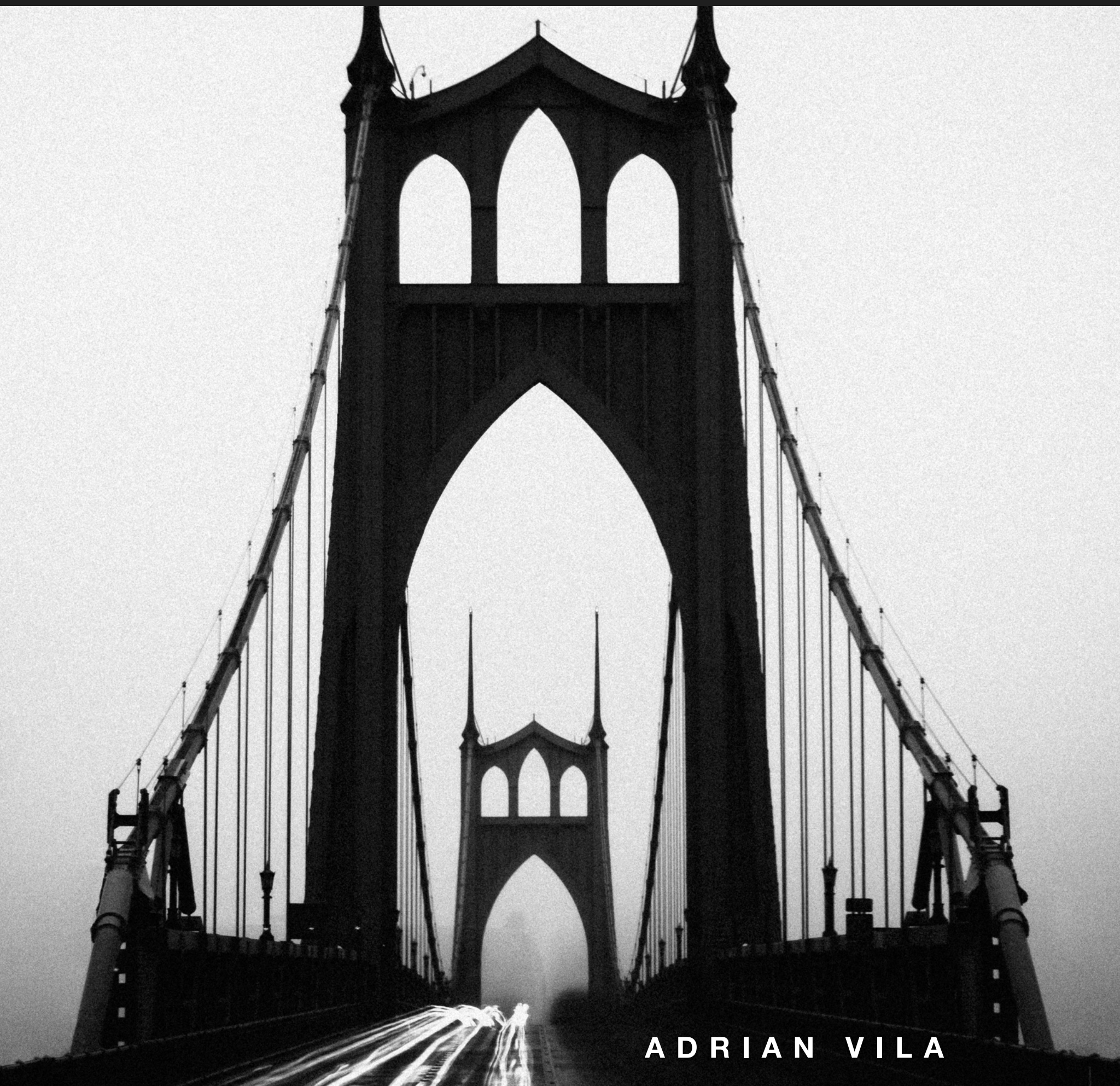


HOW TO MAKE STUNNING IMAGES THAT DEFY TIME

LONG EXPOSURE

PHOTOGRAPHY



ADRIAN VILA

to Luna and Rachel, my two biggest fans

About this book

Thanks for downloading and taking the time to read this book.

“Long Exposure Photography: How to create stunning images that defy time” was first published in September, 2018, and is distributed as a free-to-download eBook, under a Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) license.

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About the author (me)

I'm Adrian Vila (aows), a Spanish-American photographer currently based somewhere in Europe.

Most of the work shown in this book was made with my medium format film camera, a Bronica SQ-Ai. I also use a digital camera, a Sony a6500. The content in this book applies to both digital and film, as we'll talk about the differences when capturing long exposure on both mediums.

You can find a lot more information about me, articles about photography and the outdoors, along with much more educational material on my website: <https://aows.co> (don't miss out on any of this by [subscribing to my newsletter](#)).

I also have [a YouTube channel](#) where I try to bring you along on my adventures across the US and the world.

Find me everywhere else: [Instagram](#), [Twitter](#), [Facebook](#).

Contact me directly using my email: hi@aows.co



What Long Exposure Photography is and Why I love it

I love long exposure photography. This technique allows me to distort reality, to depart from it, to create something new that doesn't necessarily exist, to find my own voice and offer a unique vision of the world.

I realize this might sound a bit crazy, or at the very least, like I'm exaggerating. Truth is, I'm constantly seeking scenes I can capture on a long exposure.

But, what is it?

In Long Exposure Photography, you expose your images for a longer period of time than usual. As simple as that.

When you take a photo with your camera, be it a phone or a SLR, most likely you -or your camera- are using speeds of between 1/60th and 1/2000th or faster. These speeds freeze the world, and create snapshots of a brief moment in time. This is usually what you want!

I'm sure you've taken a photo of a fast moving object, which appeared blurry on your picture. Maybe it was a car at night, or a dog running too fast for the settings of the camera. It was probably not intentional, either. You wanted to freeze that car, that dog.

Just imagine for a second what would happen if you exposed such a photo for a little bit longer. A shot of a busy street at night for 1 or 2 seconds -cars and people would show up very blurry, even if you'd still be able to recognize them.

We are entering Long Exposure Photography territory.



A new world

What would happen if we kept the camera capturing the scene for 10, 20 or 30 seconds, though? Most certainly, you wouldn't be able to tell individual cars or persons.

What about 10 minutes? Or even longer, hours?

A whole new world opens to us, one that we can imagine but we can't see.

Is it luck or creativity?

While you can make your own guesses, a big part of long exposure photography is left to chance and luck.

This is not to say your guess isn't educated, though. After gaining some experience shooting long exposures, you can predict what the scene will look like.

There's always room for accidents: sometimes they'll be of the "lucky" kind, and more often than not, they'll ruin your image.

It can get frustrating at times, but I find this to be an important component of Long Exposure Photography, and one that I came to enjoy. I love surprises, and I must admit I feel a little bit disappointed when the image looks exactly like I've envisioned it.

It's not for everyone

Long Exposure Photography is not for everyone. It requires specific gear, patience, and a different approach to photography.

I love capturing what can't be seen. Also creating abstract images of otherwise ordinary locations. Other photographers prefer to show the world as it is.



It tells a story

Long Exposure Photography can tell a story, usually the passing of time.

Capturing the clouds moving, the water flowing, the cars passing by... All of this captures a period of time instead of a moment.

When you add fixed elements to your scene, the story can get deeper and more interesting. Some components of your image will be affected by time, while others won't. The possibilities are endless.



Conclusion

Take Long Exposure Photography as what it is: yet another tool on your belt.

I love it because it allows me achieve what I want in an image. I use it along other techniques: black and white, color filters, square format...

In this book, we will talk about everything related to Long Exposure Photography: how to take a long exposure, what kind of gear we'll need, tips and tricks, how to find a scene suited for a long exposure, how to do extreme long exposures, how to do it on film, and many more things.



Camera Gear and Equipment

Camera gear matters. And when it comes to Long Exposure Photography, it matters even more.

Whatever camera we use (it could be a phone or a 8x10 large format camera), we need to be able to control the shutter speed and increase it for extended periods of time.

The greater control you have, the better.

Now, there are still ways to shoot long exposures even if we can't control the shutter speed. We'll talk about those too.

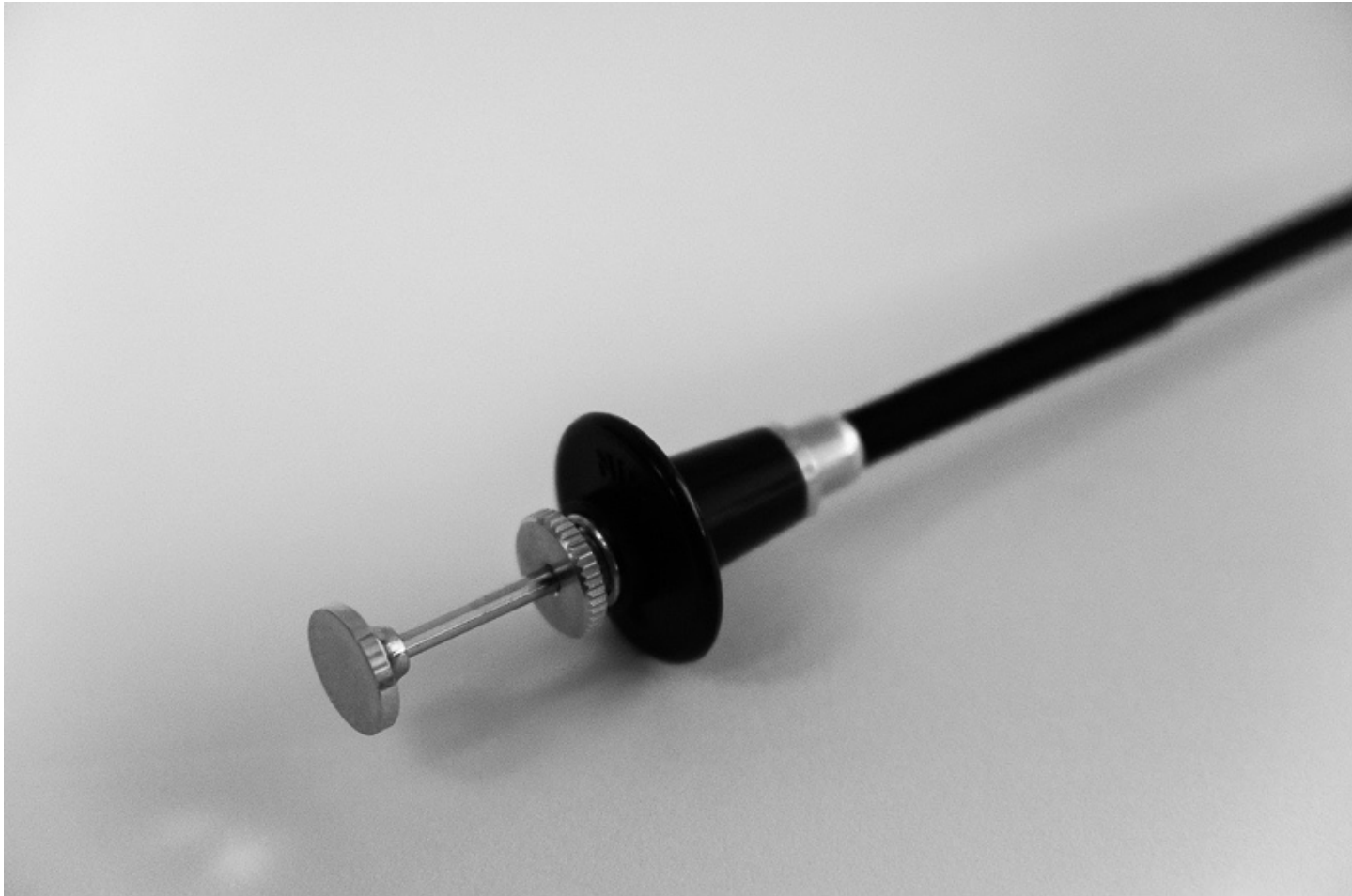
The Camera

Almost every digital camera will let you set the shutter speed up to 30 seconds.

Ideally, your camera will have a bulb mode. When selected, the camera will take an exposure for as long as the shutter button remains pressed, allowing us to go beyond those 30 seconds.

If you have a digital camera, you should find bulb when shooting in M (manual) mode. If you have an analog camera, it should be one of the options for your shutter speed.

No bulb mode? No worries, you can still take long exposures - just limited to the longest shutter speed your camera offers.



Cable Release / Shutter Remote (maybe)

We don't want to keep our finger on the shutter button while taking a long exposure. First, because we'd get tired. And second, because we'd introduce camera shake and blur the image.

Why do I say "maybe" then?

It depends on the time - only in bulb mode do we have to keep the button pressed. If we select the shutter speed in the camera, then we can release the button and the shutter will remain open for that time.

Other cameras, like some Olympus, have the option to keep the shutter open until the camera thinks the exposure is correct. No interaction needed, thus no remote required - I'm really intrigued by this feature, and I want to try it someday.

Analog cameras like my Bronica SQ-Ai have lenses with a built-in **T mode**. Unlike bulb, we don't have to keep the button pressed when we have T mode on. Instead, the lens will keep its shutter open until we turn the switch off. The cable release would only be required if we want to avoid camera shake when pressing the shutter button at the beginning of the exposure -the longer the exposure, the less significant that shake will be.

Lastly, some cameras don't even support a cable release even though they have bulb mode. I'm looking at you, Holga! You can still try holding the button during the entire long exposure, as I did a few months ago. As you can tell from the blurry image down below (I held the shutter for almost 7 minutes!), do this only if you are after this look or want to get a blister on your finger.





ND Filters

Now that we know how to keep the shutter open for as long as we want and how to avoid camera shake, we are ready to move on to one of the key aspects of long exposure photography: **ND filters**.

The problem with having the shutter open for long periods of time is that, even using the slowest ISO available for the camera (100, 64, or even 25) and the smallest aperture possible (say, f/64), our images would be overexposed after just a few seconds during daylight.

How can we take a long exposure of several seconds, or longer, like minutes, hours, and even days then?

We need sunglasses for our camera!

Introducing **Neutral Density Filters**. A ND filter is a piece of glass we put in front of our lens that blocks the light. A good one will block it evenly throughout the spectrum, a worse one will create a color cast.

ND filters can block more or less light, something that is usually measured in stops.

For example, a 2-stop ND filter will let through just 25% of the light; a 10-stop ND filter will let only 0.1% of the light pass through!

As you can imagine, our shots would be rather dark if we don't adjust the settings. To increase the exposure we can either open the lens (using a smaller aperture number) or... you guessed it, decrease the shutter speed!

Example: our camera is giving us settings of 1/60sec, f/7.1 and ISO100 for a regular shot of a scene. If we use a 2-stop ND filter, we can increase the exposure time by 2 stops:

1/60 -> 1/30 -> 1/15

If we had a 6-stop ND filter, that'd be:

1/60 -> 1/30 -> 1/15 -> 1/8 -> 1/4 -> 1/2 -> 1 second

If we used a 10-stop ND filter, we'd get *16 seconds*.

And if we had a 15-stop filter, we could take a *8:30 minute* long exposure!

This is how we are able to shoot long exposures without overexposing our images.



What ND filters to buy

There are two types of ND filters: *variable* and *fixed*.

A variable ND filter (see image above) can replace a whole set of fixed ND filters, but they come with serious drawbacks (they are more useful for video). That's why I'd recommend to stick with fixed ND filters for long exposures.

They are usually cheaper and better. Furthermore, none of the variable filters I've used indicate how many stops of light they are blocking, making it really hard or near impossible to calculate an accurate exposure time.

Among the multiple brands you can find, I can only talk about **Lee**. I have a few of them: [6-stop ND](#), [10-stop ND](#) and [15-stop ND](#). The overall quality is phenomenal even though they have a slight blue cast.

I use those 3 in very different scenarios: the 6-stop ND for low light situations like right after sunrise or right before sunset, the 10-stop for cloudy or dark days, and the 15-stop filter for bright and sunny days.

They are not cheap, but they will last a long time if you treat them well. Mine are still perfect after a long time of heavy usage.

There are more brands out there, like **NiSi** or **B+W**. Unfortunately I haven't used any of those, so you'll have to do some research if you want to find out which one is the best for you.

Along with the ND filters, you have to buy a holder (for example, the [Lee holder](#)) and an adapter for your lens. The adapter is surprisingly expensive too, so I bought a rather big adapter (72mm) and then got cheap step-up rings for each lens I have.



The cheap route: welding glass

I know what you are thinking: “damn, long exposure photography is expensive”. It is true, good ND filters aren't cheap. Luckily, there are alternatives.

One of them, that I used for a while, is to replace the expensive filters with cheap welding glass. As I said, an ND filter is just like sunglasses for your lens, and welding glass pretty much accomplishes the same.

You can buy this kind of glass for a few bucks in a hardware store (or Amazon), and you can use some tables with the equivalence in stops of light. Give them a try before going out to make sure the table you have is right, though. This is the one I used before:

Shade Number	F-Stop Reduction
1	0.0
2	1.4
3	2.8
4	4.3
5	5.7
6	7.1
7	8.5
8	10.0
9	11.4
10	12.8
11	14.2
12	15.6
13	17.1
14	18.5
15	19.9

As you can imagine, there's a reason why people still spend money on ND filters. A few, actually.

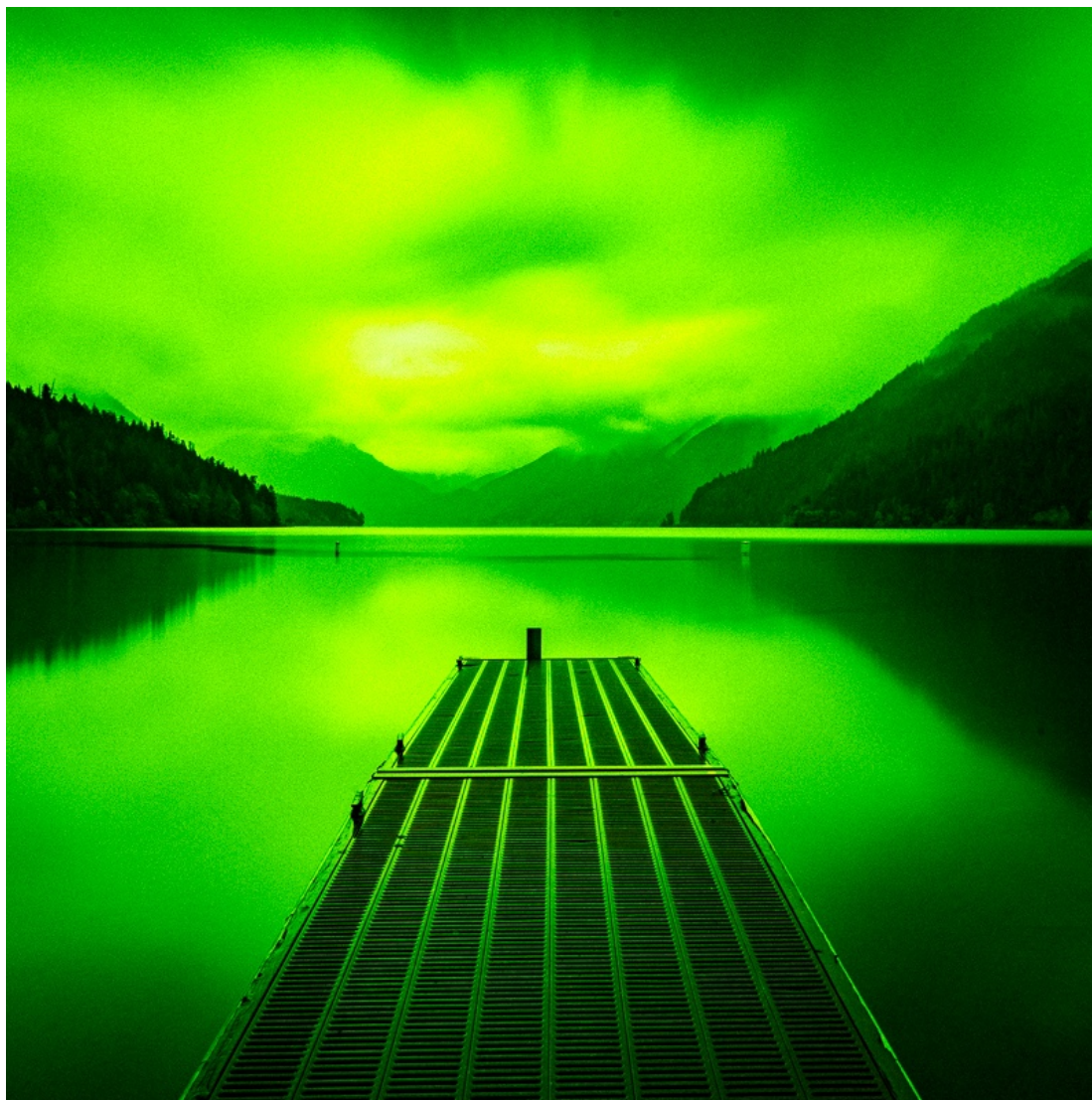
The first one is quality: welding glass isn't as friendly to light as a ND filter and you'll get softer images. Also, you'll get a strong color cast (see the original RAW file for the previous photo on the next page). It can be fixed in post, but it's a pain.

I didn't mind those two issues because my images aren't about being sharp, and most of the time the color cast isn't an issue because I make monochrome images (you lose the ability to manipulate colors individually, though).

I still went ahead and invested in ND filters because they are so damn convenient: you can't really use a holder with welding glass, so I had to somehow attach them to the camera with a rubber band.

This approach doesn't really work with long cameras like the Bronica SQ-Ai, nor does it work well with a lot of zooms (the pressure of the rubber band will make the lens collapse, so you lose your framing).

If you shoot with DSLR-like camera and use mostly primes, and you are just getting started with long exposure photography, please go and buy some welding glass and rubber bands before investing in expensive ND filters.





Tripod

It almost goes without saying, but in order to keep the camera in place during the exposure, you'll need a tripod.

The bigger and heavier the camera, the better the tripod should be. A shitty tripod will ruin your image under the lightest wind.

The longer the focal length you are using, the better the tripod should be. If you are shooting wide, a few vibrations here and there will not be noticeable. If you are using a telephoto lens, do not breathe within 10 feet of the camera or you'll ruin your shot.

I use a [Manfrotto 055 with a XPRO3 ballhead](#) and am very happy with it (it's heavy though!).



Software-based long exposures

There's another way to take long exposures that doesn't require bulb mode, ND filters, or even a tripod! It comes with some downsides though.

Instead of keeping the shutter open, we take a bunch of shots and then blend them together with special software -for example, Adobe Photoshop.

This creates the effect of a long exposure.

One downside is that the light in your image doesn't "add up" the same way. This means that while a shutter opened for 10 minutes (for example) will gather enough light to create a properly exposed image, no matter how many individual

images we take during that period of time, if they don't have data in the shadows there is no way we can recover it afterwards.

Another downside: taking dozens, hundreds or even thousands of shots isn't that good for your camera (shutters have a limited life expectancy). Having the shutter open for a long time is no problem, though.

And while you don't have to use a tripod -software like Photoshop can align the images-, the worse you are keeping the camera steady the more cropped your final composition will get.

Lately, I've seen some apps popping up that let you take long exposures this way, and they take care of the whole thing for you. Adobe Lightroom offers this feature, still in beta. The image on the previous page was taken that way, handholding my iPhone 7 Plus.



Accessories

You might need to cover the viewfinder of your camera, if it leaks light. Cardboard or a big cloth should work, but keep the wind and shake in mind (the camera will be less aerodynamic).

When using bulb mode, you will need something to measure the time. You can use your phone, or go fancy and get a Casio watch like mine. Just sayin'.

It's a lot of gear

If you want to become a long exposure photographer, be ready to spend some money, make room in your backpack for all this extra gear and prepare yourself to spend a lot of time outside -actually, this is the best thing about long exposures, it's such a relaxed way to make images.

My recommendation is to go the welding glass route first, if you can, and then upgrade to a ND filter system if you like the process but feel limited by the quality or the convenience.

As usual, do not obsess over sharpness or color accuracy too much. Think more about the stories you want to tell and the compositions. Long exposures are very different from regular shots and will require a different approach.



How to take a Long Exposure

We already know what a long exposure is and why this technique is so awesome. And we know the camera gear and equipment we need. In this chapter, we'll talk about how to actually use that gear to take a long exposure.

Note: long exposures on film are a little bit trickier. We have to take other factors into consideration and that deserves its own chapter.

I'll show you how I take a long exposure with my **Sony a6500** step by step. The controls on your camera might have a different name, but the process should be pretty similar. If you have any questions, don't hesitate to send them to hi@aows.co.



Meter the scene as usual

Let's forget for a second that we are taking a long exposure. Compose your shot as usual and either meter the scene manually or let the camera work its magic. Try to use an aperture between f/6.3 and f/11, more or less.

I use P mode most of the time, but it doesn't really matter how you do it. The goal is to get an accurate reading of the scene.

In the example I'm going to be showing, we have an initial settings of ISO 100, f/7.1 and 1/20th.

Think of the long exposure time FIRST

What most photographers do here is to take that reading and increase the exposure time accordingly to match the ND filter they are using. This is a mistake and it should be done the other way around.

In order to create the image you have in mind, you need to know -more or less- how long the exposure will be. Depending on your subject, a 5-second exposure could result in a dramatically different image than a 30-second exposure.

We will talk about how to choose the right exposure time for different subjects in a future chapter.

In our example, I'm looking for an exposure time of around 15 seconds. That's more than enough to smooth the water out without creating excessive blurriness on the sticks. We will work with these settings to get the exposure time we are looking for.

Little Stopper		Big Stopper		Super Stopper	
Normal Shutter Speed	Little Stopper +6 stops	Normal Shutter Speed	Big Stopper +10 stops	Normal Shutter Speed	Super Stopper +15 stops
1/1000	1/15	1/1000	1 second	1/1000	30 seconds
1/500	1/8	1/500	2 seconds	1/500	1 minute
1/250	1/4	1/250	4 seconds	1/250	2 minutes
1/125	1/2	1/125	8 seconds	1/125	4 minutes
1/60	1 second	1/60	15 seconds	1/60	8 minutes
1/30	2 seconds	1/30	30 seconds	1/30	16 minutes
1/15	4 seconds	1/15	1 minute	1/15	32 minutes
1/8	8 seconds	1/8	2 minutes	1/8	1hr 4mins
1/4	15 seconds	1/4	4 minutes	1/4	2hrs 8mins
1/2	30 seconds	1/2	8 minutes	1/2	4hrs 16mins
1 second	1 minute	1 second	16 minutes	1 second	8hrs 32mins
2 seconds	2 minutes	2 seconds	32 minutes	2 seconds	17hrs 4mins

Tables

Your ND filters should have come with exposure guides like the one above from Lee.

As I mentioned, instead of reading the table from left to right, we'll do it the other way: from our desired exposure time (remember, 15 seconds) to the shutter speed we will need in our camera to get it.

Highlighted, our options to get those 15 seconds:

Little Stopper		Big Stopper		Super Stopper	
Normal Shutter Speed	Little Stopper +6 stops	Normal Shutter Speed	Big Stopper +10 stops	Normal Shutter Speed	Super Stopper +15 stops
1/1000	1/15	1/1000	1 second	1/1000	30 seconds
1/500	1/8	1/500	2 seconds	1/500	1 minute
1/250	1/4	1/250	4 seconds	1/250	2 minutes
1/125	1/2	1/125	8 seconds	1/125	4 minutes
1/60	1 second	1/60	15 seconds	1/60	8 minutes
1/30	2 seconds	1/30	30 seconds	1/30	16 minutes
1/15	4 seconds	1/15	1 minute	1/15	32 minutes
1/8	8 seconds	1/8	2 minutes	1/8	1hr 4mins
1/4	15 seconds	1/4	4 minutes	1/4	2hrs 8mins
1/2	30 seconds	1/2	8 minutes	1/2	4hrs 16mins
1 second	1 minute	1 second	16 minutes	1 second	8hrs 32mins
2 seconds	2 minutes	2 seconds	32 minutes	2 seconds	17hrs 4mins

The easiest way would be to use the 10-stop ND filter. In that case we need to modify our settings until we get a shutter speed of 1/60th. A slight increase in the ISO should move the original value of 1/20th to 1/60th.

We could use the 6-stop ND filter as well, almost 3 stops away from our original shutter speed. This would require stopping the lens down to f/16 or so.

It's not pictured on the table, but we have a third option if we wanted to use the 15-stop ND filter. In this case, we'd need to dramatically increase the ISO: we need a shutter speed of 1/2000th, 7 stops away from our original shutter speed of 1/20th. We could keep the aperture of f/7.1 by increasing the ISO to 12800. If we can afford to change the aperture, something like f/4 and ISO 3200 would be more reasonable.



Let's stick with the 10-stop ND filter. After adjusting the exposure, our new settings are ISO 400, f/8 and 1/60th. This shutter speed of 1/60th will become 15 seconds when using the 10-stop ND filter.

Switch to manual mode

Switch from P (or whatever mode you were metering on) to manual and make sure to dial in the settings we got in the previous step.

If our exposure is longer than 30", we need to select BULB, use a cable release and stop it when the time is up.



Focusing

Depending on the camera, you might be able to auto-focus and lock it in place during the whole exposure. My Sony camera is supposed to do that, but it's not the first time that it decides to refocus during the exposure.

To avoid this, I auto-focus and then switch to manual focus. That way I make sure the camera won't be changing the focus and the final image will be sharp where I wanted it to be.



Put the filter on

Now it's time to put the filter in front of the lens -make sure no light can go through the corners. Other than that, this step is pretty simple.



Avoid camera shake with shutter delay

I usually use a shutter delay of 2 seconds. That means that the camera will wait for 2 seconds after I press the shutter before starting the exposure. This way, I make sure there will be no camera shake.

Fire!

We are ready: press the shutter and wait for the exposure to finish.

If it's raining or snowing, you'll need to clean the ND filter every once in a while or the drops will show up on the frame.



Take another one, or two

No matter if I'm shooting digital or film, I like to take at least a couple of long exposures of the same composition.

This is even more important when there are elements in the photo that are constantly moving. [See this post for an example of what I'm saying.](#)

Conclusion

The technical aspects of long exposure photography are easy once you get familiar with converting shutter speeds to exposure times. Over time, you'll even start to memorize them and you won't need any tables.

Avoiding camera shake and keeping the filter clean are key aspects to long exposure photography, along with of course having enough power to keep the camera alive!

In the next chapter of this series, we'll dive into what makes good subjects for long exposure photography and how long they should be.



Choosing the right subject for
our long exposures

In this chapter, we are going to talk about what is arguably the most important thing when it comes to making good long exposure images: *the subject*.

While there are no strict rules in long exposure photography and the results might be unpredictable, we should be aware of a few concepts that are usually true.

After talking a bit about them, I'll be showing you plenty of examples of what you can expect to create with long exposures. These are examples from my own archive and represent only a tiny part of what can be achieved with long exposure photography.

This is, in my opinion, the most creative technique in photography, allowing you to develop your own vision and create very unique imagery.

Practice and dedication are required to get the results we want, though. If you like any of the images you see here, try to get out and create them (or something very similar) by yourself. Then, you can add your own twist to it. This is the only way to learn.



We need movement

If you try to take a 5-minute exposure of a wall, you will be disappointed to find out that the end result looks like a 1/60th of a second exposure.

Long exposure photography needs movement: clouds, water, cars, people, stars... almost anything that moves will work.

But not too much

As we'll see in the examples, if everything in the frame is moving (think of clouds or water) the long exposure will result in an abstract image. That's fine if that's what we are after.

We'll need to add fixed objects to tell stories with long exposures.

Same composition rules

Composing a long exposure should be like composing a regular shot. That means that whatever rule you might use to compose your images (like the rule of thirds) can be applied here as well.

Be prepared for the unexpected

When you leave your shutter open for several minutes, unexpected things might happen. Most of the time, you can't control what is going to pass in front of your camera, and something might show up in your image.

You might be photographing at night just to have a car pass by with the lights on. Someone might step in front of your camera while you are capturing a long exposure of a building.

Whatever it is, be prepared to embrace the unexpected. Sometimes, accidents are the best thing that can happen to you in long exposure photography. They can create a more compelling image!

Abstract Long Exposures

If everything in our frame is moving and we keep the exposure going for long enough, we'll get abstract images.

The easiest way to do this is to photograph the sky or water. Without a fixed subject to focus on, the passing of time makes those clouds and water look like textures or patterns.



Can you tell what this is?

This is a long exposure of a beach, taken from an elevated vantage point. The top half of the frame contains the sky and some morning fog. The bottom half of the frame is reserved for the ocean, some waves and those tiny white dots: seagulls on the beach.

Even though this image has more elements than just sky and water, it's hard to tell what those small white dots are, resulting in a very abstract picture.



The Pacific Ocean and some clear night skies.

If this image looks familiar, it could be because of *Sugimoto's Seascapes*, an incredible collection of long exposures of oceans all around the world that I recommend looking at.

Another abstract result.

Telling a story with fixed subjects

Adding fixed objects to long exposures will create images that aren't abstract, but rather will tell a story. Think of structures like bridges, buildings, or even trees.



Wasco County, Oregon. Out in the high desert, wind turbines dominate the landscape. They can make really good subjects for long exposures as well.

Even better is to find one that isn't working while all the others are moving at the dance of the wind.

In this frame, you can also see the effect of the long exposure on the clouds. If you took a regular exposure of this scene, it'd seem that all of them were either working or stopped. The long exposure tells the story of that one wind turbine that wasn't moving that day.



María Pita, A Coruña, Spain. This is a very popular spot in the city, and I wasn't sure about how to photograph the statue.

It was a mostly clear day, so I waited for some clouds to be in the right position to make a long exposure, and then I made a few exposures. The result is much better than I thought it'd be, I really like the way those clouds came out.

Here, the clouds add even more drama to a scene where a statue is holding a spear.



Another image from Wasco County, Oregon.

This photograph was one of my first long exposures made on film. The sky is pretty dramatic, even though the first thing you probably notice in this frame is the silos.

They are the brighter part of the image and make a good subject against a darker background. The flag adds a little touch and contributes to the story.

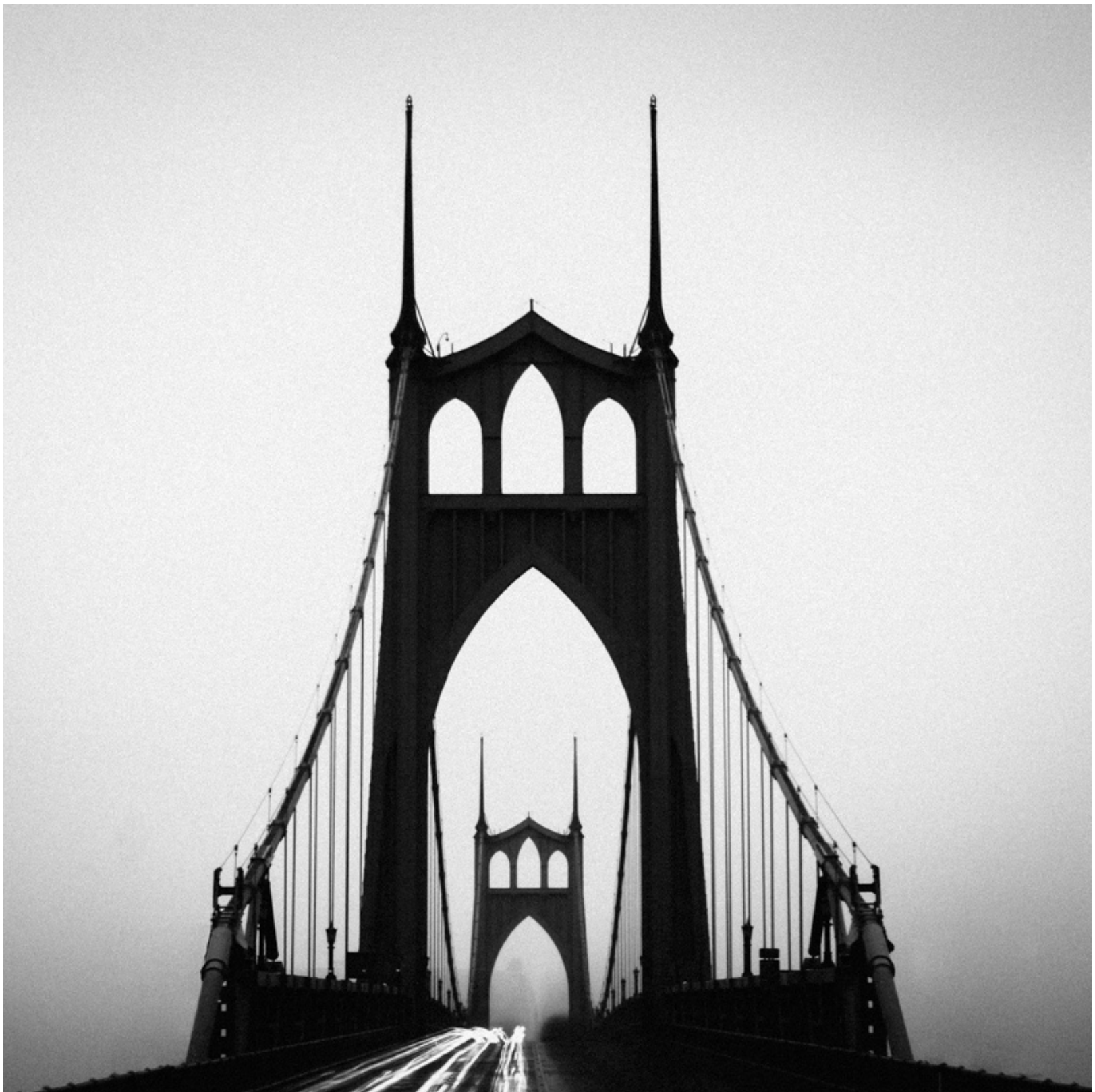
I like this image but it's a little bit too complex. The long exposure tells the story of an overcast, windy and bright day. It does so with too many elements: clouds, flag, river and wind turbines.



This image, made in the Willamette National Forest, Oregon, tries to tell another story. In this case, one of a windy day.

Taken from below, I pointed the camera towards the top of these tall trees, focusing on the lower branches that weren't moving. That created some contrast between those branches and the ones higher up that were being hit by strong winds.

Making things disappear



This is the St John's bridge, in Portland, Oregon. Arguably the most beautiful one in the *City of Bridges*.

I made this long exposure on a rainy and foggy day, to remove all the distractions from the background. In normal conditions from this vantage point

you'd be getting a lot of houses and other structures behind the arches. But this day, visibility was so low that only the bridge was visible.

The problem with this location is the heavy traffic. My idea was to make an image of an empty bridge, but the rain and fog came during rush hour and there were hundreds of vehicles on the bridge.

This is why I took a long exposure, to "remove" the cars. And I quote remove because you can still see their light trails.

In the end, I think that those "ghost cars" made this image even better than the one I had planned.



Cloud Gate, or The Bean, Chicago, Illinois. I'm sure most of you recognize this spot. If you've been to Chicago, you know how crowded this place can get, even early in the morning.

Taking a picture of it without people in front of your camera is pretty much impossible... unless you take a long exposure.

This one was a 10-minute long exposure, and it took care of all the people walking by, talking selfies, or even sitting down around the structure.

You can still see some shadows from some people who stood in the frame a little bit longer, but I think that adds some character to the image and tells a bit of a story too.

Smoothing the waters

The most common type of long exposure, by far, is of any object in water. It can be a pole, a boat, rocks...

Personally, I try to avoid these kind of images because they are overused, in my opinion.

I still use water in my long exposures, though, but in different ways. I think water is the best negative space you can add to your image, and we'll talk about this in the next few examples.



Crescent Lake, Washington.

I wanted to capture the mountain and the clouds that were swallowing it. My first instinct was to use a longer lens and zoom in the mountain, but after further thinking I dismissed the idea. It'd be too busy and dark.

I decided to include the lake in the bottom part of the frame as negative space. There was a stump in the lake, which wasn't ideal for my purpose, but I think it doesn't distract the viewer and adds a little bit to that space.



Trillium Lake, Oregon.

If you've got some calm water and a subject as impressive as Mt Hood, then you can use a long exposure to create an almost perfect mirror. The morning mist helps to set the boundaries between the two images within the frame.



Chicago, Illinois. Another example of using a long exposure to create negative space.

Would have been this a regular exposure, the water would be a distraction from the main subject of the photograph: the skyline.

I looked for the perfect spot to create this image for 2 days, until I found it. The long exposure allowed me to create a rather calm and simple image of something complex and loud and busy like a downtown.



Porto do Son, A Coruña.

Here, I wanted to capture the fog rolling in and gobbling the town up. The waves that were breaking in my foreground would have ruined the calm tone I wanted for this image.

While my long exposures are usually several minutes long, I didn't want to lose the movement of the fog here so I kept it "short", of just about 45 seconds. That smoothed the water out, removing any distractions from the waves, while still rendered the fog showing its movement, and not just as a white, static layer.

Other examples



Mendocino, California. I waited all day to make this image.

I wanted to capture the arch as a silhouette, almost black shape. To do this, I needed it to be backlit. Just before the Sun set in the horizon, I was there ready to take the exposure.

There was one problem though: one person was standing on top of the arch, and seemed to be pretty content over there. I thought I could remove them in Photoshop, so I made the long exposure anyway.

To my surprise, and after a long time standing there, he left half way my exposure. That created this "ghostly" human shape in the image, which I decided to leave intact.



Moonrise above Mt St Helens.

I'd been planning this shot for months. I needed the right conditions: full or almost full moon, also low in the sky, not at crazy hours in the night (I still had a 9-to-5 job by then), a clear night, and at the right position for the landscape of choice (I had 2 or 3 options).

I finally got those conditions on a cold October night, at Mt St Helens National Volcanic Monument. It was a 3.5-hour long exposure.

Extreme long exposures can create a completely new world, and they can be totally unpredictable. This wasn't the case for my image, but it is for long exposure that last days and even weeks, usually captured with a pinhole camera.

Conclusion

Subject matters, even more if possible in long exposure photography.

Practice makes the master. The best way to get great long exposure images is getting out there and trying and failing, over and over again.

Over time, you'll start "seeing" your images, even when they don't exist - you are creating them with your long exposures.



How to take Long Exposures on Film

Taking long exposures on film can be trickier than doing it with a digital camera. Don't be afraid, though! After getting familiar with a couple of gotchas, you'll find the process pretty straightforward.

And I actually like the results much more than the ones I get with digital!

In this chapter we will talk about what's different, the downsides and the advantages of using film for long exposures.



Your light meter is lying

In chapter 3, [How to take a long exposure](#), we talked about how to calculate the exposure time.

If you are shooting film, that value is no longer valid!

We are going to need much longer exposure times than the one indicated by the light meter.

Why? Enter reciprocity failure.



Reciprocity failure

Experts (and the Internet) say that film is made of really tiny silver crystals that react to light, and I believe them. Those crystals can only react for a limited time while keeping their original properties, though.

In practice, this means that you don't have to worry if your exposure time is that of half a second or faster. But things start to get more complicated the longer your exposure gets.

We have to expose the film for a longer time than the meter indicates. How much longer, you ask? It depends on the film stock.

The now extinct Fuji Acros had virtually no reciprocity failure and needed an adjustment of just 1/2 stop for exposure times of 2 minutes or longer.

Other films like my beloved HP5+ do need more dramatic adjustments.

Adjusting our exposure times

Ilford recommends to use a reciprocity factor, but if you don't want to do the math, this is the table I've been using for more than a year and a half (it also works for FP4+):

Indicated exposure	Adjusted exposure
5s	13s
10s	31s
15s	55s
20s	1m 23s
25s	1m 57s
30s	2m 35s
1m	7m 8s
2m	17m 21s
4m	36m
6m	55m
10m	1h 32m
20m	3h
1h	9h 20m

Indicated exposure is the shutter speed that the light meter is giving us. Adjusted exposure is the time we actually need to expose the film for to get the right exposure.

As you can see, it's not linear: the longer the exposure, the bigger the adjustments you need to make.

You will need to have this table with you, either printed or on your phone.



Taking the long exposure

I know, all of that sounded very complicated. But believe me, we are done here!

Use that table (you should be able to find the one for your film stock on the manufacturer's website, or somewhere on the internet) to find your adjusted time and you are good to go.

Important! Just in case it's not clear: if we are using ND filters, the “indicated exposure” in the previous table refers to the total exposure time we get from the ND filters tables. We are indeed using two different tables.

Everything we've talked about long exposures still applies here.

Well, there is one "small" difference.



Embrace the contrast

Film can dramatically increase the contrast when taking a long exposure.

Highlights and shadows have different reciprocity failures, meaning that the brighter parts of the image will get recorded much faster than the darker ones.

It gets "worse" the longer the exposure.

I quoted worse because I like contrast, so it depends on what you are looking for.

If you don't want increased contrast, you can try pulling the development.



Why film is so much better for long exposures

Increased contrast and adjustment of exposure times are the two big differences, and depending on how you look at it, the two downsides of using film for long exposures.

There are advantages, though.

One depends on your camera. If you use a mechanical camera, or one that allows you to capture long exposures without using battery, then the doors are wide open to you for extreme long exposure photography.

Digital doesn't do well with very long exposures.

First, there's the battery issue. You will need an external battery, if your camera supports it.

But even then, digital sensors heat up and can create a lot of noise on your long exposures - and it's not the kind of noise I like (grain), but the ugly digital noise no one wants.

The solution is to use **LENR**: *Long Exposure Noise Reduction*. Using this mode, the camera will take a second long exposure of the same length after you are done. It will be a black exposure, with just the noise, that the camera will use to eliminate it from the original exposure.

In the end, it looks like digital has its own reciprocity failure, doesn't it?

Conclusion

Making a long exposure image with film can be challenging at first, but it gets easier as you make more and more.

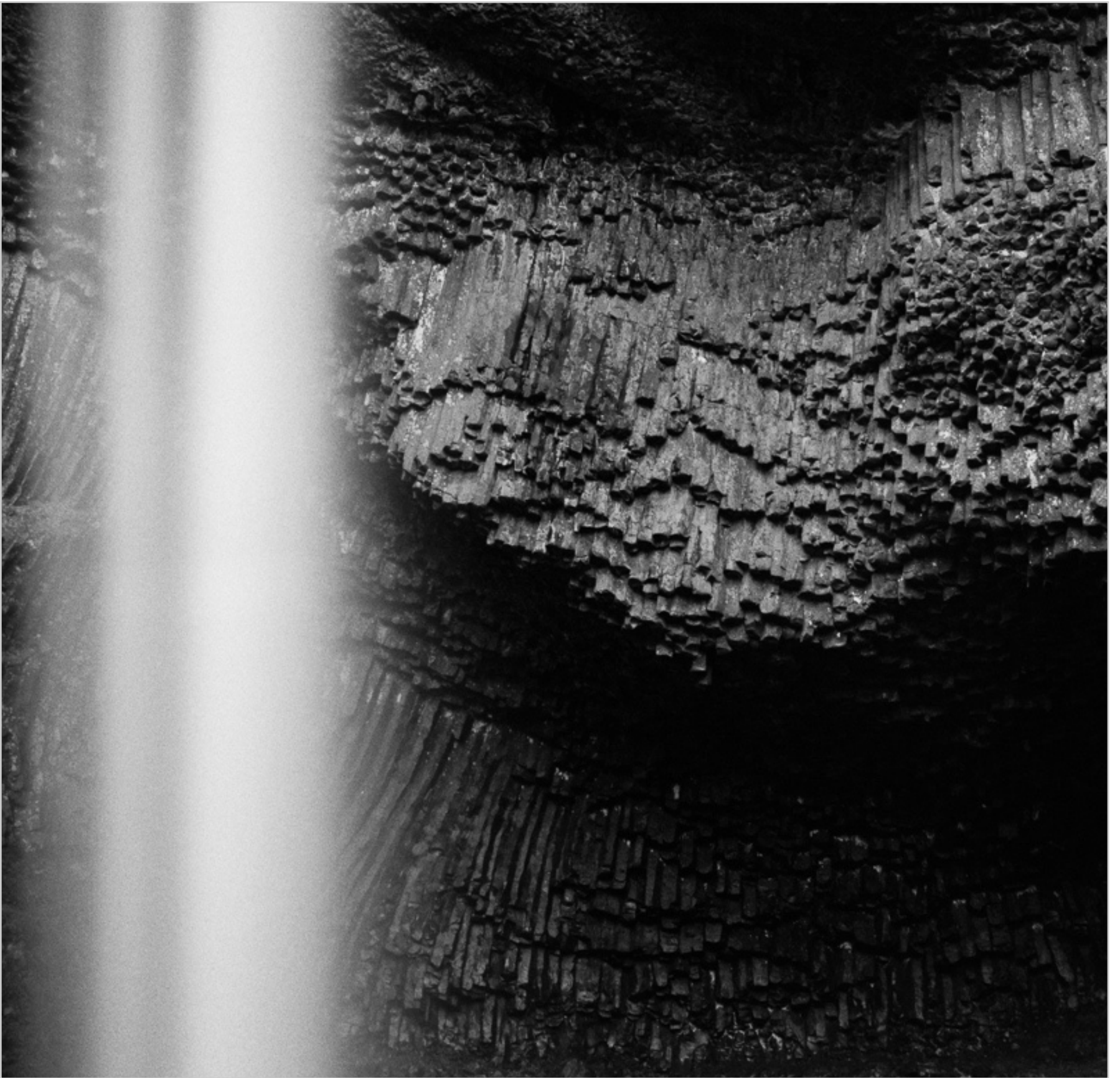
It also comes with some other oddities, like the increased contrast.

Everything else is good, though.

Extreme long exposures are much easier with film, using mechanical cameras that don't drain the battery.

Digital cameras also have some problems, like the noise created when the sensor heats up.

In the end, the tool doesn't matter as long as you achieve the image you were looking for, and that represents your vision.



Final Considerations

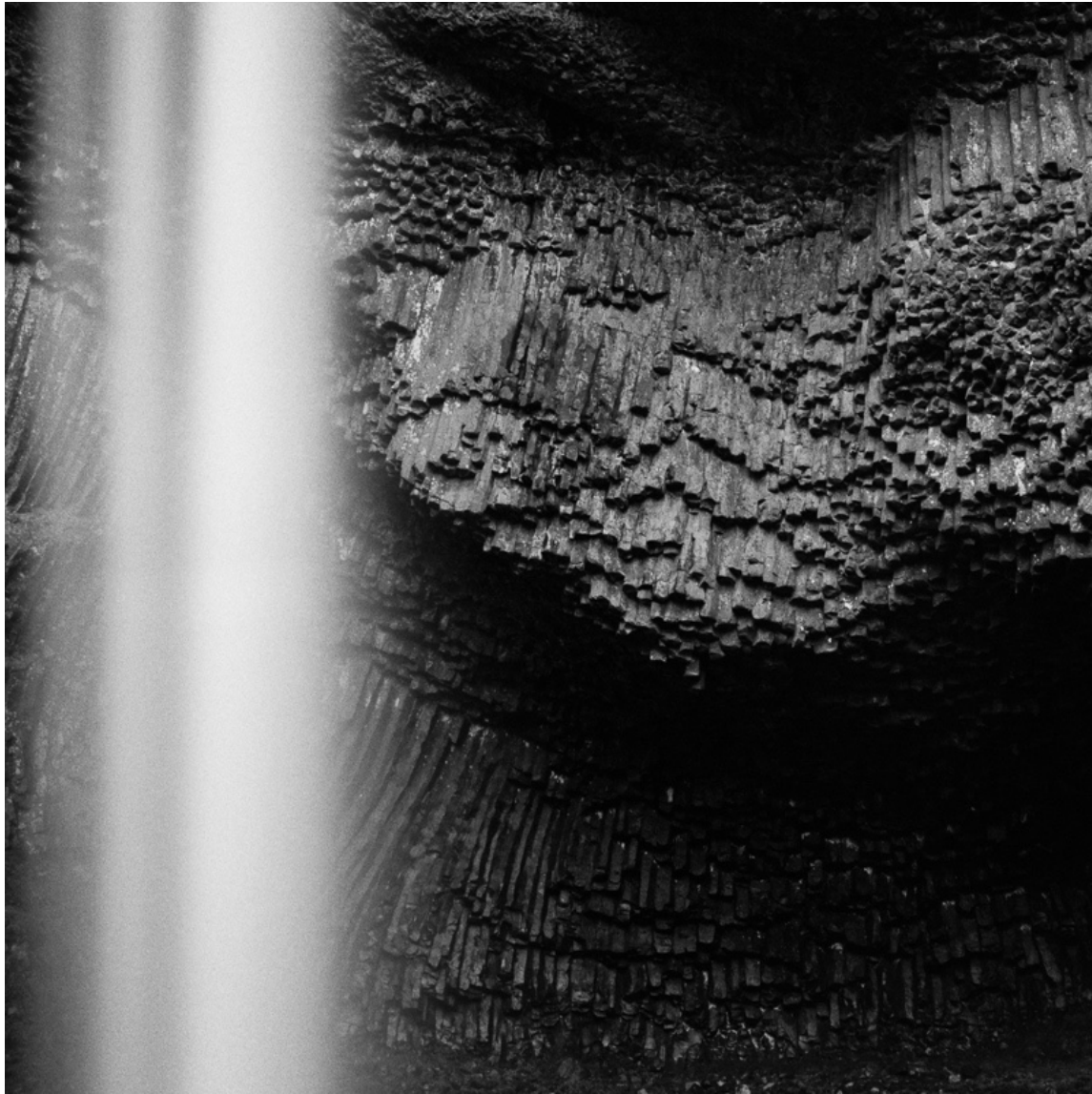
How long the exposures should be?

If there's just one thing I want you to take from this series, is this: it's crucial that you know how long the final exposure should be beforehand.

Settings and ND filters need to be adjusted to achieve that exposure time and not the other way around. Choosing one or another duration will drastically change the way our image will look like.

How long the exposure should be? This is highly dependent on the subject, and on what you are trying to create!

Let's take a look at a few different sample scenes.



Waterfalls

I'm sure you've seen those "silky" images of waterfalls or rivers before. You can create that effect with a long exposure of just 1 or 2 seconds. If your camera has IBIS, you might even be able to take the shot handheld!

A several-second-long exposure will start to hide the movement of the water and become a surface instead.

Take the image above of Latourell Falls, in the Columbia River Gorge, as an example. This exposure was about 1 minute long, and all trace of water movement is lost. It shows as a white curtain, creating an abstract effect. Some people thought it was a light leak when they first saw this image.

This shows, once again, how important it is to choose the exposure time you need to make the image you are after.



Sea (beach, rocks...)

The same principle applies here. If you want to show some of the movement of the water, you are going to need a "short" shutter speed of 1 to 2 seconds.

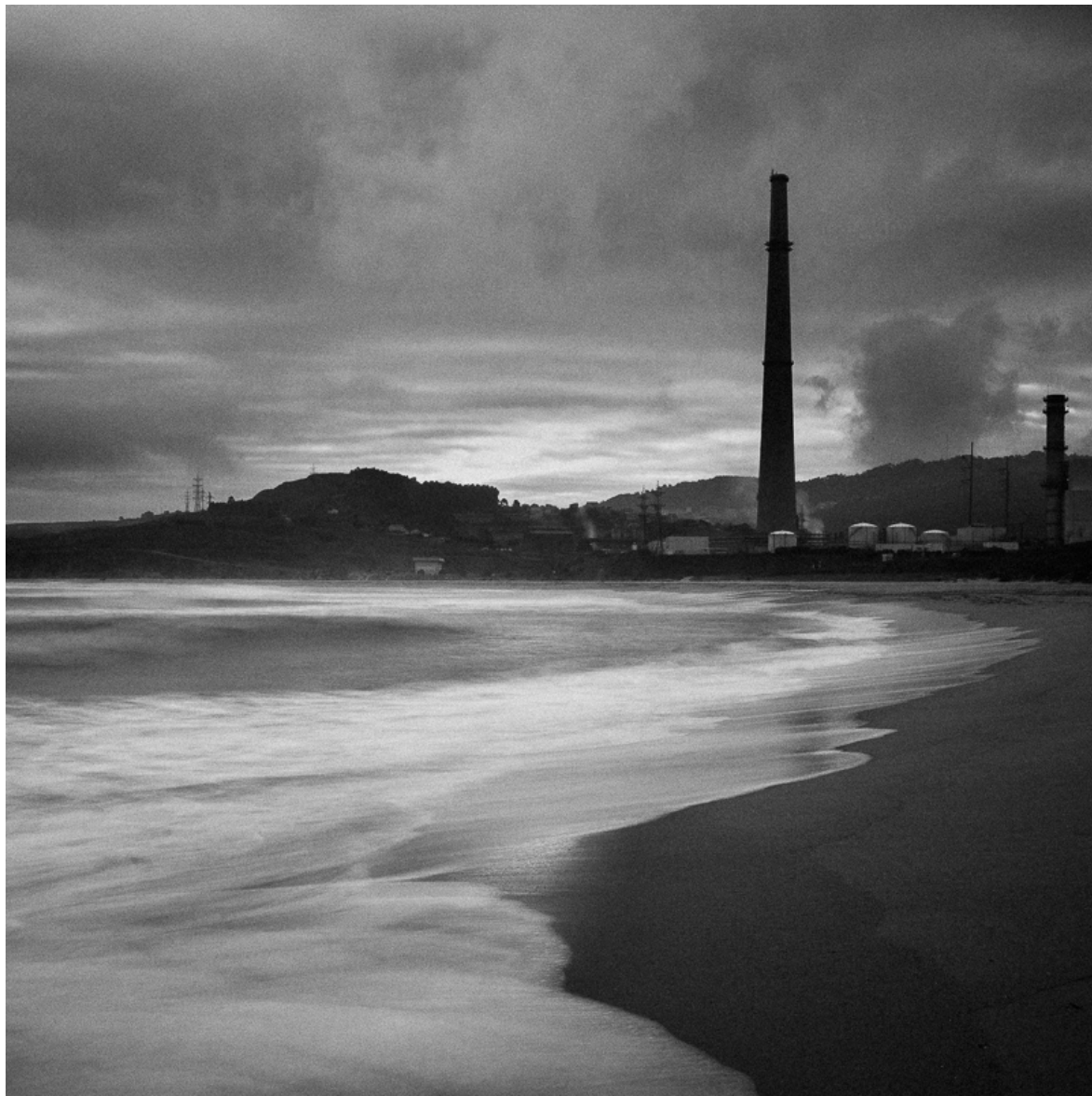
When you increase your exposure time to several minutes, you start getting an ethereal look. Waves breaking in the rocks become mist, while they turn into abstract patterns on the beach.

Look at the two images above.

In the first one, the waves were breaking against the rocks where some sea lions were chilling. This exposure was 5 minutes long, and that completely transformed the waves into some kind of mist. Fortunately, the sea lions didn't move much during those 5 minutes, otherwise they would've looked like ghosts.

The second one was much shorter, 1 minute. That was enough to remove almost any trace of the waves breaking on the beach. In this case, they became a white layer that marks the end of the land and the beginning of the sea.

Compare those two images to the next one:



Here, I wanted to show the waves as they broke on the beach. You can still tell what they are and the movement they were making. It adds motion and a bit of drama to the image.

Different exposure time for the same composition will create a completely different image.

I can't repeat it too many times: the exposure time is the key to what your long exposures will look like.



Clouds

I think you already know by now what I'm going to say: the exposure time will dictate how clouds look in your image.

Clouds do come with a new variable that can make guessing the exposure time much more difficult: they move at different speeds, depending on the wind.

Sometimes, 1-minute-long exposures might look almost like regular shots if there's no wind. Often though, just a few seconds will add a lot of drama showing the clouds moving across the sky.

These two exposures I'm showing as examples were, respectively, 7 and 4 minutes long.



Star trails

If you've ever shot stars at night, you know your exposure times should be kept shorter than 15-20 seconds if you want to get the stars as sharp fixed points in the sky. Any longer and you'll start recording their trail.

But what if you want to show that movement, though? How long does a long exposure have to be to create a star trail?

Take this exposure of the night sky I took in Nevada as an example: I had the shutter open for 45 minutes.

You can get star trails with shorter exposures, like 30 or even 15 minutes (see my video: [Photographing Star Trails from the backyard](#)).

The image above was made with my digital camera so I didn't have to deal with sensor heat and the noise it creates.

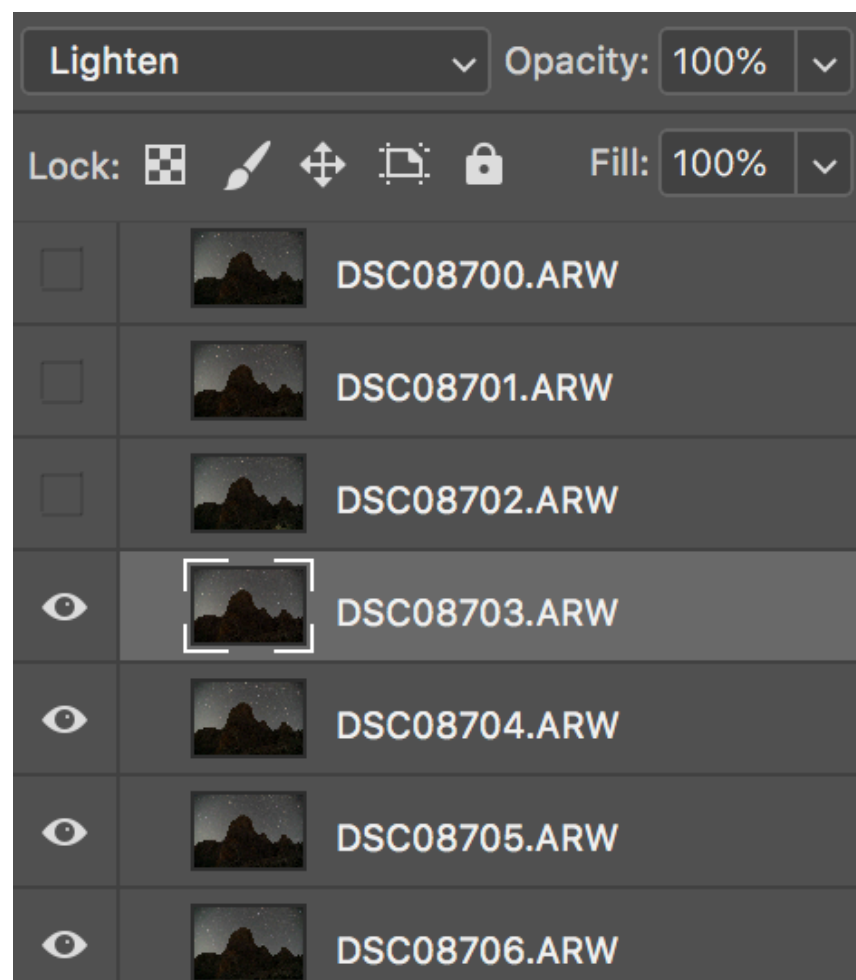
There's a better way to capture star trails with a digital camera: several exposures that we can then combine in Photoshop.



That's how I made the image above, in the Picos de Europa National Park, Spain. I took 47 images of 30 seconds each, for a total exposure time of almost 24 minutes. I blended them together in Photoshop.

It's an easy process: import your photos to Lightroom like you'd normally do. Take one of them and edit it to your taste. Once you are done, copy those developing settings to all the images in the set. Then, select them all and right click to show the option "*Open as layers in Photoshop*".

Be patient, this can take a *long* time depending on the size of your images and, most importantly, the amount.



Click on the eye to the left of every layer (except the one at the very bottom) to hide them. Then, going up from the bottom, make each layer visible again and select *Lighten* as the blending mode.

Your final image will start to show up, little by little. Doing it one layer at a time will allow you to make small adjustments to them. For example, we could remove traces of planes or fix any problems created by unexpected light.

It's VERY important to disable any kind of image stabilization your camera might have when using this technique. I forgot to do so during a trip to the highest peak in Portugal and I pretty much ruined an image that would have been very nice otherwise.

As you can see, the star trails are a little bit messy due to the camera trying to stabilize the shots.





Long Exposures at night

Night photography is a whole topic in itself. It comes with a lot of new challenges, and we could fill a whole book talking about them.

Most of your night shots will be long exposures, so I thought we could talk really quick about it.

Image above: two climbers start their ascent to Urriellu Peak early in the morning.

How to meter

Composing an image through the viewfinder might be hard or even impossible with a film camera, unless the subject is illuminated or we can use a flashlight to temporarily light it up.

How do we meter something that we can't see?

Digital is straightforward: take a test shot, check the histogram, and repeat until you get the desired exposure.

If it's very dark, you want to have your lens wide open and the ISO as high as it can go without totally destroying the image. Once you get the histogram where you want it to be, you can stop that lens down and lower the ISO. Of course, you'll need to adjust the shutter speed when you do this.

What about film? Well, my advice here is to use a digital camera to meter for the scene. It is by far the best way to do it, in my opinion. Don't forget to apply compensation for the reciprocity failure!

How to focus

Focusing is the biggest challenge in night photography.

It will be almost impossible to focus with a film camera unless we are shooting something far away. In that case, we can set our lens to infinity and forget about it.

We can do the same with our digital camera, if our lens has a real focus ring. If we have a lens that features focus by wire and a mirrorless camera, we are going to struggle to get things in focus. These kind of lenses don't have a fixed position for infinity, as they can focus *beyond* infinity -yes, this is a thing. There's no other way to go around this but to take plenty of shots and making sure we are focusing where we want before starting the exposure.

Do we need ND filters?

It depends. If you are shooting in an urban area, you might need ND filters even at night.

If you are out in the country though, chances are you won't need any ND filter to make long exposures for several seconds and even minutes.

Careful with lights (cars, flashlights...)

If you aren't using ND filters for your long exposure, you need to keep in mind that your camera is "naked" and any light could ruin your image.

Think of car lights, for example. A passing car is your worst enemy out there, only second to your very own flashlight.

My advice here is to have a cloth always within reach if there's any danger of getting unexpected new light sources. If you see a car approaching, you can just cover your lens and wait. This will still ruin long exposures of just a few seconds, but if your exposure is longer than, say, 1 minute, you can just add whatever time you were covering the lens for to the end of the exposure.



Extreme Long Exposures

The longest exposure I've ever taken was almost 8 hours long. This is nothing compared to long exposures that are so extreme that they can last several days.

These kind of exposures are impossible with a regular camera. Not even a 15-stop ND filter can block the light so much that you can leave your camera taking the photo for days.

This is almost pinhole photography exclusive territory. Pinhole cameras are just boxes with a tiny hole that lets the light in. They don't have lenses per se, but the equivalent aperture of one of these cameras can be as crazy as $f/256$ or $f/512$.

Let's imagine we are using Ilford Pan F and exposing it at ISO 50 in a pinhole camera with an aperture of $f/256$.

Sunny 16 rule: $1/50$ th of a second for f/16 on a sunny day. There are 8 stops from f/16 to f/256, so the exposure would be of 4 seconds... without any filter! If we use a 15-stop ND filter, the exposure time will go all the way up to 68 hours, without counting for the reciprocity failure! Following Ilford's formula, it'd be of 252 hours, or more than 10 days!

This is it

I hope you've learnt something with this book, or that at least it's inspired you to get out and make some long exposure images.

I love long exposure photography because it allows me to create something that doesn't necessarily exist, and you should take it as just that: another tool for your photography belt.

If you have any (*really, any!*) questions about long exposures -on film or digital- don't hesitate to contact me at hi@aows.co.

