

Astroplate

International workshop on scientific use, digitization, and preserving astronomical photographic records

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Reasons

- Bad physical conditions of glass plate negatives primarily of significant archival files (19th / 20th century)
 - Impossibility (unacceptability) to present glass plates for study
 - Difficulty to create analogue reproductions

Main goals

- To determine appropriate conditions and suitable materials for long term storage of glass plate negatives; to analyze types of damages and specify appropriate conservation procedures
- To draft methodology for archival processing using international standards
 - Attempt to define some terms
- To propose a suitable method of careful reproduction
- To propose appropriate forms of making digital reproductions available

 Cooperation of various experts comprehensive processing of issues concerning making archival documents available

- Making available not only mediation of archival documents to the general public (i.e. making records accessible), but a package of activities from acquisition, record keeping, conservation, arranging, inventorying, etc. to final provision of archival documents to researchers in suitable form
- First project in the field of archival science under participation of conservators, archivists, photographers, and IT consultants, attempting to propose comprehensive solution to make photographic archival documents (primarily glass plates) available

Digitization – choosing the method

- Aim to find careful way of reproduction of considerably valuable fragile glass plates
- Any reproduction brings loss of quality and information not necessarily a problem with archival documents in acceptable physical condition
- We chose method of quality digitization where loss of information is largely eliminated and resulting reproduction contains the same amount of information as the glass negative
- Glass plate is considered to be an 3D-artefact, not a 2D-pattern
- Apart from visual information (content), also physical condition of glass substrate and light-sensitive layer (and thus their potential damages) are documented
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Criteria for digitization

 Digitization of glass plates based on traditional photographic (reprographic) procedures – basis for digitization criteria:

Sharpness

- High quality lens
- Resolution (number of pixels)
 - Often preferred criterion
 - Related to the quality of a digital image, important only in connection with quality lens and appropriately selected light

- Color depth of 48 bits Quality of digital image using low color depth would be comparable to analog photograph made directly on photographic paper = substantial loss of information
 - Influence of color depth of 48 bit on digital images quality
 - Wide exposure latitude
 - Very soft halftones scaling
 - Prerequisites for achievement a color depth of 48 bit
 - Absence of noise primarily in dark areas of an image
 - Elimination of noise caused by long exposure
 - Elimination of overexposure noise (blooming)

Photographic lights

- Wide continuous spectral range of daylight
- Absence of unwanted (invisible) components
- Effect (operation) only at the moment of exposure
- Modulation of light (diffused, direct)
- Variable power regulation

Composition of the device



- Light table with opal board and glass plate (base)
 - Enables to select lower lighting with various grades of light diffusion
 - Enables to document physical condition of the pattern

- Lightning with stepless power control
 - 2 to 4 lights enable variability of settings
 - lower soft light capture of content
 - upper direct light capture of physical condition and damage of glass plate and sensitive layer



- Technical camera Sinar
- Digital high-resolution back with active cooling
- Mac with graphic SW and SW communicating with the digital back



Routine scanning of glass plate includes 3 shots to capture – 1. Transparent character in lower diffused light

- Highest information value
- Highest number of halftones
- Largest exposure range
- TIFF 3x 16 bits RGB



2. Physical condition of the glass substrate



10

15

16

3. Physical condition of the emulsion layer



Workflow

- Defining procedures and responsibilities
- Workflow within the project:
 - Work allocation (administrator)
 - Digitization (operator)
 - Data transfer for processing (administrator)
 - Data integrity check (IT operator)
 - Checking, editing, and creation of study copies (graphic designer)
 - Saving in repository (IT operator)
 - Removing source files (administrator)

Metadata

- Image information
- Use commonly used standards primarily (i.e. Dublin Core, EXIF)
- Metadata recording (directly within the image EXIF, database)
- Solution within the project assumes EXIF metadata recording within the image



- Essential for meaningfulness of digitization
- Necessary to store at least at two places concurrently
- Backup system is better understood as one repository
- Storage media
 - Hard drives
 - Disk arrays
 - **Optical media**
 - Data tapes
- Disk arrays and data tapes used within the project

Publication

Nowadays the most prevalent reason of digitization

- Best solution use of the existing system
- Possibility of HTML albs
- Application created within the project available at <u>http://digi.nacr.cz/grant8/</u>

Complete research report including detailed digitization guidelines (Czech) available on the web of the NA – <u>http://www.nacr.cz/G-vyzk/negativy.aspx</u>



Questions

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