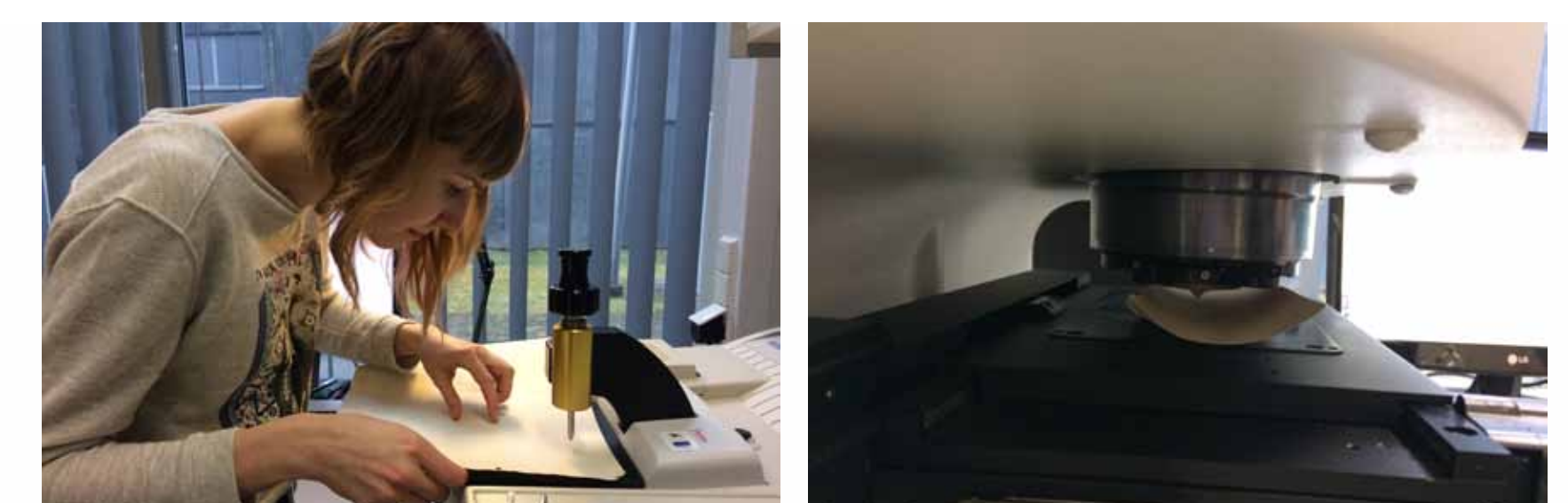
Results and conclusions

Survey of copies

A preliminary survey of various copying techniques in memory institutions' collections has been completed. A more thorough inventory of these collections would be of help for getting an overview of different copying techniques (diazotypes included) at different times. It would be useful to interview some of the people who made the copies.

Identifying copying techniques

Visual observation is the first step in identifying techniques. Reference books, manuals and the internet help to define the copies. Microscopic studies enable more precise estimation of the characteristic features (contrast of lines, structure of paper surface, etc.). Currently our estimate is that the Harju County Museum collection includes 101 diazographic copies out of the total 165 architectural drawings. Asocolour exploration infrared-spectroscopy (FT-IR) method was used to confirm the results. The analysis was conducted at the Institute of Chemistry, University of Tartu supervised by Signe Vahuri, PhD. The results are not yet final.



Sharing professional info

Our research indicated a great exigency in Estonian memory institutions for identifying and describing copying techniques, assessing the current state of copies and defining their suitable storage, including conservation and digitisation needs. Skills in discerning copies from originals and identifying copying techniques contribute to better describing and systematising documents in the collections. The authors would like to continue this work and share the results with their colleagues.

Storing of diazotypes

Copies should be digitised and stored in pH neutral folders to keep fragile and fading material from disappearing. The originals and copies should, if possible, be preserved in separate folders. When displayed digital images instead of originals should be used. Originals may only be displayed for a short period in specially controlled light.

Dear conservators, in case of interest, or having any information on this subject, please contact sumanovtea@evm.ee or liis.serk@hmk.ee Thank you!



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