

A current practically oriented manual for digitizing photographic negative collections and producing analogue safety copies

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Abstract

The paper aims to show the gap between theoretical conservation guidelines for handling and generating safety copies of photographic negative material and the practice of professional staff in large and small collections. By translating the discipline specific guidelines into a practically oriented manual, the importance of saving photographic negative heritage could be guaranteed in the future. Collection management should be able to understand guidelines, information and practical research results and transfer it into working processes in their collections for bringing them save into the future.

Introduction

Over the last five to seven years the author worked as an archivist and conservator for photographic collections in different institutions, such as archives, museums, large and small collections. It doesn't matter if the institution is a federal facility, run as an association or private collection, the topic of saving photographic negatives, especially fast decaying cellulose nitrate and cellulose acetate material, is an important topic within the collections. Over the last years digitization became more important and is often seen as the long-term and cheapest saving solution. This fact comes alongside with the disappearing of analog film materials, film production companies and the rising expenses of the photographic film development.

Because digital data is not seen as long term archivable another way of reproduction of valuable film material is needed. Because currently subsidies for saving photographic collections are given mainly for digitizing them, a combination of producing digital and analogue reproductions needs to be used. The examination of producing analogue safety copies which are generated out of the advanced established digital master files can be seen as the fundament of the practically oriented manual.

Most of the time the collection managements can not support reappraisal projects with a lot of money. Funding often is only time limited and available for specific parts of the collections. With it comes that employees are hired for only a short time and their generated experiences cannot be taken into future projects. The time for a preview research is often limited and technical knowledge about the original material and storage needs is often missing. As a result, research and professional exchange is often not done.

The aim of the practically oriented manual is to enable collection managers, archives, museums and further institutions to create safety copies of photographic transparencies. It aims to provide a clear and simple overview of the different options and guidelines that should be considered when creating safety copies. Thereby it motivates its users to tap into an unknown field of expertise and encourages them to exchange with conservators and collections that are facing similar challenges.

The paper should also sensitize for the different functions of a transparency: as an image that conveys a message or as an object with processing and aging traces which needs to be captured and saved as well. The goal is to point out: that no type of safety copy, analogue or digital, can replace the original. Because of the rapidly progressing technologies and data storage solutions, it is very important to preserve the original object as long as possible.

Examination of analogue reproductions

In cooperation with the *Universalmuseum Joanneum (UMJ)* in Graz (A) five different companies in Western Europe have been contacted and asked to produce analogue copies of in-house digitized film material. The seven different types of reproduction materials have been tested for long term archiving qualities, processing quality, expenses as well as for future handling. So far those materials weren't examined as a complete product, analogue film materials generally gets examined regardless of technical processing and manual handling later on.

The following list shows the seven examined samples:

1. *Fachlabor Gubler AG*, Felben-Wellhausen (CHE): *Ilford Micrographic Film* (35mm black/white film)
2. *Activity Studio*, Esslingen (D): *Rollei Digibase CR200 Pro* (35mm color-positive film)
3. *Activity Studio*, Esslingen (D): *ADOX Silvermax* (35mm black/white positive film)
4. *Viertel Vor Acht*, Berlin (D): *Fuji RVP 100* (35mm color-positive film)
5. *Viertel Vor Acht*, Berlin (D): *Fuji Acros 100* (black/white negative film)
6. Self-made contact prints in-house @ *UMJ*, Graz (A): *Ilford FP4* (black/white negative film)
7. *Foto Leutner*, Vienna (A): *Kodak Duraclear* (color positive film for LVT technology)

In the beginning of the testing all samples were undertaken an optical comparison between the original and the reproduction for color and sharpness quality. With the help of cross sections, microscopes and rescans of the analogue copies a closer look onto the image reproduction quality was taken.

Second, FTIR testings were done to proof the type of film base to make sure that cellulose acetate materials are not used as a film base. As known this type of material underlies an autocatalytic degradation process. Analogue safety copies should be exposed onto PE material for long term archiving purposes. While the FTIR examinations three samples were identified as cellulose acetate materials, which should not be used in the future by collecting institutions.

Third, all examples were tested for longterm archiving qualities. After *DIN ISO 18909:2006* and the research project *Diassec3* [1] by the *Hochschule der Künste* in Bern (CHF) a light-fading test was undertaken with all seven different examples. Next to it an aging test after *DIN ISO 18901:2012-07* was done. Before and after the tests for longterm archiving qualities, densitometric measurement on three different spots (one dark, one light and one middle tone) of all samples were taken to be able to proof a fading of the film material.

Fourth, the costs, time frame and the companies packaging for sending the examples back to the *UMJ* were compared.

After the completed examination it can be said that the reproduction of decaying film heritage can still be reproduced on analogue film material in a size of 1:1 on *Kodak Duraclear* with affordable prices in a very good quality. The *Kodak Duraclear* is a modern film material which is used in the daily printed advertising and contemporary art business which guarantees that the material will be available in the next years.

	1: Ilford Micrographic Film	2: Rollei Digibase CR200 Pro	3: ADOX Silvermax	4: Fuji RVP 100	5: Fuji Acros 100	6: Ilford FP4	7: Kodak Duraclear
microscopic examinations	●	●	●	✓	✓	✘	✓✓
comparison of redigitized reproductions	-	✘	✓	●	●	✘	✓✓
film base material	PE	PE	CA	CA	CA	PE	PE
light fading	✓	✘	✓✓	✘	✓✓	✓✓	✓
stability	✓✓	✓	✓✓	✓	✓✓	✓✓	✓✓
cost (netto)	-	14,50€	11,50€	4,09€	4,09€	30,00€	12,00€
	✘	✘	✓	●	✓	✘	✓✓

The comparison of all seven tested samples for the analogue reproductions show that even cellulose acetate film material is still in use. Those film types shouldn't be used for archiving due to the the fact of degradation of CA-film material. Overall can be said that sample no. 7 the Kodak Duraclear surprises with its image stability, processing and the pricing. Because the company takes small orders institutions have the possibility of reproducing small convolutes.

Due to the ability of generating analogue safety copies of photographic film heritages the results of the examination are taken into the practically oriented manual for digitizing film.

Content of the manual

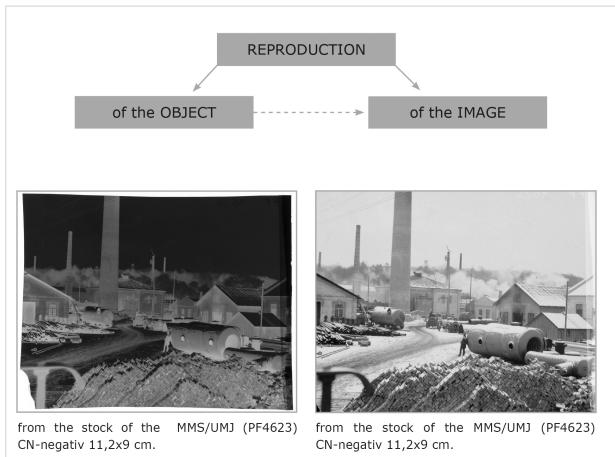
The manual is separated into six parts: 1. Overview of already existing guidelines and institutions as for example *NESTOR*, *ISO DINs FADGI* and *Memoriav*. As a registrar, archivist or conservator who needs to set up fast a digitization project already existing guidelines and publications to similar projects are taken as a fundament. Often those guidelines are long papers written in a specialist jargon or give principles which can not be reached by many institutions. Further more looking at more than just one guideline and comparing them, they give different advices. Due to the fast technical development and a slow exchange between institutions, archivist and restorers often the not updated versions of manuals are considered. The comparison of a guidelines should make the reader aware of the different approaches and developments of the manuals.

2. The second chapter should motivate the reader to take time in research and developing a workflow which is makable for their own collection. The manual user should see the different options and their costs: For example the digitization through an external company maybe brings high end scans but the objects need to get prepared for the transport to the company which brings physical stress onto the objects. The digital files and the objects themselves need to be controlled after the digitization as well as being labeled and put into the database manually by the collection management afterwards. On the other hand producing in-house scans needs technical equipment, a standard for digitizing them and a checking of the files by a second person. This process maybe takes longer time than the external digitization but can cost less. Another task shows different file types and sizes. For high resolution scans a big data storage is needed, which is expensive so which ones should be saved and how? The manual wants the reader to take into account the budget, the in-house technical equipment and data storage capacities to find the best solution for his collection.

Different workflows and options for producing reproductions are shown, always with a list of advantages and disadvantages of the processes and results. For the digital workflow not just resolution and file types are looked at, also different technical devices as cameras and scanner types are introduced and compared for the handling, pricing and the quality of the digital results.

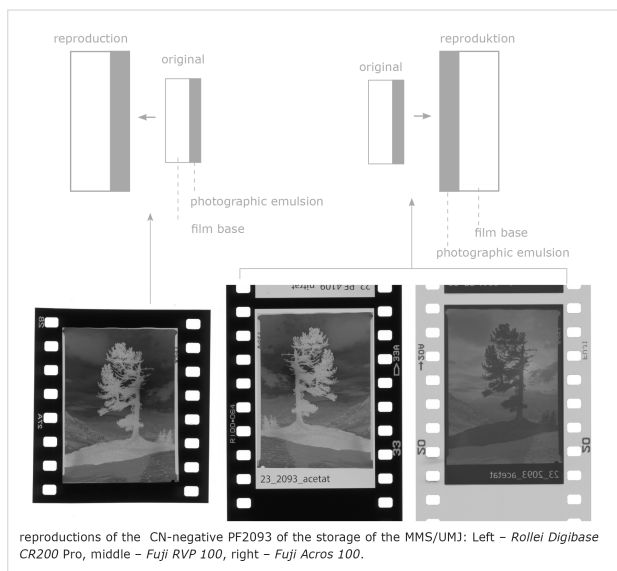
The outcome of the examination of producing analogue safety copies after digitizing the originals are taken into the analogue workflow to introduce the combination of the digital and analogue reproduction. The chapter also compares the digital and the analogue way of reproducing photographic film material, considering not just the image on the film, also the capturing of its historic traces, which opens up chapter three.

3. Chapter three discusses different options of reproducing film material. It explains the importance of seeing the negative as an object which needs to be carried into the future and not just the exposed image on it. The importance of not just the



The importance of the photographic negative as an object and not just as an image carrier is highlighted in the manual with imagery and examples. Due to the print is colored, the images also will show that degradation marks and other traces of history can be seen, but also will highlight which ones can not be captured with scanning or photographing the originals, like pencil retouches.

size, film base material and film type, also labels, retouches and marks of usage can give information about the image, the photographer and the general convolute in the future. Those marks need to be seen as part of the film material which converts it into an object. Through digitization historic traces can get lost, get retouched and not saved for the future. People who set up a digitization project need to be aware of their influence on how the future generations will see the photographic object. Due to technical restrictions and the sensibility of the original material itself, especially already degraded cellulose nitrate or cellulose acetate films, not all marks and traces can be kept in digital or analogue reproductions. People need to be aware of loss of information.



The manual does not say which way of digitizing and reproducing originals is the best, the manual shows different options and qualities. Due to simple schematic representations like the upper one the reader can easily see the differences in the technical style and image quality of the reproduction.

Options of passing on informations into the future are discussed and bring the readers to chapter four.

4. The most important task of a conservator is to document what was done with an object, how and why. Protocols of working processes including images and sometimes scientific examinations, the same as scripts and final reports need to be saved with the reproduced convolutes to give transparency of the copying process and the ability of redoing the workflow. Looking at digital imagery for long term archiving the naming of files, databases and metadata need to be used in a uniform way. Chapter four draws attention to the importance of the traceability of work processes for future researchers, archivists, technicians and restorers.

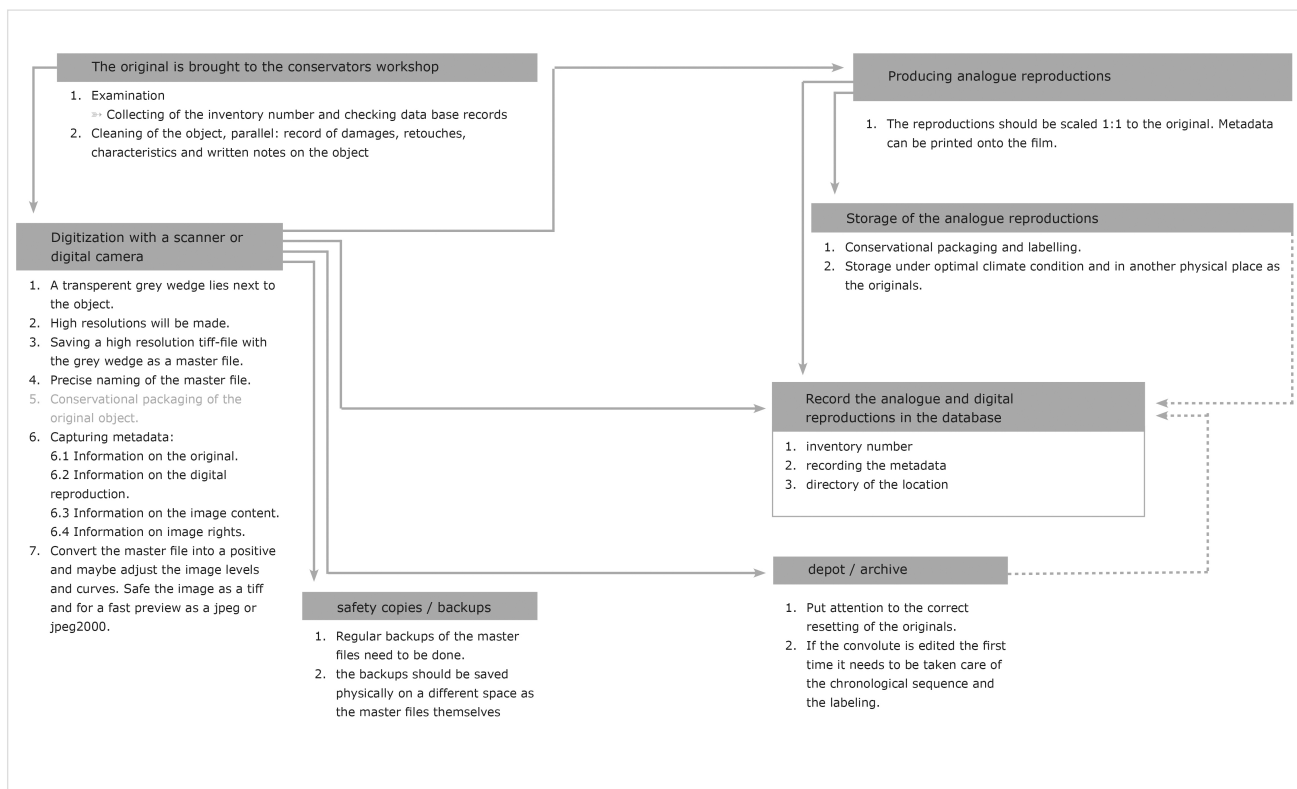
5. The second last part of the practically oriented manual for digitizing photographic film material gives an overview on how to storage different types of photographic materials as well as advices for the digital and analogue reproductions. Already known recommendations for storage conditions, packaging advices and climate controls for the originals and the reproductions from previous researches and publications are shown in clearly arranged schemata.

6. The last part discusses the terminology which is used in the manual. First of all it should help the reader to understand what is meant with the original, the reproduction, the digital intermediate, the image, the object and so on. But more important is to start discussing uniform definitions in the field of digitizing and reproducing photographic materials. In the sector of moving images the definitions are common but looking onto the field of photographic images terminology was not taken care of because the negative itself as an object was not considered as important only the captured image.

Conclusion

The content of the manual seems maybe to someone who works in the field of digital long term archiving obvious and already as been said but the institutions which are taking care of collections often do not have the professional expertise, not the time and men power to do a deep research and as a result the quality of the digital safety copies of photographic historical documents often gets lost before digitizing. With the practically oriented manual the people will be given ideas about the wide ranges of decisions which need to be made before starting digitizing. Event more the manual wants to motivate to do researches and active exchanges in-between institutions and colleagues, question previous done workflows and not just report success, also failures through which everyone can learn.

Because the digital reproduction can not be considered for long term archiving due to the insecurity of saving data and the fast development of the technology, which can make the data fast unreadable, the manual also shows solutions for producing analogue safety copies. Different options of printing the analogue copies from the digital master files are mentioned and explained in their differences. The analogue reproduction can have the same size as the original, can transfer the feeling of holding a transparent negative, but more important doesn't need a computer to be read. This can be an option for reproducing either small and big amounts of essential and vulnerable collections.



In the practically oriented manual simple designed schematic representations will give a good overview of different workflow options. Keywords and pick notes put an eye onto the most important tasks which need to be considered and can be used a check list.

But most important the manual will sensitize the reader for the original photographic transparency, which needs to be seen as an object itself which has to be carried into the future!

Definition of objectives

The practically oriented manual is in the early stage of its creation. For the finishing a printing format needs to be found which supports the affordable purchase for institutions. Next to it a web based product is supposed to be created which can be updated with technical advices, cooperation companies and a platform for exchanging expertise. Both the printed and web based manual need to be translated from German into English. For the North American Sector (and future wise thinking other parts of the world) possible cooperation partners for digitizing and generating analogue safety copies need to be found and their products checked for long term archival quality.

Due to the constant changes in the technique and analogue film material market a regular maintenance is necessary. Until the end of 2019 the manual is supposed to get public.

Acknowledgments

The author wishes to thank the restorer Fenna Yola Tykwer for all her advices and help in testing the film material of the analogue reproductions and encouraging her to finish the paper and keep working on the manual. Further more the author wants to thank the Universalmuseum Joanneum, especially Heimo Hofgärtner to let her work with the collection and equipment.

References

- [1] Kristina Blaschke-Walther, Sebastian Dobruskin, Untersuchungen zur Lichtechtheit von unlaminierten und laminieren Inkjet-prints, in: Rundbrief Fotografie, 21, 2014, 42-47.
- Anna Bohn, Denkmal Film, Band 2, Kulturlexikon Filmerbe, Wien Köln Weimar 2013.
- Christian Keitel, Astrid Schoger, Vertrauenswürdige digitale Langzeitarchivierung nach DIN 31644, Berlin Wien Zürich, 2016.
- Cornelia Kemp, Unikat, index, Quelle, Erkundungen zum Negativ in Fotografie und Film, hg. Cornelia Kemp, Göttingen 2015.
- Ed Gartner, Digitalisierung 4.0 -Digitale Erschließung von Fotonegativbeständen, in: Fotografien, erkennen, bewahren, ausstellen, hg. Marjen Schmidt, Augsburg 2018, 141-154.
- ISO 18909, Photography, Processed photographic color films and paper print, Method for measuring image stability, Genf 2006.
- Laura Capell, Digitizing as a Preservation Method for Damaged Acetate Negatives: A Case Study, in: The American Archivist 73 (2), 235-249.
- Marjen Schmidt, Fotografien, Erkennen-Bewahren-Ausstellen, Altenburg 2018.
- Martin C. Jürgens, The digital print, a complete guide to processes, Identification and Preservation, Los Angeles, 2009.
- Martin Körber, Was gilt das Originalnegativ im Filmarchiv?, in: Unikat, Index, Quelle, Erkundungen zum Negativ in Fotografie und Film, hg. Cornelia Kemp, Göttingen 2015, 211-230.

Monique Fischer, A Short Guide to Film Base Photographic Materials: Identification, Care, and Duplication, Northeast Document Conservation Center, USA 2012, www.nedcc.org (last retrieved: 11.10.2018)

Nina Lager Vestberg, Index/Finger, Medium and Materiality in the Archives, in: The Archives as Project, Achium jako projekt, hg. Krzysztof Pijarski, Warschau 2011, 160-190.

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Carolin Pommert has the MA of Fine Arts/Entrepreneur in the field of photographic collections from the NOVA University of Applied Science (FIN). In fall 2018 she finished the studies Conservation/Restoration of Audiovisual and Photographic Heritage at the HTW-Berlin (D) in cooperation with the Universalmuseum Joanneum in Graz (A). Pommert was always aiming to be practice-oriented due to her continues work experiences in museums and archives with photographic collections. Since August 2018 she is the manager and conservator of the archive of the contemporary art gallery neugerriemschneider in Berlin.