The Photographic Collections Network Toolkit: Basic Collections Care at Home

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1. Introduction

Photographs are often some of the most evocative and emotive objects we own, and yet are prone to deterioration and can sometimes be neglected due to our over-familiarity with the medium. This advice is intended to help you preserve your personal photographic collection and to prevent unnecessary damage from occurring. It is aimed at private individuals and focusses on three main types of photographs found in domestic collections – prints, negatives[1] and slides. However, much of the advice is applicable to other photographic processes too.

2. Before you start – five key points

This advice is given to those of you who wish to check that your photographs are in good condition and not likely to deteriorate unnecessarily. You may wish to know what signs of damage to look out for and when you might need to consult a conservator. Before you start having a look over your collection there are 5 key points that can help you prepare:

1. **What photographs do I have in my collection?** Make sure you know what materials and formats your collection is made up from. Photographs are notoriously often stored in many different places, so some pockets of material could be overlooked. Negatives in particular are an oft-neglected part of a collection as they are so visually inaccessible, but are in fact the primary photographic object. Don't forget your framed photographs either.
2. **Where do I store them?** Think about the room, drawer or cupboard they are in and what the ambient conditions are like in there. Is it an attic which may get very cold in the winter and hot in the summer? Or a spare room where the temperature and humidity levels don't change too much?
3. **What do I store them in?** Take a look at how your photographs are stored and organised. Are the boxes, envelopes, albums and frames in good condition? Or does it look like they may be causing damage to your photos?

[1] The toolkit will focus on negatives on a plastic base, rather than more unusual processes such as glass plates or paper negs.

4. **Where do I look at my photographs, and how?** Photographs are easily damaged and scratched – before you get started make sure any viewing areas are clean and clear, and take a look at the handling guidelines on page 11.
5. **What do I want to do with them?** You may be accessing this toolkit because you are starting to digitise your negatives, or you may be wanting to put your loose photographs into an album. Keep your ultimate aim in mind and this toolkit should provide you with a head start.

3. What are Photographs?

In order to care for an object it is essential to understand what it is made from – different materials react in different ways and thus can have a wide variety of preservation needs. From a collections care viewpoint, 'photography' is really an umbrella term that incorporates many different materials - photographs can be multi-layered objects made from materials such as paper (e.g. photographic prints), glass (e.g. glass plate negatives), plastics (e.g. 35mm negatives), metals (e.g. daguerreotypes) or sometimes even textiles, ivory or enamel amongst others. However, fundamentally photographs are made of two things – an image layer and a substrate or support. To be a 'true' photograph, the image must have been produced by light reacting with a chemically sensitised surface. It has been estimated that there are around 1500 different types of photographic processes[2]! However, from a collections care point of view many of these photographic types can be grouped together as they are made from similar materials. This advice focuses on three of the most common types of photographic materials/formats found in domestic collections:

- Prints
- Plastic negatives
- Slides

3.1 Prints

There are a huge range of photographic prints. However, what they all have in common is the fact that the main constituent material (i.e. the base, substrate or support) is made from paper. The image layer can be made from many different

[2] Nadeau, L. 1994. Encyclopedia of Printing, Photographic and Photomechanical Processes

materials including albumen (the white of a hen's egg), gelatine (derived from animal skin and bones) or even polyethylene in the case of more modern 'resin-coated' prints. As well as the image layer, photographic prints can contain many other layers or substances too such as optical brighteners or dyes. For the purposes of this toolkit however, prints with a variety of different images layers will be treated the same, as often their collections care needs are similar. The main difference comes with whether the prints are colour, or black and white. This is discussed in more detail in section 3.4.

3.2 Plastic Negatives

There are many different kinds of formats for plastic negatives (e.g. 35mm roll film, medium format etc), but when it comes to caring for them it is most important to find out what kind of plastic they are made from. Whilst this is generally a task for a specialist or for larger collections in institutions, a basic introduction can be seen below, with links to further information given in section 8. As with prints, it is also important if your negatives are colour, or black and white. This is discussed separately in section 3.4.

There are three main types of negatives on a plastic base: cellulose nitrate, cellulose acetate and polyester[3].

- **Cellulose nitrate:** this is the earliest type of plastic used in photography, dating from 1889 to c.1950s. It is notorious because it can be extremely flammable, and when it degrades it can give off noxious gasses. It is therefore very important to identify whether you own any in your collection. This can be complicated, and is beyond the scope of this toolkit – please instead refer to this advice issued by the Health & Safety Executive: http://www.hse.gov.uk/pubns/indg469.pdf . Further advice can be seen in the links given in section 8.

  In the meantime, there are a couple of straightforward steps to help you identify if a negative is on a cellulose nitrate base. Firstly, date it. Pre-1920's negatives on a flexible plastic base will be cellulose nitrate. Negatives dating

[3] These are umbrella terms used to simplify the advice given here.

between 1920-1960 could potentially be cellulose nitrate or on another type of less-flammable plastic (see below points). Any negatives dating to post 1960 are unlikely to be cellulose nitrate. If your negatives fall into the ambiguous dating category, then take a look at them carefully. Do they have "nitrate" printed along the edge? Often they were labelled as such which is handy when identifying it! If you are still unsure as to whether you own cellulose nitrate then consult a professional (see link to HSE advice above). In the interim if you do think you may own some cellulose nitrate negatives and are waiting for advice, make sure they are stored somewhere cool and dry with plenty of air circulation and away from sources of heat (e.g. next to a computer or radiator).

- **Cellulose acetate:** This is an umbrella term use for a type of plastic introduced into photography as an alternative to cellulose nitrate. It was first produced as a base for negatives in the 1920's and is still used today. It is the most common type of plastic base for photographic negatives and does not have the same flammability issues as cellulose nitrate does. Accordingly it is also known as "safety film" (though this can also refer to polyester – see below). Unfortunately, it can be unstable and when it degrades it gives off acetic acid amongst other substances – which is why it's deterioration is known as "vinegar syndrome". If you think you can smell vinegar when looking at your collection of plastic negatives then seek advice from a conservator (see section 7).

- **Polyester:** Polyester was introduced as a film base in 1955 and, like cellulose acetate, is still used today. Often used for professional formats rather than amateur, it doesn't have the same instability issues that cellulose acetate and nitrate have.

3.3 Slides

Photographic slides are not a process in themselves but rather a certain type of photographic format. Because they are relatively common in domestic settings however, and have their own collections care needs created by the way they are

constructed, they are dealt with separately here. The most common type of slides in domestic collections are 35mm cut roll film, usually on a cellulose acetate base. Individual film frames are mounted into a pre-manufactured holder, usually made from card or plastic, often with cover glasses. Those slides with cover glasses can form a microclimate, and often you will find mould growing between the glazing and the film itself. As with the above materials, their long-term stability also depends on whether they are colour or black and white – see below for more information.

3.4 Black and White vs. Colour

As a general rule of thumb, black and white photographs (whether prints, negatives or slides etc.) are more stable than colour formats. This has an effect on how conservators recommend you store and view them. You will probably be familiar with photographs from the 1970s or 80s which have undergone a 'colour shift' i.e. they may look more orange-brown than they did originally. This is due to the instability of the dyes used in some colour processes, which are prone to fading. It is linked to both light exposure, and also to high temperatures – it is important to understand that this kind of colour shift can occur even if your photographs are kept in the dark, if the storage temperature is high! How to remedy this inherent issue of stability is discussed in more detail below.

4. Causes of Damage

Photographs can be adversely affected by many different factors; the main ones include:

- **Light**: Light, especially the ultra-violet (UV) part of the spectrum, can cause photographs to fade or change colour ('colour-shift').
- **Heat**: High and fluctuating temperatures accelerate deterioration processes. Storage at high temperatures can cause colour photographs and negatives to fade or colour-shift. It can also accelerate the deterioration of negatives on an unstable plastic base.
- **Humidity**: High and fluctuating humidity levels cause many problems in photographic collections. It can make prints 'stick' together (when the gelatine-based image layer

becomes more viscous), or can create an environment in which mould can grow. Mould can attack the image layer of a print causing blank patches or discolouration.

- **Insect pests**: Because many of the materials in a photograph are organic, they can provide a food source for insect pests such as silverfish, booklice and leaving your photograph mottled and patchy. Framed photographs can also be affected by woodworm which not only attack the wooden frame, but can cause damage to the photographs themselves too.
- **Storage materials**: Sometimes original storage materials can cause damage to your photographs. For example, a framed photograph with a poor-quality card mount may be going orange along the cut edge, or a 'sticky album' from the 1980's might be causing your photographs to become tacky or to change colour. Other poor-quality storage materials such as poor quality boxes and envelopes, can cause photographs to fade, discolour or even become brittle and easy to break.
- **Handling:** Poor handling is one of the main causes of damage to photographs. Our hands contain moisture and other substances that can leave residues on photographs. These residues can eventually cause damage such as fading. Rough handling can cause physical damage such as tears, folds or even breakages.

5. Preventing Damage

It may seem as though photographs are affected by anything and everything! But there are straight forward steps you can take to prevent damage from occurring. The information below is intended as a 'general rule of thumb' guide, but for individuals wanting more in-depth information there are British and International standards and guidelines for the storage of photographic collections (for example the recently published BS 4971:2107 Conservation and Care of Archive and Library Collections). See Useful Links for more information.

5.1 Light

The easiest way to prevent light from affecting a photograph is to eliminate it completely by not displaying it. Store originals in a high-quality conservation-grade

box or album[4] and put only copies on display. If you do wish to display an original, find an area which isn't in bright sunlight. If it is to be framed, ask your framer to use glass with a UV filter, and again, choose framing materials that are conservation grade (see section 5.5 for more information). When choosing a photograph for display, also think about whether it is black and white, or colour. Well-processed black and white prints from the 20th century are generally more stable than colour prints, which can be very light sensitive.

5.2 Temperature

Store your photographs in a cool area where the temperature doesn't fluctuate too much. Avoid places such as attics (where temperatures can get very hot in the summer and very cold in the winter) or basements (which can be cool and stable but too damp – see points 5.3 and 5.4 below). Also avoid cupboards or shelves near radiators or other sources of heat such as hot water pipes, or electrical equipment. As a general rule of thumb, try to find somewhere as cool as possible but ideally below 20°C.

5.3 Humidity

As in the above point, try to find somewhere to store your photographs where the environment doesn't' fluctuate too much. Avoid storing your photographs in any areas that might get damp, such as cellars or garages. Cupboards and shelves against an exterior wall can also sometimes be damp and best avoided. Find a space or room which you know to be dry, and if possible cool as well. As a general rule of thumb, try to find somewhere as dry as possible but ideally below 60% RH.

5.4 Insect pests

Try to prevent insect pests from affecting your collection by storing them in an area which does not allow insects to thrive. Most insects that damage photographs like damp conditions, which is another reason to keep your photographs somewhere dry (as in the above section). Keep your storage area clean to ensure any insect pests are

[4] See section 5.5 for recommended storage materials

kept at bay. If you spot any signs of insect activity such as woodworm holes, patches of image loss, or even the insects themselves such as beetles or silverfish, then consult a conservator (see section 5).

5.5 Storage materials

Keep your photographs in the best quality materials possible. Have a look at the original storage materials and ask yourself if they are causing damage. If you think they are, then you may wish to re-house them in better materials or a more suitable storage system. However, it is really important that changing the way you store your photographs doesn't damage them, and doesn't lose their original context. For example, a typical 'sticky album' from the 1970s could be causing your photographs to discolour. Sometimes they are easy to remove from their pages, in which case you may consider putting them in a new album. However, they can often be stuck so firmly that they can tear or become distorted when trying to remove them. If this occurs stop and consult a conservator.

Storage materials and methods can vary depending on the type of collection you have and how you use it – there is no 'one size fits all' solution. However, some of the most practical methods and ideal materials are summarised below:

- **Prints:** If you have loose prints, you may wish to put them in an album. Avoid self-adhesive albums, albums that have any component of PVC or plastics with plasticisers. Best practice would be to choose a solution that doesn't use adhesives – such as the plastic pockets in a 'box-binder' album, as can be seen in the image below.

The most widely accepted plastic of choice for photographic prints is inert polyester. Brand names include Secol, Melinex and Mylar. You may wish to use a paper support inside the sleeve if it's a particularly fragile or large print, as in the image above. Ensure that any paper or card you use is very high quality – ensure it has a high alpha-celluose or cotton content and has a near neutral pH (i.e. is free from acids and alkaline buffers). Brand names of high quality papers include pHoton and Argentia. If you wish to frame your print, insist your framer uses high quality mount board which meets the same criteria as paper listed above. Brand names include Arqadia Cotton Conservation Plus, and Heritage Museum Board, and Heritage Museum Board.

- **Negatives:** The plastic sleeves that negatives come in from the photographic developers tend to be poor quality that may accelerate their degradation. The transparent paper known as 'glassine' that is also often used to store negatives in is usually not high enough quality either for the long-term storage of photographs. Older plastic negatives should ideally be stored in individual paper sleeves that meet the criteria for paper listed under prints, although they can be buffered with an alkaline reserve. If you know your negatives to be on a polyester base then you may choose to use polyester pocket system as shown in the image above.
- **35mm slides:** This kind of format is often already stored in purpose-made boxes. Often these will be of good quality and will not be adversely affecting the image layer. However, if you have a large collection of loose slides or you feel their current storage is not suitable, then polyester sleeves in a hanging system are a practical solution for storing 35mm slides.

5.6 Handling

Firstly, prevent damage from occurring by handling your photographs as little as is practicable. You may wish to access your collection in a different way, e.g. by digitising them so you can look at the images on a computer or tablet, whilst keeping the originals safe. When you do look at your photographs, make sure you do so in a clean and clear area to prevent accidents. Many institutions insist that anyone handling their

collections wear well-fitting powder-free nitrile gloves. Whilst this is not practicable for many domestic collections, you can still ensure your hands are clean and dry. When holding your photographs, use two hands and handle by the edges only to prevent damaging the image layer. Also, do not try to repair any photographs yourself and don't use any tapes, paper clips, rubber bands or similar when organising them – they can cause irreversible damage.

5.7 Labelling

Ensure any labelling is reversible – so don't use pens, tapes or adhesives. For prints, use a 2B pencil which isn't too sharp and only press lightly. Label your prints on a hard surface so your pencil doesn't make an irreversible indentation. Some resin coated prints can be difficult to label, but a very soft pencil (e.g. 8B) will work.

6. Consulting a Conservator

In some cases, the damage may have already been done and no amount of careful handling or proper storage will be able to put it right! As such you may wish to get a photograph treated by a conservator. Conservators can help put right the effects of previous deterioration – although stabilisation rather than restoration is often the aim. Conservators will perform treatments which as far as possible are reversible and carried out within an ethical framework. You can find a conservator by using the Conservation Register. The Register is run by the Institute of Conservation and provides detailed information on conservation-restoration businesses based in the UK and Ireland. It is searchable by specialist skill and geographical location and each business has been required to meet rigorous criteria which include professional accreditation.

7. Expert Tips

- **Get to know your collection.** Identify the different photographic processes and formats in your collection, particularly those susceptible to degradation. Look out for

signs of damage and try to implement methods to prevent this deterioration from continuing.

- **Handle items carefully.** This is one of the main causes of damage to photographs but one of the easiest to mitigate.
- **Monitor the storage environment – and improve where needed**. Ensure your collection is stored somewhere cool and dry where temperature and humidity levels don't fluctuate too much.
- **Use the best quality storage materials possible.** Ensure your storage materials are suitable for the type of photograph you are storing, and that they are of the highest standard available.
- **Keep your photographs in order.** If you do decide to reorganise your collection into better quality materials, make sure they don't lose their context. If you remove photographs from their original enclosures, keep them separately and keep any information from them that may be useful in the future.
- **Label your photographs carefully.** If, as above, you decide to reorganise your collection, labelling can help keep it in order. However, try to ensure that anything you do can be reversed and doesn't cause any damage
- **Don't try this at home!** In some cases your photographs may need to be conserved. Photographs are complex and should only be treated by a professional, otherwise irreversible damage can occur. Never be tempted to repair your photographs with tape or glues.

8. Useful links

The Institute of Conservation; Care and Conservation of Photographic Materials:

https://icon.org.uk/system/files/documents/care_and_conservation_of_photographs.pdf

British Library Preservation Advisory Centre; Photographic Material:

https://www.bl.uk/aboutus/stratpolprog/collectioncare/publications/booklets/preservation_of_photographic_material.pdf

Image Permanence Institute; Graphics Atlas for identifying photographic materials:

http://www.graphicsatlas.org/

Health and Safety Executive; The dangers of cellulose nitrate film:

http://www.hse.gov.uk/pubns/indg469.pdf

ICON; find a conservator-restorer:

http://www.conservationregister.com/IndexPublic.asp

A short guide to film base photographic materials:

https://www.nedcc.org/assets/media/documents/05PH_01FilmBaseGuide.pdf

9. Suppliers

This is by no means an exhaustive list of suppliers but you may find it a useful start:

http://www.conservation-resources.co.uk/

http://www.conservation-by-design.com/home.aspx?pagename=home

https://www.preservationequipment.com/

https://www.secol.co.uk/

http://www.johnpurcell.net/

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