



# Digitisation of glass negatives at the SA EVM Conservation and Digitisation Centre Kanut in 2001-2017.

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Fig. 1 Negative and positive images of a glass plate negative. Digitised in 2015 (original file 7692 x 5870 px, RGB, 16-bit, 276 MB) Nõmmekingsepad (Shoemakers of the Heath, by A. Kivi), at the theatre Estonia, 1927, Johannes and Peeter Parikas. Estonian Theatre and Music Museum, 12 x 16 cm, ETMM\_4868\_2778-kl.



Fig. 2 Glass plate negative digitised in 2002. Original file – JPEG, 990 x 692 px, 0.38 MB, (RGB transferred into greyscale). Pupils of Jakob school, Kaagjärve parish, 1916. Johannes Lukin, 9.7 x 14.5, Valga Museum VaM F. 1103:11/N.

One of the biggest collections of Estonian glass negatives is in museums. The number of them, however, has not been mapped and recorded yet. Digitisation of glass negatives started at the SA EVM KDK Kanut in 2001. It occurred in connection with launching the project The Red Book of Estonian Museum Pieces in 2000-2002, initiated by the Kanut. 11 museums participated in the project. Initially we used our light table and the digital camera Coolpix 990 that did not offer a very wide range of technical possibilities. One hundred glass negatives were digitised within the project (table 1 – digitisation equipment in the Kanut in 2001-2017).

Since 2008 the technology and equipment for digitisation glass negatives have been of top quality. Digitisation strives for meeting the public expectations to use the museum collections as well as preserving them. The first task in digital reproducing museum pieces is creating a high-quality digital copy of the original piece so that it would contain as much information characteristic of it as possible. Since 2001 up to the present about 13500 glass negatives dating from the 1880s to 1942 have been digitised.

Owing to the technical possibilities of digitisation the glass negatives get a new life, presenting their wealth of details and reproducing information in high-quality picture files. The digitised material is available for public use in the museums' info system <http://www.muis.ee> and in the portal <https://www.e-varamu.ee/>.

## Characterisation of glass negatives

A negative is photographer's implement, a stepping stone on the way to make a positive photo. The first negatives that were made on paper had problems of opaqueness. This was solved, when glass negatives were introduced. They were ideal for photographic purposes, as they produced a far better result in contact copying. The reason for using glass negatives for so long (1847- the 1940s) lies in the character of the glass base and also the photo emulsion used on it. Three emulsions with different photosensitivity have been used on glass – albumin in 1847-1860, collodion from 1851 up to about 1885 and gelatine from 1878 up to about 1940. Glass negatives made it possible to produce detail-rich photos and were successful in competing with plastic-based photographic supplies that developed rapidly beginning from the late 19th century. First of all it was thanks to gelatine-silver-bromide emulsion's high photosensitivity, fine granulation and good opaqueness of the glass base compared to the first nitro-cellulose plastic negatives.

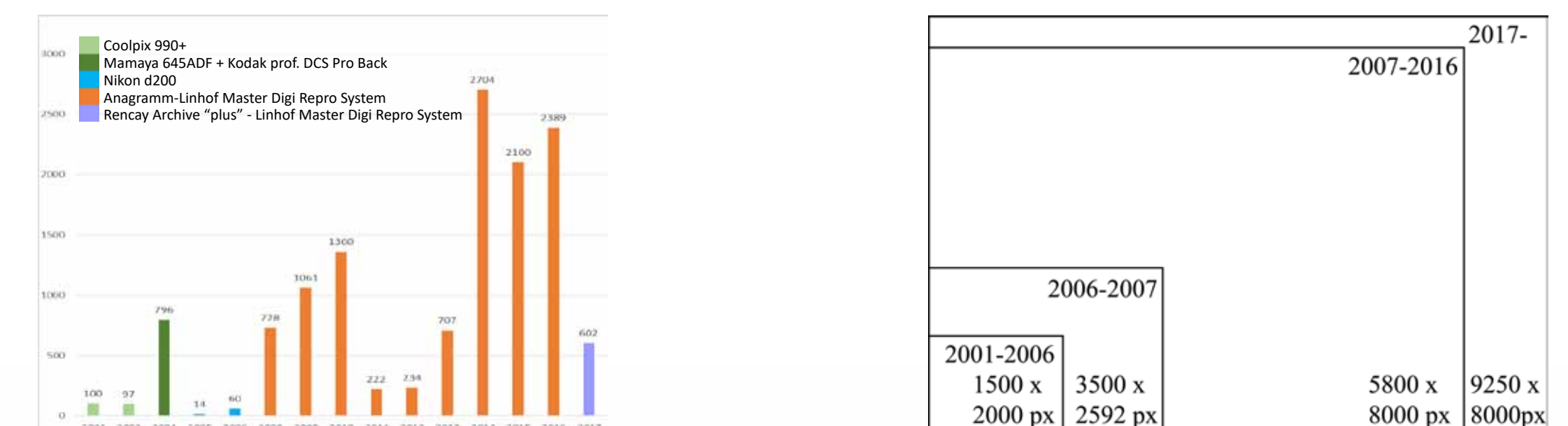
In Estonia glass negatives were introduced in the late 1850s. The quality of the reproduced image depends on which procedure has been used and how well the glass negative has preserved throughout the time. Damages in the negatives' glass base and the emulsion, preparation for digitisation (conservation included), together with the technology of digitisation all influence the quality of the reproduction result considerably. It is important to consider the sensitivity of glass negatives and take care that the chosen technology would not harm the object's condition. The room in which glass negatives are digitised must have stable microclimate that meets all the demands.

## Development of digitising glass plate negatives at the KDK Kanut in 2001-2017

Stages of the development	Means of digitisation	Parameters of the implement	Parameters of the digitised image	Auxiliary info	Reference to images
2001-2004	Digital compact camera Nikon Coolpix 990 (E990)	2048 x 1536 pixels (3.14 Mpx)	Approx. 1500 x 2000 pixels (8,5 MB), 8-bit RGB, with LZW compression TIFF (Tag Image File Format) or Joint Photographic Experts Group (JPEG) format	First glass plate negatives were digitised in 2001. 100 glass plate negatives belonging to the collection of the Estonian Theatre and Music Museum were digitised, using the initial implements within the project Red Book. In addition to the camera, a light table specially accommodated for contact-free photographic reproduction of glass plate negatives was used. This enabled to make reproductions in 1:1 at 300 dpi. 300dpi juures reproduktsioone suhtes 1:1.	Fig. 2
2004-2006	Medium format SLR Mamiya 645 AFD and scanning back Kodak professional DCS Pro Back 645, lens Mamiya 645 Macro MF 120 1:4	4080 x 4080 pixels (16.5 Mpx)	Approx. 1500 x 2000 pixels, (2,13 MB), 8 bit grayscale, või (132 MB) 8-bit RGB, uncompressed TIFF (Tag Image File Format)	Method enabled to create 1:1 reproductions at resolution 300 dpi.	
2006-2007	DSLR Nikon D200, lens Nikkor 28-105 1:3.5-4.5	3872x2592 pixels (10.2 Mpx)	Approx. 3500 x 2550 pixels (8,8 MB), 8 bit grayscale, with LZW compression, TIFF (Tag Image File Format)	In 2006 we were looking for a possibility to digitise glass plate negatives with a higher resolution in order to get bigger reproductions than only 1:1. Digi-mirror camera Nikon D200 was taken into use for that.	
2007-2016	Scanning back Anagramm-Linhof Digi Master Repro System GmbH Munich production <sup>2</sup> , lens Schneider-Kreuznach APO-digital 5.6/120 M-26 MC	8000x13000 pikslit (312 Mpx)	Approx. 5800 x 8000 pixels (265 MB), 24 bit (3x8 bit) or (132 MB) 48 bit (3x16-bit), uncompressed TIFF (Tag Image File Format)	Digitisation technology was renewed in 2007-2009. Anagramm-Linhof Master Digi Repro System together with the light-table Linhof LED Lightbox was introduced. When the installation and testing of the system had been completed, the new system was launched in November 2008. The method enabled us to create high-quality picture files for the first time.	Fig. 1,3
2017-	Scanning back Master Repro scan-back Linhof Digi Rencay Archive "plus" scanback (REVIEW 64 1.3.0.14 superfineart SN:167), lens Schneider-Kreuznach APO-digital 5.6/120 M-26 MC	12000 x 19500 pixels (1404 Mpx)	Approx. 9250 x 6250 pixels (331 MB), 48 bit (3x16-bit), uncompressed TIFF (Tag Image File Format)	In February the scanback and light systems were modernised and a new implement (Rencay Archive 'plus' scanback. REVIEW 64 1.3.0.14 superfineart SN: 167) and LED Light Type4 was purchased to replace the former Master Digi Repro Station. The new development enables us to create high-quality files in much shorter scanning time.	



Fig. 3 Glass plate negative digitised in 2002, the unprocessed return copy on the left, the processed reproduction on the right. (The original file uncompressed TIFF, 8845 x 6823 px, 345 MB, 16-bit RGB). Eduard Mikseri ja Aline Ünapuu wedding, Lõõla Pearna cottage 1923.a. 8.8 x 11 cm, Järvamaa Museum PMF 1603:888.



### Development of digitising glass plate negatives at the KDK Kanut in 2001-2017

Stages of the development/ Means of digitisation/ Parameters of the implement/ Parameters of the digitised image/ Auxiliary info/ Reference to images.

In 2001-2017 glass plate negatives were digitised with various implements. Hence the files of different sizes. The scheme presents the side measurements of the files in pixels (px).

