



10

Fun with
“Planned
Accidents”

10.1 Cameras and Optics

If you consider how complicated our modern digital cameras are, it can be helpful and refreshing to remember that a camera is basically nothing more than a dark box with a hole in it and a shutter, with a piece of film or photo paper inside.

There are many cameras and optics nowadays that can let you experience the joy of low-tech photography. The less there is for you to adjust, the quicker you can shoot pictures instead of battling with buttons and wheels. See subject, point camera, shoot. That’s how easy photography can be.

10.1.1 The Box Camera

The box camera is one of the dinosaurs among the simple cameras on the market. It has been available for more than a hundred years. Provided you don’t try to get a collector’s item, it’s also generally one of the cheapest options if you want to take up low-tech photography. At flea markets or on Internet auction sites, you can get a working model for less than 12 dollars.



From left to right: Zeiss Ikon Box Tengor, Kodak Brownie Starlet, Agfa Synchro Box, Bilora Boy

A box camera is exactly what its name suggests—a box. This box has an opening at the front to let the light in, and a film at the back. There are very few things you can adjust. Sometimes there are one or two different sliding apertures behind the lens element, and even more rare is a small yellow filter that can swivel in front of the lens.

Most of these box cameras manage with a simple lens element, referred to as *meniscus lens*, which resembles the lens in a pair of spectacles. This lens has no or very little coating. This gives the results of using this type of lens their special charm by adding “dreamy” unsharp effects or circular lens reflexes to the pictures.



Landscape shot on Efke 50, taken with Agfa Synchro Box

In terms of film type, the box camera is inseparably linked to roll film. Most box photographers use either type 120 or type 127. Depending on the model, the image formats are 6×9cm, 6×6cm and 6×4.5cm (film type 120), or 4.5×4.5cm (film type 127).

Although all box cameras are slow (they shoot at around 1/25s and their small lens aperture doesn't let in much light), we have not yet had a completely misexposed picture, even with medium-sensitive or low-sensitive films. You can safely leave your light meter at home when going on a photo excursion with the box camera. Being overly precise when composing your shot is also not recommended with most box cameras. The viewfinder crystals are often not positioned above the lens, so image elements you deliberately arranged at the edge of the shot may be cut off. The good old bull's-eye perspective can help: if you put your subject right into the center of the shot, or at least leave a bit of a safety margin around the edges, you'll usually keep the subject in the frame.

Most of these cameras are held at belly height for shooting, so you shoot from the hip. Take this as an incentive to listen to your gut rather than your head when taking snapshots with the box.



Landscape shot along Annapurna Circuit on Efke 50, shot with Agfa Synchro Box

10.1.2 Diana, Holga, and Other Toy Cameras

It all started with the Lomo LC-A, a viewfinder camera with fully automatic exposure control. It was mass-produced in St. Petersburg, Russia, in the 1980s and had one thing, above all: faults. Due to the great number of its weaknesses, this camera was not very popular in its domestic market. Serious photographers who were able to afford alternatives chose to steer clear of it.

In 1991, some students from Vienna (Austria) came across the LOMO Compact Automat in a photography shop in Prague and started experimenting with it. They were delighted by the creative potential of its flaws, and founded a photo initiative in 1992: the Lomographic Society International. They laid the foundations for a trend in which light leaks, strange contrasts, and a shifted color representation were no longer regarded as flaws, but deliberately used as creative design tools. In the wake of this trend, simple cameras such as the Lomo LC-A for 35mm, or Diana and Holga, the medium format plastic cameras, experienced a renaissance.



Diana F+ and Holga 120GN

The Diana

The original Diana is a camera classic. It was produced en masse in the 1960s by the Great Wall Plastic Company in Hong Kong and sold on the American and European markets. The manufacturers originally specialized in toys and promotional gifts, which is exactly what the Diana was. The original price for a Diana was less than 10 dollars. The Dianas that are made nowadays for and sold by the Lomographic Society are much more expensive copies (although still very affordable by comparison to other cameras).

Just like back in the 1960s, the Diana is a simple medium format camera for roll film format 120, with one shutter time and three available aperture openings. The camera has three distance settings of moderate precision. So far, we have been unable to determine if it makes any difference whatsoever to the resulting picture where the arrow on the focus ring is pointing.

The Diana has always been made entirely out of plastic and manufactured so cheaply that it should really be classified as a disposable camera in terms of the material value, even though many modern disposable cameras have clearly superior optics. In contrast to the Diana, modern disposable cameras are also light tight. As if that was what it’s all about.

The lenses of the Hong Kong beauty contain simple meniscus lens elements with an image circle that is not wide enough to evenly light the picture in the 6×6cm frame. The viewfinder is simple, but sufficient for pointing the camera in the desired direction. There is no exposure counter. Instead, a red plastic window on the camera back helps

Double Dresden. Diana on expired Fuji Astia, cross-processed using C-41 process



you wind the film forward to the right place. If you do not want your image numbers exposed onto the film, you should cover this window with a bit of sticky tape when not using it to check the film transport.

Sounds dreadful, doesn't it? Yet despite, or rather *because* of its flaws, the Diana is very charming. The pictures have a soft, slightly dreamy quality that you can hardly achieve via digital means. The too-small image circle of the lens causes natural vignetting, rather than the kind you add via image-editing software. If you deliberately or accidentally fail to wind the film-advance wheel far enough, this can result in double exposures, producing an interesting panorama picture of overlapping images. The Diana is now sold as a “system camera.” In addition to five lenses, there is a flash unit, different film masks, and other accessories, all made of plastic. Plus you can also use it entirely without a lens—with shutter lock—as a pinhole camera.

The Holga

The Holga, launched in 1982 by Hong Kong company Universal Electronics Industries, follows a camera principle very similar to the Diana. The Holga designer, Ting-mo Lee, created a camera that features partial unsharpness, possible color distortions, and dramatic shadows in the image corners. The case is also prone to light-leak. Holga fans know (just like fans of the Diana) that there is one thing they definitely will not get with their camera: technically flawless photos. But the Holga is still one of the most popular toy cameras, and by now, has become an object with a cult following.



<https://en.wikipedia.org/wiki/Holga>

The Holga is slightly more robust, but even more basic, than the Diana. The different aperture settings, which appear as sun, sun with clouds, and cloud icons next to a lever on the lens, only work in the later models (from about 2009) and you can basically only shoot at 1/100 of a second with one single aperture (around f/13). Vignetting and edge unsharpness are comparable to those produced by the Diana. Some Holga models offer one single luxury: they feature an integrated flash.

All toy cameras have one thing in common: in terms of photography, they are great levelers. Since there is practically no technology to master, photographers can concentrate fully on the imagery of the picture. The popularity of Holga and Diana extended beyond the lomography movement. These cameras were used at universities and photography schools because they gave students an uncomplicated means for training their creative eye.

Both cameras are also great gateway drugs for getting into medium format.

10.1.3 The Pinhole Camera

Whether for hobbyists, experienced photographers or absolute beginners, pinhole camera photography is always an interesting exercise, and an experience that sticks in your mind. Compared to pinhole cameras, even Holga, Diana, and box cameras seem to have extravagant features. Taking pictures with a pinhole camera means getting right

down to the mere essence of photography and omitting pretty much anything except the laws of optics. You’ll experience how the basics of photography work: how a camera functions and how an exposure takes place.



Hanover, Marquardt International Pinhole (MIP)

Pictures from a pinhole camera are truly unique. They look ethereal and atmospheric, because unlike most modern cameras, the pictures captured are not just a moment, but a considerably longer period of time. Pinhole camera photography reduces the camera to its absolute minimum. Even the simplest lens is omitted. Instead, the camera only uses a very small hole, a pinhole, to bundle the light. The resulting pictures show

an infinite depth of field. All non-moving elements in the picture, regardless of their distance to the camera, are always represented with the same level of sharpness.



4x5" large format pinhole camera: MIP

Shots taken with pinhole cameras are long-time exposures. Depending on the size of the hole, the exposure time can be a few seconds, several hours, or even days. Because the tiny hole represents a very small aperture and lets in little light, pinhole photography is best suited for outdoor shots.



Hanover, town hall, developed in Caffenol-C-H

If you buy a standard pinhole camera, the camera’s f-number is usually known. A smartphone app can help you work out the suitable exposure time. This type of minimal camera is available in many versions—from very basic and cheap (in the plastic universe of toy cameras) to noble wooden cameras with or without brass fittings. You can find something to suit every taste. Even digital photographers will get their money’s worth. Specialist camera shops offer camera body caps with a built-in pinhole (some even offer sophisticated vignetting) for many common system cameras.

You can easily build pinhole cameras yourself out of a tea caddy, beer can, bin, matchbox, pumpkin, etc. Sometimes all it takes is a rainy afternoon, a suitable camera/container, a pin, some black cardboard, sticky tape, and spray paint.

10.1.4 The Subjektiv

You can have fun with “planned accidents,” and not just with camera models. You can also go crazy with various lenses and adapters.

Certainly one of the more luxury models of pinhole camera is the Subjektiv, developed by Monochrom in collaboration with Novoflex. This modular lens has a focal length of 65mm and is an optical system with four interchangeable optical modules. It gives you the option of capturing light in many different ways, and each module has its own characteristic imagery. You get a pinhole aperture, a zone plate, an acrylic lens element, and a meniscus glass lens. There are also pinhole aperture sieves and photon sieves available. All models have something in common: they are not suitable for technological precision and optically perfect photography. They are used because their optical flaws, faults, and quirks contribute to a creative image composition.

10.1.5 Zone Plate

A zone plate is a plastic disk or foil with a printed pattern of concentric circles. It has similar properties to a lens, but the mechanism of the pattern is light diffraction instead of light refraction. A zone plate shows more pronounced irradiation than a pinhole aperture, which can create a creamy, impressionist-style image.

10.1.6 Lensbaby

Although the name Lensbaby now refers to a whole product range of different lenses or lens-type optical attachments (some of which show resemblance to the “Subjektiv”), we still associate this term with the original version: a flexible, bellows-like tube with a simple lens and interchangeable aperture inserts.

When films age their properties change. With some films, the changes are subtle; with others, changes are more dramatic. There are films that are so stable they can still yield normal and first-class results beyond their best years. Provided you keep them protected from heat and radiation, you can enjoy regular results well past the best-before date.



Pentax 67 on expired Kodak Portra 160 VC

But most old rolls of film have an eventful past (many journeys, a few days spent on the parcel shelf of a car, and so on), and you'll often observe that the film grain is inconsistent with your expectations, and the color particles in the emulsion appear rougher or more enlarged than they should, so the sensitivity decreases. Rule of thumb: the higher the nominal film speed, the more it degrades over time when stored. You should also always expect color shift because not all of the pigments in the emulsion share equal stability. For example, you will notice that films lose their reds first, and the color effect changes to look yellow-green or blue. Some films show a desaturation of colors, some don't. Expired films are like a grab bag: you never know what you're going to get.

If you want to preserve the qualities of your favorite old film for longer, it's best to store it in a cold place. Storing film in the fridge or freezer can postpone its slow decay.



Black-and-white film has better storage stability than color film. We have used black-and-white film successfully (without any exposure time adjustments) even when it was 10 or more years past its expiration date. Films you discover in cellars are particularly interesting in this respect, because they've been stored at stable temperatures.

10.2.1 Experimenting is Fun

You can have hours of fun rooting around on photo platforms such as Flickr and 500px for pictures taken on expired film. You can admire the effects, but please do not make the mistake of assuming that the same film in your camera will behave in exactly the same way. Too much depends on how long the film has been past the expiration date, how it has been stored, which camera you are using, and the light conditions in which your photo is taken. The composition, age, and temperature of the developer chemicals also play a role in the result you eventually get. In the end, you can only do one thing: experiment, experiment, and experiment some more. Take the time and have fun checking out different makes and different film speeds at different times of the year in varying conditions. Feel out how overexposure or underexposure can affect the result, and figure out which camera works best with a certain film and its quirks. Be open to the wide range of results you'll achieve, and let yourself be surprised and enchanted by them.

Due to the color shifts, it is not necessarily a good idea to test out unfamiliar expired film in a portrait session, unless you and your model are specifically after unusual skin tones. Generally, landscape shots or architecture shots are better suited for testing expired films. If you come across a particular film that you like in its expired version, go ahead and get a few extra rolls. Most likely, they will behave consistently to each other, so you have plenty of spare material to accomplish even larger projects.

10.2.2 Film Speed and Light Conditions

If you search for tips on how to use expired film, you'll often hear that it should be used in plenty of light, for example outdoors or in the studio, due to its decreased sensitivity. The general advice is to expose one stop brighter for every five years the film has

been expired. Indeed, you can minimize the risk of completely failed shots if you follow this rule, but it does not always allow you to check out the interesting limits of old film. Some of our most impressively atmospheric shots on expired film came about by exposing it at nominal speed in indoor scenes with low light, and then developing the film normally. For our willingness to embrace risk, we were rewarded with an almost monochrome effect and very pronounced results in vibrant colors. If you want to be on the safe side, you can take a sequence of shots at different exposures.



“Silence,” Inzigkofen Monastery on expired Kodak Portra 400 VC, MHD 2004



"Total Silence," Inzigkofen Monastery on expired Kodak Portra 400 VC, MHD 2004

10.2.3 The Special Joys of Cross Processing

Cross processing, or developing slide film in C-41 process or color negative film in E6 process, offers plenty of room for creative experiments, even with fresh film. In this case, you can achieve many different and unpredictable results just by varying exposure settings or using different makes of film.

Slide film that you're going to cross process often benefits from overexposing the film by up to two stops. On the other hand, it can sometimes pay off to starve the film of light. Many cross-processed films show an entirely different color temperature when you underexpose them than when you overexpose them. Pictures tend to have a warm color climate when overexposed, and dark image areas often look very cool. If you cross process expired film, the film's rougher structure and already present color shifts will be emphasized for a more surreal effect.

10.2.4 A Residual Risk Always Remains

The many wonderful and often dreamlike pictures on exposed film that you can marvel at online are certainly only a fraction of the number of shots that were actually taken. You can assume that there are also many unsightly results that are not being displayed online. That’s the risk you have to accept: there is no guarantee that your pictures will be successful.

10.2.5 Treated Film

Are experimental optics, expired films, and multiple exposures still too tame for you? If so, taking a trip into the realm of pretreated or post-treated film may be for you. Not so very long ago, you were able to go to small online shops to buy film material that had been manipulated in various ways. While we were working on this book, these online shops seem to have disappeared. Perhaps the market for ready-made experimental films is not a very profitable niche. However, those who treasure complete surprise derived from utterly unpredictable results might like to go hands-on themselves. This does require a bit of time, but is much cheaper, and also more fun. For some effects, all you need are a few DIY tools and a changing bag. For others, you need white goods and a darkroom.

If you search online for “film photography hacks” you will quickly find tips. The number of possible tortures you can submit your film material to is enormous. You can bend or scratch your film before or after exposure to get more texture into the picture. You can wash the film in the washing machine or dishwasher, spray it with salt water or soak it in fizzy drinks or vinegar, followed by a long bath in cold water and a hair-dryer session in the darkroom. Often these experiments are done with slide film, which is then cross developed in C-41 process.

Photo emulsions that have been subjected to such treatment react in a totally unpredictable way, and it’s hardly possible to match the subject to the effect. Depending on your approach, you can observe more texture on the surface, color shifts, color clouds, and/or partial tearing of the light sensitive layer.

Warning: We found many interesting and beautiful pictures online. But we did not try any of these experiments ourselves. If you want to experiment, you are doing so at your own risk—and maybe it’s best not to use the most valuable camera you own for these experiments.



lomography.com—Dr. Lab Experiment One:
Do the Dishwasher

<http://www.lomography.com/magazine/47053-dr-lab-experiment-one-do-the-dishwasher>

gizmodo.co.uk—30 Ways to Hack Your Next Roll of Film

<http://www.gizmodo.co.uk/2011/12/30-ways-to-hack-your-next-roll-of-film/>

10.3 Double and Multiple Exposure

Double exposures are among the great creative playgrounds in photography. They are rather unpredictable and use up a lot of film, but they are great fun and always good for unexpected results. They offer the option of combining many small stories into one, or presenting them side-by-side in one picture. You can correlate things that are foreign or combine different perspectives of a subject into one picture. When using color film, the colors of the individual exposures also overlap and mix under the principles of additive color. If you combine all of this, you can create surreal image worlds that can be interpreted very differently by each viewer.

Although unplanned or even unintentional double exposures can often have appealing results, you can get more success if you do more than just pressing the button more than once. You are trying to overlap the exposure of two (or more) pictures in such a way that you get the different levels to interact, not just blend together.



Accidental double exposure. Greenhouse in Schönbrunn Palace park, Vienna. Graflex Crown Graphic on wephota ortho 25.

If you want to control your multiple exposures, you can draw up a sketch of the envisaged effect and think carefully about how to arrange the central image elements in the viewfinder. But often, it's enough to visualize where the darker areas of the shot will be, because that's where a second exposure will be the most obvious. High-contrast shots with larger bright and dark areas are best for practicing. Combine patterns and textures with portraits or architecture, close-ups with things that are far away, water with desert, or silhouettes with plants: your limit is your own imagination!



Double exposure with Diana F+ on expired Ilford XP2

If you want to give both exposures the same amount of space in the finished picture, stick with halving the amount of light per shot. But you can also emphasize one of the two exposures more than the other by splitting the exposure in a different ratio, such as $\frac{1}{3}$ to $\frac{2}{3}$.

There are cameras where precise exposure control is hardly possible, or not possible at all. This includes simple cameras such as the box camera or the Diana. If you want to use these for multiple exposures, just use a lower speed film. As a basic rule: negative film is better suited than slide film because it has a greater exposure latitude. Black-and-white film is more forgiving than color film.

Which Cameras are Suitable?

Multiple exposures are easiest to achieve with cameras where the film simply has to be wound manually via a rotary control. As soon as you “forget” to wind it on, double exposure is possible. That’s how it works with the classic box camera or with a Diana or Holga.



Double exposure with Agfa Synchron Box on expired Kodak Portra 160 VC

With many camera models, the shutter cocking mechanism is linked to the film advance. There are cameras that have a button for disabling this mechanism, so you can cock the shutter without advancing the film. This button is often referred to as the double exposure switch or the MX switch (MX = Multiple Exposure). Some cameras can also be tricked by pressing the rewind button while cocking the lever. But this method

does not always work and is not very accurate because you cannot tell how much of the film advanced, and your shots can overlap around the edges.

If your favorite camera does not like double exposures or refuses to be tricked, you can just put the film into the camera twice. With 35mm cartridges, this is quite straightforward. Make sure you do not completely rewind the film at the end of the first sequence of shots to prevent the film leader from vanishing into the cartridge. (If that happens by accident, a film leader retriever can help.) Then you can put the film back into the camera a second time and expose it again. To make sure the new pictures are exposed in the same places as the first, you should mark the film with a foil pen at the point where the film was pulled out of the cartridge for the first exposures. Then wind the film to the same place before threading it back into the camera so the result will be accurate.



*Multiple exposure
in old Elbe Tunnel,
Hamburg, Germany*



Fans of unplanned double exposures pass an exposed film on to a photographer friend for the second set of exposures. Let yourself be surprised by the results and see what can happen if two different views of the world mix together.

Roll film is not rewound at the end of the film, but advanced fully onto the take-up reel and held down with sticky tape. If you want to put roll film back into the camera a second time, you have to wind it onto an empty reel in the changing bag, first.

Fake Double Exposures

Another option of working with different levels in one picture—creating a kind of fake double-exposure effect all at once—is playing around with simultaneous reflections and views through other objects. This enables you to combine different perspectives. For the viewer, this forms a kind of picture puzzle that will hold the eye for more than just a few seconds.

*“Waiting,”
Pentax 67 on
Kodak Tri-X 400*





"You are looking out," Pentax 67 on Kodak Tri-X 400

Long Time Exposures

In the early days of photography, when the photo material was not very sensitive and the lenses were not very short, exposure times of 5 seconds or more were a necessity. If you sat for a photo portrait, your smile may well have frozen on your face. Sitting still for so long was incredibly tiring, which is perhaps why the people in the old photos always look so serious.

Today, the situations in which you *have* to use long exposure times are getting rare, but situations in which you can have fun with long exposure times are still a-plenty. The long exposure time has become a creative tool. If you use it during bright daylight instead of at night, it has the potential of producing a photograph that can turn the viewer's way of looking at things on its head.

Visible or Invisible?

You can use long exposure times to turn people who are walking through the picture invisible. If the people only appear in the viewfinder for a short time in comparison to the shutter time, they will not leave any visible traces on the emulsion. An absence of people where you would expect to see people can create a very special atmosphere in architectural shots. On the other hand, you can also emphasize how lively a city is by not freezing ambient movement, and instead making it visible through blurriness.

In contrast to exposures that happen in the blink of an eye, shots with long exposure times do not just capture a moment. They show the subject in time. They visually shrink down the time of the shot to a single moment for us as viewers. Movements of things or people are blurred, and seem to flow through time. Depending on whether you expose for a few seconds or several days, you can capture moving clouds, flowing water, or the wilting of a flower. For the human eye, this suddenly reveals connections that were hidden before.



Long exposure time along Annapurna Circuit on Efke 50, shot with Holga-120WPC

Accessories

To be able to play around with long exposure times in daylight, you often need a bit of help. Even with low-speed film of ISO 25 or 50, and depending on the weather, you may only achieve exposure times of a second at the most, even with the aperture closed. This is often not enough to really make movement visible. ND (Neutral Density) filters or gray filters can help. With these, you can reduce the light getting in through the lens as much as is required to achieve the desired exposure time.

Depending on the camera type or model, you have different modes to choose from for setting long exposure times. Only a few analog treasures feature an automatic system that covers exposure times beyond one second. Most cameras have either a bulb mode (B), where the shutter is kept open for as long as you hold down the button, or a (T) mode where the shutter opens when you press the button the first time and closes with the second press. In both cases, you should use a (lockable) cable release or a remote release for more modern cameras, for shake-free triggering.



You should also definitely arm yourself with a sturdy tripod.

Reciprocity Law Failure

Every film—but also other analog materials, such as photo paper—has a typical sensitivity to light. Within certain limits, you can assume that the ratio of incident light to optical density is linear, and yields comparable results in constant lighting (light intensity multiplied by exposure time). This is referred to as the Bunsen-Roscoe law or reciprocity law. With long exposure times (and with particularly low light), a photographic emulsion often no longer behaves in a linear way. Doubling the exposure time does not necessarily produce twice as much density on the film. In this case, the exposure time determined by the light meter needs to be extended by a certain factor for each specific material. This effect is referred to as reciprocity law failure, reciprocity failure, or Schwarzschild effect (after the person who discovered it, astronomer Karl Schwarzschild). Depending on the material, reciprocity failure can occur with exposure times of more than about one second (with color film, it can even happen at about 1/30 second).

Check the packaging of the film you are using or the included data sheet: the curve shown there will show you exactly which value you'll need to correct the measured exposure time.