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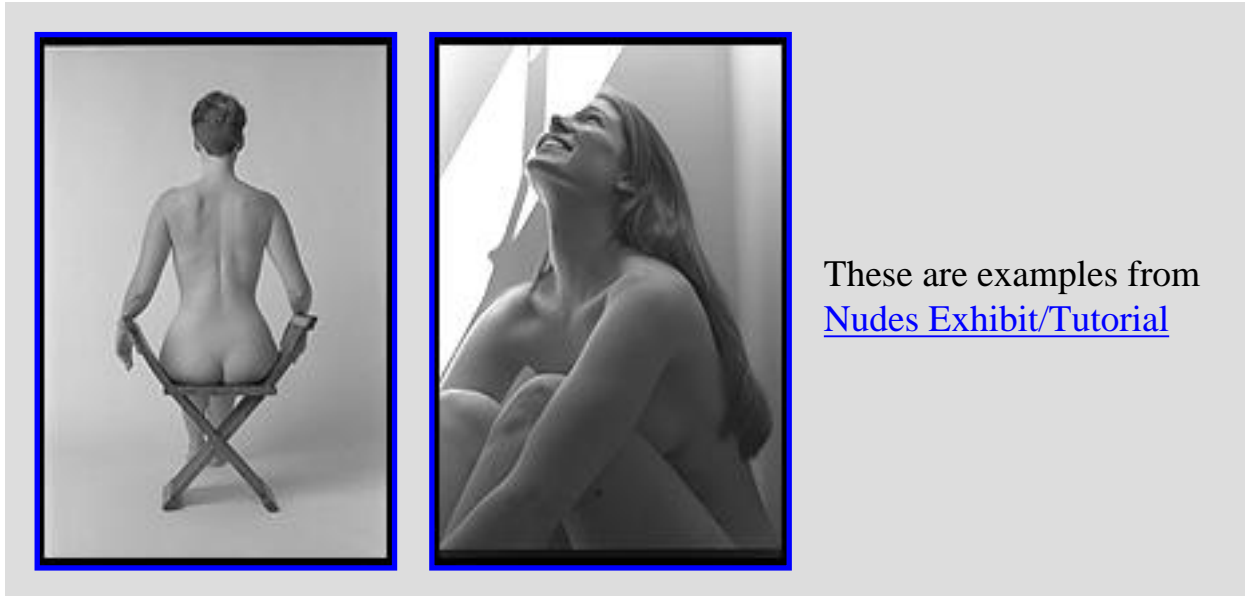
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Tips for Using a Point & Shoot Camera

By [Philip Greenspun](#)

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Yes, it can be done

Do you feel inadequate because you have a puny [Yashica T4](#) in your pocket but your no-dick friend is lugging around a Canon EOS-1 SLR, Tamron 28-200 zoom lens, and moby flash?

Don't.

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You can get a better picture than he can, for the following reasons:

- Your camera weighs 8 oz. and is weatherproof so you have it with you at all times.
- You have a decent lens in front of the film; like most first-time SLR owners these days, he has a cheap low-contrast zoom lens.
- He is using that moby on-camera flash as his primary light. You would never be that uncreative (at least not after reading the rest of this article).
- Your camera has a better system for combining light from the flash with ambient light ("fill-flash").

A professional photographer with a pile of \$1500 lenses and a tripod is going to be able to do many things that you aren't. But rest assured that he carries a P&S camera in his pocket as well.

The photo at right shows Bill Clinton handing out a diploma at [MIT's 1998 graduation ceremony](#). I was in the press box with a Canon EOS-5, 70-200/2.8L lens, and 1.4X teleconverter (\$2500 total). In the upper right of the frame is a woman with a point and shoot camera. I would venture to guess that her pictures of Clinton are better than mine.



Think about Light

"He spoke with the wisdom that can only come from experience, like a guy who went blind because he looked at a solar eclipse without one of those boxes with a pinhole in it and now goes around the country speaking at high schools about the dangers of looking at a solar eclipse without one of those boxes with a pinhole in it."

-- Joseph Romm

My personal definition of *photography* is "the recording of light rays." It is therefore difficult to take a decent picture if you have not chosen the lighting carefully. (I've written [an entire tutorial on light](#).)

Just say no

Just say "no" to on-camera flash. Your eye needs shadows to make out shapes. When the light is coming from the same position as the lens, there are no shadows to "model" faces. Light from a point source like the on-camera flash falls off as the square of the distance from the source. That means things close to the camera will be washed-out, the subject on which you focussed will be properly



exposed, and the background will be nearly black. We're at a theater. Can't you tell from the background? That's me in the middle. The guy with the flat face and big washed-out white areas of skin. Part of the problem here is that the camera was loaded with [Fujichrome Velvia](#), which is only ISO 50 and therefore doesn't capture much ambient light (i.e., the theater background). [Despite this picture's myriad faults, I'm glad that I have it because it spruces up [Travels with Samantha, Chapter III.](#)]

Virtually all point and shoot cameras allow you to control the on-camera flash. What you want to do most of the time is press the leetle tiny buttons until the "no flash" symbol is displayed. The "no flash" symbol is usually a lightning bolt with a circle around it and line through it. Now the camera will never strobe the flash and will leave the shutter open long enough to capture enough ambient light to make an exposure.

A good point and shoot camera will have a longest shutter speed of at least 1 second. You can probably only hold the camera steady for 1/30th of a second. Your subjects may not hold still for a full second either. So you must start looking for ways to keep the camera still and to complete the exposure in less time. You can:

- look for some light. Move your subjects underneath whatever light sources are handy and see how they look with your eyes.
- load higher-speed film. ISO 400 and ISO 800 color print films are the correct emulsions for P&S photography. ISO 400 film can get the same picture in one quarter the amount of time as ISO 100 film.
- steady the camera against a tree/rock/chair/whatever as you press the shutter release
- leave the camera on a tree/rock/chair/whatever and use the self-timer so that the jostling of pressing the shutter release isn't reflected on film. I often use this technique for photographing decorated ceilings in Europe. I just leave the camera on the floor, self-timer on, flash off.
- use a little plastic tripod, monopod, or some other purpose-built camera support



Yes it was dark in [Bar 89](#). But I steadied the camera against a stair railing and captured the scene with my [Minolta Freedom Zoom 28-70](#). Note that not using flash preserves the lighting of the bar.

Just say yes

Just say "yes" to on-camera flash. Hey, "consistency is the hobgoblin of little minds" (Emerson; slightly out of context).

The on-camera flash on a P&S camera *is* useful. It just isn't useful for what you'd think. As I note above, it is *not* useful for lighting up a dark room. However, it is useful outdoors when you have both shaded and sunlit objects in the same scene. Photographic film and paper cannot handle the same range of contrast as your eyes. A picture that is correctly exposed for the sunlight object will render the shaded portrait subject as solid black. A picture that is correctly exposed for the shaded portrait subject will render the sunlit background object as solid white.



Here the chess players are being shaded by some overhead screens while the background foliage is not. The on-camera flash makes sure that the foreground players are bright. In fact they are a bit brighter than they probably should be and note the washed-out highlight on the leading edge of the table, which is close to the camera. This picture was taken by prefocusing on the shirtless player on the right, then moving the camera with the shutter release half-depressed to the final composition. Without the prefocusing the camera would have latched onto one of the chess tables in the center of the picture, quite far away. The foreground men would have been out of focus and also tremendously overexposed since an amount of flash adequate to illuminate a far away subject would have been used. [Note that most \$1000 SLR cameras would not have been capable of making this picture except in a completely manual mode. Their flash metering systems are too stupid to couple to the focus distance. An exception is the series of Nikon SLRs from 1994 on with "D" flash metering.]

Pressing the little buttons on a P&S camera until a single solid lightning bolt appears in the LCD display will keep the flash on at all times. Note that a side-effect of the "flash on" mode is that you also

get the same long shutter speeds for capturing ambient light that you would with "flash off" mode. The standard illustrative picture for this has an illuminated building at night as the background with a group of people in the foreground who've been correctly exposed by the flash.



Sometimes it all comes together, as it did here in [Coney Island](#). Without fill-flash, the ride operator would have been a silhouette. Prefocused on the human subject's face. "Flash on" mode.

Prefocus

The best-composed photographs don't usually have their subject dead center. However, that's where the focusing sensor on a P&S camera is. Since the best photographs usually *do* have their subject in sharp focus, what you want to do is point the center sensor at your main subject, hold the shutter release halfway down, then move the camera until you like the composition.

Virtually all P&S cameras work this way but not everyone knows it because not everyone is willing to RTFM.



A side effect of pre-focusing is that most P&S cameras will preset exposure as well. Ideal exposure with a reflected light meter is obtained when the subject reflectance is 18% gray (a medium gray). Exposure isn't very critical with color negative film, but you still might want to attempt to prefocus on something that is the correct distance from the camera and a reasonable mid-tone. I.e., avoid focusing on something that is pure white or black. This becomes much more important if you are using [slide film](#).

Burn Film

If a roll of film is lasting three months, then something is wrong. You aren't experimenting enough. An ideal roll of film for me has 35 pictures of the same subject, all of them bad. These prove that I'm not afraid to experiment. And then one good picture. This proves that I'm not completely incompetent.

It takes at least 10 frames to get one good picture of one person. To have everyone in a group photo looking good requires miles of film. You should have pictures from different angles, different heights, flash on, flash off, etc.

My personal standard film for P&S photography is Fuji ISO 400 negative film. It enlarges very nicely to 8x10 and is great for [Web presentation](#).



Try to Buy a Decent P&S Camera

You can read my [buyer's guide](#). Basically what you want is a reasonably wide angle lens to capture your subject and the background context. Focal lengths beyond 70mm in P&S cameras are not useful. My personal ideal camera would have a 24-50 or a 24-70 zoom though actually in many ways I prefer a camera with only a single focal length because it is one fewer decision to make at exposure time. Zooms are more useful with full-sized SLR cameras because the user interface is better/quicker (i.e., you can turn the ring on the lens instead of pushing little buttons to drive a motor).

Whatever you may choose to buy, you can help defray the cost of running photo.net by buying from [Adorama](#), [Photoalley](#), or [ritzcamera.com](#).

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Reader's Comments

I seem to be leaving comments all over this site. My T-4 comment has to do with the use of flash. I am constantly taking pictures indoors and lighting them with my Vivitar 283. I've had one of these units since 1976 and they remain a workhorse (my first one croaked after 6 years and my disassembly of it with a Swiss Army Knife). Anyway, every P&S camera suffers from weenie flash syndrome, including the Nikon 35Ti and Yashica T4. I've owned both. I finally went out and got a slave for the 283 and now happily bounce-flash my indoor pictures. It works really well, lighting the whole room up, looking natural and soft, and the small camera flash even fills in the eye sockets a bit.

As for the T-4, I took back my Nikon 35Ti and traded it in for 2 T-4s (one for wife, one for mother in law) about 3 years ago. They are so nice I just got a T-4 Super for my Dad when his old Nikon P&S packed up on him. I bought this last one from Camera World of Oregon with no delays, hassles or problems.

Have fun with the T-4/283 combo. I wish they'd make it with a hot shoe, like the old Minox scale-focusing mini-35mm camera.

M Cole

-- [Matthew Cole](#), January 19, 1997

The new Ricoh GR-1 gives back complete control of exposure, focus, and flash to the photographer. The lens is a 28mm/2.8 symmar formula. It weighs 6 oz, has metal everywhere it needs to have it: top, bottom, back, film channel + more. Ricoh has so understated this camera that it will take most people years to figure out -- finally, there is a tool to have at all times, and take superb photos. I use it to take available light shots of musicians and dancers. Oh yes, its full frame 35mm, one inch thick, all black, costs \$454. There's more. Center weighted metering down to EV 6. Then it switches to averaging plus the finder internally illuminates so you can see the shutter speed, exposure compensation (2 stops) and distance (ikons) in the finder window. Its a lot of fun!

-- [myron wolf](#), March 5, 1997

I've had a Ricoh GR-1 for about a month and I've shot a dozen rolls of negative and slide (Velvia, E100S) film with it. I find that the 28 mm f 2.8 lens is very sharp and contrasty and yields nice colors. On the down side, it appears to be somewhat more prone to flare than my SLR's lenses, and there is no provision for attaching a lens hood. Exposure metering is accurate enough for Velvia; exposure compensation is through an intuitive (for me anyway) analogue knob. The camera is extremely compact and light, and the all-metal skin rugged. I found the camera control layout easy to understand, and the camera fits nicely in my hands. It cost \$450; I think it's a superb camera.

Some complaints I have are (1) the viewfinder is rather small for eye-glass wearers; (2) there is no cable release; (3) external flashes cannot be used; (4) on/off button is easy to activate inadvertently; (5) there's no weatherproofing; (6) no manual ISO setting; (7) no depth-of field information (even in the manual); (8) somewhat cryptic manual.

-- [Adrian Ferre-D'Amare](#), May 1, 1997

I agree with Philip on his choice of the yashica t4 camera. I personally own 3 cameras... A canon elan iie w/ a couple of decent lenses, a yashica t4 and a canon elph APS camera... While each of these have their own merits and limitations... I have to say the flash metering system specifically fill-flash on the Canon Elph APS camera is the best I have ever used...

-- [Ravi Nagpal](#), August 28, 1997

One thing about point and shoot cameras: they work best if you understand a little bit about exposure. Exposure meters in cameras try to make everything a medium tone (think green leaves---that's medium tone). If you're trying to take a photo that's bright, the camera will still try to render it medium tone. The solution in those cases is to get a lock on something medium tone but in the same distance, press the shutter release halfway down, and then recompose and shoot.

Example: you're trying to take a picture of a sunset with the sun in it. Point at the horizon with no sun in it, press shutter halfway, point at the sun, and then shoot.

This explains why all sunset photos taken with point and shoot cameras look too dark. Wish I'd known this a year ago.

-- [Piaw Na](#), December 10, 1997

Here's another idea for a backup/travel camera. I recently found a 1950's German made Voightlander Vitamatic in the local camera store for \$40! The lens is a 50mm/2.8 Skopar all-metal thing that looks like a miniature Hasselblad lens. It's completely manual and has a built in light meter (no batteries required). It even has a flash shoe and will sync up to 1/300th. Yeah... it's a little heavier than the modern P&S cameras... but if you need a backup camera... consider an old classic.

-- [Albert E. Anderson](#), May 12, 1998

One of the nice things about returning to P&S photography with a fixed lens is that it sends u back to thinking about the basics of image making again.

I've just spent the better part of the last 3 weeks trying out a few models of all the famous P&S single focal length cult cameras mainly to try and make a decision on which one is the most suitable for me. The experiences have been recorded elsewhere in the site, but with regards to technique, it just brought me back to remembering how to think about light, composition, perspective, support and basic camera handling. With these pillars of photography set straight, it is indeed possible to get shots on a P&S as good as any top notch SLR.

It's true, u don't really need stacks of equipment to ensure u can take good photos. With the above fundamentals set out, u already have enuff to be an A student. With all the other bells and whistles, u may probably get to A+. But IMHO, since the 80/20 rule is applicable to most things in life, the last 20% may not be worth the extra cost or effort. Unless u r a perfectionist, or a professional, or both.

-- [T C Khoo](#), September 26, 1998

This will be no revelation, but I think more and more who read this section have come to expect more and more capabilities out of the Point and Shoot category. And most aren't going to be happy with a Rollei 35 or a Canonet I think. Those who will admit to this no compromise will want to look seriously again at the Silver Hexar. Not a big camera by any means, grippable and well layed out- see Caruana's wonderful review elsewhere.(No offense to the GR-1 people, I havent tried it at all) On Program mode Hexar behaves like my Leica Mini III only better,-tack sharp lens. (I have the option of setting it up so that the Hexar knows that outdoors I like a lot of DOF, but if forget and I set it at 2.8, at least it will give me some kind of photo.)OTH, when I shot at night from a hotel window last month I put it on manual mode, used the camera meter to find a gray tone and let the spot metering get the exposure. Then I pushed MF to get bam to infinity focus through a window and I was good to go.(But if you think I didn't ALSO carry a T-90 with three lenses in my kit on the trip, you arent a member in good standing of the schlep- what-you-just- may need club.-)either.

-- [Gerry Siegel](#), November 1, 1998

I am a public school teacher, but have been doing serious photography, pro and hobby, since 1959. I have used everything from 4x5 through 6x6, 645, 35, etc. About a year ago I obtained a Leica CL from my repairman for a song, and loved what I could do with it. I totally hate photo mags that advertise "stepping-up" to bigger and bigger film sizes. I want to "step-down" to greater freedom, speed, and spontaneous artistry. Be that as it may, I bought a Leica Minilux last week (before I even knew that T-4's existed!!!), but enjoy this camera greatly. Here's the bottom line: I live in the San Jose California area and would like to gather serious P&S users for regular P&S only field excursions (a few times a year) with some sharing of results later on...and lots of fun, food, etc. If anyone in the S.F. Bay area is interested, feel free to send an e-mail with a phone number...mine is (408) 686-1441, so call if you like, but,please, no solicitors! Thanks, Todd

-- [Todd Fredrick](#), November 4, 1998

good pages! just bought a yashica T5 and look forward using it, you set away my doubts over leaing my dear nikon behind for a while (wait till i get my first pictures, though) sure oone thing: ps is fast.

-- [jules I](#), January 30, 1999

I don't know how many people have tried this old camera, but I've just gotten it from my mother: Ricoh 500 G. It must be a predecessor to the newer G's, but I hadn't heard of it

before. It's a real rangefinder, having full manual control (as well as offering automatic exposure...which has proven to be reasonably accurate from some of my trials). I'm totally blown away by the quality of the lens in this camera. It's every bit as sharp as my SLR...although I haven't put it to the test with slide film yet. And it's tiny! Although heavier than my Olympus P & S. For those times when I have more than a moment to fiddle, but don't want to bother with my SLR, this camera is awesome.

-- [Heidi Weaver](#), January 30, 1999

Just a short note to let you know about Fuji's Ga645 medium format P'n'shooters. After overdosing on gearomania, I've decided to get myself a one lens, one camera combo and work on fundamentals and lighting. The GA 645 was perfect for me and the 645 neg enlarges quite gracefully to 11 X 14. It's exactly the same in operations as a 35mm point and shoot save for a few goodies such as vertical framing, cable release, tripod socket, etc.

It won't fit in your pocket though...

-- [Benoit Doloreux](#), February 2, 1999

I've recently started taking pictures with a P&S after having had some experience taking pictures with an SLR. I've had good results with my Yashica T5 (T4 Super in the US). I've experimented with its different flash modes and I found that the Fill-In flash works better than the Automatic Flash or Red-Eye Reduction mode. Even in taking pictures indoors with even lighting, I use the Fill-In flash mode. The camera does a good job with the exposure as it balances the light reflected by the subject and the background light. There's less overexposure on the subject, and less shadows on the background. One trick to reduce red-eye effect, I just tell the subject to look at a light source for a moment and then pose. Also, I use the Super Scope (waist level viewfinder) frequently since I'm a tall person living in Asia. This eliminates the barreling on some pictures caused by the wide angle lens if you take them from a high viewpoint. It's also neat to take pictures without people knowing it. They all think that I'm just checking how many shots I have left, while I'm actually looking through the Super Scope and snapping away (without flash of course). Another point, if you're ever in Vietnam, check out the cheap prices of cameras in Ho Chi Minh City (former Saigon) and Hanoi. Their prices are competitive to those in the States and cheaper than in other countries in this region (i.e. Ricoh GR1 = 400USD; Olympus mjuII = 130USD).

-- [Ronald Gregorio](#), February 15, 1999

I just got back from a trip to London and Paris and brought along my brand new Olympus 80 zoom deluxe wide. I am thrilled with the photos it took. I would highly recommend this camera to anyone. The wide angle lens came in very handy in sooo

many instances. Has anyone had a good experience with this camera. This is my first experience with a point and shoot. it was nice having such a small camera and not my OM1 to lug along.

-- [kathy kane](#), February 22, 1999

I have had the Yashica T4 (older model, now: T5/T4 Super) for about 3 years now. It is a nice P&S camera, cheap, with an excellent lens and exposes "correct" in standard situations (also for slides). I take it with me, when I want to leave the heavy stuff at home, or just as a supplement for the SLR equipment. The only problem I've had is that the rewinded to early a few times (at about picture 20). -> Would buy it again with no hesitation.

-- [Philippe Wiget](#), March 2, 1999

A useful hint for people with active autofocus P&S cameras that lack an infinity focus button, like the Infinity ;-), Stylus Epic, I found on <http://www.ans.com.au/~chrisb/photo/equipment/olympus/mjuui.html> There Chris Bitmead says: "The Epic doesn't have an infinity lock (useful to shoot through windows) You can however get the camera to focus at infinity by covering one of the IR focus sensors with a finger or whatever and then press the shutter button half way. Then compose and shoot." That should do it. Though I didn't the results yet, I'm sure it will help. By the way Phil, about your site: the more I use it, the more I admire the great accessibility.

-- [Lex Molenaar](#), March 5, 1999

I use the Yashica T4 for shooting stereo pairs. I originally had two of them mounted six inches apart (lens-to-lens) on a bar, but have abandoned this system because:

- 1) I could never press the shutter buttons at exactly the same moment.
- 2) My dear Catherine "borrowed" one of the cameras eighteen months ago, and uses it so much she has yet to return it.

In any event, excellent stereo pairs can be taken with this camera simply by shooting the first picture with an object on the left side of the center circle, and the second with the object on the right side. If the scene has a concentrated light source such as a fireplace, there might be a problem with the difference in camera position resulting in different metering, but if the light is not near the center of the picture, it generally isn't a problem.

-- [John S. Wojtowicz](#), April 1, 1999

Last year I purchased a Leica CL and then a Minilux (see previous comments for November '98), but sold the CL and bought a Leica M6 through a fine young man I "met" on the internet (minilux club) who asked me if I wanted an M6, bought me a beautiful used model (9606th made) with 2 lenses for 2K, and is accepting payments!!!...we've never met! True trust is a wonderful thing!...and believe that seriously...very rare today! However, after reading widely the Photonet P/S comments, and considering my need for a very pocketable camera (don't take an M6 on a kayak!), lens quality (asph elements), true ergonomics (pocket tapered design), and lens speed, I bought two Olympus Stulus Epic cameras (one for me and one for a friend, in fine used condition: one through e-bay and one from a "WTB" on Phil's Photonet ads today. I haven't run a single roll through, but I expect great things! This is not a rejection of the T-4, or others! The teeny-weeny size got to me and the tapered design was just what I wanted. I will, of course, run many rolls through, and post an evaluation. I am concerned about the comments on AF problems, but the spot meter is a GREAT addition! I do wish there was a reader's photo gallery on this site as there is on the Minilux and Hassie clubs. Phil...think about it...we can show our great stuff and praise each other as we so deserve! I'm still looking for San Francisco/San Jose CA Bay Area people interested in taking photo trips. I once taught adult ed classes in photography and had a great time on field trips, until these darned old P/S cameras came along and no one wanted to know photo basics any more! Look who's talkin' now!

E-Mail if interested in setting up some trips this summer at fredrick@hotmail.com

Todd Frederick

-- [Todd Fredrick](#), April 7, 1999

After having read all of the comments, it makes me wonder why anyone but a professional would use a regular SLR. I just don't think that a P&S gives me enough of what I want. I don't take a lot of pictures but when I do I like lots of closeups and landscapes, plus some sports action. I just can't get that with a P&S. I am thinking of going digital for my P&S needs.

-- [Ron Lawrence](#), May 24, 1999

I've pretty much lost my faith in point and shoot cameras. I may, however, purchase a Ricoh GR-1 because it has spot metering and aperture priority metering with override....the very things that are needed in a point and shoot.

I still use my Minolta FZE, but only for things like signs, casual group portraits and times when I just need a picture but don't have my slr. They're just too unpredictable for anything other than snapshots.

As to Philips paragraph at the top of this article, I'm sure if he had been standing next to the girl with the point and shoot, he would have taken a better framed, better exposed, sharper and more contrasty shot with his slr.

-- [Jim Tardio](#), May 25, 1999

Sorry, Jim -- I disagree w/r/t Philip's example at the graduation. If Philip were sitting next to the woman with the point and shoot, he wouldn't *have* his big cache of gear with him -- a point & shoot is likely all he'd be able to bring to that position.

...he would have taken a better framed, better exposed, sharper and more contrasty shot with his slr

Better framed? No, that's entirely related to the skill of the photographer. Better exposed? With print film (and a little bit of brain power) it wouldn't make a difference. Sharper? Yes. More contrasty? Likely.

But this is all missing Philip's point -- you can bring a point & shoot with you almost anywhere. You can whip it out at a moment's notice and get the shot. Hence the value of a point & shoot. They may not suit you, Jim, but that doesn't mean they're without value.

-- [Russ Arcuri](#), May 27, 1999

Sorry Russ--I never said they were not of any value, and I never said I didn't like them. I said I am losing my faith in them. I also said I am considering buying a Ricoh GR-1, and still use my Minolta FZE.

I really don't know what Phil would have been using had he been closer, but I would have had an slr with 1 or 2 lenses AND a point and shoot.

And I just don't agree that a point and shoot is better than a cheap body with a slow consumer zoom and Moby flash. When Phil first wrote this piece I did, but after having gone through many of these cameras I've come to the conclusion, **IN MY OPINION**, that they're not much better than a disposable camera.

For example: take the Zeiss lens away from the T4 and what do have left? A little box where the only control you have is turning the flash on and off. If light is indeed the main ingredient of photography...as Phil states...how do you capture it faithfully when you have no idea what the camera is exposing the film at? With practice all you have is an educated guess at best. How do you lock focus if the camera is on a tripod? How do alter film speed?

Now, I know the purpose of this piece is to show the value of carrying a point and shoot, and Phil's anecdote about Clinton is valid. Obviously it's much easier to carry a point and shoot in your pocket than lug around a bag full of gear. A T4, Olympic Stylus, or whatever brand you use are great for this. But as so many folks on photo net are fond of pointing out, " You get what you pay for ". And for \$150.00, or less, you don't get much more than the ability to slip the thing in your pocket. But, I agree, that that's better than nothing, and do that myself many times. With that, all I can do is echo Phil's guidelines for using these cameras in two simple rules.

1. If people are in the photograph use fill flash.
2. If there are no people in the photograph, turn the flash off and hope the camera chooses an appropriate setting.

If you want some control with one of these cameras, it's going to cost you upwards of \$300.00...around the same price as an entry level slr body with a slow consumer zoom.

Just some thoughts.

-- [Jim Tardio](#), May 29, 1999

I love taking pictures. After researching the current market I found the T-4 best fit my needs(I found out it has no problem with being carried around in my pocket). The more I read up on it the more fascinated I became. I shopped around and found that Cambridge Camera Exchange offered it for only \$118.95. I placed my order via mail\phone. That was two weeks ago. After many long distance calls (many of which got me nowhere[they hung up on me five out of ten times I would call]) I have found out that "my T-4,"as I so dearily refer to it, will not cost anything near the first expected price. \$158.95. I have not let it get my hopes down, I am waiting by the mail box in a childish frenzy just imagining the fun I'm going to have with "My T-4." That's Cambridge Camera Exchange in New York. They'll hang up on you.

-- [luis villasana](#), June 2, 1999

I'm using an Olympus Infinity Stylus /Zoom 115 for about a year and extremely pleased with its outstanding performance.It is definately the smallest and lightest point-to-shoot camera in the world. It works perfectly on the panaroma mode.While taking close-up shots,strictly adhere to the close-up correction marks.I'm an ex-pilot and I must add Olympus Infinity Stylus is highly recommended for aerial photography. I have fantastic photos taken at 37.000 ft.Try to avoid buying from Singapore.I've had awful experiences in the past.Prefer the ones manufactured either in US or Japan. I also recommend Samsung Maxima Zoom 145 QD,Cannon Sure Shot Z135 and Pentax IQ Zoom 160 QD.

G|rol Kutlu gkutlu@thy.com 17 June 1999

-- [G|rol Kutlu](#), June 17, 1999

I'm beginning to feel like a collector of cameras!! Once I got serious about photography I got a used Nikon FM2 & 2 lens - 50mm & 28mm. I mostly use the 28mm as it suits my style.

I've moved up to medium format which I love but I can't bring myself to lug my Hasselblad on a trip (I mostly fear I'll throw my back out -- rather than fear losing it).

And there was this thing about being in clubs where all this exciting stuff is going on & I just can't capture it with my blad. So I got a P&S. I got the canon Z135 (a friend who teaches photography & has a couple of books out - Del laGrace, recommended the Canon Z115 and by the time I got mine the Z135 had come out). I read the manual but can't quite remember all the fine details in a club setting (but I'll be sure to try some of the recommendations here!). I still play with the settings & I've gotten some fun photos I just can't get with even my nikon. Tho I bring my nikon with it's 28mm lens & either TriX 400 pushed to 1600 or one of the faster b&w films. I get different kinds of photos.

Now when I travel and I'm wanting my medium format camera I just throw in one of my super light weight plastic cameras!! I prefer the lubitel for more serious work (it's much more flexible with all sorts of cool things like a timer, a hot shoe, shutter speeds & f-stops) but I'm trying to learn my holga. My holga gets me plenty of funny looks because I couldn't find any black electrical tape so it's taped up with red tape. I've gotten some GREAT shots & it probably weighs less than an ounce! BUT I bring my P&S too!! I can't always shoot in daylight.

(now besides all those cameras I also own 2 polaroid cameras!!)

-- [erin o'neill](#), June 20, 1999

Well, I own one of the cameras that is often disparaged in this group. Its a 400si with (horror of horrors) a Sigma 28-80 lens, a second-hand Minolta 50mm f/1.7 and another second-hand Minolta 70-210mm lens. I also have a cheap Sunflash external flash.

I like what I own because it gives me the flexibility to try out new things. I can try manual metering, aperture or shutter priority metering and manual focusing. While I have not attained genius-hood with my setup, I have taken quite a few photographs which make me a lot happy.

I dare say that except for the bulk, my camera is no worse off than a decent point and

shoot. And considering the price I paid for it I think it is worth more to me than a P&S camera would have been.

-- [Jagadeesh Venugopal](#), June 26, 1999

All this arguing over p&s cameras is getting a little redundant. Correct me if I'm wrong here, but isn't the idea behind a p&s to either have fun in casual shooting situations, or as an emergency back up when your SLR is down, or unavailable? Sure, it's always great to see useful information about a camera before you purchase it, but lets not forget that the majority of the cameras here are under \$200 ferchrissakes! AND, as we all know: you do get (sometimes less than) what you pay for.

That said, here's a great idea for point and shoot fun: I've got a Yashica, and I love to play 'hot potato' with my friends. Just use the self timer to trigger the shutter, and start tossin' it around. I've gotten some really cool shots this way.

Joe

-- [Joe Toole](#), June 29, 1999

I'm glad to see that Heidi Weaver has discovered the Ricoh 500G. I bought one new in 1977 for a trip to Wyoming and loved it. We took some great pictures, enlarged them to 9.5 x 14 and they're still hanging on our wall. Then came Autofocus cameras and I put my Ricoh aside. Later I passed it on to my niece. I sometimes grow tired of the lack of control and limitations of Autofocus cameras, but still enjoy taking a small light camera with me. Then came E-Bay. For relatively little money I was able to bring a Ricoh 500G back into my house. It still takes great pictures and is an inexpensive and wonderful compromise when you need a little more control without a lot more heft.

Mark Sussman

-- [Mark Sussman](#), July 15, 1999

I have a Ricoh 500 given to me by a friend. It is a beautiful camera, but slow in use and clumsy...and heavy. I have an Olympus XA, also received as a gift. The lens isn't sharp or flare-resistant, and tiny controls are hard to use. I gave my girlfriend an Olympus Stylus Epic (*35/2.8 lens) and, even on a tripod, the lens isn't very sharp. That is why I would stick to light SLRs like Elan with a 50mm lens whenever possible...the compacts seem to give too much in image quality and speed of use.

-- [Oleg Volk](#), July 30, 1999

I bought a Leica Z2X couple months ago and went to New Orleans. The Z2X was such a pleasure to use and I got some of the most wonderful pictures of the old French Quarter. These are some of the best pictures I've ever taken using any P&S.

-- [Clarence Ng](#), August 5, 1999

My perspective may not be especially alternative. I too own a T4 I purchased it almost 3 years ago shortly after having many years worth of Canon equipment stolen. Well, I have been thrilled by the results this camera gave, so much so that I am thinking seriously of trying to stay with Zeiss Contax lenses. I am not sure what the difference is, contrast, colour balance? but I prefer the colour to anything shot on my Canons....go figure. HOWEVER, BEWARE!!! service in Canada is another story!!! Last Christmas I dropped it in a hotel parking lot oops and owww! The lens cover was broken, more than \$100 dollars later, (well we can't expect warranty to cover impact damage can we) I happily gave it a little hug and proceeded to shoot again....problem, vignetting?!?! Telephone Yashica and explain, after sending directly to him with explanatory note, several weeks later it comes back with same problem, this time when I phone the manager had not seen it, techie had fixed by "adjusting" the meter??? After bitterly complaining, I have re-sent my camera and they are forwarding to New York. I hope your US service is better or I will not be able to talk myself into spending the kind of money necessary for some Contax gear. That said, before breaking, the T4 (T5 here) is a beautiful little camera. Highly recommend for hiking, biking etc. Graham North

-- [Graham North](#), September 7, 1999

Good photography is in the eye of the user.

My wife has no concern for obtaining adequate quality photographs. She merely wishes to obtain images which will induce a memory recall of the event. What I consider trash, she values. The P&S is geared toward those of my wife's bent where the object is not to produce art but rather physical records of prior events. By automating the artistic control, the average quality increases but the average art value diminishes.

In contrast, I use photography as an artistic outlet. I shoot 35mm b&w, with a spot meter using the zone system and do my own printing. If I have no darkroom set up, I don't shoot. I haven't shot in years.

Two extremes.

Perhaps if I gave up some control, I would obtain more even if I enjoyed it less.

My compromise is using a GR-1 with negative film. I will use store printing for my

wife's film, and computer printing for my film.

This compromise may better the both of us.

-- [byard edwards](#), September 10, 1999

Monkey!

-- [Troy Hyde](#), January 13, 2000

Ian's comments above are based on some degree of SLR/EOS snobbishness. Pity. It's not difficult to get decent photos with a point/shoot camera; the Stylus Epic's fast f/2.8 lens gets the job done nicely. So does my Yashica T4 super (f/3.5). I carry a mini-tripod with flexible legs to negate camera shake, or wedge my shoulders up against a wall or door jamb. And I usually expose at least two frames per subject, varying stance or lighting as called for. When I know I want something more complicated, I'll haul out my Nikon FM2n and its assorted lenses, but that's infrequent. Using outdated or cheap film for test/technique purposes is a great idea; instead of getting that tree-killing second set of prints, find a lab that will give you a free roll of "House brand" film; it's often made by one of the name manufacturers in Japan or Minnesota.

-- [Dave Baldo](#), January 13, 2000

I know my viewpoint may not be similar to other people here, but it's here. P&S cameras may be great for "consumer" shots (i.e vacations, family gatherings, etc.) but in professional photography, nothing beats an SLR or TLR. I guess the reason manufacturers keep P&S in production is not for photographers to use them, or they would produce a small camera with manual aperture and shutter. I don't really know how a P&S is in the real world (since I do astrophotography), but it's hard to beat a good SLR with a telephoto lens.

Jim

-- [James Jingoian](#), January 28, 2000

After many years using only SLR equipment, I bought a Minolta Freedom Zoom as a take-along-at-all-times camera. Unfortunately, it proved to be extremely unreliable. It made me miss many opportunities when it just switched off (leaving the lens unretracted) at the moment of pressing the shutter. It ruined many pictures by focusing to minimum distance, even for landscapes with no foreground! It frustrated entire mountain trips by simply locking up. It took seven repairs to shoot a total of about 40 rolls of film, of which more than half was ruined because of camera problems.

I have now discarded it, and replaced it by a Ricoh GR-1s. What a difference! This camera is very usable, extremely small and lightweight, rugged, allows a considerable range of manual control (which I missed so much with the Minolta), and so far I have not lost a single frame to camera malfunction. It works very well indeed! I'm very happy with it.

This camera is an improvement over the already good GR-1, and I do highly recommend it (I have no connection to Ricoh other than being a satisfied customer!). Its main drawback is the lack of a zoom lens, but then, its 28mm f/2.8 is really good, and WOULD you expect a zoom in a camera this size?

Recently I was able to photograph some lightning bolts with the Ricoh, something I had been never successful at when using the SLR equipment! Tomorrow I'm off for one month into the mountains, doing some flying and some climbing, and the Ricoh comes with me!

Manfred Mornhinweg.

-- [Manfred Mornhinweg](#), January 31, 2000

Although technically not point-n-shoot cameras, there are many compact 35mm rangefinders from the '70s that are almost as small and nearly as easy to use. Check out www.cameraquest.com/classics.htm for a rundown of the better ones.

Personally, I'm quite happy with the Minolta Hi-Matic 7sII I picked up for \$60 last year. While it can't focus itself, it does have a fairly accurate auto-exposure system (complete with exposure lock) and a fast (f1.7) lens, which means you can shoot ISO 100 film instead of ISO 400 much of the time. Better still, it has a leaf shutter (which means it flash-syncs at all speeds) and a manual film-speed dial so you control the amount of fill-flash more accurately as well as adjust exposure to your particular taste. Another nice touch is the filter ring, which I use fairly often, as well as the fact that the meter cell is located inside the filter ring, just above the lens. This means that it meters through the filter and thus automatically compensates for the filter-factor of whatever filter you use.

On the downside, at 17 ounces, it's about twice as heavy as the typical p-n-s camera but it's still small enough to fit into a jacket pocket, if not a jeans pocket. Another plus is that the body is metal, not plastic, which means it will dent instead of crack when it's accidentally dropped.

Overall, if -- like me -- you prefer your photographic automation in small doses and

metal-bodied cameras to plastic ones, then a compact 35mm rangefinder from the 1970s may be a better choice for you than an auto-everything plastic wonder from the 1990s.

-- [Jeffrey Goggin](#), February 5, 2000

How about a used Contax G1 ? Its great little camera for you pocket, jacket that is. A little on the heavy side but if you want creative controls with interchangeable lenes, this is it. I just wish Contax will make another pancake lens like their 45 f2.8 for it.

-- [William Song](#), February 18, 2000

Always wanted a quality point and shoot camera to take on trips instead of lugging the old Nikon N90 or Canon EOS 1 but wasn't sure which one to buy. I just bought TWO quality point and shoots, a Leica Minilux and Nikon 35TI to compare and get the feel. I can only keep one but since I bought them used, I'm sure I can always sell the one I don't want at auction. My choice after 3 rolls of film? It's the Nikon 35TI. First, I wear glasses and they must have gone all out to make the Leica Minilux viewfinder as small as possible and I like to see shutter speeds in the viewfinder to know what I'm doing. That only gave me one choice, the 35TI. As far as the pics, both were about equal, perhaps the Leica may be a tad sharper but, in my opinion, the "feel" and handling of the Nikon was better and I can see what I'm pointing at. Anybody want to be a nearly new Leica?

-- [Jim Gemmill](#), February 28, 2000

Yashica T4 Super. I have had it for several months, shot about 30 rolls of print film and couple rolls of Fuji Astia 100 (slide film, if you want to know what it is). I have only one word about it; this small camera is GREAT! Most of my pictures taken with T4 were enlarged up to 8x12". Slides were properly exposed and very sharp. Properly used "spot" meter allows me to cope with pretty tricky light conditions (like sunset in the mountains). Just aim camera at something with intermediate brightness (camera set at infinity mode), hold shutter button half pressed, recompose the picture, and shoot. Used with Kodak 400 CN (black & white film for C41 process, you can develop it in any one-hour minilab) camera shines with it's highly detailed contrasty images, even in murky light conditions (overcast winter day, for instance). I heard that people report inconsistent autofocus with T4 resulting in blurry images. It never happened to me. In fact, my second camera Olympus Stylus, which was purchased last year CONSTANTLY blurs two-three frames in each shot roll. Camera was sent back to Olympus and they returned it with verdict "camera is absolutely functional" ... The superscope in T4 is another great feature.

Overall: My hat is off. T4 Super is waterproof, quiet camera with excellent Carl Zeiss optics. Great buy for \$150.

-- [Yuriy Vilin](#), March 22, 2000

Interesting ideas, Ian. But I'd like to see your pictures first.

-- [Yuriy Vilin](#), March 30, 2000

I must say that I respectfully disagree with the preceding diatribe against point and shoots. As has been pointed out elsewhere, a camera is a tool. A wise artisan will learn the strengths and weaknesses of that tool, and adjust accordingly.

My own P&S experience has been most rewarding. First of all, if you view it as simple tool that can be used (with experience, and planning and reading the @\$@(\$* manual) you CAN take great shots. I know that some of my all time favorites were taken with an Olympus Stylus Epic. Framing, composition and having the maturity to realize that you're not going to get every shot, are part of the P&S experience. Also, if you have the camera with you, you can use it. A P&S, especially one with a spotmeter, that's with you beats all the fancy stuff sitting on the shelf at home.

It's equally true that a T4 or a Stylus Epic aren't, and won't be, a good substitute for a good quality SLR under every circumstance. Or even some circumstances. When I really, absolutely, positively have to be certain of getting the picture, (like, say, confirmations, graduations, etc), I do use the old SLR. But the P&S can go in the briefcase, glovebox, etc. I mean, how can you get that picture of Elvis without a camera.

-- [Bob Yates](#), March 30, 2000

Amen, Bob.

If you know how to use a P&S, you can indeed get some gorgeous pictures -- and my experience has been that these little cameras succeed much more than they fail.

And, as others have pointed out, they keep getting better all the time. In the last decade, point and shoot cameras have taken a quantum leap forward in size, design, and optics. (You wouldn't have seen something like the Epic in 1990.) More of us can carry them more easily to more events, and thus get more shots we would have otherwise missed. And that's what puts the POINT in "point and shoot" cameras, isn't it?

These cameras are tools, designed for capturing moments on the fly. But someone with a little patience and persistence can also use them to more creative advantage -- and the results can be rewarding, indeed.

-- [Greg Kandra](#), March 31, 2000

If you believe Ian Cruikshank's comment just above, then you must conclude that the images produced by practitioners like Henri Cartier-Bresson, Robert Frank, etc. etc. -- all produced by cameras with small viewfinders and slow lenses (old Leicas, mostly) -- are by definition uninteresting. That doesn't make sense. For that matter, a Yashica T4 is a better producer of images than a Leica IIIIF! Better lens, w/ better film in it than was available in the old days.

That doesn't mean it has all the advantages, however. The viewfinder is small, and I can't adjust its focus to my (increasingly) bleary eyes. And, I'm never quite sure of the frame I'm seeing. So, I'm looking for a used Hexar (black, please). I also shoot with an old Olympus 35SP and a Canonet GIII -- autoexposure, manual focus, sharp lens, made in the '70s, the Canonet even has moving frame lines for parallax compensation.

Sitting in a big, heavy camera bag are my EOS Elan and EOS 620, my (very sharp) 28-105 USM, my 50 1.8 and a 19-35 zoom which isn't sharp but hey it sees interesting things. Why do they sit in the bag? You know why. They are heavy, intrusive devices. You can do great things with them, but if you shoot in a world full of people who you would prefer to remain unconscious of and undisturbed by your picture-taking, an SLR ain't the ticket.

-- [Tom Mandel](#), April 4, 2000

Does anyone know anything about the Lomo camera? I have heard great things about the portability and creativity of this camera, but wanted to get some more opinions from some more "serious" users. One thing that sounded really interesting about it was that it was not fully automatic, allowing a lot of leeway for creativity.

Thoughts?

-- [RF Briggs](#), April 4, 2000

I loved the article! I just bought a Contax T2. My Nikon and it's 28-200 zoom is flying out the window! Phil Greenspun just answered why my photos lacked 'zing!' I learned a LOT from Phil, certainly enough to improve my photography and my equipment. THANK YOU, Phil!

-- [Hernan Mapua](#), April 7, 2000

Fascinating comments on point and shoot cameras, SLRs etc, and an excellent site by

Phil. As a newcomer to computers and the net but a camera nut since childhood, here are a few comments which may be useful (cf main site feedback): Cruikshank's comments seem elitist and unnecessarily inflammatory. I agree with all viewpoints. Surely the objective is the same: to create the best possible pictures by the simplest means - incidentally, the same philosophy which guided Oskar Barnack to invent the Leica. Thus the search for the ideal P&S seems perfectly valid. Phil is bang on. I agree, turn off the flash. It ruins mood lighting. I would like to see a P&S with an accessory flash and a bigger viewfinder - the bigger the better. How many pix to take? A film of one subject? Just one? Up to the individual. The goal should be to produce really good, memorable pictures. Thoughtfulness, not just firing off pictures as fast as possible, is the key. Comments on pre-focusing are helpful. Watching exposure is also critical. Even tilting the camera up to the sky to decrease exposure or down to the ground to increase exposure, then locking it in by half depressing the shutter (assuming your camera has no compensation) can help. Watch you don't throw the focus out of whack. Yes, a good 1.8 50mm lens on an SLR is an excellent choice for some pictures, but the SLR is still bigger and more fiddly - it is! And the moving mirror makes it very hard to hold the camera still below 1/30th sec. A rangefinder camera is a better choice for low light (no blackout either). I do find heavier cameras are more stable at slow speeds though - perhaps why readers on this site still like the good old classic cameras. Not just Leica, though if you buy one I'm sure you won't be disappointed. Have you tried an Olympus 35RC for example? Not perfect but very capable. This feedback is useful, both to users and hopefully the camera industry. It's up to us photographers to tell them what we want!
David Killick, Christchurch, New Zealand.

-- [David Killick](#), April 21, 2000

Ian, just relax. If you don't use P&S that's your problem. Just leave this discussion alone and let people choose their own path in photography. Your opinion is just one of hundreds and not valid in amateur photo world. I have lots of friends "amateurs" using all kinds of cameras (P&S, SLR, view cameras, rangefinder cameras...) at the same time with a great success and great pleasure. And, if you are a "professional", you do not need to read comments on this site.

-- [Yuriy Vilin](#), April 28, 2000

Good point, Yuriy. Someone who clearly has no respect for point and shoot cameras -- and, in fact, expresses nothing but disdain for them -- has no business posting in a forum designed to help people use them better. What's the point? To make everyone feel bad? Or just to show off?

-- [Greg Kandra](#), April 28, 2000

Does it matter what camera you use or even if you use a camera at all? I certainly don't always use a camera. I do photomontage and photograms and I also create pinhole images and digital work. The fact of the matter is if an image is of any depth at all. Is the image good? Pretty soon we might all be using digital or maybe photography won't be fashionable anymore. Unlikely, but feasible.

Image: [mike - pinhole school.jpg](#)

-- [Mike Rossiter](#), April 30, 2000

The Lomo camera is great, but it really depends on what you are looking for. It does colors very nicely and has a fast f2.8 lens. It tends to vignette a bit and it has many quirks about it. I like it because it's different, not 'technically' better. I already have a Nikon for my 'main' sharp photos, but I carry the Lomo around as a snap camera. I like the unique look it provides, as well as the unique feel of it. But it's certainly not for everyone.

If you are looking for a more everyday snap camera that takes good sharper pictures, I'd recommend you take a look at the Olympus Stylus Epic (under US \$100.!). The non zoom version has a fast f2.8 lens and produces quite nice images. I've used the Yashica T-4 Super as well, and it was very sharp, however not f2.8 as I recall. [I tend to like faster lenses since I don't like using flash on a point and shoot]. I like the build quality and ergonomics of the Yashica better than the Olympus though.

-- [T T](#), May 17, 2000

OK, to Ian and anyone else who doesn't see Point and Shoots as a respectable camera to use, I'm an undergrad photo major at Harvard and Nan Goldin taught here for a semester last year and she was a big advocate of the T4 (she also shoots with a Leica (non-point and shoot)) and under her advice, I bought a T4 and my photography changed for the better immediately. I had been shooting with a Nikon N70 with a 35mm, f2 Nikkor lens and for awhile, I was using both cameras because I didn't trust the T4 so I could compare the two and the \$150 T4 was so much better than the \$700+ Nikon SLR outfit I had.

Technically, the T4 images were pinpoint sharp where the Nikon images weren't as sharp. I've had friends take 35mm slides taken with the T4 enlarged to 30x40 cibachromes and had the sharpness hold extremely well. The fill flash is also amazing and the 1 second exposure without a flash lends to some really great images in lowlight.

With a point and shoot, you begin to think more about the essentials to what make a good photograph, the photographic image itself. Henri Cartier-Bresson's negatives were terribly underexposed because he didn't care about every image being technically perfect

as long as the photograph had a perfect image. Cartier-Bresson is arguably a much better photographer than Ansel Adams (I'm sorry but the amount of people who have your print in their downtown office building does not determine your greatness). When that 'decisive moment' does occur, I'd much rather have my instant point and shoot than fumble with exposure and focus and miss that moment. No, matter how good you are with an SLR, you'll never be faster than a point and shoot.

I've discovered that my subjects react differently to a point and shoot than to an SLR. It's nice to still see the face of the person photographing you and with my T4, I've gotten much more intimate portraits. There's just less of a barrier between you and the person you're photographing. I can carry my T4 everywhere, even to the beach where I wouldn't trust my Nikon. Sand has actually gotten into my T4 and I've been OK. I've run around in the rain in it, waded in pools with water inches below my camera, I've dropped the T4 on the ground once when I was drunk, and it still works like a charm. The unbelievably low price also allows me to not worry about it as much. I carry it around in my backpack or pocket without fear and literally have it everywhere I go. You never know when a perfect photographic moment can come. I actually own two T4s now so I can have two different slides films available at all times, an ASA 50 or 100 Fujichrome or Agfachrome for outdoor stuff, and a 200 ASA Kodachrome for indoor lighting... this way I don't have to run through a roll before switching films (I'll never be forced to use Velvia 50 inside in low light now).

I'll still use my SLR once in awhile but getting good at a point and shoot is what every photographer should learn how to do before they really consider themselves good. It just adds such a different level to their photography skills. I'm sure some of Nan Goldin's photographs that are hanging up in the Whitney right now or selling at Matthew Marks for thousand of dollars were taken with her T4. When you can take a museum-worthy photograph with a \$150 point and shoot, that's when you know you're really good.

My two cents, Jeff

-- [Jeff Sheng](#), May 22, 2000

Pretty heady stuff here, especially considering the subject of "point & shoot." For me, one of the great joys of photography is the ability to "capture and record" the moment. Something you can look back on a few years from now and enjoy.

Currently, I own a Pentax ZX-10, which takes great pictures for me. I recently purchased an Olympus Stylus Epic and have been both pleased and frustrated with the results. (In other words, still learning its capabilities and limitations.) But I learned basic photography on a "gasp" Olympus focus-free Trip MD camera (about 40 bucks in 1987). This was/is a true "point & shoot" camera.

Here's why: Because I didn't have to think about aperture and shutter speed, I learned how to compose a good photograph quickly. I learned how to balance subject with background. (Had to, DOF was 4 feet to infinity and background was ALWAYS a factor.) I learned about lighting and how to make the best use of the on-camera flash and other light sources. Most important, I learned what this basic camera wouldn't do and tried to figure out possible ways around it. Are these photos worthy of publication? Doubtfull, but I do enjoy looking at them immensely. Quality? I have to say, I had a couple blown up to 8X10 and they're quite sharp - even to the edge. But the one edge this camera has over the others, was the ability to pass it around to anyone in the room and get a decent framed (80%), focused (99%) picture. All I ever had to say was "just push the button."

Here's the best argument for a point and shoot I can think of, and it relates to Phil's MIT graduation "being there" theory. I went to a convention in New Orleans a few years back. During an off day, I went around with my Pentax SLR and took some beautiful shots of the city and surroundings. Later that night, I had the point & shoot in my pocket and had pictures taken at dinner with old friends, on Bourbon St. with colleagues I hadn't seen in years, heck - I even ran into my ex-wife and posed with her while someone snapped the moment! That camera was passed around while people were enjoying themselves and the pictures reflect that.

Now when company comes over, I like to show off the photos of the city, but guess which ones I personally enjoy looking at more? Would those taken with the P&S have looked better had I used the SLR with the controls and better lense? - well, the one's I took early in the evening - probably. But the ones taken as the night went on, plus all the ones I'm in? - I really doubt it.

My point is, don't underestimate the uniqueness and allure of the snapshot. They capture great moments. And point and shoots capture great snapshots.

-- [Jack Kratoville](#), July 23, 2000

Hello! My experience with the P&S. Attention!!! I shot with print films.

I tried 6 Big Mini cameras (BM 202. The first camera of the Big Mini series) Metallic body.

First camera: Corners and side edges of the photogram (mainly the left one), completely fuzzy.

Second camera: 50% of the completely fuzzy photogram!!!

Third camera: idem!!!

Fourth camera: A little fuzzy side superior and wild corners of the photogram. More fuzzy to f. 3,5

Fifth and sixth camera: Lens: Very good of f.16 to f.5,6. Nevertheless, to f. 3.5 one slight fall of the sharpness from 15 mm of the photogram is appraised. Vignetting: Very slight. Distortion: Very slight, in cushion. Exposure: Very good, CDS center weighted meter. Features: Very good: Flash Auto, Flash: Fill-in and Slow, (calibrated very well) Exposure compensation +1.5 and -1,5, Speed: 1/500 to 3.6 seconds (Excellent!!!). 25 to 3.600 ASA. I have proven the Kodak Ektar 25 ASA, brutal sharp!!! And also 1.600 Fuji ASA, contrasts very high, but good sharp!!!

Viewfinder: Good and clear. But does show a susceptibility to flare in extreme into-the-light... and the AF symbols cannot be watched... With less light the viewfinder is excellent.

I make extensions of my negatives up to 18 cm by 26 cm. The result is excellent. My friends are surprised. The maximum of extension has been 30 cm by 40 cm. The also very good result. With my Big Mini (BM 202) I have made photos in all the possible conditions and results excellent: in the high mountain, in the snow, in the beach, in the grottos and warehouses very little illuminated. Very good nocturnal photos. (Speed 3.6 seconds)

Big Mini (BM 302): Same problem with the optics that my four first Big Mini!!

I have tried 5 Olympus mju II (Stylus Epic) cameras: Apocalypse Now!!! Total disaster!!!!

The first camera (Made in Japan!!!): excellent lens, but to f.2,8 slight but appreciable loss of sharp in the corners. Accurately AF. Accurately exposure. But him lack EV +1.5 and -1.5, The camera spoiled to the 30 days to use it!!!!

Second camera: Horrible lens!!! (Parts Made in Japan, Assembled in Honk Kong!!!!)

Third camera: More horrible lens!!! Defective AF. (Parts Made in Japan, Assembled in Honk Kong!!!)

Fourth camera: When I extracted it of the box and I put the battery to him, it did not work correctly!!! Impossible to prove it!!!! (Made Parts in Japan, Assembled in Honk

Kong!!!)

Fifth camera!!!!: (Too Parts Made in Japan, Assembled in Honk Kong) Good optics (Not as good as the first Made in Japan) But AF vague. I to sell my Olympus mju II to a person less demanding than I.

Pentax Mini Espio (UC1). Two proven cameras. No found problems. Viewfinder: Extraordinary, the best one of all the A & P!!! Lens: Very good. Nevertheless, to f. 3.5 one slight fall of the sharp in the corners and edges; and also in the central inferior part (!). Versatility: Good, although not as much as the Mini Big (BM 202)

Yashica T4. 20% of the photogram of the straight diffuse side!!!!

Konica A4. (Second-hand, but new) I to buy by 22.5\$. Good optical of f.16 to f.8-5,6 but to 3,5 mediocre: one slight fall of the sharp in all the photogram. Versatility: Normal. The Konica A4 is a "prototype" of the Big Mini(BM 202). The Mini Big, is far better.

Leica Mini III: Impossible to prove it, the AF did not work...

Zeiss Lomo LC1: Three bought cameras. The three spoiled in a year... Made in Est Contry: crap!!!

Olympus, mju -1 (Stylus USA) (first mju series). Serious problems of sharp in the edges of the photogram. 30% to each side of the blurred photogram!!!

Olympus XA with unit of Flash A11. I to buy used to 58\$. Excellent, robust, very good features, in many aspects the best one of all. The very good optics in all the diaphragms. But of f.2,8 to f.5,6, very appreciably vignetting. The cause is the design of the objective: invested retrofocus. Of the best thing of years ' 80.

I have been continuing using my old Big Mini (BM 202) for 8 years!!! No problems. And my brother also has a Big Mini (BM 202) and he is amazed.

I to be crazy if I want to obtain the same optical quality with a A&P that with a good optics SLR. (Nikkor, Canon, Zeiss, Leica, etc.) Only good optics SLR, is worth 2 or 3 times more than a Mini Big, or T4, or a Olympus mju II, It is impossible!!! If your you obtain equal quality with P & S that with a SLR (Nikkor, Canon, etc.), you must to bomb the factory of Nikkor, Canon, etc.!!!

The manufacturers of cameras P & S, design very well their cameras of the high range. With good specifications, but when they make the cameras, they forget to maintain the quality of his products!!! We are deceived by the manufacturers!!! The quality level of

its products is discontinuous. If you have luck when to buy P & S, you can be very happy, but if you do not have luck when buying your P & S, you are very displeased and you have many frustrations.

I have wanted to be brief. I have more information of other simpler cameras: Super Olympus AF 10 Super, Canon AF 7, Rollei Prego 35-70...

Thank you very much and I wait for your answers. Excuse me, my English is very much deficient.

Jose M. A. L. (Spain)

-- [José Manuel Alvarez López](#), August 3, 2000

I've just discovered this site but have owned a T4 since 1996 when my local camera shop recommended it for size & image quality.

I am uncomfortable though with the "buy a T4 or else!" sentiment I infer from this page. A person makes a picture, the camera just follows instructions! The T4 has a great lens....and that's it.

I've come to the following conclusions based on my pictures with the T4:

- 1) The lens produces sharp and detailed images(with exceptions - see 2&3) - better than zoom P&S. Sometimes the images are breathtaking.
- 2) The exposure system is not very smart or directional. For example, Landscape/building shots can appear underexposed due to a bright sky.
- 3) Frequently, say 5 pictures in every 36, the Autofocus system fails to lock onto the foreground images
- 4) The Fill in flash has a limited range - group portraits only work when there are 2 or 3 people close to the camera.
- 5) Film winding mechanism is dodgy in extreme humid conditions - fails to wind on after taking a picture, or catch on when loading new film.

Summary: It's a great camera for image quality but, lens aside, is cheap and cheerful with regards to everything else - and when one element fails (i.e. exposure) so does the picture!

Finally, I feel spoilt by the Zeiss lens and unable to sacrifice this quality for more the creativity that an SLR would give me on my limited budget (£400ish).

-- [Neil Cooke](#), December 20, 2000

As several people have pointed out, P&S cameras have their own advantages that make them a tool that every photographer should possess. I have several cameras ranging from a Mamiya M645-1000s and Canon F-1N, to a Nikon Coolpix 990 and Pentax Zoom 90-WR. Of the five photographs that I've chosen to upload to Photo.net to date (I'm a relatively new user), it turns out that two of them were shot with the Pentax! I simply wouldn't have gotten the shot without it, because there are so many circumstances where I refuse to lug around a big rig.

Photography is so much more than Zeiss lenses and rock-solid tripods supporting 8-by-whatever cameras that cost enough to feed a family in India for three years. It's all about the image, and the vision one utilizes to produce that image.

Just as someone who actually goes out and *rides* a bike a lot can jump on a garage hooty beater-bike and beat the pants off the neighbor down the block with the \$5K titanium wonder bike, anyone can produce an image of worth with practically any camera/film/format. Just take a look at the pinhole camera section...

Cheers!

-- [Jeff Warner](#), March 8, 2001

If you are looking for a great quality P&S at a decent price, I recommend the Minolta Explorer Freedom Zoom. Yes, I have seen a few comments about its reliability but I have experienced none of that. I bought my Minolta 2 years ago and it has given me some great pictures. I have found that using a tripod produces excellent pictures as well as also using the prefocus. I wouldn't trade my little Minolta for any other P&S at this point. Jeffrey from Nashville

-- [Jeffrey B](#), April 19, 2001

On Phil's "a good roll is 35 bad shots of the same subject and 1 good one" idea....

Digital P&S is ideal for this.

With my Fuji Finepix 2400 and a 32 Mb card I can waste 70 something hires shots and not spend a cent.

Where this pays huge dividends is in family shots. You simply cannot compose great shots of kids. You have to take them when and where they happen.

P&S is great for that in that your grab camera, set up and shoot time is minimal. Digital is great because you can point and shoot and not cry over the waste when the kid suddenly runs out of frame between the press and the click.

Besides, do you really want that hugely expensive SLR anywhere near mud coated, sugar encrusted, water flinging, tantrum throwing littles?

Even just for pure experimentation, the digital is fun.

-- [John Carter](#), April 20, 2001

I have mainly taken pictures with point-shoot cameras (whether using 35mm, APS or digital; and whether equipped with a zoom lens or not) and I find that you cannot just "point and shoot" your pictures. When I take pictures with these cameras, I make each shot a four-stage shot. First I make a "rough composition" of what I want to capture. This is when I would operate the zoom control and, if using an APS camera or other "multi-aspect-ratio" camera, decide what aspect ratio suits the image I want to capture. Then I make sure that one of the key features is in the centre of the viewfinder. At this point, I then press the shutter release halfway and make sure that the "ready" lamp glows. Then I revert back to my original composition to finally take the picture.

Some people think that using anything other than an SLR with total manual control offends creativity and "proper technique". But these compact cameras encourage users to concentrate on what they are to photograph, rather than spending time fiddling with the camera.

There was also a time when I attended a wedding and took plenty of pictures with my Canon SureShot Zoom S compact camera. One of the shots that I thought about setting up was one of the bride about to climb into the wedding car (a mid-1970s Jaguar) after the ceremony. The professional photographer who was hired for this job didn't think about this as a possible wedding shot. But I organized the shot and he and I took it on our equipment. Later on, after the big day, I had the negatives from the wedding scanned to Photo CD and showed what I took of the wedding to the bride and I didn't realise that she was totally dissatisfied with the pictures taken by the professional photographer. She realised that I had some of the best pictures and I organised reprints of those pictures. Another good example was the one that I took of the "giving away the bride" procession with her with her father. She preferred my shot over the "official" shot; and I printed this shot off the Photo CD master using my computer and printer.

-- [Simon Mackay](#), June 25, 2001

I agree with Mr. Carter's comment regarding the digital P&S and would like to point out that a digital P&S can also be a wonderful tool for teaching photography. I bought A Fuji 2400 for my 13 year old daughter who has been interested in photography for several years. Digital gives her immediate feedback, approximately the same set of constraints and features as a film-based camera and virtually unlimited resources for experimentation at an amortized price of pennies a shot.

We can do "assignments" together, each using our own camera, and compare results on-the-spot, to see what worked and what didn't and in many cases, reshoot immediately to emphasize the point. This appears to be a very effective method. We both learn a lot.

-- [Lyndon Guy](#), July 18, 2001

Well thats done it! I had to make a choice between taking my 1959 Praktica IV SLR (and limited experience) my Fuji digital or purchase a P&S for my Holiday to the Dominican Rep next week. I felt I had to go with the Yashica T5 after the positive feed back from a considerable knowledge base(you lot!).I'm taking 200 film and I'm looking foward to grabing some great moments in time. I've decided not to take my Fuji digital camera for the simple reason that I seem to edit too many pictures out. I want lots of memories of this trip rather than a few well composed ones.

-- [Dave Hands](#), August 12, 2001

One of the most important concepts to remember with P/S, rangefinder and SLR cameras is that each lens has its own personality. I have a Yashica FX-103 SLR with three lenses, a Yashica MG-1 rangefinder with a fixed 45mm lens, a Canonet QL-19 with a fixed 45mm and an Olympus Accura with a 35-70mm zoom. I also have used several versions of Canon Sureshots and a couple of digitals. The sharpness varies much less than the overall color tone and esoteric "feel" of the images each produces and each lens' personality is consistent over the long haul. To sum it up, I say don't waste any time and energy quibbling over which format is best (a subjective term anyway) and use them all!!! I think most serious amatuers would find a depth and richness to their hobby that would never be there without experimenting with different cameras and most importantly different lenses.

I love the advice in this article. To add my own bit to the piece, I'd have to say, when using a point and shoot, treat it as though you're holding a Leica. Think before you shoot. Overthink until great composition and desired effects become second nature to your technique. Above all, enjoy it and develop a wide array of styles. I'm glad I did.

-- [Tony Samples](#), November 23, 2001

Bit the bullet, bought a yashica T4 super through the classifieds here. \$130 from Toronto, brand new in box with warranty. Dis-satisfied with the puny flash, although I do like all the flash options. Bought a Konica flash bracket with built-in sensor, specifically designed for point and shoot cameras. Best \$30 I have ever spent, also through these classifieds. Went to Washington DC and spent the day at the Air and Space Museum and burned 11 rolls of film between my new point and shoot and my old Canon AE1-Program with a 50mm lens (vs the 35mm on the Yashica). Used the same flash for both cameras. On the point and shoot bracket, the upright hot shoe portion is placed slightly ahead of the front of the camera so that the built in sensor facing the side of the camera can tell when the on camera flash goes off and then fires the main flash. (Vivitar 285). On the Canon set up, I have an old Roberts bracket (also bought here) which places the flash in approximately the same position relative to the lens but I used a sync cord with that. I had to guess on what to set the 285 flash on using 400 ASA film on the Yashica T4 Super. (Yeah, I know, but it's a big space with lots of stuff, and it's not for their magazine, but my trip album) So, I set the flash on Red, which gave me the equivalent f4 and about 30 feet or so, plus whatever the P&S flash added. They don't allow tripods anymore, so I had my improvised monopod which is eyebolts screwed into the tripod sockets of the brackets with nylon rope attached, dangling down about 6 feet, and then I step on the end, marked with a black stripe, pull up to tension it, adjust the height of the viewfinder and get a nice, steady picture. Albeit some very strange looks and an occasional inquiry as to why. I think you will see more of these around, maybe... (God, he do go on don't he?) Bottom line, I shot several pictures with and without main flash on the point and shoot. These were not bounced, but direct! The difference was astonishing. I shot a panoply of large aircraft that hang in the main hall, using only the on-camera flash and with the automatic backlight compensation working perfectly (I was shooting against a 50'x200' window in sunlight), I got some crystal clear, dark outlines with some detail from the closest plane, a Ford Tri-Motor. You could see the propeller, but not much detail on the fuselage. Then I used the big flash on the bracket with the point and shoot. You could see every detail of the fuselage, the front engine, the landing gear, also the nose of the plane 30 feet behind was perfectly visible and the colors and some of the detail of the others, 50+ feet away were also visible. Then I shot another pair of an X-15 rocket plane with the Wright Brother's Flyer framed under it's wing. The nozzle of the X-15 was approximately 8 feet from the camera. Without add flash, the rocket plane was perfectly exposed, but the Flyer was a little dim. With added flash, the X-15 tail section was over-exposed, the Flyer was perfectly crisp and clear. Some thoughts: My Vivitar is a semi-manual flash, not TTL If you are going to use a manual flash, try to find out what the largest opening would be for your point and shoot when using flash. Since the Yashica has a f3.5 lens, f4 on the flash would match OK, provided you were going to illuminate further than 15-30 feet or more. Point and shoots tend to open their lenses as wide as possible and control the exposure through shutter speed, the print film can handle the added light just fine. The offset of the supplementary flash also tends to eliminate

some of the shadows caused by the on-camera main flash. The entire set up is easy to hold, but looks strange, since my flash is heavier and bigger than the actual camera. I love the T4 Super! Pain in the ass trigger sensitivity, that can be mastered with some training, crystal clear images, edge to edge, I have not noticed any vignetting. Hate the lens racking, focusing and shutter trip delay, but, again, training helps (and my step on monopod. The AE1-Program took superb pictures, as expected, I have used it for 20 years, but considering the weight and the bulk, I will be using my T4 for most of my vacation stuff and light shooting duties. The slave flash bracket, judicious use of the flash, based on your distances and the ease of the T4 focusing has made a believer out of me. If you want to take superb group shots with natural color and none of the startled deer look, try using this type of fill flash to bounce off a white ceiling. My new sister in law preferred my candid pictures to the pro with the high bracket and Mamiya camera, although not in all instances, to be honest. (Why he didn't bounce and fill, I don't know)

-- [Peter Tower](#), December 31, 2001

I use a 5 yr old Olympus Stylus and love the results but I've found that these cameras can take terrible pics if you don't Think. Since P&S cameras are marketed to the simpletons among us I came up with a nice acronym (no Thinking involved) to help my spouse shoot the occasional picture of the primary household photog (ME). I call it the "Three F's". One, set the Flash (usually OFF or Fill). Two, Focus the camera by pointing it EXACTLY where you want it to focus then push halfway. Three, Frame the shot and shoot it. (I could probably add a fourth F, as in FILL UP the FRAME if you're shooting FOLKs) The 3F's seem to work well for my 5 year old son too. Teach your friends the 3F's and they'll take better pics of YOU...

-- [Mark Atwell](#), February 11, 2002

I had a Yashica T4 super for about 4 years. Yes it was compact, weather proof, and fairly accurate with AF and AE. I sold it, and bought a Olympus 35SPn with a Zuiko 7 element 42mm 1.7 lens. Sweet. This is a much slower camera to operate (manual focus). Although it does do AE, I bought it to use it mainly in manual mode, spot meter, and of course MF. It is one tough (metal) camera. Very, very versatile... it slows me down and makes me think more about where I meter and what pinpoint I want to focus on. My Hexar gives me the best of both worlds... P&S and total manual. But I've been toying with the Olympus more lately and it's a gas. The flash system uses incorporates GN and distance automatically therefore really accurate flash exposure (with ISO 100... anything else and don't forget to change the guide no on the lens setting accordingly) Add to the mix a cheap mechanical cable release, no AF focus resetting between pictures, and almost no lag time between shutter release and firing, and flash sync to 1/500 and ability to use hot shoe or PC cord studio flash. I guess I was lucky... the SPn that I have is the last model produced... pristine condition, with everready case also in pristine condition and a new mecury battery and a great flash to boot. I miss the waistlevel finder of the T4

super though...

-- [David Bindle](#), February 14, 2002

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[Reader's Comments](#)

Remember that your camera is just a tool. Don't pamper it. You can always buy a new one. If you leave your camera in a closet, it will never get dirty or broken, but you won't have too many great photographs to show for yourself. Many of the best photographs can only be taken under conditions that will render your equipment wet and/or filthy. That's life.

The photo at right was the result of spending six hours at the bottom of a canyon in the Navajo Nation. For the entire six hours, sand blew down from the top of the canyon and into my \$20,000 Rollei 6008 system. Was there a sickening grinding sound when I focussed my \$3000 50mm lens for the next few months? Yes. Did I have to send the camera back to Marflex (Rollei's US service) to be cleaned? Yes. Did the camera get [stolen in Filthadelphia](#) a couple of years later? Yes. So it really



didn't make sense to obsess over the camera, did it? I can still enjoy this picture even if I can't use my 6008 anymore. If I'd pampered the camera, it would just be in that much better shape for the crook who is using it now.

Lenses

Basic lens cleaning tools are a blower, a microfiber cloth, and lens cleaning fluid. Try to blast dust off the lens with the blower or canned air. Finger prints can be removed with a circular wipe of the new miracle micro fiber cloth (my favorite brand is Pentax because it is nice and thick; about \$6). Persistent dirt should be removed with lens cleaning fluid, of which the safest is probably Kodak. **Always drip the fluid onto the cloth and then wipe the lens; never put fluid directly onto a lens.** My personal favorite is Residual Oil Remover, available in many camera shops for about \$4.



Even if your lenses don't look dirty, every few months you should give exposed surfaces a cleaning with Residual Oil Remover (ROR). Even if you were able to protect your optics from all environmental sources of filth, there would still be crud condensing on your optics as camera bag plastics outgas. ROR has a bunch of advertising hype about how you can get a full 1/2 stop of extra brightness from your lenses after a treatment. I haven't experimentally verified this nor do I believe it, but the optics do look visibly clearer after an ROR treatment.

I don't like to obsess over my equipment, so I keep a B+W UV filter on almost all of my lenses. I count on replacing the filters every few years rather than being paranoid all the time.

SLR mirrors

Don't even think about cleaning the mirror in your SLR. Maybe, just maybe, you could consider using a handheld blower to move a few dust specs off, but canned air is too powerful. Technicians clean mirrors with some kind of special viscous fluid and will often do it for free at camera clinics run by shops or conventions. Mirrors have very fragile surfaces and I wouldn't dream of getting near them with a standard lens cleaning solution or cloth.



Remember: the dirt in your viewing system isn't going to show up on film.

Flash Contacts

Modern TTL flash systems have numerous contacts and if you don't clean them every now and then with a pencil eraser or something, you can be fairly sure of getting intermittent failures.

The Camera Body Itself

Camera and lens bodies are fairly well sealed against dust and moisture. So you don't really ever have to clean the exteriors of your equipment. On the other hand, if you don't want the dirt and crud that is on the camera body to work its way into your camera bag and from there onto an optical surface, it is probably worth wiping off the body with a soft cloth. Slightly dampening the cloth with plain water certainly won't do any harm, though I imagine that this wouldn't be Canon or Nikon's recommendation.



War Stories

I had a very [interesting experience in New Zealand](#) after smashing a UV filter on my Nikon 28AF lens.

Gallery

Here are some photos that I wouldn't have gotten if I'd been prissy about my cameras...



From [Samantha](#) ...



And from [Italy](#) ...



If all else fails...

If you got the picture but lost the camera in the process, you may need to visit one of [the photo.net recommended retailers](#).

[[top](#)]

Reader's Comments

Hi,

When shooting out, I always place some silica gel in my bag to get rid of excess moisture. I don't know how useful it can be but since the camera bag is not 'air-proof' and is light-proof, the potential for fungus growth is high.

I use empty film containers and poke little holes in them, then pour enough silica gel into it. It is an easily refillable container and contains just about the right amount for a medium size bag.

-- [Angst Man](#), July 19, 1998

I'm not disagreeing with anything you've said. I'm reporting on Nikon information. The Manual - yes I do read it. It says, for glass surfaces such as lens; avoid using lens tissue. Use soft cotton moistened with pure alcohol. The Nikon consumer/tech reiterated that I read it right. "Use 100% pure methol alcahol. Con't use lens cleaners." Any comments from anyone? To be honest, I usually use one of the cloths you mentioned or a soft, clean bandana. I do know some filters from certain companies come with warn ings against using certain cleaners, but by the time, I get ready to clean same, I've lost the instruction paper.

-- [M. Huber](#), August 25, 1998

Reading from the Nikon F5 User Manual, page 151, it says: "Clean lens surface with a blower brush. To remove dirt and smudges, use a soft cotton cloth or lens tissue moistened with ethanol or lens cleaner"

-- [Rick --](#), October 25, 1998

On microfiber lens-cleaning cloths, two recommendations. First, Herbert Keppler, who's been doing and writing about photography for more years than most of us have been alive, has some interesting thoughts (in the Dec. 98 Popular Photography, p. 25), in his brief piece entitled "Microdear microfiber cleaning cloths finally available in the U. S." Keppler says, "For years I have been raving about what I think are the best lens- and camera-cleaning cloths anywhere--the Microdears, made in Japan by Etsumi Co. They are generously large and thick" but have been obtainable only in Japan. Now Adorama is importing them, in two sizes: 11"x11" for \$10, and 14"x17" for \$15. Keppler's piece also gives his own directions for their proper use: "Dust and light smudges are easily wiped away. To remove pronounced fingerprints or heavy, mucky stuff, breathe lightly on lens surface and immediately clean lens with light, circular motion of single-layer Microdear. Better yet, slightly moisten the edge of the Microdear cloth with lens-cleaning solution, alcohol, or, in an emergency, vodka. Then do your circular motion bit. Microdears are also great for cleaning outside surfaces of camera bodies and the like." Keppler claims that dirty Microdears "can be washed in soapy water" and when rinsed thoroughly and dried, "they'll be as good as new."

Second, I like and recommend the Contax MicroStar microfiber antistatic lens-cleaning cloth, which is also generously large and thick. This is a top-quality lens-cleaning cloth. I bought mine for \$15 from an Asian selling them at a camera show (mine is light green in color and says "CONTAX/Carl Zeiss T* Lenses" on the cloth; directions are in Japanese only). Sorry I can't tell you where to buy one.

-- [Dave Kemp](#), November 28, 1998

Whenever I buy new shoes for my kids I grab the little silica gel pack from the shoe box and put it in my camera bag. I always have three or four of the little packs floating around in there. They lay flat in the bottom of the bag, so they don't take up space. The cameras stay dry and I have never had one tear or break open. Best of all they are free and easily replaceable.

-- [Dan Fordice](#), February 5, 1999

I have had very dissappointing results with the cleaner that Phil recommends, Residual Oil Remover (ROR). I purchased a bottle recently, along with a pair of Wiko Microstar

cleaning cloths. ROR's website recommends against using regular lens tissue, claiming that it is "not absorbant enough for ROR," so I sprayed this peculiar smelling chemical onto one of the Microstar cloths and wiped off the elements and filters of all of my lenses.

After completing this process, however, I exhaled onto the elements to make sure that they were in fact perfectly clean. (A clean lens will fog uniformly, and any grease or fingerprints will appear quite distinctly.) I was very surprised to see all sorts of swirls and whatnot materialize on the elements. I polished of the fog and then tried again. They did appear somewhat cleaner this time, but nonetheless, the swirls persisted.

Now you must realize that I am quite compulsive about my equipment, and especially the cleanliness of my optics, so, needless to say, I was somewhat perturbed. I acquired a flashlight, and, by the light reflected from the front element of the lens, distinct smears of grease or something could be detected.

So I read the bottle. "Do not use with treated lens cloth." Well, Microstar is not treated (treated lens cloths being primarily of the anti-static type, such as Ilford's AntiStaticum), but perhaps this chemical was somehow breaking down the Microstar's synthetic fibers and leaving the residue on the lens. (I seriously doubted this, but it bore consideration.) Or, perhaps the cloth was simply dirty, and the oil ws being redeposited onto the lens.

I washed out the Microstars and then used lens tissue with the ROR instead, hoping to eradicate my little problem, and guess what; the residue remained. However, a bit of ethanol diluted with water took the mysterious residue right off. Perhaps my bottle of ROR was defective, but I have since discarded it, and never plan to buy another.

My recommendation? When you first acquire a lens, clean it with regular lens cleaner or diluted ethenol (NOT isopropyl, or rubbing, alcohol, but ethyl alcohol only). This is sufficient to remove much grime that can accumulate on a lens (especially if it is used) and should be repeated periodically every four months or so. Remember, however, that overcleaning will eventually strip off the delicate coating of the elements. To minimize such damage, used canned air to blast dust and other abrasives off of the glass BEFORE rubbing a cloth of tissue over them. For intermediate cleaning, a microfiber cloth and the moist breath treatment are the safest approaches, and canned air is the easiest way to remove dust, especially on longer telephotos in which that rear element sits deep in the recesses of the barrel.

-- [Timothy Breihan](#), May 20, 1999

I second the above negative experience with ROR (Residual Oil Remover) lens cleaner. I found it to work no better for most, and worse for many, types of lens contamination, than Kodak lens cleaning fluid.

On a separate note, as per Keppler's recommendation in Pop Photo, I went to Adorama and bought the Microdear cloth, and found it to work very well.

Alex Karasev

-- [Alexander Karasev](#), June 30, 1999

I also noticed the slight swirls you get when using ROR, but it seemed to work well overall for cleaning. I just used it to clean a Canon 70-200 2.8 and a Sigma 170-500. After a year of taking the Sigma to the racetrack for horse racing photography, the lens' front element was so fouled with sand, dust, oil, etc that I was about to give up on it. Regular cleaning products like canned air and microfiber cloths did nothing to help it. After one ROR treatment, it was good as new! ROR even took off moisture spots that had appeared on the front coating. Sure ROR left a slight swirling pattern (only noticeable when viewed at an angle under fluorescent light), but after some buffing with the microfiber cloth the swirls were pretty much gone.

-- [Derek Dammann](#), July 16, 1999

A further comment on lens cleaners; since my last posting, I discovered a way to eliminate the greasy swirls that mysteriously appeared on my lens elements after a treatment with ROR. I have found that if you saturate a cotton facial pad with ROR, apply the liquid thickly to glass, and then immediately remove it with another dry pad, the swirls are eliminated or at least reduced to a degree at which a light buffing will remove them.

The literature on Residual Oil Remover makes mention that certain tissues are "not absorbant enough for ROR..." My theory is, that since ROR apparently emulsifies oil, too much wiping simply redeposits the oil back on the glass. This is a somewhat half-assed explanation, and I'm not entirely convinced of its merit. What I am convinced of is that ROR seems a bit to fickle to warrant wasting my time with. I use others cleaners that work better. I would also ask if Phil has experinced any of the aforementioned difficulties, and, if so, could he please place a posting illustrating his solution. I would be interested in hearing additional insight.

A final observation on Kodak lens cleaner. Reading the Contents label illustrates that it is simply ammonia diluted with water. I have often heard that ammonia is harsher on lens coatings than ethyl alcohol, and to my experience, does not work as well. (I use an alcohol based cleaner.) Does anyone have any insight here? Phil says that the New Zealander who extracted the glass fragments from his lens cleaned the glass with acetone, something I would never consider. Any comments?

-- [Timothy Breihan](#), August 24, 1999

As far as Kodak Lens Cleaner, I read from the bottle that it is water and ammonium carbonate, which is different than household ammonia (ammonium hydroxide). It seems to work OK, but I think most of the effect is that the water in the solution helps the tissue or cloth hold onto dust particles more effectively. As far as ethanol, Everclear is pure ethanol and is available at liquor stores in some states (Texas, Colorado, other he-man type places). Ethanol seems to dissolve oily spots beautifully, although the jury seems to be out on its effect on coatings.

It would be useful to have some facts about what lenses are coated with and the reactivity of coatings with common cleaner ingredients like the above. I cannot imagine that condensed breath is totally non-reactive (especially if you've been drinking Everclear).

-- [Charles Mackay](#), September 5, 1999

In my lab 100% ethanol and methanol are freely available and I use them to clean my lens all the time. Works great. Not a trace left. Methanol evaporates in seconds but it's toxic so be careful.

-- [Rocky Aaron](#), October 23, 1999

Ethanol and cotton flannel are recommended by Nikon, so I doubt that they would harm lens coatings if used in moderation. If you are using Everclear, though, it might be a good idea to dilute it with distilled water, if for no other reason than to increase its evaporation time. That way, you can be sure to get all of the oil up with your cloth instead of having it remain on the lens as the ethanol evaporates.

-- [Timothy Breihan](#), November 8, 1999

Since the above, having used ethanol denatured with methanol ("solvent alcohol") sold at my hardware store and the absorbent cotton that comes on rolls at local drugstore, I will never use anything else. After using dust-off, use one piece of cotton dampened with ethanol to remove dirt / oil / sludge, then dry with a fresh dry piece. (This technique is also advocated in one of Really Right Stuff's "white papers".) Lenses look absolutely like new, at least with Nikon glass.

If you don't get all the crud off, the ethanol may leave a hazy residue (basically diluted crud that you have redistributed evenly around the lens). This happened to me once but a microfiber cloth removed it -- or you could just repeat the alcohol thing.

-- [Charles Mackay](#), November 17, 1999

A quick note on the previous comment regarding ethanol-- ethanol not explicitly labelled 200 proof has probably been denatured for tax reasons. While some ethanol is denatured

with methanol, other denaturants which may be harmful to lens coatings include camphor, gasoline, benzene, acetone, ether, and kerosene (Merk Index, 11th ed., 1989).

-- [Dave Flanagan](#), February 2, 2000

Don't forget to clean the insides of the lens cap too, and the back end of the lens as well might need cleaning. Also I have found that Zeiss lens cleaner cleaned even my dirtiest lens to a "like new" clean. thanks for all of the tips.

-- [Pat O'Neill](#), March 6, 2000

For those folks who truly believe their "clean" lenses are clean, try this: grab a jewelers 10X eye loupe and take a look at the lens. What appears to the naked eye as the cleanest looking lens will reveal its' true dirt, smudges, swirls, scratches, fungus and damage under a 10X eye loupe. Best to use a jewelers "triplet" eye loupe that's been designed for diamond grading with a black frame. They offer best color and image fidelity. The GIA sells them for about \$70.00.

(In fact, when you go shopping for a lens, bring the jewelers eye loupe with you. You'll be unpleasantly surprised at how many "new" lenses have surface defects, chips etc.)

-- [Marika Buchberger](#), March 19, 2000

Just a note on blowers - don't pay a lot of money at a camera store for one. Instead go to your local pharmacy and purchase a rectal syringe, they do just as good a job for a lot less money.

-- [Ian Johnston](#), July 23, 2000

As an alternative to cleaners and wipes, consider good ole scotch tape. Just use a small piece, touch it to your lens or filter and lift off. It removes oils, fingerprints, and dust without the potential of streaks or scratching or mess. I use it to clean the LCD screens on digital cameras. It works great, gets all the way up to the edge and will not scratch the sensitive (cheap) plastic screens. I have also, on occasion, used it to clean the mirrors on my SLR's. Nothings more annoying than a dust spec in the viewfinder.

-- [S.J. Polecat](#), August 11, 2000

One observation I'd make about cleaning any sort of surface. Having some year of oexperience in cleaning residual contamination from surfaces being prepared for adhesive bonding on aircraft structures (where any trace oils would totally degrade the bond), it is traditional to use two cloths for solvent cleaning. The first one is soaked in the solvent and is used to dissolve the contaminant and put it in solution. The second, clean and dry cloth,

is used to remove the solvent/contaminant solution remaining on the surface. These steps can be repeated if required using fresh cloths.

For lenses, I would think a second step of treatment would suffice. What I can say from personal experience on lenses is that the Cokin lens cleaner seems to do a decent job when used with the two cloth approach. I always use the Kodak lens tissues and get few swirl patterns.

In a pinch in the field, I've resorted to using a standard tissue (yuck) but followed that with a blow off brush to get rid of the inevitable bits of fibre that deposit from the tissue. An imperfect solution, but sometimes an errant finger does actually get in front of my lens.

Dave

-- [dave lawson](#), September 28, 2000

Slide-Loc, OneZip...

If your micro cleaning cloth or lens tissue has abrasives in it you may damage your lens. To protect the integrity of my cleaning materials I always carry them in Ziploc type bags. I especially like the ZipLoc, Slide-Loc and Hefty, OneZip bags.

I find these bags are great for other things, for example quart size Ziploc Freezer bags are just the right size for 4x5 cut film holders. Charged and discharged batteries, exposed and unexposed film, lens hoods, camera manuals, etc.

-- [David H. Hartman](#), November 3, 2000

just about the mirror cleaning i guess there is really no problem to keep it in good conditions cleaning it up with a soft pencil or that pencil ones you can mount in an air pump.

-- [oTTO zUCHIERI](#), November 26, 2000

When you get that gray grunge buildup in the inscribed numbers on your lens' aperture dial or your shutter speed dial, try an old toothbrush dipped in any kind of alcohol. Shake off the excess, then go at it with a circular motion. The original paint will soon be shiny & bright. You can remove any left-over residue with a slighty-moist (H2O) tissue. This will also remove the crud from any other crevices on the camera.

-- [David Krewson](#), December 6, 2000

Zeiss Lens Cleaner and old fashioned baby diapers. Makes the lenses "squeaky clean"!!!

A note about the diapers: Make sure the diapers have been machine washed numerous times with NO fabric softener. Also, rinse them well in DISTILLED water to remove all residue.

-- [Marika Buchberger](#), December 29, 2000

In my experience with cleaning multi-coated filters, optical glass can be cleaned to perfection with the following methods:

1. Simple dust specks or lint: Use a blower bulb or blower bulb/brush. (obtainable at photo stores, chemical stores, pharmacies) Blow off the dust using the bulb. Sometimes a combination of brushing and then blowing works best. Make sure that if you use a brush, that it has never been in contact with anything oily, like your skin. If it has, you'll need to clean it with alcohol first. If you only have a blower and no brush, lightly knocking the dust particles loose with a clean 100% cotton cloth first, and then blowing works. In some cases, lint will be stuck in the rim of your filter. In that case, careful use of tweezers (I recommend swiss army tweezers) to pull out the stuck lint.

2. Dust, filmy residue, or specks: Use pure water (tap water is fine) with a 100% pure soft cotton cloth (a perfectly clean t-shirt is fine, but no cotton balls, they're too linty). In the case of mounted lenses, apply the water to the cloth. Then wipe the glass clean with the damp cloth, and then wipe dry with a dry part of the cloth. Do not let the water dry on it's own!

In the case of filters, remove the filter from the lens, then hold the filter under the tap and rinse it completely with water, both sides, and then immediately begin to wipe the whole filter with cotton cloth until dry. If there is dust or lint left, go to method 1.

3. Fingerprints and oily residue: use ethanol and a 100% pure soft cotton cloth. A 95% ethanol, 5% isopropyl alcohol blend is perfect. This can be obtained from chemical supply stores. (I recommend tri-ess in Burbank, <http://www.tri-esssciences.com>)

Apply the ethanol to the cloth and then wipe the glass with it. Make sure to dry it off completely using a dry part of the cloth. Do not let it evaporate without wiping. If there is residue, proceed to method 2. If there is only dust or lint left, proceed to method 1.

4. If and ONLY IF there is a residue that could not be removed by methods 2 or 3, use a lens cleaner like Residual Oil Remover, ROR', and a 100% cotton cloth. Apply the lens cleaner to the cloth, wipe the glass with it, and then dry as best as possible. There will be a residue, so proceed to method 3. In general, filter manufacturers like Hoya, do not recommend use of lens cleaners. They say in some cases they can ruin the coatings. (That didn't happen though with my Hoya Super HMC UV(0)).

What kind of pressure should you use when using the cotton cloth? The lighter the pressure, the better, but even medium pressure should not scratch your lenses or coatings, because cotton is soft. Don't press hard enough though for the glass to break!

-- [Eitan Adut](#), February 10, 2001

I'm a bit surprised no-one's mentioned OptiClean for glass cleaning. Maybe it's not available outside the UK yet.

Anyway, for those who don't know, it's a liquid polymer that you paint onto the lens and leave until it hardens. You then remove it by attaching a little sticky tab and pulling it off. Away comes the film along with every bit of gunge that was on the glass.

It's quite expensive, but very good. It also doesn't rely on you having the right sort of cloth to remove it.

-- [Steve Rencontre](#), February 22, 2001

I've used Kodak lens cleaning fluid with a Promaster cloth with squeaky clean success. The Promaster cloth is very absorbent, but I don't know what material it's made from (possibly cotton). I've tried the Microstar cloth, but found it to be not very absorbent, and sometimes left streaks. I always begin with gently blowing the lens off with some ReadRight compressed "air", then gently brushing it with a camel hair brush, blowing again, and then soaking the cloth fairly well with fluid, and gently dabbing the lens (and immediately dry it w/ cloth). I then use perhaps a drop of fluid on the cloth and gently wipe the lens down. There aren't usually any streaks due to the absorbency of the Promaster. If there are a few streaks, I just lightly buff the lens with the cloth, and in fact the resulting cleanliness is so thorough there's usually a slight squeaking here and there from the surface being spotless. I've tried Kodak disposable paper, but that just leaves damm streaks all over! Make sure your cloth is absolutely immaculate... PS: I just bought a Leland PowerClean Ultra Cloth which looks promising as well.

-- [James Allen](#), February 24, 2001

Long ago, when I worked as a camera assistant on movie crews, I was taught to clean lenses with the three-tissue method: 1) Roll the first tissue into a fairly tight cylinder and tear it in half, then lay the two pieces side by side--the torn ends become the "bristles" of your lens brush ... point the lens down, and brush the grit off its face (if you don't point it down, you just push the grit around) then discard the tissue; 2) Bunch up the second sheet by grasping its corners and form a little wadded cushion ... put one drop (no more!) of lens fluid on it, and gently clean in a spiral motion from the center out, rotating the cushion so that a clean surface is constantly presented to the glass, then discard the second tissue; 3) Quickly (or you'll get waterspots from the fluid evaporating) bunch up the third tissue as

you did the second, and dry and polish the glass in a spiral motion from the center outwards, then discard the tissue. Always clean your lenses gently--never scrub or rub hard. If you buy some lens tissue and you can hear it crackle when you wad it up, it's too stiff and harsh for your glass, so replace it. Before I start step two (above), I put the third sheet of tissue between my left ring and pinkie finger knuckles, so that it will be at hand immediately and waterspots won't form before I can dry the glass. Finally, keep a UV or 1A filter over your lens all the time for protection (I know that's elementary but I'm a true believer, having replaced the filter four times on a lens I'm still using today)

-- [Donald Gentz](#), March 1, 2001

Great Lens Cleaner! Regarding optics cleaning I have not tried ROR but there seems to be some dissatisfaction with it's use in some of the comments. For forty years I have found using liquid lens cleaners to be a horrendous experience, including alcohol, those from Kodak, etc. Recently I have found a totally satisfactory cleaner that actually makes the glass look clean! No swirls, residues, etc. In fact, the claim is that it removes all previous residual cleaner contamination as well as normal oils and accumulations. This seems to be the case in my experience and it does it without special efforts. It is called Formula MC and it's website is at the bottom of these comments. I hesitate to use microcloths as the danger of reusing their surfaces poses a danger to my \$1000 lenses even though they work remarkably well. With Formula MC they are not needed or recommended. The safe method is to use two pieces of clean, unused lens tissue, a wet and a dry one, and the job is done in a minute or so with no threat to optics. I first blow away any dust from the surface, especially the crevices so I don't dislodge any grit while cleaning, with a can of Dust-Off or similar product and perhaps a light blow at the finish to remove tissue lint. I do a test blow away from the lens and always hold the can upright. Never shake the air can before using it! Because I take care in protecting my lens surfaces and avoid cleaning unless they get a finger smear or really need it, I haven't had a lot of need or experience using MC but can say that when I have used it its been a pleasant experience. I might mention that in using the 2nd tissue there might be what seems as residue but this appears to be part of the cleaning process and is removed by carefully wiping it away. The lens will come out clean and free of cleaning marks.

Formula MC's site is: <http://www.pecaproducts.com/mc.html>

As an alternative there is another cleaner that I remember reading is the official one used by Hasselblad and other optics makers (possibly Leica). It is called Rexton Optyl-7. I have used it but prefer MC. I bought both these cleaners from Get Smart Products at: http://www.pfile.com/cgi/cart.cgi?db=dusters_cleaning.db&category=Dusters,+Cleaning+Supplies

-- [Pepe Alvarez](#), March 4, 2001

I have lenses several years old that have never been cleaned directly. I always buy a new filter with each new lens. Upon receipt of the new lens, I immediately install the new filter.

Smudges and dirt get removed from the outside of the filter with my t-shirt or whatever else seems handy at the moment.

Shine a flashlight through your lens. Anything that is illuminated is effectively scattering light. Think about that. On an ideal lens, you wouldn't even be able to see the glass.

A high powered flashlight will allow you to discover just how much dust actually resides on elements that are inaccessible. Zoom lenses seem to get the most dust internally, probably due to fluctuating air volumes within the lens tube. The amount of internal dust may convince you that cleaning the two exterior surfaces is rather trivial.

With a high powered flashlight, you may also discover the effects of over cleaning a lens. The light will illuminate all those microscopic scratches in the glass left by cleaning procedures.

I have also seen some lenses with oil residues on inner elements. These oil residues will take the form of fogging, spotting or streaking. I suspect that factory-applied lubricants are to blame here.

In one extreme case, using a flashlight I saw a smudge with a small fingerprint on an internal element. This same lens happens to be the sharpest one in my collection (a 50 mm prime). Since this realization, I have devoted much less attention to the cleanliness of my lenses.

A little scattered light seems to be ok.

-- [Alan Wallace Jr](#), March 7, 2001

General advice.

1. Use a bulb blower to dust off your lenses periodically. This is one of the safest ways to clean the glass.
2. Use alcohol and lens tissues or cotton balls to clean persistent grime off the glass. I use ordinary alcohol rather than special lens cleaning solutions, because it evaporates quickly, wipes clean easily, and leaves no streaks.
3. Use a lens hood on every lens, and consider an eyecup for your camera's viewfinder. These accessories help protect the glass from fingers, dust, facial oils, air pollution, impact, etc. They also deliver more contrast to your eye and to the film, by blocking extraneous light.
4. Use your lens caps when you finish taking pictures, and when you change lenses. This

keeps dust and oil off the elements, and prevents scratches and impact damage.

5. Use UV filters to protect your lenses in hostile environments: rain, snow, smoke, extreme heat or cold. But don't think you have to use them all the time. Even the best filters will degrade contrast and resolution, which may or may not be noticeable. Bad filters can turn good lenses into mediocre ones. Always remove filters when shooting into the sun or artificial light, to prevent flare, ghosting, and reflections.

6. Don't clean your lenses too vigorously or obsessively. There's always the chance of causing more harm than good.

-- [Ian Cruikshank](#), May 24, 2001

I am amazed every time I read an article by someone who does NOT recommend a UV filter on every lens for protection. These are people whose work I admire and I feel they should know better. Included in this group is John Shaw who makes the statement "protect it from what?" in regard to a filter protecting the lens.

In my previous incarnation as a working photographer I have witnessed the following: 1)Nikkor 180mm f/2.8 falling from the roof of my car to the pavement below, 2)Same Nikkor 180 snapping off the entire front of a Nikon F2 following my being hit by a football player, 3)Nikkor 24mm f/2.8 being splashed with champagne in the locker room of a Texas League baseball team, 4)Nikkor 80-200mm f/4 lens taking a headlong dive from a bar to the tile floor below, 5)Nikkor 24mm lens attached to a Nikon F2 that slipped through my fingers and crashed to the dining room floor of my apartment, 6)Nikkor 35mm lens being splashed with flood water, etc., etc....

In every case, the front lens element was undamaged. I wore out one 24mm lens, there was no distance markings left on the barrel and it was no longer sharp until you stopped down to f/16, but the front element (and rear as well) were pristine.

If you are working as a photographer or just caught up in the moment, you will many times expose your camera and lenses to rough treatment. You will stuff lenses in bags or lay them down on rocks (or bars) and not use a lens cap. It's called normal use and abuse for a working photographer or an amateur who does a lot of photography. It makes sense to protect the lens elements as best you can. And you can get a decent optical glass UV filter for a lot less than you can replace the front element of the lens. If you are worried about flare, etc., you can always take it off to make a photograph and put it right back on--it's not a permanent lens attachment. You need to protect the lens from the unexpected incidents. It's just common sense.

-- [Lee Shively](#), June 12, 2001

I have noticed that often the humidity of finger soils the lens surface through the thin lens cleaning paper that I use. So I use it loosely wadded. Or I use it, sheet-wise, but I take 2-3 sheet at a time.

-- [Alessandro Mattiacci](#), July 13, 2001

I use double tipped cotton q-tips, and blow (hard) the dust off (and any gritty stuff that might happen to be there) then I use the 100% cotton q tip to clean off my breath from the glass. No scratches or problems. Cotton.

-- [Nathan Wynn](#), November 20, 2001

I know lots of purists are concerned about the optical imperfections of UV filters. Instead of using one to protect the front element, I recomend a rigid lens hood to protect the front element from fingers, bangs, etc.

-- [Mike Barnhart](#), December 13, 2001

Three cheers for ROR. I managed to clean an old lens that I thought would never come clean. It is a great thing to have in the bag.

-- [Roger Shrader](#), February 2, 2002

Using a UV filter as lense protection is a double edged sword. Although a previous poster relates a number of "saves", I had a Nikkor 35-70 hit linoleum after a 30 inch fall - landing on the front end. The UV filter broke, scratching the front element. New front element from Nikon service = \$200. It comes down to a question of luck...

As for lense cleaning - 3M makes an excellent microfiber cloth specifically for optical cleaning. If you can locate a supplier, please post it - I was lucky enough to get a sample from a 3M rep but have been unabale to locate a dealer.

-- [Jason Monfort](#), March 1, 2002

I'm a photographer by hobby only, but professionally I'm an optical engineer and have worked with all sorts of critical (and less critical) optics (infrared, visible, and ultraviolet lenses, mirrors, coated, uncoated, etc), and thought I'd throw in my two cents.

Probably the most important thing to consider when cleaning optics: beware of SAND! I know that everyone recommends using those cleaning cloths in a circular motion, but that it is really an **incredibly** risky thing to do. If there is even one tiny bit of sand or glass or other hard material under that cloth, you just made a whole bunch of pretty **permanent** circles on your lens. This is also the reason why doing what you can to minimize how often

the lens is cleaned is important. Perhaps you did make those circle scratches on your lens. But maybe they're not too deep. Do they scatter light and decrease the contrast on your negative? Sure. A lot? Probably not too much. But if you clean your lens once a week (or day?) and continue adding these scratches, it will become real noticeable in a hurry.

For cleaning an optical surface, straight wipes are much better. And for those of you who are really paranoid, you should switch to a different part of the cloth for **each** wipe. That way, if you did pick up a bit of sand, you won't drag it across again on the next wipe.

Dusting off lenses before using a cloth is important because it (hopefully) removes any abrasive materials.

I would also definitely steer clear of using any cloth that isn't sold as a product specifically for cleaning optics. T-shirts may be nice and soft to the touch, but how sure are you that a spec of sand (or thousands?) isn't stuck in that shirt from the last time you went to the beach or worked in the yard (or there when you bought it)? Sure enough to risk scratching your \$2000 300 mm Nikkor? It really isn't worth it. Paper towels, tissue paper, cotton swabs... I have seen all of these readily scratch glass. But these are not manufactured or packaged to ensure that they do not contain **any** abrasive materials. If you know anyone who has regularly cleaned their eyeglasses with tissues or paper towels for a long time, take a look at their eyeglasses with a really bright flashlight and you'll see what might happen to your lens.

Why am I going on so much about sand? Because the damage is permanent. Once a scratch is there, it's not coming off.

As far as cleaning solutions go... Again, I'd stick with ones that are supposed to be for optics. I am not sure what type of AR coatings are put on camera lenses, but many are quite durable and resistant to many solvents (we use isopropanol, methanol, acetone, toluene, sometimes even dish washing detergent). Since camera lenses are consumer products, I would expect the coatings to be pretty durable. But again, it comes down to quality... Rubbing alcohol has isopropanol in it but only a few percent. The rest is water, detergent and who knows what. I don't expect that the stuff sold as "pure" isopropanol is as good as the stuff I would use at work (reagent-grade, contaminants are measured in parts per million!) but it's far better than rubbing alcohol (and cheaper than reagent-grade too:). That goes for "exhaled water vapor" too... Do you know what's in it? Well I don't either, and I wouldn't risk putting it on my lens. Biological materials tend to be difficult to clean and corrosive if left on coatings for long periods (fingerprints can permanently damage a coating if left long enough).

And here's a tip: If you've just put some cleaning fluid on your cloth and tried wiping off a fingerprint, and there's still some there, wet another spot of the cloth (or a new cloth) and wipe again. Don't continue to reuse the cloth that isn't working. The solvent can only take

up so much dirt before it is saturated (remember chemistry class?), and more wiping just moves the dirt around, instead of dissolving it.

Lastly, someone above mentioned that looking at your lens with a bright light will reveal any dirt and dust. That's just how it's done in the optics world. Just a word of caution though: even a brand new, freshly opened lens may show "a lot" of "imperfections" under a good bright light. I suppose only someone who is trained in inspecting optics can really tell what's normal and what isn't, but anyone can look for grossly wrong things. There should be essentially *no* smudges or other things which cover a large area on the lens. Most acceptable imperfections will be just little point-sized things. If you can count the dust particles on your lens, you're in good shape. If there are so many that you could never count them all, then you probably need a good cleaning.

Hope this helps. Brian

-- [Brian McNeil](#), March 6, 2002

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Related Links

- [Gemological Institute of America](#)- At this site, follow the links to their on-line catalog of products (GEM Instruments). If interested, you can purchase a 10X triplet eye loupe from them. (contributed by [Marika Buchberger](#))
- [Kooter's Geology Tools](#)- Kooter's Geology Tools carries the Bausch and Lomb Hastings Triplet hand lens in 7X to 20X for \$32-39. Stainless steel and black impact plastic. It should last a lifetime. (contributed by [Mark Ingleright](#))

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Where to Get a Camera Fixed

By [Philip Greenspun](#)

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If you have a modern 35mm SLR or point and shoot, the most obvious thing to do is send it back to the manufacturer. So if you have a Canon EOS and live in the US, just send it back to Canon USA. You can usually find repair facility addresses and phone numbers either by surfing the manufacturers' Web sites and/or calling 800-555-1212. If you live in a strange Third World country, you can still FEDEX in a camera body with a credit card number and get your camera fixed by the US importer.



If you have an old 35mm camera with sentimental value and are prepared to spend \$200 to make it work again, you might think that sending it back to Nikon or Pentax or whoever would work. However, invariably the manufacturers don't really want to deal with models that are more than 20 years old and will tell you that "parts aren't available." You need an independent shop that is willing to cannibalize junk bodies, machine parts from scratch, and otherwise exercise creativity. A traditional favorite is Professional Camera Repair in New York City: (212)382-0550.

If you have a Hasselblad, consider sending it to Gil Ghitelman (referenced in [my where to buy a camera article](#)). He employs his own Hasselblad repair guy.

If you have a broken Rollei, Linhof, or Rodenstock, then you want Marflex, (201) 808-9626.

Boston's only camera repair legend is Steve Grimes, (508) 384-7107, skgrimes@aol.com. He solves all kinds of strange large format problems with custom machining. He also does bread-and-butter large format shutter repairs, lens mounting, etc.

We're not experts on camera repair shops in every state. You'll probably get the best advice from [our Neighbor to Neighbor service](#) or the user-contributed comments (below). If all else fails, you may need to buy a new camera from one of [the photo.net recommended retailers](#).

More

- You can also learn more about [camera and equipment insurance](#).

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Reader's Comments

Repair Shop in Tampa:

In my [Nikon N-series Comparison Chart](#), I referred to a little repair shop near the Tampa airport that did a nice job on my Maxxum 2xi after hours at a reasonable price. A search yielded the name and address of the place.

V P Technical Inc.
3434 West Columbus Drive # 104

Tampa, FL 33607
(813) 876-7099

There seemed to be a lot of Kiev equipment on the shelves there so I believe that this is one of the few shops that repairs these cameras. Should you have trouble finding a repair shop that handles Kiev, I'd suggest you give this place a call.

-- [Don Atzberger](#), September 26, 1997

If you live near but not in Boston, consider going to Sanford Camera Repair in Arlington MA. They are a factory authorized Nikon, Canon and Minolta repair shop(probably other brands also including medium format).

They do an excellent job and they have a display case that's worth visting for by itself. It's full of destroyed cameras plus the cause of destruction(things like being driven over and sprayed with salt water).

-- [Paul Wilson](#), October 1, 1997

If you have a Canon T-90 in need of repair don't bother sending it to Canon. They returned mine with a note stating that the "service life of the T-90 has just ended" and they no longer have repair parts. After several phone calls I found an independant repair shop with parts. Good luck.

-- [John English](#), March 1, 1998

If you live in/around Baltimore and need your medium format and lighting equipment serviced, go see Peter Whedbee!!! This guy KNOWS Hasselblads and has a really good reputation amongst the local working photographers. His number is (410) 435-4481.

-- [Ken Eng](#), March 6, 1998

A (the?) source for out-of-print user and repair camera manuals is John Craig,
<http://www.craigcamera.com>

If he doesn't have the original he will sell you a photocopy, in the same size and binding as the original.

As usual no relation other than as a satisfied customer, etc... (found him by recommendation of the folks at KEH).

-- [Cris Pedregal Martin](#), June 8, 1998

In the Boise area:

Photek (3075 N. Cole, Boise, ID 83704, (208) 323- 7568) is a really great place. Their repairs are reasonably priced, and they seem to have a nice supply of used parts. They also have a nice selection of used lenses and bodies in good to excellent condition.

-- [Stephen C. Murphy](#), July 1, 1998

This is a confirmation of the recommendation of Photek in Boise, Idaho. They can be depended on for superior quality and a reasonable price, in my experience. They've also more than once had in stock what I just couldn't find elsewhere.

<http://www.allworld.net/photek/index.html> is their website.

-- [Dave Miller](#), February 5, 1999

Why don't try to repair your stuff yourself? Many camera repairs turn out to be just cleaning, replacing light seals, or replacing broken levers. These jobs can be done by anyone who has reasonably good fine motricity, some patience, and a set of small screwdrivers, ring openers and a few other tools. The time invested is often less than what you would take to find out a service shop, pack the camera, ship it, etc. Living in one of those "strange third world countries" mentioned by Phil, I have no real option other than doing my own repairs. Shipping a broken camera to the USA would involve a very complicated and quite expensive "export and re-import" procedure. I have repaired a few dozen cameras and accesories over the years, both my own and those of friends, and found that in almost all cases the problem is something mechanical, often quite obvious. Electronic problems are much less common. It can be necessary to machine some part (this can get difficult!), but more often than not the sick camera can be healed without any special medicine!

If you have a quite new \$2000 camera that broke, and a nearby highly recommended service shop, and your hands are hardly able to handle any tool more delicate than a chainsaw, then by all means get it fixed professionally. But if the camera is 30 years old, worth \$200, you have reasonable skills, and the nearest service shop that may accept it is a continent away, it would be a good idea to fix it yourself! If you mess up, at least you had the opportunity to see how cameras look inside! :-)

Keep a tube of cyanoacrilate glue at hand. A lot of failures in autofocus mechanisms go back to cheap plastic gears sliding on the shafts!

And a small anecdote: Once a friend asked me to repair his Canon (I think it was a T50 or so). It looked like an electronic problem. He had replaced the battery without results (first things first!). Being an electronic engineer, I dived into the camera's circuitry,

reverse-engineered it until understanding what was happening - power supply problems! I removed the battery, connected the camera to a bench power supply, and it worked like a charm... I put in a new battery - problem fixed! The explanation: The battery had a manufacturing defect, manifesting itself in very high internal resistance, while the voltage at no load was perfectly normal. When my friend replaced the battery, he bought the new one at the same shop, and got one from the same manufacturing batch, with the same defect!!!

So, don't take anything for granted.

-- [Manfred Mornhinweg](#), May 21, 1999

Southern California? Camera Tech of Anaheim for all old cameras. The guy has been doing it for 30 years and does a great job for a great price. Doubt he'd be too good with the newer stuff, but if it's a mechanical, as opposed to an electrical, problem, bring it in.

David

-- [David Marhadoe](#), August 16, 1999

if in jacksonville, fl. and need repairs, check out southern technical photo services. factory authorized for at least nikon and canon. super good prices and quick turn around

-- [Tony Padilla](#), October 17, 1999

My Canon T90 needed a major overhaul a couple of years ago. The Camera Clinic in Reno, NV did a great job getting my favorite camera back into service.

-- [Michelle Dose](#), May 13, 2000

trial comment.

-- [waikit lau](#), June 28, 2000

In the Atlanta area, I highly recommend Camera Repair Japan (CRJ) in Norcross, just off Jimmy Carter Blvd. Excellent pricing and service. Compared to other service I've gotten, they certainly went the extra mile in CLA'ing my gear; it's the cleanest it's been since it came out of the factory 20 years ago. Tel: (770) 849-0555, Fax: (770) 449-7999, Email CRJCO@aol.com. I doubt you will be disappointed.

-- [Christian Deichert](#), July 3, 2000

If you own an older Canon A-series Manual focus camera, send it to Karl Aimo in Mass. His E-mail address is AE1REPAIR@aol.com, he caught a problem with my AE-1 and repaired it for a very good price. He charged \$65 to fix a jam, a dead hotshoe, and give the camera a CLA. The local camera shops in my area wanted \$120 to fix the hotshoe alone. Great service and fast turn-around along with great prices.

-- [Chris Pitassy](#), July 9, 2000

In Philadelphia, try to avoid Camera Brokers of Philadelphia (CBOP). Took a camera there for cleaning/adjustment in early August. Went back a week later to find out their repair technician wasn't (and hadn't) been around, so my repair waited until he returned. Received a phone call from him later, saying that my Canon SLR needed some other work - shutter repair, mostly - and that it would be another 2.5 to 3 weeks, and I would get a call.

After waiting for the call (in the meantime missing the opportunity to take the camera on a trip) I returned to the shop today (October 2) asking the whereabouts of the camera since I had never been called. I was told that "the camera just got in today" by one employee, and then "the camera came in a while ago, and we called you." (The number I provided was a work number, so there's no chance I "missed the call or there was no answering machine" as I was told. Even so, wouldn't good customer service dictate that you keep calling until A.) you speak with someone or B.) can leave a message?)

In any case, the second employee I dealt with "didn't like my tone" and told me to "take my business elsewhere." I suggest you do the same.

-- [Michael Kmiec](#), October 2, 2000

In the Washington D.C. area, I have experience with three repair shops:

Mora Camera Service: Just off Wisconsin Avenue, near Tenley Circle in the District. Nikon only. Small, personal, and they can do most anything on a Nikon. Reasonable prices and decent turnaround times. Their work for me has always been first rate. They also sell used Nikon and Nikon-compatible equipment. Last time I was there, they had a rare 500mm f5 mirror lens at a competitive price.

Alpha Camera: In the Clarendon area of Arlington, at the corner of Washington Blvd. and Wilson Blvd. This is another small shop, run by a Vietnamese guy who fixed Nikons for the war correspondents in Saigon. He has done some first-rate work for me on older mechanical equipment, cleaning fungus out of lenses and that sort of thing. Rates are quite reasonable. Don't be put off by the funky storefront, this guy does good work. I don't know how knowledgeable he is about the latest autofocus wonderboxes, but he is

definitely the first guy I would go to for work on an older camera.

Strauss Photo: Big, institutional, diverse, and slow. In a part of the District I would prefer never to set foot, Strauss does repair work for most of the camera shops in the DC area. They are factory authorized by several major manufacturers. I have had mixed results with them. They are basically good, but the operation is big enough that some sloppy work can slip through. Their size does mean they can fix a lot of stuff that a smaller outfit wouldn't have parts for. I don't send them Nikons any more; I wasn't real pleased with the last overhaul on my F3 and the camera wound up at Mora a few months later. I would still go to Strauss if Mora or Alpha couldn't help me.

-- [Bob Benzinger](#), May 26, 2001

Stay away from MACK CAMERA and Repair, in Springfield, NJ. They are arrogant, ham-handed thieves. Unfortunately, they provide lots of extended-warranty service to camera shops all over, so many consumers may have no other choice.

I live near Mack and recently brought them a Rollei TLR for servicing. I asked specifically to speak with their repair person before they worked on the camera. In fact, nobody called me, they went ahead with the work, and they returned the camera to me in much worse shape than it was before -- an exterior part entirely missing, a lock-lever detached, damage to the film transport mechanism and to the camera back/latch. This is beyond belief. When I complained that nobody had called, they said take your camera and leave, don't pay us--thinking I would be mollified. It was only when I got home that I saw what a botch job they had done.

Now, the company president refuses my phone calls, ignores my faxes. My next step will be Better Business Bureau, then Small Claims Court, I imagine.

Clearly, this company knows nothing about fixing real cameras. It is to be avoided at all cost.

I would be happy to hear of others' experience with them.

-- [John Verity](#), February 4, 2002

I highly recommend Superior Camera Repair and Exchange, in Woodland Hills, CA. The owner has done excellent work with my Minolta SRT-101 and XD-11 cameras, which most shops refuse to even look at. I had a short in my XD-11 which drained fresh batteries in less than a month; no problem, he fixed it inside a week. He loves working with classic cameras.

-- [John Wright](#), April 7, 2002

[Add a comment](#)

Related Links

- [Kominek Camera & Optical Repairs](#)- We are an independant shop specialising in camera and optical instrument repairs. Located in Toronto, Canada, we offer service to most makes of cameras, including Leica, Canon, Nikon, Pentax and most other makes. We also service many older models, including Zeiss and Voightlander. (contributed by [Roger Henriques](#))
- [Camera Repair Tips Page](#)- In the course of repairing SLR cameras for almost 25 years, I have compiled this list of the most common problems that I have run across. To see if I have some tips about your camera just click on your brand name and jump to your model. The most common SLR cameras that I work on are listed. (contributed by [John Titterington](#))
- [Bob Warkentin's Southern Nikonos](#)- THE place to go for Nikonos service. Simply the best. This is where the pros send their Nikonos gear. I have been using them since the 1980's and have always been 100% satisfied. Also a very informative Web site. (contributed by [Bob Benzinger](#))
- [Camera Fix Newsgroup](#)- This is a newsgroup for hobbyist camera repairers to share experiences about repairing their cameras. Specializing first in mechanical and semi-electronic cameras, any related discussion is also welcome. You can subscribe from the link above, or send blank email to: camera-fix-subscribe@yahoogroups.com (contributed by [Kelvin Lee](#))

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Buying Insurance for your Camera and Equipment

By Lisa Surati

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Guide Contents:

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Good camera equipment is not cheap. Most photographers spend years acquiring theirs. If you had to replace all your equipment at once, or even a portion of it, would you be able to? What would you do if faced with such a situation? Settle for a fraction of the equipment you once had? Stop taking pictures altogether and pick up a cheaper hobby?

None of the above sound appealing? Consider insuring your equipment. If your equipment is insured, check the coverage and exclusions of your policy to make sure you have the coverage you need. If you lost all your equipment tomorrow, would your insurance company pay for the replacement value of your equipment? Would you face exclusions if you receive photography-related income? Understanding your level of coverage today could save you from being unable to shoot pictures

tomorrow.

What type of policy do I need?

The type of policy you need depends on how you use your equipment. If you do not make any money through the use of your equipment, a standard homeowners or renters policy should cover against theft and fire, even when your equipment is outside your home. Typically, standard homeowners and renters policies cover you against named perils only. They also typically have deductibles. If your equipment is accidentally damaged, for example, you drop it, chances are it will not be covered under a standard homeowners or renters policy.

If you use your equipment for non-commercial purposes, another alternative is buying an "all-risk" floater. This attachment to your homeowners or renters policy includes a schedule of covered items. An all risk floater generally covers the scheduled equipment against everything except specifically excluded perils stated in the policy (e.g., acts of war). So if you're walking down a street and you accidentally drop your camera and a car drives by and runs it over, smashing it into pieces, it's covered unless that situation is specifically excluded in your policy.

If you use your equipment primarily for business purposes, you should be insured by a *commercial inland marine policy*. A commercial policy offers all-risk coverage for equipment, eliminates the potential of exclusions if equipment is used professionally, and offers a variety of optional floaters designed to insure against the liabilities faced by a professional (e.g., someone trips over your tripod).

What type of policy do I need if I occasionally use my equipment for commercial purposes?

That's a difficult question to answer. Some photographers who generate revenue from their work, even if it's not their primary source of income, need a commercial policy. Commercial policies are generally more expensive than personal policies and might be required depending on the value of your equipment and the level of income you generate from photography. It's not unusual for a photographer to talk with two different insurance agents and be told by one that they require a commercial policy while the other says a personal policy is sufficient. Your best bet is to talk to a number of insurance agents representing different companies and see which company will offer you the best deal. Remember that misrepresenting your information could cause your coverage to be denied. Worse, if you are offered a policy, misrepresenting your information could cause your claim to be denied, even though your policy is fully-paid!

Due to interest from the community, photo.net has been talking to insurance companies about potentially offering a photo equipment insurance program for photo.net members. This program, which will not result in a dime of income to photo.net, could provide photo.net members with a professional exposure with some combination of all-risk worldwide coverage, competitive rates, coverage for leased or borrowed equipment and peace of mind that your equipment is properly covered. **To determine if offering a photo equipment insurance program to photo.net users is viable, the insurance companies have asked us to post this [survey](#) to evaluate the demand for such a product.** If you

would be interested in participating in the photo equipment insurance program exclusively for photo.net members, please fill out this survey.

I want to add a floater to my homeowners or renters policy

Items of value, including photography equipment, that are not covered or have limited coverage on standard homeowners policies may be scheduled on a personal articles floater. Rates for insuring your equipment on a personal article floater vary among companies. Generally, you should expect to pay about \$1.35 - \$1.75 per every \$100 dollars of equipment with no deductible. Coverage is usually in addition to your unscheduled property, giving you more coverage if there is a total loss. Most homeowners and renters insurance policies provide coverage against named perils only. If your camera falls off a shelf and breaks, it is not necessarily covered. Personal article floaters are usually written on an all-risk basis, meaning your equipment is insured against everything except specifically excluded perils. So, if you're leaning over the side of a boat to get the perfect shot, your strap breaks and your camera falls to the bottom of the ocean, it should be covered unless that peril is specifically excluded in your all-risk floater or if you intentionally threw the camera overboard. With a personal article floater, the burden is on the insurance company to prove that a claim is not covered. With a standard homeowners policy, the burden is on the insured.

Personal article floaters provide broad coverage, usually with no deductibles. Generally, you're agreeing on the value of your equipment prior to loss. When you apply for a floater, your insurance broker will ask you to list all your equipment, the market value/replacement cost, serial number and other information on your equipment. The market value of an item is the replacement cost of the item in its current state, not a new piece of equipment. Generally, insurance companies replace insured equipment and do not pay cash for the value of the item. If you want cash to replace the item yourself, generally you will have to negotiate with your insurance provider.

Personal article floaters can also cover items you've bought even if you have not told your agent. Policies can provide coverage for newly acquired items for up to 30 to 90 days if you pay a pro-rated premium.

I need a commercial policy

If photography is your primary income, or a source of income, a commercial policy might be right for you. Generally a commercial policy is more expensive than a personal article floater attached to your homeowners or renters insurance policy. You should expect to pay between \$1.75-\$2.25 per every \$100 dollars of equipment with a deductible between \$250-\$500 per claim. A commercial policy offers a similar level of coverage for equipment as an all risk personal article floater, but eliminates the potential exclusion of equipment if used professionally.

Additional coverage available on a commercial policy includes general liability, commercial property,

workers compensation, commercial automobile coverage and umbrella liability to name a few.

Most states require you to carry workers compensation insurance(they're so good in Massachusetts of keeping track of this even photo.net had to comply when sent notice after only a month of incorporation). Professional photographers operating a studio with employees could be liable for any and all costs associated with injuries in the event fo an accident. Professionals not only face this liability with full-time employees, but also with anyone they have hired for an assignment. Carrying workers compensation protects you from personally being liable for such costs. General liability insurance further protects you from third party bodily injury or property suits.

Bottom line

The bottom line is that you should get the type of coverage that best fits your needs *before* you're faced with the strain of having to pay for equipment, injuries, or other liabilities. If your equipment is insured, check your policy and make sure you have the coverage you need and that you will not face exclusion if you receive income from your photography.

Photo.net Survey Results

We ran a survey on photo.net to determine both if there was interest from the community for a photo.net insurance program and garner the type of demand. There is great interest as we received 699 responses. We determined the average amount of equipment users wanted insured was 8452 and the median was about \$5500. about 15% of the users had greater than \$20,000 dollars worth of equipment to insure. We are currently looking at possible partnerships for a group discount for photo.net users.

More...

- [Camera insurance thread in photo.net Q&A forum](#)
- [Photo equipment thread in the photo.net Q&A forum](#)

Reader's Comments

A note about "theft" versus "mysterious disappearance." You may have theft insurance with your homeowners policy, which will cover your cameras if you are held up, robbed, or put in bodily harm in exchange for your property. But if you place your camera on the park bench next to you and three seconds later it is gone (stolen), it is not considered theft, but is termed "mysterious disappearance" by your insurance company. In this case, theft insurance will not cover you. If your camera is stolen from your office while you are out at lunch, theft insurance will not cover you. This is where the additional insurance discussed on this page will (hopefully) come into effect.

-- [Jay J. Pulli](#), July 10, 2000

Jay,

I'm not sure if I totally agree with your definitions of "theft" and "mysterious disappearance".

I ran an insurance agency for 8 years here in New Jersey and what the insurance companies REQUIRE is a police report. If my camera is with me at work (as it always is), and it disappears from my bag, I have to contact the police to report a theft. I receive a report from the police, detailing the theft, which I then turn over to my insurance carrier who then pays me according to the terms of my policy. While the camera may have "mysteriously disappeared", it did not jump out of my bag and walk away on its own. Someone, a person, had to remove it without my knowledge. That's theft.

"Mysterious disappearance", while it can apply to missing property, almost always applies to life insurance policies where the insured has "disappeared", usually without a trace. Under those circumstances, the insurance company can withhold payment until they are reasonably satisfied that the insured had passed away, and is not just simply hiding in a cave on an island somewhere out in the Pacific. One famous example of a "mysterious disappearance" was Amelia Earhart, the pilot. Although the Navy searched extensively, neither Ms. Earhart nor her plane were ever found.

According to Black's Law Dictionary, "Mysterious Disappearance" can also be the loss of property under unknown or puzzling circumstances which are difficult to explain or understand. Leaving your camera on a bench and then finding it has disappeared is not exactly mysterious, puzzling, difficult to explain or understand. Either the camera fell off the bench in which case it should be on the ground near the bench, or someone removed the camera from the bench and this is then clearly theft. Now whether the insurance company decides to pay you for the missing property is another matter but again, if you produce a police report, the odds are clearly in your favor that the company will pay you, assuming of course, you have not filed 200 previous claims for theft of equipment. This is also a good reason to remember to READ your insurance policy carefully and thoroughly and consult with an attorney on any segment(s) of the policy that are not clear to you.

A better example of "mysterious disappearance" as it relates to property, is if you come home to your apartment and find your stereo, computer and television set are gone and yet there are no signs of forced entry into the apartment. You will have a very tough time proving to the insurance company that those items were stolen from your apartment unless the police can trace the items back to someone who may have had access to your apartment such as a superintendent or landlord. Insurance companies want to see proof in

the form of a police report, that clearly indicates broken doors, broken windows, or some other form of forced entry into your premises before they will pay you for a claim of theft. If the lock has been picked on your apartment door, the police can usually tell, and will or should include this in the report. (Meanwhile, head down to your locksmith and pick up a MEDECO lock)

According to Black's Law Dictionary, Theft is defined as, the felonious taking and removing of another's personal property with the intent of depriving the true owner of it; larceny. Anytime your personal property "disappears", the insurance company has to assume the property was stolen and pay you according to your contract if you supplied them with the necessary documents to prove rightful ownership of the property and a report from the police indicating that the property has "disappeared" in a manner consistent with "theft"; you are innocent until proven guilty. Again, the key here is to read your policy and thoroughly understand what is expected of you in the event you have to file a claim with your carrier. Additionally, many states have laws which require insurance carriers to finalize all claims within a certain time frame. Check with your state insurance commissioner for details or again, speak with an attorney.

-- [Marika Buchberger](#), July 12, 2000



For us with digital cameras, there is at least one company that bundles your digital camera with your laptop and peripherals (<http://www.safeware.com/safeware/>). If I read correctly, right now their Texas policy does not cover over \$2000.00 in equipment while in transit (my laptop only cost \$500.00 so if I were in Texas it might cover my camera (Olympus C-2500L), that is, until I buy the Nikon D1). I don't think they cover my equipment while I am here in Korea.

And if I owned lenses, filters, hot shoe flashes and diffusers, stands, etc., who knows if that would be covered.

I consider my IBM slimtop, smart media disk, PCMCIA adapter, cheap plastic stand, and camera all as part of my photography equipment.

It would be great if there were an international insurance policy that would include your camera, laptop/peripherals, and photography equipment all under one bundle.

That's my 2 cents.

-- [N. David Guarneri](#), July 17, 2000

I have owned an insurance agency in California for the past twenty years and want to help my fellow camera enthusiasts.

Most homeowner policies have SEVERE limitations on "business" personal property. Some companies offer the option to purchase higher coverage and most of them will stop at \$2500 with a 10% coverage off premises. They provide NO coverage for loss of income or extra expense. They are designed to cover only non-business exposures.

Before you consider purchasing "commercial" insurance you should ask your agent or broker to see if you have options available on your existing homeowners policy. You may have to contact several different carriers to get the coverages you need.

One company my agency is contracted with is Allied Insurance, a member of Nationwide Insurance. Allied offers a Home Enterprise Program (available in 10 states) which is designed to provide most of the coverages needed by the typical small business being operated from the residence premises. It combines personal and commercial coverages on one policy. It is designed for exposures such as barber and beauty shops, dog and cat grooming, florists, photographers, music instructors and tutoring, etc.. Professional Liability is specifically excluded. Other companies may have similar products available.

Also, Personal Inland Marine Floaters, Personal Artical Flaoters, Scheduled Personal Property Endorsements are designed to add "all risk" coverage to specific personal property owned by the insured. This coverage is so broad as to include loss caused by accidently dropping a camera over the side of a boat. Don't wait until a loss occurs to find you have little or no coverage.

-- [Steven Hallbert](#), July 17, 2000

For underwater gear I've been insuring through a company called DEPP, or Diver's Equipment Protection Program, and been happy with the coverage. The deductable is low and they cover most losses including flood insurance. Not cheap, but worth the money to me. www.ProgramServices.com

-- [Dan Carey](#), July 24, 2000

I have an F1n outfit. I have valued the replacement cost today at \$3725 Canadian. When i phoned my household insurance agent he ask me to register the serial numbers with the carrier. He explained that the equipment would be added on as a named risk. This would ensure that there was no confusion with the carrier. I dropped off the info and a picture of

all the equipment as well and left it with him. Four days later i recieved the updated policy and to my surprise discovered that there was a ZERO deductable and it was a no hassle coverage (As i requested) and get this \$26.00 per year on top of my home policy. Good deal or what?

-- [Michael Borisko](#), August 1, 2000

The original article discused costs for personal articles floaters/riders on a homeowners policy in the range of \$1.35 to \$1.75 of value. I suspec that rates such as that are for urban areas where the acturial risks are relatively high. I mentionthis because the rates I have paid for years are much lower. Currently I am paying \$0.13 per \$100 of value for photographic equipment. Check with you insurance agent or broker. Even at \$1+ this is relatively inexpensive insurance.

-- [Ted Harris](#), August 4, 2000

I'm a "wanna be" professional photographer, still in the infancy stages of building a business. I contacted our personal insurer - USAA - about covering my gear. They don't insure equipment or inventory for business, so transferred me to their "General Agency" division. Their base coverage was \$350 a year, and covered up to \$15.0 at CASH value, not replacement value, with a \$250 deductible. any suggestions who to call?

I also hadn't even thought about insuring the office equipment! I've just added a CD RW and a photo printer. Guess I better check those out also.

-- [Steph Thompson](#), August 10, 2000



If you are not using your photographic equipment as "professional" equipment, you can add it to your homeowners/renters policy as a rider, usually with little or no deductible but it's only covered if it's "non-professional use" and it's covered for it's stated value so make absolutely certain you know what it will cost you to replace the equipment. Keep

this clearly in mind if you decide to go this route.

-- [Marika Buchberger](#), August 11, 2000

I live in Vancouver, BC, Canada, a great city albeit one with one of the largest hard drug user populations in the western world. When you have a large group of addicts around you'll realize they need a lot of money to support their habits. Two weeks ago my beloved GR1s and a T90 were ripped off when my apartment was broken into. I consider myself lucky...this is the first equipment loss I've had in 25 years. Since then I've tried to get all risk insurance to cover the \$20K worth of equipment I use (as an amateur)...no luck: either the premiums are too high or I'm laughed out of the office. Phil how about trying to organize some kind of policy in Canada...Anyone else: do you insure in BC? With whom? Thanks Jim

-- [Jim Vanson](#), September 21, 2000

Jim, if you use your gear for personal use only, a standard tenant or homeowner's policy will cover it. Just watch for what the perils you are insured against are, and check to see if there's an off-premises limit.

I'm an insurance broker in Regina, Saskatchewan (Canada), and the carrier I've chosen to insure my home has no off-premises limit on personal property. I pay a \$500 deductible, but given the value of my gear, that's okay.

-- [Jim MacKenzie](#), September 28, 2000

If insurance is an issue with you NANPA members have an insurer who writes Commercial Inland Marine Policies for members. I assume that there is a lower rate for NANPA members. I found that my homeowners insurance limits would not come near covering a major equipment loss even if I didn't have related income. This policy is all risk and covers me in most foreign countries. The NANPA website is www.nanpa.org

-- [John Pickles](#), December 10, 2000

My Insurance Company will list camera equipment in excess of 200.00 as scheduled items on my homeowner's policy. Items with a value less than 200.00 default to my standard homeowner coverage. This coverage is not as good as a scheduled item.

Now, I have a lot of "stuff" with a unit price less than 200.00 when added together would be a great loss to me. Am I being too picky here or is there another way to insure my equipment?

-- [Michael R. Amodeo](#), February 16, 2001

I recently had my residence burgled and most of my camera gear stolen. This was the first time I've had to deal with insurance companies, and I have to say I learnt a lot from it. Here are some comments for fellow naive insurance customers.

The first thing is that I didn't think through my policy. My insurance policy covers camera gear up to \$3000 Canadian. I'd bought all my stuff used and didn't think it was worth that much. Of course, the insurance covers replacement cost of new items. And a local camera store valued the stolen goods at \$4600. Plus tax on top of that. My \$3000 coverage doesn't even come close to covering all the items I lost. So when calculating the replacement cost of your gear remember to factor in both new cost and taxes.

Second, the policy replaces stolen equipment with the rough equivalent that's sold today. Sometimes that worked out to my advantage. I had an old Canon T50 camera stolen that was pretty well worthless. But the camera shop rated its replacement as the cheapest Canon SLR sold as a body (not a kit) - the Rebel G. A Rebel G replacing a T50 is a pretty darn good deal.

However, I also lost a 30 year-old Pentax Spotmatic that was in excellent condition. Having that replaced with a Pentax MZ-7 is kind of sad. It's like saying, "Okay - your beloved 1965 Ford Mustang, your first car, is gone. Here's a shiny new 2001 Mustang!" It's not exactly the same thing.

Finally, be absolutely sure to record every single item you own in a spreadsheet, with serial numbers for everything with serial numbers. And keep receipts and proof of ownership. Otherwise the insurance company may turn down parts or all of your claim.

So. Yes, I had insurance. Did it help me? Well. Kind of. I can't replace much of what was stolen, and I'm not sure if I will. I could obtain a cash settlement, but it's not going to be a \$3000 cheque or anything - the cash value is depreciated too.

Still. If I get burgled again at least this time there isn't much to take. :)

-- [NK Guy](#), June 12, 2001

I know this is really stupid of me but i don't have the receipts of many of many of the higher priced items that i own, and also one or two was given as a gift sans receipt (Mamiya 645 outfit) is there anything i can do besides photos and serial numbers that will be adequate proof to the insurance companies of my actual ownership of these items?

-- [Jared Zimmerman](#), June 17, 2001

[Add a comment](#)

Related Links

- [Seems to be a good deal.](#) - http://www.maginnis-ins.com/our_products.asp These guys insure ALL your photo equipment including bag, cables, etc. **WORLDWIDE!!!!!!!!!!!!!!** I even asked about if I dropped my Camera off the side of a boat and where unable to recover it. They said it would still be covered. It's an all risk policy paid yearly. And the replacement cost is the NEW price. There's a \$100 deductible per claim. The price is \$2.40 per hundred insured up to \$15000. I didn't get the premium for amount over \$15k. Check them out. (contributed by [Oscar Banos](#))

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And still they come and go: and this is all I know--
That from the gloom I watch an endless picture-show,
Where wild or listless faces flicker on their way,
With glad or grievous hearts I'll never understand
Because Time spins so fast, and they've no time to stay
Beyond the moment's gesture of a lifted hand.

And still, between the shadow and the blinding flame,
The brave despair of men flings onward, ever the same
As in those doom-lit years that wait them, and have been...
And life is just the picture dancing on a screen.

-- "Picture-Show", Siegfried Sassoon, 1920

- [Lens FAQ](#)
- [Lens Tutorial](#)
- [USAF 1951 lens test chart](#). Note this a reverse engineered unofficial version. It is easily scalable to any size. See the notes in the file itself.
- [Equivalent Lens Focal Lengths For Different Film Sizes](#)

[David Jacobson](#)

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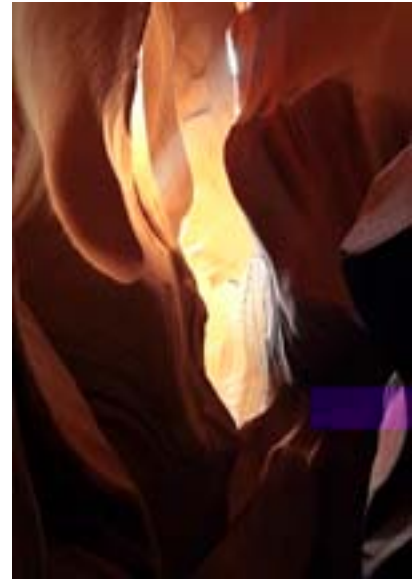


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Guide to Framing

[Home](#) : [Learn](#) : One Section

- [The Best Framers in the World](#)
- [Notes on framing](#)



Reader's Comments

Anybody ever hear of "swiss framing clips" A.K.A. "gallery clips"? They are a way to hang a properly matted photo with out the bother of framing. They are very inexpensive, costing pennies for the clips, I don't know how much for the glass or plexi. So, one doesn't have to be a web-master to afford a good looking presentation.

-- [Tim Even](#), March 14, 2002

[Add a comment](#)

Related Links

- [Holton Studio Frame-Makers](#)- Exceptionally beautiful handcrafted hardwood frames from a small studio of dedicated craftsmen. Of particular interest to fans of turn-of-the-century work (pictorialism, etc.), & settings (Craftsman Bungalows) Timothy Holton & staff are in fact truly versatile, constrained only by their quest for good design marked by artful simplicity. Holton

Frames are also available at Goldfeder/Kahan (see Philip Greenspun article) and a handful of other shops nationwide. (contributed by [Tim Holton](#))

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Guide to Editing

[Home](#) : [Learn](#) : One Section

- **Adobe Photoshop How-to**
 1. [Sepia toning](#)
 2. [Sepia toning made easy](#)
 3. [Hand coloring](#)
- [Fixing the gamma on your monitor](#)



Reader's Comments

[The Gimp](#) does have some issues on Windows, mainly:

- Scanning problems. It refuses to scan from my Microtek Scanmaker 3700.
- No printing option.
- Opens a new Gimp instance for each file you click on the Windows explorer.

Nevertheless, it is a great tool that works well otherwise. For those in a budget who can't afford Photoshop (would you rather pay for a Photoshop license or a film scanner?) a great choice is to use a lesser tool for scanning and printing - such as the one that came with your scanner, in my case, PhotoImpact 4 Lite - and use The Gimp for image manipulation.

If you're wondering about available tutorials, there's an excellent book titled [Grokking The Gimp](#) available on Amazon.com as well as in [digital form](#).

Give The Gimp a try and save the money for equipment.

-- [Ricardo J. Méndez Castro](#), August 28, 2001

WRT GIMP: I have been using GIMP on Linux for a few years and have used it on windows for the last 18 months. As of 1.2.3-2002-03-10 it is stable and a lot of the plug in issues seem to have been fixed (But I haven't pushed this version hard yet).

It still doesn't beat photoshop on windows but it is getting closer, it is now a VIABLE alternative.

-- [Mark Reeves](#), April 8, 2002

[Add a comment](#)

Related Links

- [Making fine prints in your digital darkroom](#)- A three part tutorial on making fine prints in the digital darkroom. Features a description of an outstanding image editing program, Picture Window Pro 3.0, a powerful low cost alternative to Photoshop. (contributed by [Norman Koren](#))
- [The GNU Image Manipulation Program](#)- A [free](#) replacement for Photoshop. Unfortunately, as of July 2001, it only runs well on [Linux](#). (contributed by [Eric Hanchrow](#))

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([Voigtlander Heliar 12 F5.6](#) shown)



Nudes

by [Philip Greenspun](#)



[Home](#) : [Learn](#) : One Article

It doesn't have to be literal



This is one of my favorites nudes ever. I actually didn't see the picture until I got the film back. This is about 1/5th of a 6x6 negative that contains the model and a beach and some rocks and a whole bunch of other stuff. By itself, the picture is a loser. Cropped heavily, I would almost claim that it is art. That's one of the nice things about [medium format](#).

[Rollei 6008](#), 250mm lens, [tripod](#), Kodak VHC color negative film.

Does it tell a story?

Here's an excerpt from "[Career Guide for Engineers and Scientists](#)" ...



Rachel, PhD Biology UCLA 1992, enjoys the wealth of material comforts that she has accumulated during 10 years of hard work in science.

(click on the photo for a 500x750 JPEG; [click here](#) for a 1000x1500 screen-filling image)

1100 square feet of bare hardwood floors called to me: "You will never have this opportunity again. Tomorrow you are going to move all of your worldly goods into this [new condo](#). You'd better grab your Canon EOS-5, 20-35/2.8L lens, and TMAX 3200." The model and room both have to be bare to show the bleak poverty of the unemployed PhD.

Here's another image that I had completely planned in my head before I picked up the camera. It was during the 1992 presidential campaign when women's rights groups were upset by the Republicans' rhetoric. I call it *Republican Platform*. I really should have gone back and redone the image using smaller feet to create the red, white, and blue footprints on the model.





Remember when date rape was the subject of a *TIME* cover? This is the image they should have used IMHO.

Body as Structure

I took this in 1981 when I was a junior at MIT. I used a dark brown blanket as the background and the overhead light in my dorm room for illumination. The camera was a tripod-mounted Yashica twin lens reflex (6x6), valued at approximately \$100.



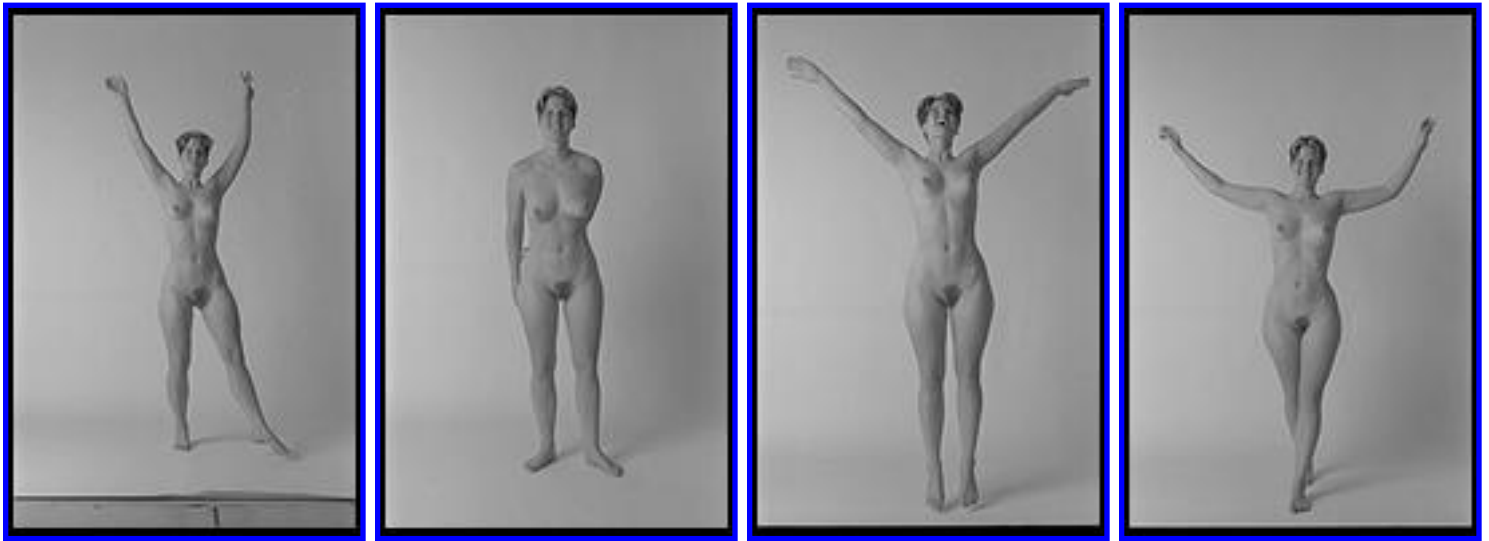
In 1993, I tried to duplicate the picture with higher-tech equipment. I used a \$5,000 Rollei 6008, elaborate studio strobe system with softbox, and motorized seamless paper background. Even the model was higher tech (taller, thinner). The results? Pathetic. The room light was too bright for me to adequately judge the outcome with the strobes' modeling lights. Consequently, the image was much too high in contrast.

Sometimes a brain is more important than a fancy camera.



Motion

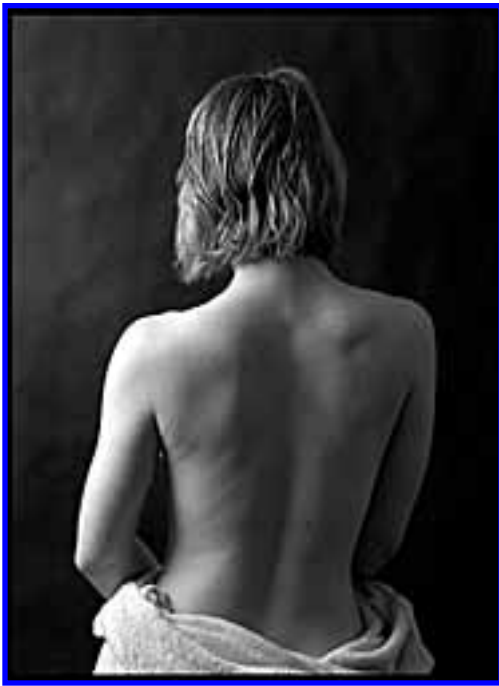
Most nudes are static, heir first to the tradition of painting and then to the limitations of early cameras. But with \$30,000 of studio strobes there is really no reason not to show the body in motion. Richard Avedon keeps his models constantly in motion so that he never gets a frozen deer-in-the-headlights look. To ensure that the light on each model stays constant as he or she moves, Avedon has assistants follow the models around with lights at the end of booms.





(To create some images like these, start by reading [the photo.net guide to studio photography](http://www.photo.net/guide-to-studio-photography/).)

Environmental Nudes



I won't say that there is anything wrong with the picture on the left (standard studio shot; seamless background, medium format camera, softbox), but I really prefer the right hand "environmental nude."



This is one of my favorite images from [Travels with Samantha](#). Fuji Velvia film is not really noted for its subtlety with flesh tones, and therefore you might prefer the [version that I hand-colored in PhotoShop](#). (If you want to know how I did this, check out my [hand coloring tutorial](#).)

Mostly Covered is Usually Better

People get uncomfortable when staring at other people's genitalia, so it is generally best to either get rid of the genitalia or the face.



Of course, Mapplethorpe made almost a whole career out of violating this rule so if you want lots of money and fame, you should probably ignore this rule.

Covered by a Dog is Best



me and [George](#) (please do not send email asking which one is the dog)

George inspired me to write [Travels with Samantha](#), which begins with his end.





Three Graces

"I checked a few different sources for info on the 3 graces, and all I could find is that they are continually anointing mortals, making them appear extremely beautiful and immortal to their pursuers. But I couldn't find why there are three of them or why they are called "graces". I think there is some conflation with the Erinyes, who hounded Orestes after he murdered his mom, but then he sacrificed to them and they became Eumenides, and at the same time he sacrificed to the Graces. They are benevolent goddesses - that much I can say for certain."

-- My classics nerd friend (Ph.D. from Princeton)



At right is a copy of a classical statue at the [Hearst Castle in San Simeon](#). Below, in declining order of fidelity to the classical traditional, are my interpretations of the theme.





"Nothing Beats a Wet Beaver"

That's the motto of the MIT men's water polo team. My friend Adriane and I did a fund-raising calendar (September 1998-December 1999) of these beefcake-y guys. Send e-mail to her at age@mit.edu if you want to buy a copy to help the team (cost will be \$10, available late August).



Note: yes, this is the same Adriane with whom I built [The Game](#).

Is it Art?



The line between art and pornography is fairly thin, but

it is there. At right is a photo that I took as an MIT undergrad. A couple of photography professors loved it. They thought it was art, expression, new, whatever. They hated the arch nude above and preferred this one. Unfortunately they never did teach me how to describe this as a tortured artiste project and how to do more, or I'd be exhibiting in the Whitney museum...

More Practical Tips

Black & white infrared film tends to erase skin blemishes and imparts a lustrous luminous quality to human skin. It is worth reading Laurie White's [Infrared Photography Handbook](#) and then trying out a few rolls of B&W IR.

Every now and then someone sends email asking "How do you get women to take their clothes off." My personal theory is that the world divides into two classes of people: those who like to be photographed and those who don't. Those who like to be photographed think they have beautiful bodies. Naturally, if they look *good* in a picture clothed, then they'd look *better* without all those ugly clothes standing between their beautiful body and the camera. If you therefore find some folks who have survived the constant assault on their self esteem by advertisers, the challenge will be to get them to keep their clothes on. It also helps to have a portfolio of high quality work.



How to develop that portfolio? Here's a 12-step program:

1. Read [Making Photographs](#), our free online photography textbook. Concentrate on the "Light" chapter.
2. Read [our portrait photography tutorial](#); the challenges in nude photography are very similar

3. Buy a camera with full manual controls and a fast fixed focal-length lens from [one of the photo.net recommended retailers](#). If you've invested the time in arranging a venue and a model, you don't want to rely on automatic exposure. The fast (f/1.4, f/2 or f/2.8) lens is important so that you don't have to use flash for every photo.
4. [the photo.net guide to studio photography](#)
5. Practice (repeat).

Big photo labs generally will develop tasteful nudes with no questions asked. I once asked the customer service department at Kodalux (now Kodak) and they said "if there is only one person in the picture, we're definitely not going to have a problem with it." There are laws in some states requiring labs to report photographers who bring in images of naked children. More than a few serious photographers have had unpleasant, expensive, and prolonged dealings with government authority stemming from what you'd have thought were easy calls (e.g., a San Franciscan who took his 8x10 view camera to a nudist colony and photographed families with their consent).

Dead Trees

Before burning film, you might want to spend some time with [Nude & Glamour](#) by John Hedgecoe. It is not my favorite hunk of [processed tree carcass](#) but it is very pertinent.

If you are looking for inspiration rather than tutorial, you might leaf through the 425 smallish pages of [The Body](#) (William Ewing; Chronicle Books). This covers over 100 years of nude photography, right up to the repulsively hairy body of John Coplans, whose self-portraits definitely constitute one of the nastiest things one can do with a 4x5 view camera (actually his assistant takes the pictures; he just sells them for \$5000 a whack).



If you're looking for something more in the coffee table line, then [Graphis Nudes](#) (Graphis Press) gives you 200 big well-printed pages of contemporary nudes. Not as huge and only 116 pages long, the [Aperture monograph of Edward Weston's nudes](#) can be awe-inspiring. Do you really have something to say that he didn't say back in 1930? And if so, is it aesthetic?



More

- [an ancient page that used to have six in-line FlashPix nudes](#)
- the [rest of photo.net](#)
- [body painting](#)

Also check out the user-maintained list of related links at the bottom of the page

Credits

Photo of me and George by [Rebecca Schudlich](#); lighting by me (in my studio); ProPhotoCD scan from 645 negative courtesy [Frank Caico](#).

All other photos are [copyright 1981-1995 Philip Greenspun](#) and were scanned to ProPhotoCd by [Boston Photo Lab](#), my favorite PhotoCD shop.



Note: in order to assist parents in keeping their children from seeing my nude images, I have voluntarily rated this site using the [PICS standard](#). If you wish to set up your browser to block nudity, simply follow the instructions at the rating bureau that I have used: <http://www.rsac.org>.

If you're a Web publisher and want to know how to quickly add arbitrary output headers on your site, you might also want to read [my book on Web publishing philosophy and technology](#).

philg@mit.edu

Reader's Comments

Just looked over your photography pages, and found the info on B&W IR photography.

I do a bit of freelance work, and I have done some work with IR at nighttime activities, such as dances, when a flash would blind everyone. I had quite good luck placing a #87 IR Gel Filter (Kodak) over my flash, an old Vivitar 283, set on auto in the "yellow" range. I was surprised to find that the flash read the IR light as if it was a regular flash.

I got shots from about 50' in to about 15' (and no one was blinded). Of course any closer and people's skin began to take on a strange appearance.

Just wanted to pass this on. Keep up the good work.

Jim Rementer

-- [Jim Rementer](#), September 30, 1997

The nude is one of the hardest subjects to do well. I have found through my galleries that the images which sell best are ones without pubic hair. For some strange reason -- prints displaying pubic hair seem obtrusive to the viewer, while the hairless versions are much more collected. Perhaps we can learn something from 17th century painters? Also, as far as shooting black and white of models, I use a red filter over my lens and dark haired models for some of my work with great success. The red filter "whitens" the skin tones and greatly conceals skin blemishes and discolorations. Photographers just starting out may want to try this outdoors against grass -- the grass turns very dark and contrasts well with the white skin tones of the model. To the artist, my praise. Of the hundred or so gallery sites I've visited so far -- yours in the best organized and most informative. Thanks!

-- [James Falkofske](#), October 8, 1997

Isn't nudity being able to show who you are beneath the clothing, beneath the flesh, the person you are within the body. Being nude, to show yourself, be yourself, nothing covered nothing hidden, beneath the clothing beyond the body.

-- [Ruey Loke](#), April 9, 1998

WOW!, first of all. Next, I think that your work is wonderful. You are one of the only artists I've ever read, that i truly able to write - to convey the emotion of their artwork into language, not just art. My mother is an artist (not starving, I'm happy to say), and I've learned a lot about art over my eighteen years of life. At least enough to know that you are a "genius" I use the term loosely, only because people throw the word around way too much, and the true essence of the word is lost. Thank you for your time, and your art. And by the way, I feel that the one controversial picture is art, not pornography.

-- [Jarrod Wolos](#), July 8, 1998

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-- [Jarrod Wolos](#), July 8, 1998

A comment on Mr. Wolos' note above:

The image referred to on the gateway page that "might disturb or offend some people" has apparently been deleted. It was a photo of a stripper on stage, dark background, on camera flash, legs spread directly toward the camera.

I disagree with Mr. Greenspun's choice of examples to illustrate the point that the line between art and porn is a thin one. The arm and sheets photo is obviously not porn - maybe it's art; while the (now deleted) photo was IHMO, soft core porn and not art. Both photos were far away from that thin line by my way of thinking.

A photo balancing on that thin line might be the infamous Robert Maplethorp self portrait of himself facing away from the camera, bent over, with the end of a bullwhip inserted in his rectum. The lighting and sharpness of the large format photograph is very precise. Porn? maybe - a "penetration" shot. Art? also maybe - a statement about Maplethorp's lifestyle, shocking the viewer into forming an opinion of him, you pick the meaning or the reason. Viewers' reactions may change after considering that Maplethorp died of AIDS several years after making this photograph.

-- [Mike Rosenlof](#), July 14, 1998

I enjoyed looking at your photos of nudes in motion. As a sculptor who does figurative nudes in motion I am always pleased to find someone who can work with this fascinating subject. The photo reference books I use, however, are few in number: Thomas Easley's "The Figure in Motion" and the works of Eadweard Muybridge. The latter did not have \$30,000 in strobes when he made his 100,000 glass plates at Penn in 1888. Using the sun or whatever reflected light he could capture, he made such a statement that the artists of Europe treated him as a Messiah when he toured. It would be good if a photographer of today were such an artist that he would seek to duplicate 1/10th of Muybridge's work with modern equipment. The nude in motion has more than a front and a side. You have made a good start. Arne

-- [Arne Smith](#), March 6, 1999

I see that the artist is somewhat dismayed that this is a very popular page of his, and feels that there are better works. I for one much prefer seeing a nude on a beautiful landscape, or a nude on an interesting and artistic backgrounds, etc. than most any other subject.

The artist should ask himself: Why is the viewer bothering coming to his site to look at his nudes when there are literally thousands (probably millions) of sites out there featuring nude women in an astounding variety of positions and states of exposure?

Because many, like myself, want to see TASTEFUL NUDES. Especially those of us that live in the United States where a nude body put in an elegant or sophisticated light is so rare to behold that it is craved like gold or money or other precious commodities.

We will spend hours searching the net for a site that gives us nude people (most often nude women) in a high-resolution and high-quality format, that (1) aren't sticking strange objects into their body orifices, (2) aren't surrounded by 800 orange, yellow, and red flashing advertisements, and (3) have words accompanying the image that make our minds actually think a little bit.

For my part, I have found not a single other site on the internet or web besides this one that provides all these things, and FREE OF CHARGE to boot?!?! I'm surprised your page of tasteful nudes in high-quality format aren't visited so often that your web server doesn't halt completely!

I have viewed your images (the non-nude ones, too) and enjoyed all of them. But because the nudes are the most rare and precious images in my society, at least, I keep coming back to them, like an addiction. I never have this urge to go to any of the 1,000,000 porn sites that are the alternative.

Now a shameless plug: my web site, at www.philovivero.com/~philov has a super-small set of static pages that emulate this. No photographs of nudes, but a few image-manipulated drawings. No commercials, no credit cards. So maybe viewers would like to go there just to check it out for a little bit.

-- [Philo Vivero](#), May 6, 1999

Beautiful images, I must say. Specially gorgeous is the picture of Heather combing Alex on a bench: the picture looks so simple...

-- [Ricardo J. Méndez Castro](#), May 25, 1999

I would like congratulate you on your excellent photo layout well done!also the photo date rape really touch me.as a man I don't have any idea what a woman feels after a brutal attack. This photo gave me a tiny insight how horrible rape is.I feel that it is time for society to conditioning our young boys to be overly agresive and teach our sons how a man should treat others with kindness&respect.9years ago my wife and daughter were killed by a drunkdriver leaving me alone to raise our son God I hope i did my best.

-- [Gary Carnegie](#), September 13, 1999

This site is simply superb, and of course the way tips are given on such type

of photography is of great assistance for the amateur photographer. Furthermore the photographs are not at all obscene, these are the real class photograph.

-- [Babul K Jha](#), September 25, 1999

I was extremely impressed with the shot of the nude with back arched that you did as a junior at MIT. It is actually quite unusual, and quite original in its feel. I agree that photography has little to do with the camera, and everything to do with what is in your head. Fine work!

-- [David Schwartz](#), September 28, 1999

Phil, a picture of your naked friend in an empty condo, or rather your narrative to it reminds me of an excerpt from one of Sergey Dovlatov's books, who had some mind-boggling humor leaning towards absurd, like a real Russian writer should. You might want to read his memoirs of working for an Estonian newspaper in 1970s, where he describes a news photographer, who had cigarette-butts floating in the developer, etc. Anyway, this is a piece I translated from memory. "In a museum of partisan warfare somewhere in Russia... A large glass-clad display case with a human skull. The description reads - ""This is a skull of partisan Kowalczyk. Here are personal belongings of partisan Kowalczyk - a nail which he used to attack the German officer and a bullet from his skull."" ...Partisan Kowalczyk spared no expenses..." Love the site, BTW.

-- [Dmitry Zhukov-Gelfand](#), October 27, 1999

I am 18 and just getting into nude photography. I really enjoyed looking through the photos because they aren't just pictures of someone nude, they are feelings, and personalities. I look for the more modern pictures to get my ideas from. I really think this will contribute a lot to my personal study of black/white nudes. Thanks for a site like this.

-- [Jessica Brusio](#), January 24, 2000

i, myself, speaking as an artist of both audio and visual medium, can honestly appreciate some subtlety and simplicity, meaning that less is more and does leave the imagination and emotional charges open to the experience that "tasteful nudism" brings to the table. by not exposing everything to the naked eye, your senses are drawn more to the overall beauty and splendor of the subject rather than a blatant statement of mere sexuality, as such. the human element in and of itself is dynamic and multi faceted like a cut diamond, and it is the archetype for every perspective, that we perceive it as such.

-- [doug king](#), June 30, 2000

well, I know within me that I see these things in a very different perspective. others would call it porno but looking at it even without the paints on the body is per se an art. what is wrong with other people is their pre-conditioned judgment once they see this thing. one thing more, this concept of pre-judgment maybe to others would say it just came when they saw it but actually they were conditioned to be so. it was how they were brought up and what kind of environment they used to live in as their consciousness passes through time.

Beowulf Agate/LSD

-- [Leonard Dagaerag](#), July 3, 2000

I don't believe showing off body parts, especially private parts, for viewing to the public is a form of art. In fact I think it's embarrassing. To me this form of activity could lead to a more negative society, a society without rules...maybe a society without dignity. We can't expect everybody to view these pictures as a form of art? Maybe these forms of art should be constrained within its community and not to the open public especially where places that are accessible to the underage. This is just a comment. No intention whatsoever to offend anybody. Thank you.

-- [Razak Abdullah](#), August 2, 2000

I think when it comes to deciding whether or not something should be considered ART or PORN, you must analyze your feelings. Does this photo that you're looking at have focus, balance, and point of impact? or does it make you feel like you just took your viagra? If it's the latter, then YOU individually have to decide whether or not it's pornography. I observed all the photos posted. My personal feelings say it's ART. Not because it's in black and white. Not because there seems to be a layout in a respectable nude position, but because I FEEL it's art. That's what art is.....FEELINGS!

-- [Wud Upa](#), August 13, 2000



girl in blue room

An impressive site, but some words of criticism... first suggestion, perhaps you should use more serious models, or else have the models perform more serious acts and expressions. I find it very hard to respect a nude photograph of a person smiling or jumping when put in such a serious atmosphere as a white drop with diffused lighting, such as with the photos you posted of the female nude in motion or "The Three Graces." Secondly, try bringing your subjects out of the studio. I enjoyed the photograph of the model in the bare condo because it gave the subject ground, reality and atmosphere (although your intended message was hard to accept: hardwood floors and clean white walls are not a typical sign of poverty!). Thirdly, and probably most importantly, research the zone system; try adding some contrast. Many of your photographs were so grey they bored me, and the only ones I actually stopped to view were the color photos and the one of woman's back (torso wrapped in a towel, with a black backdrop). That one was exceptional; very beautiful. But in order to evoke any emotion from a work, light is the key in photography. My photography instructor constantly pounds, "We live and die by light." Dramatic lighting is key in provoking any mood from a studio piece. These are the words of a 19-year-old photojournalism student who hates the studio and produces slightly-blurred movement shots, so you're getting tips from a completely opposite view of photography. In fact, my jaw drops in awe of your technical abilities, for I am far from producing such beautiful prints! However, if your intent is to create a mood, at least consider my comments. I prefer criticism over empty praise, also, so forgive me if I seem harsh. To Razak, the one who commented that nudes are unacceptable and should be kept private in order to sustain dignity in society:

OBLIVION in society is hollow and unacceptable. Children who are permitted to drink at early ages in other countries proceed to drink responsibly, while American teenagers are drinking themselves and others dead. Particularly with tasteful nudes, as this site displays, the unclothed body would be chuckled at less often by immature young adults if it was exposed more freely to them at youth. And besides, we all wind up getting laid at one point. My site: <http://hometown.aol.com/toonist/Toonist.htm> (this is a rough unfinished sketch of a page and is not NEARLY as impressive as this one is as far as construction goes!)

-- [Danielle E. Corsetto](#), November 12, 2000

As someone who once had an interest in nude photography (until society imposed restrictions on this interest) it was refreshing to see this site. I think the nude in motion is very hard to do get right, your shoot of the girl dancing in the studio is a perfect example. A nude should not only be a record of the human body, but to give the mind something to think about, the photos'of the feet and arched back are good examples, and some are to please the eye with magnificent backdrop of nature that take the eye from the nude so she/he becomes second to nature. The one thing your site does show very well, is that even here in the work of a serious nude photographer, male genitalia is still somehow tabu, even if it was not conciously done so. Otherwise some very good photography, keep clicking and good luck with your future shoots. lance.

-- [lance A](#), December 12, 2000

I like this page, but the author almost seems to apologizing for its existance in some places. Unfortunately, that attitude seeps into the rest of the site. I have a number of nude images - art, not porn - posted here on Photo.net, and I have been flamed, both on the boards and in private email, for them. I have asked the webmaster for help several times in dealing with the posted flames, and my emails are ignored.

This is a site with many well-educated, intelligent members. They are surely aware that the nude has been a legitimate subject of art for centuries. Yet I still have to stuggle against criticism - not of my technique, which I do not mind, but attacks on my morals and my character for taking such photos. I think that of the admistrators of this site could be more supportive of artistic nude photography. They choose not be, which I find significant. I think it limits the site - people moan and complain about the boring photos here, but until the site administrators show support for more personally risky photos, thats mainly what its going to be. I like Photo.net - thats why I am here - but I wish it could be less...narrow.

Amy Powers

-- [Amy Powers](#), March 10, 2001

Phil,

A few things. The first is that I really like your three graces and motion pieces. One of the issues with motion however is lack of context. You were clearly playing with an undeveloped concept and I regard it as a sort of a "sketch" for the three graces set. The thing I like most about "three graces is the humor you bring to the subject through the use of props. Others have objected that your studio offers too serious a setting for smiling joyous models, I disagree; your picture of the three graces skipping rope with the cloth was the first nude that has ever made me laugh. It captured a wonderful joie de vivre and speaks well of the working relationship among your models.

The other thing regards Christina. You've framed it badly, tucking it away by itself and contextualizing it as a concession to thrill seeking teenagers. Why did you actually work with her? There must be a story behind it, and you have done some marvelous work with it. You've been accused on this comments page about being overly apologetic for your nudes. Nowhere are you more apologetic than there. Rethink the way you are contextualizing the images.

-- [Rich Furman](#), March 13, 2001

I agree with the writer who said that a nude against an interesting backdrop posed artitically is totally captivating and much sought after. In fact I think that Phil has a lack of interesting backdrops in his nudes, although they are quite good. For a better example of nude photography in natural settings check out [Erick Boutlier Brown](#), He is a Nova Scotian photographer with an impressive body of work that relates to the subject. I am grateful to Phil however, I want to get into nude photography and have found this site to be very helpful and informative on the subject.

-- [Traverse Davies](#), May 7, 2001

Most of all I enjoy the different opinions verbally fostered by the the viewers, reflecting so many things about us: our religious upbringing, that of our parents, personal (good & bad) experiences with nudity or members of the other sex, society, parents...I enjoy the shots for what they show: both the good and not so good. Light is the most important factor in shooting nudes, or anything else, certainly. I've found some bodies (skin) love light and the camera and even certain types of films and I love experimenting with the differences. Composition is second. Motion---nearly impossible to get right with nudes (what does one wish to say?). Sort of like catching a close-up portrait of someone blinking--half-closed eyelids are not so impressive.

A note to anyone using B&W infra-red film. If you have a cloth (non-metallic) shutter you may experience exposure problems. IR light (or, technically, energy) can be kept away from the film only by metal enclosures so a cloth shutter will change your exposure, considerably. I've never tried making IR shots with a camera that had a cloth, focal plane shutter. Possibly a contact with Kodak might offer assistance.

Jerry Revelle

-- [Jerry Revelle](#), May 26, 2001

In the time since I made my first comment, I have perceived a shift in the general attitude of Photo.net habitués towards being more open to nudes as an legitimate art form. There are still some who will snigger and elbow each other in the manner of sixth grade boys, but I have also found some insightful and very encouraging voices here, and that really great for me. I hope that this general trend continues...

-- [Amy Powers](#), May 31, 2001

I am surprised, and disappointed also, about the very reserved attitude I find on this page toward nude photography. I see two main bordering or parent genres of nude photography being portrait and artistic. Both are about exposing something of yourself or the person in front of the camera in the picture. For one person that will be very subtle but for the other it is more progressive, striking. That is what makes photography like any other art form so interesting: it's personal and it shows emotions that are not to be seen all the time. Remember what Freud says about art: "Art is a form of replacement-satisfaction for unfulfilled desires, like dreams. The difference is that art forms are not narcissistic or a-social, but intended for other people to share and fulfill the same desires." Like Freud or not there is a truth in it. There is nothing dirty about it other than our nature. In normal life we want to hide it away and it can only come out in neurotic forms, whereas in art it is "exposed" in a different way that more people can relate to. . Artist in the widest form have always played a progressive role in history, allowing more of what's inside people to come out. Please don't be too reserved about nude. I'm not saying you have to share your ideas with everybody but this is a page for photographers and believe me, the distinction with porn pages if you will is more than evident: we don't have to defend it further. You're nude back with towel in B&W is really high quality and I loved the nude reflexion on top. Keep up the good work!

-- [Remco den Boer](#), June 5, 2001

Someone with way too much time on their hands!

-- [Rog Schmidt](#), August 6, 2001

I wish you would leave politics and photographic technique separate. Your photo of a woman being stepped on and your association of that with the Republican party is poor. Very weak indeed. Why not do the same but with a baby being stepped on by the woman who decided to kill it? And associate that with the Democratic party? See, not very appropriate either is it?

Richard Martin

-- [Richard Martin](#), October 22, 2001

As a amateur photographer who is looking to get into more nude-are photography I just want to thank you for giving me some insight and motivation on this art.

Your insights and photos are wonderful, and they help me come to grips with my creative inabilities of which I am trying to conquer.

Again, Thank you.

Mark.

-- [Mark Smith](#), November 15, 2001

In one of the above comments, Danielle E. Corsetto, (November 12, 2000) said "I find it very hard to respect a nude photograph of a person smiling or jumping when put in such a serious atmosphere as a white drop with diffused lighting..."

Why only a nude person? Why would a smiling clothed person in such a 'serious'atmosphere be taken more seriously?

While I agree that a beautiful face with a solemn expression has a high element of class, these type of 'candid'shots have their place, and I personally didn't have a problem with the setting.

In fact, the contrast between the setting and the expressions is what I liked the most.

Artistic nudes have the cliché of being serious, and solemn. They also have the cliché of depicting something depressing, like being alone and naked to the world, etc. "This is artistic nudity! No giggling allowed! That would be immature.."

Here, for once we can see people in their natural state, expressing natural emotions. I think its quite appropriate.

-- [Clint Hobson](#), April 23, 2002

I've little interest in labels individually assigned to images, nude or otherwise. I enjoyed this tutorial because it displays and explains photographing nudes. I don't expect to do much (if any) nude photography, but I still want the insight.

I think your work is fantastic. I was impressed with the woman in the empty room.

Jeff

-- [Jeff Bishop](#), May 11, 2002

Shadow, Light, texture, setting, yes... but above all; beauty, strength, grace, intrigue... le femme mystique ... bring forth our sense of awe and wonder and impel us to LOOK again. Herein the child and the eye meet, something stirs within, and you are responsible for that. Thank you.

-- [Tom London](#), May 19, 2002

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- [VINTAGE MALE PHYSIQUE PHOTOGRAPHY 1947-1958](#)- Hand printed photos from the original 1947-1958 negatives. Male nude and posing strap models, leaning against pillars, on bear skin rugs, erotic, campy, beautiful. Rare vintage male erotica. Catalogs issued (contributed by [David Parker](#))
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- [Chip Page Photography](#)- Photographer in San Jose Cal site shows his photography subjects ranging from glamour to his work in the local music scene, also his photos of more popular

music groups, like Phish, Rusted Root. (contributed by [Chip Page](#))

- [Jaakko Hucklebee](#)- Sorry, I listed it wrong the first time. This one works. (contributed by [Jaakko Hucklebee](#))
- [Dialogue Fine Art Gallery](#)- Take a look at the photographs of Mark James Perry. The Claudia series of nudes is very good. (contributed by [bill wheeler](#))
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- [Leroy Dickson's Web Portfolio](#)- An educational work in progress, aimed at photographers of all skill level. Working on the site improves my knowledge and hopefully will yours. (contributed by [Leroy Dickson](#))
- [JR Photo Jerry Rybansky](#)- Photographer gallery fine-art figure and stock. (contributed by [Jerry](#))

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- [EASTGALLERY](#)- artist,gallery,paintings,photos,mask (just underconstruction) (contributed by [Victor Lee](#))
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- [Roller Gallery](#)- This site displays over 15 years of fine art nude photography. Most images were taken outdoors, underwater, in canyons and caves, frozen waterfalls and on the streets of Chicago. (contributed by [Dave Riemer](#))
- [Photographer.Ru - Everything about Russian Photography](#)- Our site devoted to various aspects of photography. We have several sections: Museum, Gallery, Magazine, Portal and News&Events section. (contributed by [Denis Korneev](#))
- [Art Spider: a Fine Art Search Engine](#)- This site has hundreds of fine art nude photography sites.

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- [Erotic Galleries](#)- Erotic Galleries, Models and more (contributed by [Collin Braun](#))
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- [Nudes / Erotic / Beauty - by Roman Sluka](#)- art and commercial nudes photogallery selection of photos by roman sluka: nudes, photo, erotica, sex, art, fine art, photographer, beauty, elite nudes, models, provocative and romantic nudes, portraits, close-up, model portfolios (contributed by [Roman Sluka](#))
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([Rollei 6008 Integral](#)shown)



Making Photographs

a tutorial by [Philip Greenspun](#)



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- [Exposure](#)
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Most photography books start out talking about the various kinds of cameras that are available. Then they talk about lenses, film, and exposure. Only at the very end do they talk about *light*. Yet even though I'm a photography nerd and own about 20 cameras, I never think about making a photograph in this order. Pulling together light and subjects and composition occupy my mind first and foremost. Only when I've figured out all of that do I start rummaging through my equipment cabinet. So I decided to try to write a photography textbook that reflects the way that I think about taking pictures.



Is this the best textbook for beginning photographers? Certainly not. There are many excellent ones on paper, a few of which are reviewed in [the dead trees section of photo.net](#). However, if you like this way of thinking about photographs and you don't have a paper book in front of you, this online book might be useful.

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Light

by [Philip Greenspun](#)



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My personal definition of *photography* is "the recording of light rays." It is therefore difficult to take a decent picture if you have not chosen the lighting carefully.

Sunlight

"He spoke with the wisdom that can only come from experience, like a guy who went blind because he looked at a solar eclipse without one of those boxes with a pinhole in it and now goes around the country speaking at high schools about the dangers of looking at a solar eclipse without one of those boxes with a pinhole in it."

-- Joseph Romm



You can get plenty of light out of the sun, that's for sure.

However, you might have to wait a bit if you want the light to have the *quality* that you need for your picture.

At high noon on a clear day, the sun is extremely strong. It generates a *hard light* with deep crisp shadows. It also is coming from directly overhead.

Portraits in Sunlight

The hardness of the light will generate dark shadows. The direction of the light will place those shadows in unattractive positions underneath the subject's eyes and nose. One solution is to move the subject into the shade where he will be lit by *skylight* rather than *sunlight*. Skylight comes from a large source and is therefore diffuse. Diffuse light does not cast strong shadows. Skylight is also rather blue and, if you are using color slide film, you might have to place a warming filter (e.g., 81D) over the lens to get natural skin tone.



If your goal is to record a subject in front of a sunlit object then you can't move him into the shade. There is too great a difference in illumination between shaded and sunlit objects. Photographic film and paper cannot handle the same range of contrast as your eyes. A picture that is correctly exposed for the sunlit object will render the shaded portrait subject as solid black. A picture that is correctly exposed for the shaded portrait subject will render the sunlit background object as solid white.

The best solution is to wait for the light to be coming from a different direction and/or for different weather. Near sunrise or sunset, you might be able to get flattering light on both the portrait subject and the background object. On an overcast day, light from the sun will be sufficiently diffused that the shadows become faint.

If they couldn't wait, professionals would most often deal with this situation by dragging out diffusers and reflectors. In the diffuser case, an assistant holds a huge plastic-framed white cloth between the sun and the subject. In the reflector case, an assistant holds a silver, gold, or white reflector underneath the subject to push sunlight back up into the subject's face, filling the shadows.

Finally, there is artificial light. If you stick a powerful flash on the camera, pointed at the subject, then the light from the flash will augment the light from the sun. Because the flash light is filling in the shadows, this is known as *fill flash*. Electronic flash is the same color as the sun around noontime. If you use electronic flash closer to sunset or sunrise, when sunlight is redder, objects illuminated by the flash will look unnaturally cold. Professionals deal with this by carting around assistants who cart around colored filters to paste over the flash tube.



my cousin Douglas holding our 2nd cousin Julia

This picture illustrates the virtue of waiting for sunset. Note the warm tones and even illumination.

Nikon 8008, 80-200/2.8 AF zoom lens, Fuji Reala



These two interesting women (from [Travels with Samantha, Chapter V](#)) would have been rendered as silhouettes if I hadn't used a touch of fill flash from my Nikon SB-24 (mounted on an 8008 body which was mounted on a tripod. Lens: 80-200/2.8; film Velvia.)

Landscape in Sunlight

It is difficult to see the shape of the landscape when the sun is directly overhead. Our eyes rely on shadows to recognize shapes. Nonetheless it is occasionally possible to get a good landscape photo at midday if the subject is reasonably compelling, especially if you are aiming at the kind of descriptive photos found in travel brochures.



Left: [Great Sand Dune National Monument](#), rather boring in the flat light of 11 am.

Right: The same sand dunes but much more interesting earlier in the morning.





Vernal Falls, Yosemite National Park

Taken around 3 pm, the light in this image is pretty bad and casts harsh shadows. The cloudless and therefore uninteresting blue sky might make a Chamber of Commerce calendar but doesn't make art. Of course, the rainbow makes it all worthwhile and it might not have been there at sunset. Or the light might not have been falling on the waterfall.

Nikon 8008, 28mm AF lens, Fujichrome Velvia

Bachalpsee

Because of the saturated colors rendered by the then-new Fuji Velvia slide film, I'm not sorry that I had my Nikon out in the mid-afternoon in the Bernese Oberland (Switzerland).

Nikon 8008, 20/2.8 AF lens, Fujichrome Velvia



Joshua Tree Shadow, Joshua Tree National Park

One of the good things to do when the light is overhead and harsh is look for interesting shadows.

Canon EOS-5, 17-35L lens, Fujichrome Velvia

Red Rock Canyon, west of [Las Vegas](#)

The interest in this photo comes from the different colors of the landscape.

Rollei 6008 (6x6 format), 180mm lens, Fuji Astia



Overcast Skylight

A high overcast is perfect for a lot of photography. A studio photographer would think of this as "the mother of all softboxes". If you want to capture architectural details, an overcast day lets you do it without shadows obscuring anything. Overcast and/or rainy days are also the times to go into the forest and take pictures of trees. The one bad thing that you can say about an overcast day is that a big white sky makes a very bad photographic subject. Try to make sure that your photos have hardly any sky in them.

Overcast skies are slightly more blue (7000 degrees Kelvin) than the color temperature for which daylight film is designed (5500 K; a mixture of direct sun and skylight). Officially, the [Kodak Professional Photoguide](#) will tell you to use an 81C warming filter. I wouldn't bother unless you are photographing clothing for a catalog. [For comparison, open shade from a clear blue sky is 11,000 or 12,000 degrees Kelvin and requires an 85C filter.]



If you wait long enough in [New York City](#) ... someone will probably steal your camera. So maybe it is best to just shoot in whatever light you can find. Here I used the fill flash on my point & shoot camera.

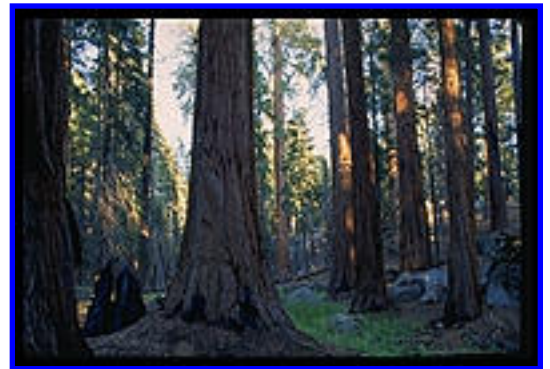


Below the town of Bomarzo, Italy (1.5 hours north of Rome). This was the park of the 16th century Villa Orsini and is filled with grotesque sculptures. Rollei 6008, Fuji Velvia, Zeiss 50mm lens, tripod. Probably f/22 and 1 second. Note that part of the foreground is unsharp. There wasn't quite enough depth of field. Note that the composition completely excludes the uninteresting overcast sky.



Left: [Vermont](#), where a little white sky pokes through.

Right: [California](#) where the weather is often too sunny for good forest photography.



Twilight

There is no reason to put the camera away after the sun goes down. In fact, you can usually get your best pictures then. You'll often need exposures of 30 seconds or longer, however. Here are some photos from [Chapter XV of Travels with Samantha](#) as examples...



Canyonlands (Utah). At left, note the unpleasant contrast shortly before sunset. I could have driven 200 miles to get to a better spot relative to the sun. But instead I just waited until the sun had set and got the image at right.



Arches National Park (Utah). At left, before dark. At right, after dark.



Strictly after dark...



Fog/Mist

There isn't much to say here except make sure you have your [tripod](#) with you.



Street Lights

Street lights are not blackbody radiators so you can't even talk about their color temperature. They discharge in various narrow spectral bands and the color that this produces on film isn't very predictable or controllable. Usually you get an eerie green light, which I personally find kind of interesting.

The [Kodak Professional Photoguide](#) has a page devoted to filtration suggestions for street lights, but you have to know the brand of bulb in use!



Indoors -- Fluorescent Lights

Long-tube fluorescent fixtures are designed to offer diffuse unobtrusive light. As such, they make for reasonably good black and white photography. I find that in a typical office, I must use $f/1.4$ and $1/60$ th of a second with ISO 400 film.

For color photography, fluorescent lights have some of the same properties as street lights, i.e., they discharge in narrow spectral bands. You will get a rather green unappealing light if you don't filter with a "fluorescent -> daylight" filter (Tiffen calls this an "FL-D"). If you are using color negative film, photo labs can compensate to a large extent for this color cast in the printing, but I prefer to do it at exposure time with an FL-D filter.



Indoors -- Incandescent Lights

Standard light bulbs are much warmer than daylight, only about 2900 K for a 100-watt light bulb. If you are using daylight-balanced film, you'll get a very pronounced yellow cast unless you stick a blue filter over your lens (Kodak says 80A + 82B). An alternative is to use tungsten-balanced film. Tungsten film is really designed for 3200 K photo lamps but it is better than daylight.



Electronic Flash

Although I'm sort of proud that the strobe was an MIT invention (Doc Edgerton), there is no doubt in my mind that the electronic flash has done more to ruin the average photograph than any other new technology.

In the good old days, even amateur photographers were reasonably careful about light. You took your subject out on a high overcast day. You placed your subject next to a large window. You stuck your camera on a tripod.



What do we do now? Point and shoot without thinking. The camera will automatically blast the subject with light from the built-in strobe if there isn't enough ambient light. Thus, 90% of our subjects come out with that "deer in the headlights" look.



Remember what I said above: "Our eyes rely on shadows to recognize shapes." There are no useful shadow cues if all the light comes from the same angle as the lens. You can't establish a mood with on-camera flash. You can't emphasize a feature with on-camera flash. You can't narrow a fat face. You can't really do anything except capture a scene that never really existed (unless you are a coal miner and walk around with a headlamp all day).

Does that mean that you should throw out your electronic flash? No. A built-in flash that fires straight ahead is useful for filling harsh shadows in bright sunlight. An accessory flash (e.g., Vivitar 283, Nikon SB-24, Canon 540 EZ) designed to slide on top of the camera can be a great tool when used properly.

Accessory Flash Strategy 1: *Get the flash off the camera.* Minolta 35mm SLRs let you control an off-camera flash wirelessly. Their benighted competitors force you to buy a cord (if you have a fancy modern camera, you'll want a fancy cord that "preserves dedication" (control of the flash from the camera body)). Separating the light from the lens by just an arm's length makes a huge difference. If you can't afford to devote one hand to holding the flash and don't have an assistant, then you can get a flash bracket (Stroboframe makes a comprehensive line). These are what wedding photographers use.



Accessory Flash Strategy 2: *Bounce the light off the ceiling.* We expect light to come from above, either because that's where the sun is or because a lot of buildings and houses have overhead lights. If you are in a room with a reasonably low, reasonably white ceiling, then you need only tilt the flash head up and direct the light towards the ceiling. The problem with this approach is that it sometimes mimics noon sunlight too well. You get harsh shadows under the eyes and pronounced shadows. I believe that Metz makes a couple of handheld flashes that have two tubes, one that always fires straight ahead and one that can tilt up. This is probably the right technology, but most people are stuck with a one-tube flash. See Strategy 3 below.



Accessory Flash Strategy 3: *Attach a Diffuser.* There are a variety of diffusers that will send some of the light up to the ceiling and some straight out toward the subject. My personal favorite is the Sto-Fen Omni-Bounce (800-538-0730). This is a translucent plastic cube that snaps on to the front of the flash in about 2 seconds. It costs less than \$20 and is made in different sizes to fit many brands of flashes. Usually, I stick it over my Canon 540EZ flash and tilt the flash head up 45 degrees. This seems to send

about one-quarter of the light forward, one-half up to the ceiling, and one-quarter off in various other directions. LumiQuest makes a bunch of similar products but I think they are a bit too cumbersome. Finally, you can get small softboxes (see the studio flash section) to cover your flash. The disadvantage of any diffuser is that it wastes a lot of light, thus reducing your flash range and increasing recycle time.

Accessory Flash Strategy 4: *Get Another Flash.* If you are willing to invest in a second flash and a rat's nest of custom cables (Canon and Nikon) or some air (Minolta with its brilliant wireless system), then you can light the background and the subject separately, fill shadows, and otherwise play most of the tricks available to studio photographers. The custom cables will ensure that your camera body shuts off the flashes when there is sufficient exposure, but it would probably be better to use manual flashes and a flashmeter if you are very concerned about lighting ratios. The cabling doesn't solve the problem of supporting the second or third flash. You might need light stands in which case it would have been almost as easy to drag along a couple of studio monolights.

For color photography, the electronic flash has one nice feature: it is designed to have roughly the same color temperature as daylight. So you don't need any filters to work with standard daylight-balanced film.

Electronic Flash Examples

Canon EOS-5, 20-35/2.8L, 540EZ flash tilted up 45 degrees, +2/3 stop flash exposure compensation, Stofen Omni-bounce, Kodak E100 slide film



We wanted a boring flat illustrative light and we got it. This photo would have been ruined by standard on-camera flash. Standard bounce flash off the white ceiling would have been better, but probably it would have left unpleasant shadows under eyes and chin. The Omni-bounce worked beautifully here, casting light all around the room. Canon's auto flash exposure worked great too, though because of all the white in the image, it was a good thing that we dialed in +2/3 stop compensation.

(see [my Narcissism page](#) for details)



On-camera flash at its most horrifying: as the primary light. But if you've got a [Yashica T4](#) in your pocket and you are in a dark theater, this might be the best you can do. Note how the background has become 100% black. Note also the ruddy flesh tones, courtesy of Fuji Velvia. (from [Travels with Samantha, Chapter III](#))



Another success for the Sto-Fen diffuser. Note that this was done in a bathroom with white tile and white walls.

Canon EOS-5, 70-200/2.8L lens, 540EZ flash

Studio Flash

For now, I think I'm just going to refer you to my [studio photography primer](#).

Studio Hot Lights

For now, I think I'm just going to refer you to my [studio photography primer](#).

Final thought

"Contrast" by Emily Dickinson:

A door just opened on a street--
I, lost, was passing by--
And instant's width of warmth disclosed,
And wealth, and company.

The door as sudden shut, and I,
I, lost, was passing by,--
Lost doubly, but by contrast most,
Enlightening misery.

More

- [archived Q&A threads on lighting](#)

Next: [Lens](#).

philg@mit.edu

Reader's Comments

You can have wireless TTL flash with Canon and Nikon too. Ikelite has a product (sold by B&H and others) that will "watch" the main flash (hard wired to the camera), and both fire AND quench TTL compatible remote flashes. The cost is high, but if you want to avoid the rat's nest, and you already have Canon or Nikon, it is cheaper than buying a complete Minolta system.

-- [Glen Johnson](#), May 1, 1997

The Ikelite works well enough, and while the unit itself is specific for Canon or Nikon, it doesn't much seem to care what you set it off with. So you can have a Nikon SB-24 on the Ikelite and it will be controlled by your Minolta, Rollei, etc, or by any other strobe in the room. In some cases, of course, such as at a wedding, that's the bad news. The Metz 40-MZ2 and MZ3 and the 50-MZ5 have an accessory available that takes this one step further. Both strobes must be one of the above -- non-Metz strobes will not work and other Metz strobes will not work. If, for example, you have two Metz 40-series strobes, one of which was on-camera, you simply put the other (with the TTL slave accessory) on a stand or table top, positioned to aim at your subject. Then fire the on-camera strobe once. This "ID's" the on camera strobe and registers the oncamera strobe as the only one which will set the slave off from then on, until you turn off the slave. That way, you can set up your slave wherever you like and only your oncamera Metz will set it off. Otherwise, this system quenches the slave at exactly the same time as the on-camera flash.

-- [David Spellman](#), June 25, 1997

The Metz 40-series strobes and several of their other handle-mount and on-camera strobes either have or can be ordered with a small secondary strobe reflector. The 40-MZ2, for example, has a large reflector that swivels and tilts and a tiny secondary reflector for filling in shadows under bounce conditions. It also includes a pair of neutral density filters for the small reflector to adjust the light output. The Nikon SB-16 also has

a small secondary reflector, but there are no filters included to cut its light output. I prefer to use a small, vertical "bounce card" behind the large reflector. This is NOT angled forward, by the way, but still manages to catch just enough light to fill in eyesocket, under-nose and under-chin shadows in bounce situations under about 10 feet. I'll also frequently aim the strobe at a wall to the right or left of the subject and keep the fill card behind the strobe beam. This gives the subject soft, directional lighting and fills in some of the darker shadows on the sides away from the wall. Please note that sticking a small diffuser over the light, even one of those tiny softboxes, doesn't really do much to soften the light. Your shadows will usually be very sharp. What it MAY do is waste enough light bouncing around the room that some of those hard-edged shadows are filled, slightly, and that will usually be a bit more pleasing. My favorite wedding strobe remains the bulky Norman 200C, with its big old 5" reflector. It's certainly not as efficient as the smaller polished reflectors on most manufacturer strobes, but in spreading so much light around the room, it gives a lot more pleasing on-camera (or on-bracket) look, thanks to the spill coming back off the walls and ceiling of the room.

-- [David Spellman](#), June 25, 1997

Nikon now sells a wireless TTL slave unit (similar to the Ike-Lite product). It's called the SU-4 and sells for about \$70US.

-- [Mike West](#), February 5, 1999

"Photography is the recording of light rays"...hmmm..what about artistic merit huh?? Things like composition, finding the moment, perspective, what about all that?....how about changing the definition to be: the capturing of images for an artistic or informative purpose...(screw the "light rays"part it sounds too pseudo technical)...? :-) my 2 cents worth....akhilesh bajaj

-- [Akh Baj](#), June 7, 1999

Regarding flash photography...I generally hate it and try to avoid it whenever possible. However, my amateur photojournalistic tendencies sometimes preclude me from using a slow shutter speed to capture ambient light. So, to reduce harsh shadows, I take one of two approaches.

The Diffuser: I have a LumiQuest Pocket Bouncer which appreciate immeasurably. It is the most compact way to achieve a pleasant softness of light. If you've never seen one of these, it is a trapezoidal hood that attaches to the flash with Velcro. The flash head is pointed straight up and light is bounced off the hood. It is, in effect, a portable of the perfect color and reflective property. I find it immensely useful outdoors and in rooms with very high ceilings. The only drawback is light loss, which limits the distance you can stand from your subject.

The Bracket: I've used two, a Sunpack and a Strobframe. I think that the Strobframe is probably a bit better, as it gives two positions, directly above the prism housing, a approximately ten inches from the lens, or to the side of the camera, upside down. Limitations include the the rather large nature of the accessory, which makes it a bit difficult to toss into a Domke F2. The Sunpack is a handle grip with a hot shoe on top. It is marginally more comfortable to hold that the Strobframe in addition to being smaller and lighter. (Weight is an important consideration; a Nikon FE2 with motor drive, 180/2.8, flash bracket and Vivitar 283 is not only heavy but awkwardly shaped.) Both of the brackets run about \$70. They are certainly nice, but the diffuser is what stays in the camera bag.

-- [Timothy Breihan](#), June 12, 1999

Abound using electronic flash units.

I am a caver, and member of a cavephoto group. Caves are realy dark! We can't use P&S techniques much, you realy have to think ahead when making a picture.

The equipment we use are Firefly II slave units attached to flash units. They are waterproof, infared and extremly sensetive. The cost about \$100 and you can order them from Engeland at <http://www.dragon-speleo.co.uk>, a big cave equipment store.

What we use to light the flash is a normal (small) flash unit at the camera. If we don't want direct flashlight at all, we tape a piece of old slide/film in front of the flash. Only the infrared light will pass the flash now, thas enough for the Firefly slave.

A bible for cave photography is Images Below from Chris Howes, It has many, many tips and trics on lighting the subject well. Also for non-cavers a must. You can order it at <http://www.albany.net/~oldbat/> and probably amazon.com

Greetings Edwyn

-- [Edwyn Schuchhard](#), August 5, 1999

If you're like me, you take the vast majority of your pictures of people in social settings, indoors, with color-negative film, and WITH a flash. And also if you're like me, many (most) of the results are just plain bad. So, when Phil writes:

"We wanted a boring flat illustrative light and we got it."

it makes it sounds as though the effect in this picture is boring or even somewhat passi.

True, there may be more interesting flash techniques in terms of artistic potential, but there are few that are as effective!

Like many, I was annoyed at the harsh, straight-on shadow effects of a single, bare flash. I had tried many different pocket gadgets, (the Lumiquest, an index card, a mini-softbox, etc.) but none does the trick like the Omnibounce.

Look at the picture again: note the even, well illuminated quality, with no hotspots or dark areas. (This is using slide film as well.) Try to get that with a single flash; whether on camera or not. In most cases, either the subject (Phil) will be correctly lit and the room will look dark, or the room will look fine with Phil ready to ignite! There is no light falloff at the edges either (another typical flash bug-a-boo,) and there are no real harsh shadows. The effect, (though "boring") is excellent; done so well that it escapes attention - the TRUE mark of impeccable technique.

I'm just sorry Phil makes it sound common and plain. Anyone who uses a flashhead knows how difficult it is to get a good effect with it. The Omnibounce works great better than 90% of the time, and is a great assist for anyone wanting some help with an on-camera flash.

-- [J.R. Neumiller](#), October 24, 1999

About your comments on flashlight: I do agree with you, up to a certain level, please see Martin Parr's wonderful photography! His use of a (medical ring)flash doesn't create shadows, but does create very hefty moods! I'm not sure if his artwork is available on the internet, but he's a member of Magnum Photos, so you might find something on him. He's based in Bristol, UK.

-- [Rolf Rosing](#), November 7, 1999

An old Hollywood device for shooting street scenes at night is to wet the pavement, very liberally. It fills up vast dark areas with streaks of colored light. Just carry a wrench and open up the nearest fire hydrant...

-- [John Simmons](#), December 22, 1999

great to see many eyes around the world through the looking glass.

I shoot for a living. Actually, all I do is orchestrate my staff to do the "dirty work" for me, and all I need to do is to press the shutter. Flash work woes? Ever tried bouncing?

Nearest wall 50 feet away? try faster film, or a more powerful flash. maybe even slower

shutter speeds? or how about multiple exposures with different light sources? I had to shoot a commercial building once mind you, it was a huge shopping mall. We linked 6 guys with walkie talkie sets. each one had access to a different light switch located on different parts of the building. ie. roof lights, internal lights, foyer lights etc. 8 exposures to create the blooming image. The image was used in the annual report of my client.

remember guys, you are in control. and if you are NOT in control, then you will find it very difficult to acheive the EXACT image you set out to shoot. In commercial shooting, you DO NOT have the luxury of saying this line, "I'm sorry, I cannot shoot it like your scam"transalated to the client, it simply means... "Sorry, I'm stupid, please find someone else.BYE"

more to ask? e-mail me @ second_jedi@yahoo.com

I'm outta here.

Michael Chick

-- [Michael Chick](#), January 13, 2000

Regarding using flash with P&S cameras, here's a little trick I do. I take a light-activated slave trigger, one with 180 degree coverage, and attach it the the shoe of an inexpensive tilt-head flash. Then, when I take a flash picture, I hold the flash and trigger at about arms length overhead and slightly forward of the camera and tilt the head to either fire down onto the subject or fire up at the ceiling. In an advanced P&S, the light sensor doubles as the flash sensor and adjusts exposure. Thus automatically compensating for the additional light.

I and a friend of mine have used this trick with our Elph Jr's. Works out very nicely. However, if you're in an area where a lot of other people are using flashes, don't turn the bounce flash on until needed. Also, a trigger with a narrower field of view would also help here.

BTW, I also use and love Lumiquest's Pocket Bouncer. While it is a little ungainly, it completely avoids problems with color casts from bouncing off a non-white ceiling and can give the same room filling effect as the Sto-Fen OmniBounce. With the Sto-Fen, color casts from the ceiling can still be a problem.

Conrad Weiser

-- [Conrad A. Weiser](#), April 27, 2000

Much as I like David Hartman's idea of pointing the flash up with an index card to send some fill light forward, I don't have to do it - being the proud owner of a Nikon SB16 which has a small secondary light that fires directly forward whether I want it to or not.

Great. That means I can use my whole packet of index cards, plus some Blu-tack and a handy pocket stepladder, to ensure a reliable supply of white ceilings!

-- [Alan Little](#), May 16, 2000

I myself hate using the flash unless I really need it. I think studio photographs are too artificial unless there is a creative aspect to them.

I want to capture images as they appear in real life. People have shadows under their eyes in real life. I don't think that's necessarily a bad thing.

But thanks for the tips on diffusers... I'm going to try it.

-- [N. David Guarneri](#), July 12, 2000

A Flash Accessory No Photographer Should Ever Be Without!

(1) One 3x5" Card (white). (2) Two Large Rubber Bands (From Asparagus Bunches).

This is a bounce technique and requires a suitable white ceiling, Home, Office, etc.

Take your typical "Cobra Style" speedlight, 283, SB-24, SB-28, 550EX, etc. Turn the head upwards at a 90 degree angle. Attach a 3x5" (or 4x6") card to your flash with a pair of large rubber bands so that the card is on the back side, away from your subject. About 3/5ths of the card should extend above your speedlight. Fire at will.

The cost is almost nothing. In a pinch you can use the address side of a magazine subscription card (normally printed black on white) but you will still need two rubber bands. This system folds flat when not in use so you can store it anywhere.

You forgot yours? Drop by any grocery store and grab a pack of 3x5" cards and a bunch of asparagus. Don't like raw asparagus? Not to worry, your dog loves asparagus!

The 90 degree bounce flash will provide soft, even, top lighting. The card will fill the soft but sometimes deep shadows from the "main light" like eye sockets and under the nose & chin and provide catch lights in the eyes.

Cheap for you, flattering to your subject, delightful for your dog!

-- David Hartman.

-- [David H. Hartman](#), July 30, 2000

Would putting transparent tape(MAGIC TAPE) or a handkerchief over the flash cut down or minimize "the deer in the headlights"effect for on camera flash? Several years ago I read an artical saying that 1 thickness of the above cut the flash output by one f stop. Any feedback? Thanks.

-- [Morgan Whaley](#), August 19, 2000

Thanks to all for the recommendations on the different types of diffusers. I think I'm going to try the Sto-Fen Omni Bounce. I also like the quick idea of the 3X5 card. Great for in a pinch.

I recently tried my new Minolta Maxxum 7 with 5600HD flash. Pictures were shot in a small church with all white/cream walls. I didn't compensate and the photos came out awful. Long shadows cast on the back walls (despite their distance of more than 10-15'away and the people were underexposed! Next time I'll compensate +2/3 and try the new diffuser pointed about 45 degrees up. Hopefully, I'll lose the long black shadows in the background and the photos won't be underexposed.

Anybody have any other recommendations it would be most appreciated.

-- [John Travassos](#), January 24, 2001

I just want you to know that I did follow up on the problem of flash shots indoors at a small church with mostly white walls and ceiling. I did use and OmniBounce diffuser directed up at 45 degrees. I also used a flash compensation of +1. It worked beautifully.

-- [John Travassos](#), February 24, 2001

John, just out of curiosity, what type of film were you using in that church?

-- [Patrick Lavin](#), December 4, 2001

I also use a plastified white cardboard with 2 rubberbands to bounce my flash like David said previously; I strap the carboard at the back of the flash with a slight (variable) angle. It is cheap and easy to do, it also can be replaced on short notice in almost any part of the word if you loose it... If the cardboard you use is stiff enough, you will be able to get almost any bouncing setup (1/3 front - 2/3 ceiling per example) with a pivoting flash

head. I tested it extensively and I prefer the cardboard result to the omnibounce clear plastic cap, that is by the way a real rip off (it cost about 0.05\$ to manufacture labor and packaging included and they sell it for more than 20\$!!!). Experiment with different sizes and shapes you can even use colored cardboard for some nice effects (like the expensive pro bouncers).

-- [Ans Beaulieu](#), December 26, 2001

[Add a comment](#)

Related Links

- [Reflector, Scrim, Gobo, Light](#)- CALIFORNIA SUNBOUNCE the most sturdy collapsible reflector/ Scrim system is still very lightweight (contributed by [Geller Wolfgang Peter](#))
- [STO-FEN](#)- STO-FEN Products Web Page (contributed by [Reyes Ponce](#))
- [Stroboframe Web Page](#)- Stroboframe Web Page (contributed by [Reyes Ponce](#))
- [Newton camera brackets](#)- These flash/camera rotators have a renown for solid build and good design. (contributed by [Graham Braun](#))
- [How to avoid uninteresting white sky](#)- several ways to make sky look good as a part of the picture. A guide with image examples, much in the style of Philip's 'Light' article. (contributed by [Vadim Makarov](#))
- [Arte digital](#)- Digital art, surrealist, photo-imagination (contributed by [Eugenio Oller](#))
- [Photography Basics](#)- A good link for basics of photography. (contributed by [Swapnali Raut](#))

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About the photo: [Alex](#) and Philip on April 15, 1997 captured by [Elsa Dorfman](#) with her 20x24" Polaroid camera.

Philip Greenspun

My life is divided among

- [teaching](#) computer science
- [aviation](#)
- contributing photo essays, tutorials, and travel stories to [photo.net](#)
- [research](#) into the best ways to use the Internet (on hold until after I am done with the preceding three)

This server also contains

- [miscellaneous writing](#)
- [information about me](#), e.g., biography and photos
- [humor](#), notably [Career Guide for Engineers and Scientists](#)
- Navigation: [site map](#) | [site history](#) | [search](#)

What's New

Don't



expect answers to email; I'm island-hopping through the Caribbean right now. Should be back in Boston sometime in mid-January unless the

(single) engine in [my DA40](#) quits over water...

If you want to see a few photos from the summer 2002 Boston-Alaska-Baja-Boston trip, check "[How to fly a small airplane to Alaska](#)" and the "[Flying Baja](#)" article.

Current projects: finishing a hardcopy version of [Internet Application Workbook](#); working on Commercial pilot's certificate.

philg@mit.edu or [phone/mail](#)



Teaching

by [Philip Greenspun](#)

General Audience

- [One-day Internet applications course \("why"\)](#)

(I often excerpt or condense the preceding class to give a one-hour or three-hour talk.)

Nerds

- [Engineering Internet Services \(a one-day course\)](#)
- [One-term Web course](#)
(started out life at MIT in the spring of 1999 as 6.916: Software Engineering of Innovative Web Services (3-0-9))

Background

- [Teaching Software Engineering -- Lessons from MIT](#)
- [Designing a Course](#)
- [Room Preparation](#) (grungy details for us)



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Lens

by [Philip Greenspun](#)

[Home](#) : [Learn](#) : [Making Photographs](#) : One Article

Once you've settled on the subject and the light, you have to decide on the relative prominence of objects in the scene. By moving the camera position back and forth, you can adjust the relative size of objects in the scene. After you're happy with the position, you pick a lens whose angle of view encompasses all the objects that you want to include in the photo.

Objects? Relative prominence? I only want to take a picture of my friend Cyrano! There is only one object in the scene and it is Cyrano's head.

Au contraire! The objects in this scene are Cyrano's nose, Cyrano's ears, and Cyrano's eyes. Suppose that you position your camera 10" from Cyrano's eyes. If his nose sticks out 5" in front of his eyes, then it will be only half the distance from the camera as the eyes and therefore relatively more prominent. Stretch out your arm right now and compare the size of your index finger to the lines of text on the monitor. Only about as big as a paragraph, right? Now close your left eye and bring that same finger in until it is just in front of your nose. Note that your finger appears taller than the entire monitor.



Aesthetic tip from MIT: when your nose sticks out 5" in front of your eyes, you don't want it to appear relatively more prominent.

Suppose that you actually want this photo as the "before" illustration in a plastic surgeon's

advertisement. Well, then haul out the 24mm wide angle lens and you can have a complete portrait taken from 10" away.

Suppose that you wish to flatter Cyrano. You'll want to back up until you are separated by the length of a football field. Now his nose is still 5" closer to the camera but that is 5" out of 100 yards (note for European readers: 100 yards is just short of half a standard furlong.) So instead of being 50% of the distance to the camera as Cyrano's eyes, the nose is 99.86% of the distance away. It will not be significantly more prominent.

What about the 24mm lens from this camera position? It will give you a nice photo of the entire stadium and the city behind it. Cyrano's face will appear as a portion of a grain of silver on the film. You're now 100 yards away from Cyrano so you will need the Mother of All Telephoto Lenses. In fact, according to the formulas in my [Kodak Professional Photoguide](#), if Cyrano's face is 12" high, you will need a 7500mm lens to fill the frame with it. Cyrano will be flattered but considering that a Canon 600mm lens costs almost \$10,000, the effect on your wallet will not be a happy one.

Exactly how long a lens do you need?

How far away is your subject? (in feet)

How high is the object you want to fill the frame? (in feet)



Apologies to people from countries that have adopted sensible units.

If film and lenses were perfect... you would need only one lens!

In a perfect world, I'd walk about with only [my Canon 14 super-wide lens](#). I'd worry only about my camera position, secure in the knowledge that the 14mm lens was wide enough to capture my entire subject under 99% of conditions. Then if I wanted a picture for my Web site of just my friend in the middle of the frame, I'd crop down to just the center and use that. The result would be the same as if I'd

used a 100mm portrait lens.

The reason this doesn't work is that lenses and film aren't perfect. If you throw away 98% of the area of a negative (and/or make a huge enlargement), you can expect to have some pretty crummy looking pixels. So if I'm sure at exposure time that I will want more magnification, it is best for me to carry some higher magnification lenses.

If you want to really nerd out on this subject, have a look at [my publishing FlashPix article](#) where I discover the limitations of 35mm lenses and get pushed into using my cumbersome 4x5 view camera.

Sadly, we don't live in a perfect world so I guess we have to think about what kinds of lenses we might want to lug around.

Wide angle lenses

With 35mm film, a wide angle lens is generally considered anything with a focal length of 35mm or less.

Here are a couple of snapshots taken with [my Canon 20-35/2.8L zoom](#) lens. Note that the image on the left, at 20, appears to be significantly distorted if you view it from far away. But try clicking on it so that you get a monitor-filling JPEG. Then move your face in close to the monitor so that you are viewing it from a few inches away. The distortion disappears, right? A wide angle lens does not distort perspective but, if the viewer of the ultimate image does not adjust his viewing position, it appears to do so.



at 20
(camera closer to car)



at 35
(camera farther from car)

As a practical matter, most people these days aren't impressed by a wide-angle effect until you get down to 24mm. Wide angle lenses start to get expensive at 20mm (\$500) and wider. So good compromises these days are probably a fixed 24 (\$250) or a high-quality 20-35 zoom (\$1500).

Normal Lenses

A "normal" or "standard" lens is one that produces prints with no apparent wide angle or telephoto distortion. In other words, when viewed at a standard distance, a print taken with a normal lens will appear to have no unusual perspective. For a camera taking 35mm film, a 50mm lens is considered normal.



Normal lenses are easy and cheap to fabricate. A 50/1.8 costs under \$100 and will optically outperform most of the lenses in any manufacturer's line. Furthermore, normal lenses allow photography in rather low light with no flash or tripod. A yuppie with a mid-range zoom lens has a maximum aperture of f/4. A photographer with a 50/1.8 not only saves \$200 but is gathering 4 times as much light (2 f-stops). With a standard single-lens reflex (SLR; viewing through the lens), this makes viewing and composition easier because the viewfinder is 4 times brighter.

If you don't feel like saving \$200, you can get a [50/1.4](#) which will gather another factor of 2 in light. If you are a real wastrel, you can splurge \$2500 on a lens like [my Canon 50/1.0](#). This gathers 16 times as much light as a yuppie mid-range zoom.

Another common option is the 50mm macro lens. I refer you to [my article on macro photography](#) and [my review of the Nikon 60/2.8 AF lens](#).





Telephoto Lenses

Telephoto lenses are high-magnification devices. These are for when you are photographing something from far away either because you want to flatten perspective or because you are unable to approach your subject.

It is difficult and expensive to produce a high-quality telephoto lens. In fact, only in the last couple of decades have manufacturers been able to design really high quality 300mm and longer lenses.

Telephoto lenses can be useful for portraits, most often in the 85-180mm range. Photography of large animals is facilitated by 300-600mm lenses. Photography of birds starts with a 600mm lens and goes up from there.



Telephoto lenses that serious photographers buy include the following:

- 100mm macro lenses, capable of focusing down to 1:1
- 85-105mm super-fast portrait lenses, e.g., the old Nikon 105/1.8
- 180/2.8 reasonably light portrait lens
- 300/4 + 1.4X teleconverter lightweight wildlife kit (\$1,500)
- 300/2.8 + 1.4X teleconverter heavyweight wildlife kit (\$5,000)
- 600/4 + 1.4X teleconverter bird photography kit (\$10,000)



Teleconverters

A teleconverter is a small lightweight intermediate optic that will increase the magnification of a lens, while reducing its effective aperture. So a 2X teleconverter turns a 300/2.8 into a 600/5.6. A lot of times new photographers ask me if they can save money by buying a teleconverter and sticking it onto their 28-70 zoom to get a 140mm lens. Sadly, good teleconverters cost \$400 or \$500 *and* they only work optically on expensive lenses. With a typical zoom lens, you'll get vignetting (darkening of the corners) when using a teleconverter.

Teleconverters are for professionals who own expensive lenses and want to save weight by not carrying two lenses. They are also useful sometimes with specialized tilt-shift lenses so that you don't have to buy these in lots of different focal lengths.

Zoom lenses

Why carry around a whole bag of fixed focal length ("prime") lenses when you could just buy a Tamron 28-200 zoom lens for \$300? With a twist of a ring, the Tamron will give you any focal length from 28mm to 200mm. The only problem with this idea is that, sadly, the laws of physics and common sense have not been repealed.

Photographic lenses in general are not very good. They only appear to be good because people very seldom enlarge or closely inspect images. Lenses are subject to many kinds of distortion, all of which are more difficult to engineer around in a zoom lens. Furthermore, zoom lenses tend to be slower (admit less light) than prime lenses. This forces the photographer into using flash and/or a tripod.

Does that mean you shouldn't buy a zoom lens? Absolutely not. I own three beautiful zoom lenses for my Canon EOS system: [20-35/2.8L](#), [28-70/2.8L](#), and [70-200/2.8L](#). These are a great convenience for the lazy and/or pressed-for-time photographer. However, none of these are as good as prime lenses in their focal length range. Each of these zooms costs about \$1500 so they won't help you out if you don't like the prices of the prime lenses.

Personally I'd rather have my 28-70/2.8L than a 50/1.8. But I'd rather have the 50/1.8 than Canon's cheaper mid-range zooms. And I'd rather have a Yashica T4 point-and-shoot than a bottom-priced Tokina mid-range zoom.

Weird Lens #1: The Fisheye

See [my review of the Canon 15mm fisheye lens](#).

Weird Lens #2: The Beyond 1:1 Macro lens

As far as I know, Canon is the only company in the world that makes a lens intended for convenient

photography of objects smaller than a 35mm frame. See [the photo.net review of the Canon MP-E 65mm 1X-5X macro lens](#).

Be Careful (and rich)

Modern film is extremely good. Modern camera bodies work very well. The limiting factor in the quality of your image will almost always be the lens. If you want to achieve a good result, you must have the correct lens for the job and it must be a high quality example of that kind of lens.

Lots of companies make high-quality lenses. Sadly, none of them have figured out how to break physical laws and do so cheaply. So if your creative goals require a long telephoto or very wide angle lens, prepare to cough up the big bucks. If you are using a larger format than 35mm, prepare to cough up the big bucks for any lens!

Rent

If you own a Canon or Nikon 35mm SLR, a Hasselblad medium format camera, or any large format camera, you can rent a wide variety of lenses in most major cities. It will definitely expand your creative horizons without breaking you financially. Remember when using a large or medium format camera that a given lens focal length will result in a different perspective than on a 35mm camera. Use [this table to convert](#).

(If you're determined to ignore our advice and buy a lens instead, you can help defray the cost of running photo.net by buying from [Adorama](#) or [Photoalley](#).)

More

- [lens FAQ](#)
- [photo.net lens tutorial](#)
- [equivalent focal lengths for the same perspective with different sizes of film](#)

- [archived Q&A threads on lenses](#)

Next: [Film](#).

philg@mit.edu

Reader's Comments

Phil has given a very nice summary of options, with one exception. No doubt humility motivated him to omit the best resource for obtaining that perfect lens: used equipment listed in Photo.net classifieds.

Unlike ebay or other general auction sites, we users of photo.net feel comfortable that most sellers of equipment are other serious, or at least honest, photographers. Consider how much faith is required to hand over thousands of dollars to a total stranger, based on his or her assertion that the equipment is both on its way, and in working order.

Over the years, I have purchased many cameras and lenses from photo.net, and have been very pleased with the process. For the non-rich among us, it's a great way to eat AND take pictures.

-- [David Merfeld](#), December 13, 2001

Phil, you say "As far as I know, Canon is the only company in the world that makes a lens intended for convenient photography of objects smaller than a 35mm frame. See the photo.net review of the Canon MP-E 65mm 1X-5X macro lens." Well, you're wrong. Olympus makes several 20mm and 38mm macro lenses. You can put them on bellows and a focusing stage for control and cover from 1.8x to 12.4x. But for convenience, you can also put them on the telescopic auto tube (65-116mm). Then the 38mm covers 1:2.5-4x and the 20mm covers 1:5.8x to 8.3x. Handholdable? Well, I'd use an electronic flash to keep things still and blast enough light to get thru such an extension (even if one of the 20's is f/2).

And the auto tube can be used to extend the close-up focusing of any Olympus or 3rd party lens, from 16mm to 1000mm. For example, the 50/2 (or 50/3.5) macro would focus down to about 1:4x But the shorter macro lenses are better corrected for their macro ratios.

Tom

-- [tOM Trottier](#), May 29, 2002

A crop of the center of a frame taken with a 14 mm lens may have the same field of view as a 100 mm portrait lens, but will have a very different (larger) depth of field and presumably a different rendering of out of focus area. Thus a 100 mm portrait lens would be useful even in a world of perfect lenses and film.

-- [Peter Langfelder](#), June 7, 2002

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Related Links

- [Understanding image sharpness and MTF curves in film, lenses, and scanners](#)- A unique visual approach to understanding image sharpness, including a computer simulation of the photographic imaging process (contributed by [Norman Koren](#))
- [Photodo lens tests](#)- The best resource of lens test data on the Web (click on products), with excellent articles on lenses. 458 lenses MTF tested as of June, 2000. (contributed by [Norman Koren](#))

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Film

by [Philip Greenspun](#)

(Note that this to some extent redundant with [the standard photo.net film recommendations page](#))

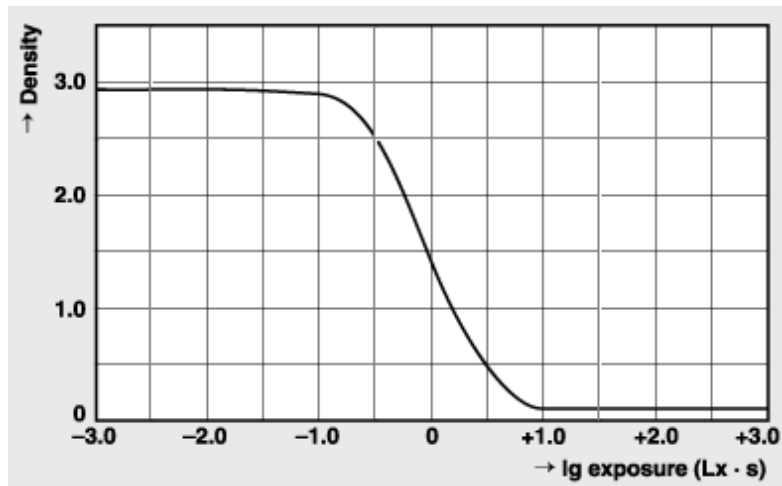
[Home](#) : [Learn](#) : [Making Photographs](#) : One Article

OK, you've settled on the [light](#) and on your position relative to your subject and the magnification (i.e., the [lens](#)). In the good old days, people like Leonardo da Vinci would simply put a piece of paper where an image was formed and start drawing. The mediocre results that he achieved aren't likely to satisfy a serious-minded visual artist today. So perhaps it is time to think about putting some film behind the lens to record the image.

What is film? I wish I could say convincingly say that it was "silver halide crystals suspended in gelatin on a base manufactured by extruding heated polyester material through a slot, thus orienting the molecules." Sadly, however, I was a math major in college and got class low on the first exam in freshman chemistry. So my friend Richard (MIT Chemistry '81) would laugh at me if I started talking about gelatin colloids on my Web site. Best to start over...

What is film? Slide film is magic stuff that starts out opaque and turns transparent as more light hits it. Negative film is magic stuff that starts out transparent and turns opaque as more light hits it.

Let's start out by thinking about the simplest possible kind of film: black and white positive (slide) film. Oddly enough, there is currently only one product manufactured in this category: [Agfa Scala](#). Here's a graph showing Agfa Scala's response to light:



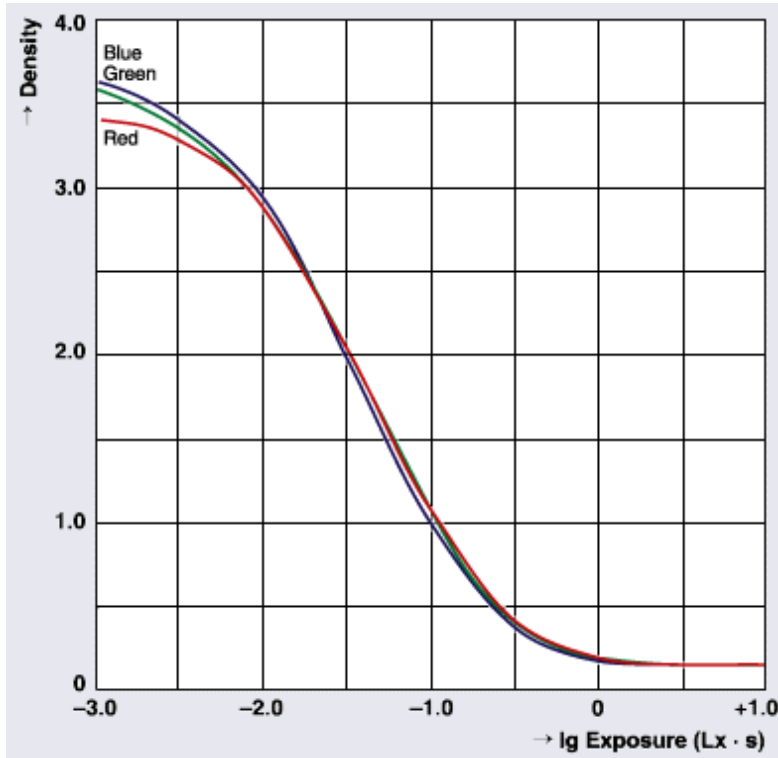
The amount of light (lux-seconds) is increasing on the x-axis. The opacity of the film is increasing on the y-axis. Note that there is a limit to "how opaque" this film can get. No matter how little light strikes the film, it will never be denser than "3" (see the notes for nerds at the bottom of this page to see why this means 1/1000th of the light gets through; this is actually roughly equivalent to the maximum density that typical desktop CCD slide scanners can read). If you look at the right of the graph, you'll notice that the film doesn't ever become perfectly clear. More than +1.0 (log lux-seconds) of light doesn't really make the film any more clear.

Staring us in the face is the first thing that we need to know about film: it has its limits. Only over a small range of light intensity does this

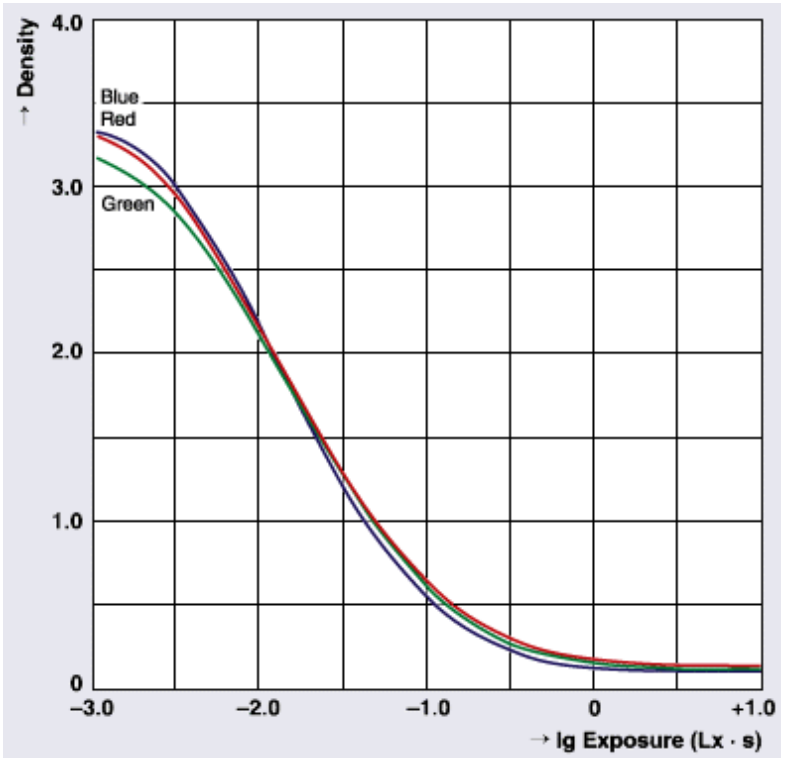
film react differently to different amounts of light. Anything less than -1.0 and the film is "simply black". Anything more than +1.0 exposure and the film is "simply clear". Since this is a log chart, this means that the film will register detail over a 100:1 range. In the next chapter, I'll show you how to use your camera's shutter speed and aperture controls to make sure that this 100:1 covers the most important tones in the scene you've chosen to depict. Right now, let's think how this information is presented to consumers.

Film Speed

If you go to the camera shop, the Agfa Scala box does not have a curve on it like the above. The only information on the box about how the film will react to light is "ISO 200". What does that mean? Let's look at charts for two color slide films.



Agfa RSX 100 (ISO 100)



Agfa RSX 200 (ISO 200)

Note first that each chart shows three curves, one for each color-sensitive layer. Note second that the ISO 200 film (at right) requires less light to reach a certain level of clarity. If you ask "how much light must fall on the film before it is transmitting 1/100th of the light (density 2.0)?", you can see that this happens for the ISO 200 film at about a log lux-seconds of -1.8 (that's $10^{-1.8}$ or 0.016). For the ISO 100 film, this requires -1.5 log lux-seconds ($10^{-1.5}$ or 0.032 lux-seconds). Hmm... the ISO 100 film took twice as many lux seconds to reach the same level of transmittance. So it is perhaps half as sensitive to light.

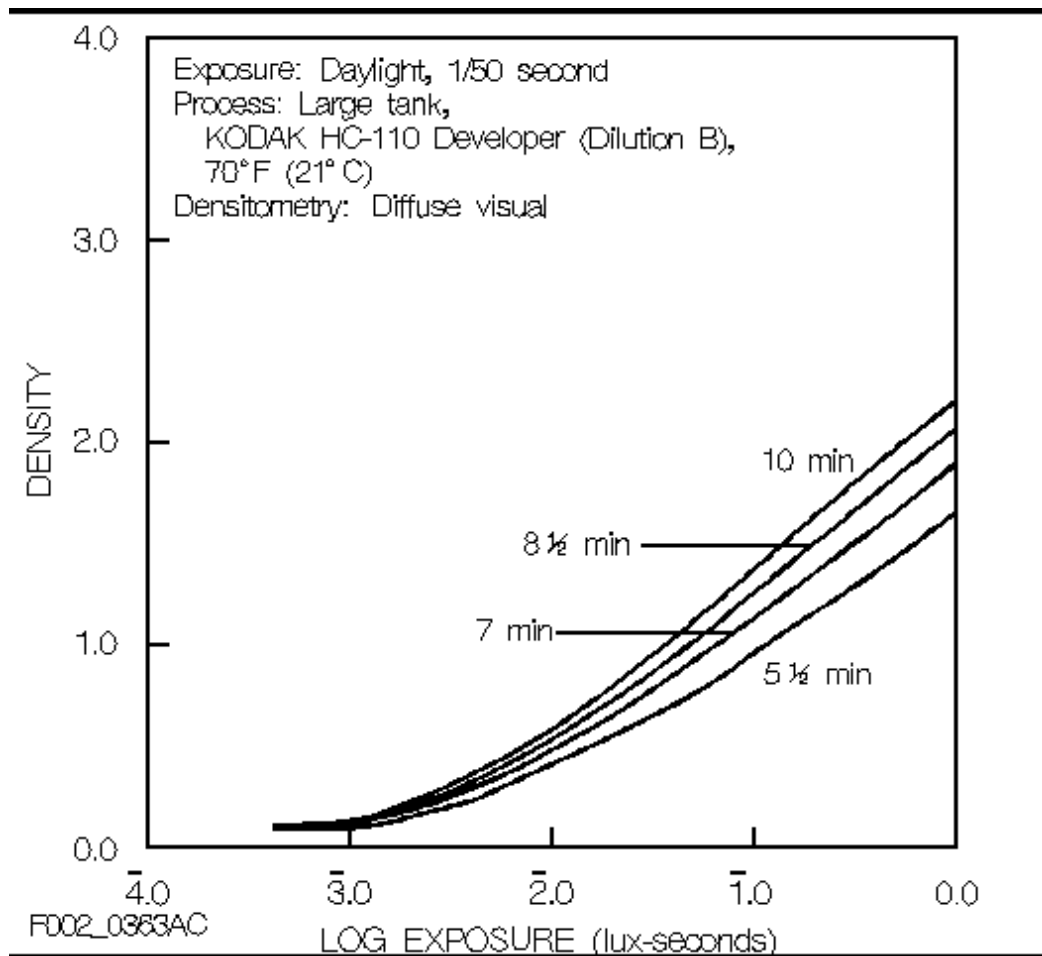
Bing! The ISO speed on the side of the film box tells you roughly how sensitive to light a film is. But it is merely a summary of the information that is available in a sensitivity curve. Why does the sensitivity curve matter? It tells you the range of tones that you can represent with a film and the range of exposure that will result in distinguishable tones. It also tells you about the film contrast, i.e., how a given change in exposure will affect the density. A film with a flatter curve will hold more detail in shadows and highlights than a film with a steeper curve.

Let's switch to color negative films now. Density will rise rather than fall with increasing exposure. Use your browser to open up [the curves for Kodak Pro400](#) and [those for Kodak Pro400MC](#) in separate windows. These films have the same ISO ratings but note how much less steeply the density for Pro400MC rises. The "MC" in this case stands for "medium contrast", a slightly lower contrast film than their standard Pro 400 product. Kodak expects that the lower contrast film will be more useful at a wedding, for example, where the groom is dressed in black and the bride is in white and you want to see some detail in both outfits.

Controlling Contrast

With black & white film, you can easily change a film's contrast-recording characteristics by changing the development time. See the figure

below for how Kodak Tri-X Pan Professional, a legendary ISO 320 black and white negative film, reacts to changes in development time.



Note that the longer the development time, the steeper the curve and therefore the higher the contrast. Also, the longer the development time, the less exposure is required to reach a given density. Increasing development time increases the film's speed and the film's contrast.

The most serious black & white photographers use big cameras that expose film in sheets that must be processed one at a time. Since they are going to have to process exposures individually, these photographers figure they might as well take advantage of the flexibility offered by changing the development time. If they have a high contrast scene and want detail in a wide range of areas, they'll plan to develop the film for less time than Kodak might suggest. This will reduce contrast. But it will also reduce sensitivity so they'll increase the exposure a bit. Ansel Adams systematized this kind of thinking into the Zone System.

With color film, this becomes trickier. Look carefully at the curves for the Agfachrome slide film. Notice how they diverge a bit when the light is scanty. The different layers of the film are reacting differently. Designing color film is a delicate process and almost anything you do that diverges from what the manufacturer expected is likely to affect one layer more than the others. This will result in a color shift. Nonetheless, there are photographers who use overdevelop (push) and underdevelop (pull) color slide film specifically to increase or decrease the contrast.

Why not use ISO 3200 film all the time?

The higher the ISO, the more sensitive the film is to light. Double the ISO and you halve the amount of light necessary for a photo. All cameras have ways to throttle back the amount of light reaching the film (e.g., by exposing for only 1/8000th of a second). So it would seem that the best approach to photography would be to buy the highest speed film available, e.g., ISO 3200, and use that all the time. Then you can take photos when it is nearly dark or take photos when it is bright and sunny.

Kodak is in fact trying to convince people to do just this. They've got an ISO 800 film that they call "Gold MAX". Like all color negative films, it tolerates exposure errors very well and especially tolerates overexposure. Like all high-speed films, it is much grainier than low-speed films. It also has reduced color saturation and reduced color accuracy. So why is Kodak telling people to shoot it? First, because so many people have bought zoom point & shoot cameras with lenses that gather almost no light. Second, because most people are apparently

practically blind and can't tell the difference between a print from an ISO 100 negative and a print from an ISO 800 negative. It helps that people seldom enlarge beyond 4x6".

If you were just looking for a way to put a 4x6" print on your fridge, you probably wouldn't have read through all those graphs up top. So let's assume that you're a little more discriminating than Kodak expects the average person to be. If so, you want slow film. Slow film has finer grain and better color. Slow film resolves finer resolution than fast film. It requires longer exposure times, so you might need a tripod (see below). At some point, it becomes wasteful to use slow film. If you don't plan to enlarge very much, the fine grain and high resolution of the slow film won't do you any good. If you have a cheap low-resolution zoom lens, then improving film resolution beyond a certain point isn't of any practical value.

It turns out that the best modern films are rated between ISO 25 and ISO 50. A typical example is Fuji Velvia, ISO 50 color slide film. It requires 8 times as much light (a lens opening 3 f-stops larger or a shutter opening 8 times as long) as ISO 400 film. But it rewards the user with super fine grain, high-resolution, and beautiful colors.

What about rating Fuji Velvia at ISO 40?

Fuji Velvia comes in a little green box that says "ISO 50" on the side. You'll have to read [Basic Photographic Materials and Processes](#) if you want to know how Fuji came up with that "50" number. A lot of photographers set their cameras on automatic and found that they'd lost detail in shadows. The photos looked a bit dark. They started "rating Velvia at ISO 40." This means that they turned the little knob on their cameras to 40 instead of 50, resulting in a camera on automatic giving the film 1/3 f-stop (about 25%) more exposure.

Does this mean that they've got a correct exposure at ISO 40? No. There is no such thing as a correct exposure. The real world generally contains a wider range of tones than you can represent on film. You have to make an artistic decision about where you place those tones. Some detail will inevitably be lost as tones that are distinguishable in the real world are mapped by the sensitivity curves to the same density on film.

If you care about details in the shadows and are using a high-contrast film like Velvia, you have to be careful to give the film enough exposure so that the tones you care about are mapped onto the linear portion of the curve.

Choosing Film

You're in the camera shop. You have to pick something. You don't have time to read all those curves. You just need to pick a film speed and a film type. Let's do the film speed first. Here are the questions you need to answer:

- how much light is available for your picture
- how fast is the lens that you're using (i.e., what aperture do you expect to use)
- how fast is your subject going to be moving
- how fast is your camera going to be moving

Let's gloss over the subtle issues and assume that all you want to avoid is a blurry picture. Faster film helps you avoid blurry pictures in two ways. First, you can close the lens down more ("stop down to a smaller aperture"). This results in a greater depth of field. More objects in the scene will be in focus. Your subject can move a little bit forward or back and will still be in focus. You or the camera can be a little bit inaccurate in focussing and your subject will still be acceptably focussed. A second way that faster film helps you avoid blur is by letting you use a faster shutter speed. The camera is taking a shorter snapshot of the world. This gives your subject less time in which to move. This gives you (holding the camera) less time in which to move. This gives the wind less time in which to shake leaves on trees. This gives the wind less time in which to shake your camera on its tripod.

If there is a tremendous amount of light available, e.g., high noon on a bright sunny day, then you can probably use even the lowest speed film for most purposes. You can handhold the camera and still use fast enough shutter speeds. If there isn't much light available, e.g., flash from the puny strobe on a point and shoot camera, then you will need fast film.

If you don't need much depth of field and you have a big professional-grade lens then you'll be able to use a large aperture, e.g., f/2.8. This will gather a lot of light and let you use short enough shutter speeds to freeze your movement (holding the camera) or your subject's movement.

If your subject is lying down asleep then you can use slow shutter speeds (and therefore slow film) without worrying about subject blur.

If you have bolted your camera down on a tripod then you can use slow shutter speeds (and therefore slow film).

It is tough to talk about film speed before talking about exposure and vice versa. So I'm sorry if this chapter has seemed confusing up until now.

Film Type

Your basic options are color negative, color positive, and black & white negative.

Color neg film is good for making prints because that's what it is designed for. Neg film is also good for scanning with cheap scanners because it never gets too dense. Neg film is good when you can't be too sure about your exposure and/or where the scene contains important detail in a wide range of tones. Neg film is good for when you need 1-hour processing in obscure places.

Color slide film is good for making you feel good about yourself as a photographer. It costs about 50 cents/image to get beautiful slides (versus \$100/image to get beautiful prints from color neg film). Slide film is good for selling to magazines. Slide film is good for scanning with expensive drum scanners because the service bureaus understand it. Slide film is good for printing because the printers understand it and the slide itself serves as a witness to what it should look like.

Black and white negative film is good for giving you control over contrast and density without your having to invest \$200,000 in digital imaging hardware. B&W film is also archival, unlike [color film which can fade alarmingly fast](#).

Where to Buy

Try to buy film from a professional camera shop. These shops have fresh inventory and keep most of their stock in large refrigerators. If you want to save money, don't try doing so by bulk loading your own rolls. It is too difficult to avoid getting dust inside the canisters. However, buying gray market film from one of the large New York retailers, e.g., [Adorama](#), is a reasonable way to economize. For up-to-date recommendations for specific emulsions, see [the photo.net film recommendations page](#).

Notes for Nerds

Transmittance (T) is defined as the ratio of transmitted light over incident light. It is usually expressed as a percent. So 1% transmittance means that 1/100th of the light got through a piece of film or a lens or whatever. Opacity is 1/T, the reciprocal of transmittance. An opacity of 100 is equivalent to a transmittance of 1%. Density (D) is the log (base 10) of opacity. If you have a "way black" piece of film that only lets through 1/1000th of the light (0.1%) then you have an opacity of 1000 and a density of 3.

More

- [Basic Photographic Materials and Processes](#)

film data sheets

- [Agfa](#)
- [Fuji](#)
- [Kodak](#)

- [archived Q&A threads on film](#)

Next: [Exposure](#).

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Reader's Comments

Agfa Scala is not the only option to attain black and white positive results. Traditional black and white films, like those provided from <http://www.mahn.net/PDLiefE.htm#Filme> can be reversal developed!

Also, for reversal processing, think of the orthochromatic films, provided from Mahn, e.g.

They have a clear base, are extremely thin and tend to exaggerate the sky landscape contrast by being totally insensible for red light. In contrast to modern films, especially the so called T-Grain (Kodak), the base is really glassy.

They can even be developed at strictly red light, especially interesting for self processing of reversal processes, which tend to be longer and require more steps than ordinary negative processing.

-- [Christoph-Erdmann Pfeiler](#), May 13, 2001

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- [Understanding image sharpness and MTF curves in film, lenses, and scanners](#)- A unique visual approach to understanding image sharpness, including a computer simulation of the photographic imaging process. Addresses the question, "How many pixels does it take for a digital sensor to outperform 35mm film?" (contributed by [Norman Koren](#))
- [Polaroid Instant Slide Film](#)- A description of some unique black and white slide films offered by Polaroid with examples. (contributed by [Mark Meyer](#))
- [These are a few of my favorite films... \(A film review\)](#)- Reviews of color reversal and color negative films with examples. (contributed by [Edward C. Nemergut](#))

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Exposure

by [Philip Greenspun](#)

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F/8 and Be There

If you ask a professional for some exposure advice, the typical answer is "f/8 and be there." This is a bit of an in joke. The "f/8" part of it sounds vaguely technical and useful, since f/8 is an actual aperture that you can set on most lenses. But it doesn't mean anything without an accompanying shutter speed or film ISO. The "be there" reminds you that ultimately exposure is pretty easy. The most important thing to have is patience and dedication so that you're around when a great photograph is happening.

There is no correct exposure

As I noted in [the chapter on film](#), the real world generally contains a wider range of tones than you can represent on film. You have to make an artistic decision about where you place those tones. Some detail will inevitably be lost as tones that are distinguishable in the real world are mapped to the same density on film.



This chapter will teach you how to control and predict which details are lost.

The Controls

Modern 35mm cameras have an intimidating array of buttons. It will please you to know that there are only three

controls that affect the image on film: focus, aperture, and shutter speed. The two controls that affect exposure are aperture and shutter speed.

Aperture

If neither the subject nor the camera are moving, the shutter speed is not very important. Aperture, however, affects the *depth of field* and therefore which portions of the image will be in focus.

What is aperture and why is it useful to change it? Aperture is the degree to which the iris or diaphragm inside the lens is opened. Lenses are designed for maximum light-gathering capability. The diaphragm is just like the iris in your eye; it can be closed or *stopped* down to block off a portion of the light coming through the lens. A lot of expense and weight went into making your lens *fast* or good at gathering light. Why would you want to throw away some of that capability away?

The first reason to stop down a lens is that the world might simply be too bright. If you're using high-speed (sensitive) film and have a slow shutter that must expose the film for at least 1/500th of a second, using a smaller aperture is the only way to prevent too much light from striking the film and overexposing it.

A more interesting reason is for aesthetic control of sharpness. Suppose the lens has a maximum aperture of $f/2$. The f-number is the lens length divided by the diameter of the aperture opening. So for a 100mm lens, this would be a 50mm opening. The depth of field will be shallow. Only the object on which you focussed will be sharp. Things closer or farther from the camera will be out of focus. The range of distances for which objects are *acceptably sharp* is called the "depth of field". Notice the word "acceptably" in the definition. What is acceptable in an 8x10 print viewed from across the room may not be acceptable in the same print viewed at arm's length. What is acceptable in an 8x10 print viewed at arm's length may not be acceptable in a 30x40 print viewed at arm's length.

If you want more objects in the scene to be acceptably focussed, you have to stop down the lens to a smaller aperture, e.g., $f/16$ or $f/22$. This nomenclature is a bit confusing at first for beginners because a smaller aperture means that the lens length divided by the aperture diameter gets larger, yielding a larger f-number. Even more confusing is the fact that lenses are calibrated with a strange succession of apertures: 1.4, 2.0, 2.8, 4.0, 5.6, 8.0, 11, 16, 22, 32, 45, 64. Each step represents a halving of the amount of light that comes through the lens. Why? The area of the aperture is proportional to half the diameter squared. So multiplying the f-number by the square root of 2 halves the amount of light coming through the lens.

Let's look at some example images.

With a long lens and a wide aperture, the depth of field is very narrow. Only those objects exactly at the focussed distance will be sharp. For example, here are a couple of images taken with [a 600mm lens](#) at $f/4$ or $f/5.6$:

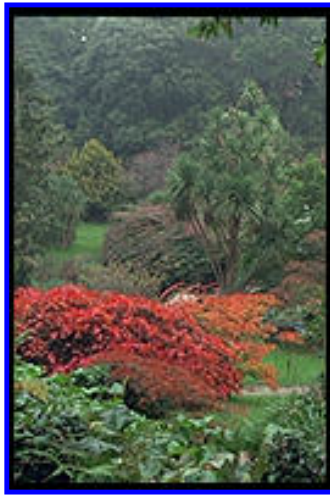


Notice that only the birds are sharp and the backgrounds are soft. The effect may seem rather extreme given that $f/4$ and $f/5.6$ are not ordinarily considered super wide apertures. Depth of field is related to the absolute size of the aperture not the f-number (lens length divided by aperture diameter). A 600mm lens is a big honker and an f-number of 4 implies an aperture 150mm across. I.e., the depth of field at $f/4$ on a 600mm lens will be shallower than at $f/1.0$ on a 50mm lens.

One way to achieve overall image sharpness is to choose a composition where everything is roughly the same distance from the lens (50mm):



Another approach is to stop the lens down to a small aperture. Note here the leaves in the upper right corner of the frame and the trees at infinity. Both are sharp thanks to the $f/16$ aperture used on this 50mm lens:



The best way to learn about depth of field is to put your camera on [a tripod](#) and expose the same image at different apertures. In these examples, note how much clearer the background is at f/22 than wide open at f/2.8.



f/2.8



f/22



f/2.8



f/22

If you're using a single-lens reflex camera, where what you see through the viewfinder is what the film will see after the mirror flips up, you might be confused at this point. You turn the aperture ring on the lens and the image

remains just as bright in the viewfinder. Moreover, out of focus objects don't get any sharper as you stop down. You're using a lens with an *automatic diaphragm*, introduced in the 1960s. The lens will be stopped down by the camera an instant before exposure, just as the mirror is flipping up. If you're just viewing and composing pictures, the lens is kept wide open for maximum brightness. To see what the film will see, you press the *depth of field preview* button. This lets you visualize in the viewfinder the focus effects of stopping down the aperture but it takes some practice to adjust to the extreme dimming that occurs by $f/11$ or $f/16$.

Shutter Speed

For a given amount of exposure on the film, the shutter speed can be determined by the aperture that you set for aesthetic purposes. If you are taking a portrait and want to throw the background out of focus, choose a wide-open $f/2.8$ aperture. Suppose that implies a shutter speed of $1/125$ th of a second. If you change your mind and want to ensure that the background is sharp, stop down to $f/22$, 6 f-stops less light. The film will need to be exposed for 2^6 times as long. Two raised to the 6th power is 64 so you'll need a shutter speed of $1/2$ second to achieve the same density of exposure on film.



A camera with built-in meter can do this calculation for you. Professional photographers most typically use an exposure mode called "aperture-priority autoexposure". The photographer picks the aperture and the camera picks the shutter speed. Does it matter what shutter speed the camera picks? Not as long as neither the camera nor subject is moving. If they are standing up, most subjects won't be able to hold acceptably still for the $1/2$ second exposure mentioned above. The photographer will be advised to open the aperture until the shutter speed is $1/15$ th second or faster. If the photographer is handholding the camera, i.e., not using a tripod, the $1/15$ th of a second exposure will very likely result in an unacceptable amount of *camera shake* being recorded on film. When using a normal lens, the general rule is to use shutter speeds of $1/60$ th or faster. Longer lenses magnify the subject but they also magnify camera shake. The traditional rule for handheld photography is to use shutter speeds of at least $1/\text{focal-length}$. So if you've got a 250mm lens you'd use shutter speeds of $1/250$ th or faster. You'll be well advised to use faster speeds if you intend to make big enlargements from your originals. You can get away with slower shutter speeds if you either (1) brace yourself against a solid object, (2) rest the camera/lens on a solid object, or (3) use a lens with electronic image stabilization, as explained in [the photo.net review of the Canon 600/4 IS lens](#).

There are sometimes aesthetic reasons to use different shutter speeds. If you are taking a picture of something moving and want to show the motion, you'll need a slowish shutter speed. If you're taking a picture of something moving and want to *freeze* the motion, you'll need a fastish shutter speed, the exact speed depending on the velocity with which your subject is moving and whether the direction of moving is towards the camera or sideways across the frame (note: the best way to freeze motion is with an electronic flash, which is actually a kind of strobe light; a cheap on-camera flash may have a duration as short as $1/30,000$ th of a second).



Hummingbird frozen in flight with a Canon on-camera flash (from [Monteverde, Costa Rica](#)).



You need a high shutter speed to capture the fast-moving savagery of two Samoyeds in mortal combat (the obscured face belongs to [Alex](#)). Probably around 1/250th.



Another good example of photography's ability to freeze motion. This was ISO 100 film on a bright sunny day so it was probably 1/250th or 1/500th at 50mm.



ISO 400 film on a cloudy day at [Venice Beach](#).



The shutter speed here ([Berlin](#)) isn't fast enough to freeze the camera shake induced by the photographer panning to follow the bike rider. Note the blurred arm. The image remains successful because the blurring suggests motion.



This image was taken from a moving car at 1/15th or 1/30th of a second, slow enough to blur the background but fast enough to keep [the Acura NSX](#) reasonably sharp (since the photographer's car and the subject car were moving at approximately the same speed).



On a bright sunny day with a handheld camera and therefore a fast shutter speed (1/125th?), the water looks more or less as you might see it with your eyes.



Some softening of the waves breaking over the rocks due to perhaps a 1/4 second exposure (from [Hawaii](#)).



A few seconds at the amusement park.



A 6-hour exposure in [the Sierra](#).

Help in Setting Aperture and Shutter Speed

Given the information and examples above you ought to have some idea of the aesthetic results you're trying to achieve. If you're interested in the blurring or stopping of motion on film, set the shutter speed first. If you're interested in what will be in focus, set the aperture first. If you can't get a combination that suits you, look for a different speed of film or put a neutral density filter over the lens to reduce the amount of light coming through without changing what is in focus.

How do you know that you're send the right number of photons through to the film so that your result won't be completely black (underexposed slide) or completely white (overexposed slide)? Old-timers using negative film would simply estimate the exposure from their experience, then fix up any minor errors in the darkroom. A somewhat more accurate technique is to RTFM. Here are the instructions included with Kodak Tri-X, a name shared by two confusingly different films (Tri-X Pan is ISO 400 and has good midtone separation; Tri-X Pan *Professional* is ISO 320 and has more highlight separation):

"Use the exposures in the table below for frontlighted subjects from 2 hours after sunrise to 2 hours before sunset."

Lighting Conditions	Shutter Speed (Second) and Lens Opening	
	Tri-X Pan Professional TXP, TXT	Tri-X Pan TX
Bright or Hazy Sun on Light Sand or Snow	1/500 <i>f</i> /16	1/500 <i>f</i> /22
Bright or Hazy Sun (Distinct Shadows)	1/500 <i>f</i> /11*	1/500 <i>f</i> /16¶
Weak, Hazy Sun (Soft Shadows)	1/500 <i>f</i> /8	1/500 <i>f</i> /11
Cloudy Bright (No Shadows)	1/500 <i>f</i> /5.6	1/500 <i>f</i> /8
Heavy Overcast or Open Shade§	1/500 <i>f</i> /4	1/500 <i>f</i> /5.6
* Use <i>f</i> /5.6 at 1/500 for backlighted close-up subjects. ¶ Use <i>f</i> /8 at 1/500 for backlighted close-up subjects. § Subject shaded from the sun but lighted by a large area of clear sky.		

More elaborate recommendations for a wider variety of light conditions can be found in the [Kodak Professional Photo Guide](#).

How well does it work to simply read Kodak's instructions and follow them as best you can? Quite well with negative film; not well enough with slide film; not at all when using electronic flash.

Fundamentally, an exposure meter can be built in two ways. The first is to measure the light falling on the subject that you intend to photograph: *incident metering*. The second is to measure the light coming off the subject in the direction of the camera lens: *reflected metering*. The typical handheld accessory lightmeter gives the photographer a choice between these two methods. The typical in-camera meter can only measure reflected light. Both kinds of meters recommend a combination of aperture and shutter speed to the photographer who will then use that recommendation as a starting point when actually exposing film.

When using an incident light meter, the most important source of error of which the photographer must be aware occurs when the light is highly directional. The incident dome may not catch the light exactly the way the combination of the subject and camera lens.

When using a reflected light meter, the most important source of error is that the subject's reflectance may not match the meter's assumption about the subject's reflectance. Suppose that you're taking individual portraits of Alex and Mia (at right). You measure the light being reflected off Alex's white fur and set the camera to whatever the meter recommends. Repeating the image with Mia as the subject you find that much less light is reflected by her black and brown fur. So the reflected light meter recommends a wider aperture or a slower shutter speed than it did for Alex.



Does this make sense? With negative film, perhaps. Mia is darker and if you want to get her tones into the linear portion of the film's curve you'll need a longer exposure. But consider that if you'd used an incident light meter it would have recommended the same exposure for both dogs. After all, the same amount of light was falling on them. If you'd used color slide film and the incident meter's recommendation you'd get one slide with a white dog in it and one slide with a black dog in it. What if you'd used the reflected meter's recommendation with the slide film? You'd get two slides exposed with an identical amount of light and therefore both would be the same shade.

Exactly what shade do you get when you follow a reflective meter's recommendation? 18% gray. This is a tone midway between 0% gray (white) and 100% gray (black). Reflected meters are calibrated to assume that the average scene is 18% gray. The reflected meter couldn't know that Alex is a white dog and that Mia is a black dog. When you pointed it at Alex it assumed that the day had gotten brighter. When you pointed it at Mia it assumed that the sky had become cloudier.

Is this 18% gray assumption reasonable? If you take portraits of Caucasian people and meter off their facial skin you'll probably find that your slides come out a bit too dark. Typical Caucasian skin is about 1/2 f-stop lighter than 18% gray. So the reflected meter thinks that the subject is lit somewhat brighter than in reality.

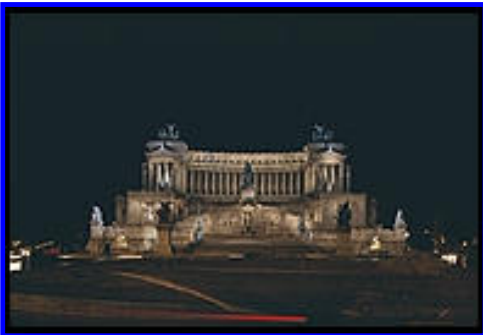
Here are some examples:



A dream scene! All roughly the same tone. All roughly 18% gray. (from [Italy](#))



A nightmare. The snow is white but the meter might also pick up on some of the dark trees. And would we really want to add exposure until the white was super white on film? We're trying to suggest evening here. This is a good occasion for bracketing!



Slightly challenging. The key here is to make sure to meter only the central (illuminated) portion of the frame so that the black sky does not get averaged into the exposure calculation. Then open up 1/2 to 1 f-stop over the meter's recommendation so that the builder is rendered white rather than gray.



Same challenge. Use the in-camera spot meter of [the Rollei 6008](#) to measure only the brightly illuminated cliff face, then open up 1/2 stop over the meter's recommendation to render it bright on film. Then try another exposure at 1 stop over because it is tough to get back to [the bottom of the Grand Canyon](#).



Point, meter, open 1 stop to move the shells from gray to white, click. From [Cape Cod](#).



Point, meter, close 1 stop to move the lava from gray to black, click. From [Hawaii](#).

Painful Details

There are some details that can make life painful when setting exposure. As you focus closer to a subject you are moving the lens farther from the film. The lens is throwing the same amount of light in a larger and larger circle of which the film intercepts a smaller and smaller fraction. For small format (35mm) cameras this effect is not significant until you get [a macro lens](#) and start taking pictures of things comparable in size to the 24x36mm frame itself. However, if you are taking macro photographs and following the recommendations of a handheld light meter you will find that your pictures are underexposed by 1 or 2 f-stops.

The handheld meter, whether reflected or incident, can't know what impediments there are to light reaching the film. The meter manufacturers assume an ideal lens. Your lens may be covered with a fine coating of dust. Your lens's internal elements will not be perfectly transmissive; some light will be lost each time it goes through a piece of glass within your lens. You may have stuck a filter in front of the lens.

A good way of sweeping away all of these details is the *through-the-lens meter*. Necessarily a reflected light meter, the metering cells are placed behind the lens and in front of the film, oftentimes built into the viewing system. These cells see what the film will see and therefore if light is getting blocked for any reason the meter simply sets the exposure as if there were less overall scene illumination.

More

- [archived Q&A threads on exposure](#)

Next chapter: [Camera](#).

philg@mit.edu

Related Links

- [Jim's Photography tips](#)- Photography tips with links to photos to show examples. (contributed by [J. Harrington USA \(Massachusetts\)](#))
- [A simplified zone system for making good exposures](#)- An approach to making good exposures with color and B&W negatives. Some information on exposing slides is also included. (contributed by [Norman Koren](#))
- ["Ultimate Exposure Computer"](#)- A really useful guide for choosing good exposures from a professional photographer. Worth reading. (contributed by [R.J. Fox](#))
- [Spot metering](#)- I often use spot meter (or partial meter) to check not one, but *several* tones in the scene, see on the metering scale where they fall and adjust exposure accordingly. (contributed by [Vadim Makarov](#))

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P H O T O G R A P H Y

Library

Agfa SCALA 200x Professional

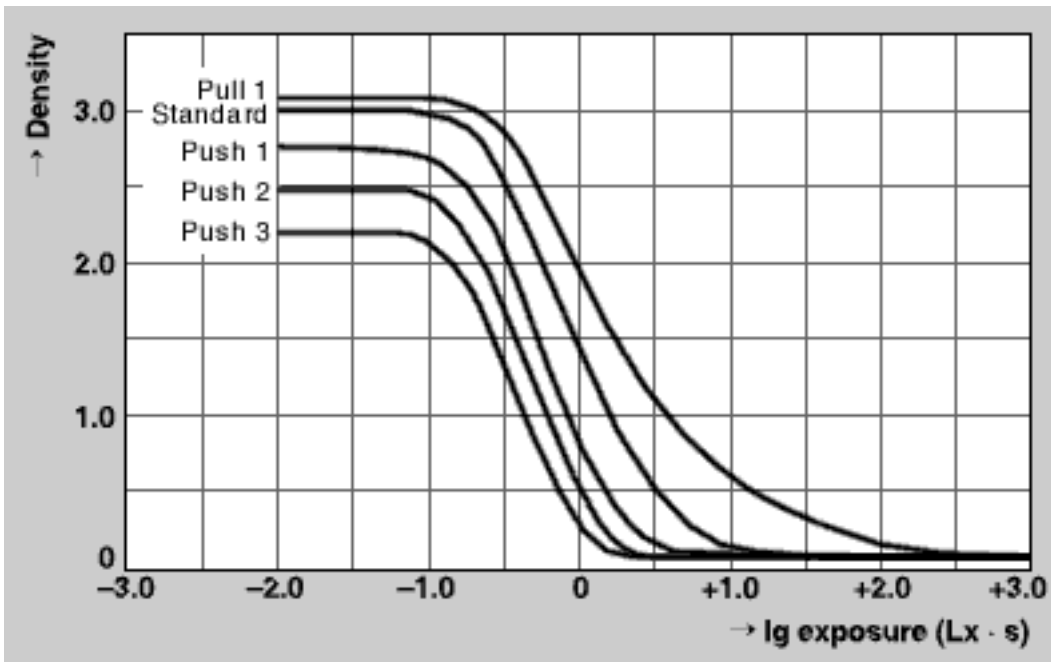
Speed

With the standard SCALA process: ISO 200/24°.

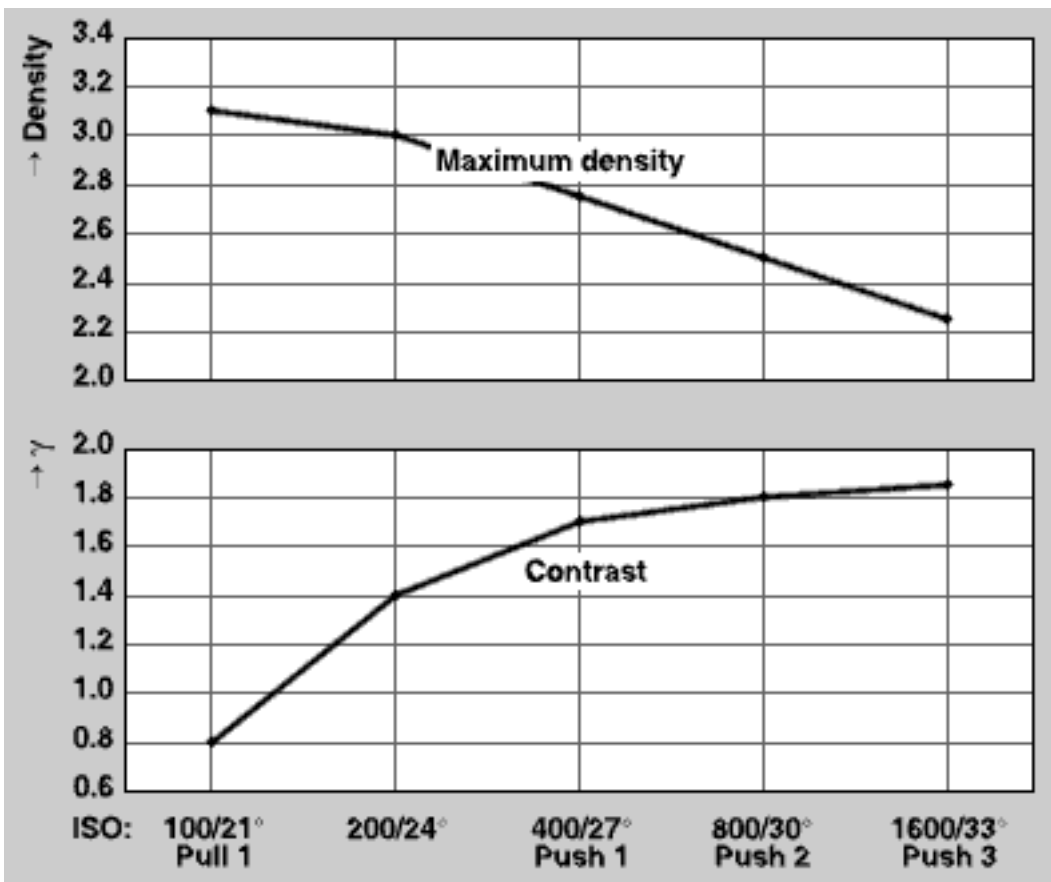
The speed of the AGFA SCALA 200x can be varied in steps by pushing or pulling the process. The contrast, maximum density and granularity simultaneously vary in comparison to the standard process.

Step	Push 1	Push 2	Push 3	Pull 1
Speed (ISO)	400/27°	800/30°	1600/33°	100/21°
Contrast	increasingly steeper			flatter
Maximum density	decreasing			increasing
Granularity	increasingly coarse-grained			finer

Density curve



Contrast/maximum density with pushed/pulled processing



Applications

Varying the speed and the contrast is useful in many fields.

Pushed processing

a) To increase the speed:

- with poor lighting / available light
- with lenses with long focal lengths and / or low power
- with fast-moving subjects

b) To steepen the contrast:

- for dramatic effects

Pulled processing

a) To decrease the speed:

- for higher maximum density
- for finer granularity (- 10 % at ISO 100/21°)

b) To flatten the contrast:

- for reproductions of X-rays
- for duplicates of BW negatives and original SCALA transparencies

Anti-halo layer

35 mm: Clear base with AHU layer which is decolorised in the developer.

Roll and sheetfilm: AHU layer and dark green gelatine back layer which is also decolorised in the developer.

Resolving power (reference: ISO 200/24°)

Contrast 1000:1 - 120 lines/mm

Contrast 1.6 :1 - 50 lines/mm

Granularity (reference: ISO 200/24°)

Diffuse RMS granularity (x 1000) = 11

(only in SCALA process)

Measured at diffuse density of 1.0 and with visual filter (V_{λ}) with a 48 μm aperture. This value is equivalent to a 12-fold magnification.

Reciprocity effect

Measured exposure time (s)	1/10000 to 1/2	1	10	100
Exposure correction (f-stops)	none	+ 1/2	+ 1	+ 2

Exposure latitude

The exposure latitude depends on the speed set.

ISO 200/24° to ISO 1600/33° \pm 1/2 stop

ISO 100/21° \pm 1 stop

Emulsion design

Film base: Safety film (acetyl cellulose) to DIN 15551.

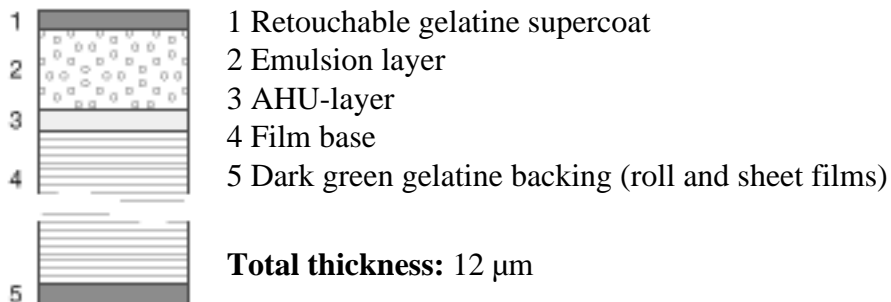
Thickness

35 mm film: 120 μm

Rollfilm: 95 μm

Sheet film (Polyester base): 175 μm

On the roll and sheetfilms there is an extra NC layer on the back.



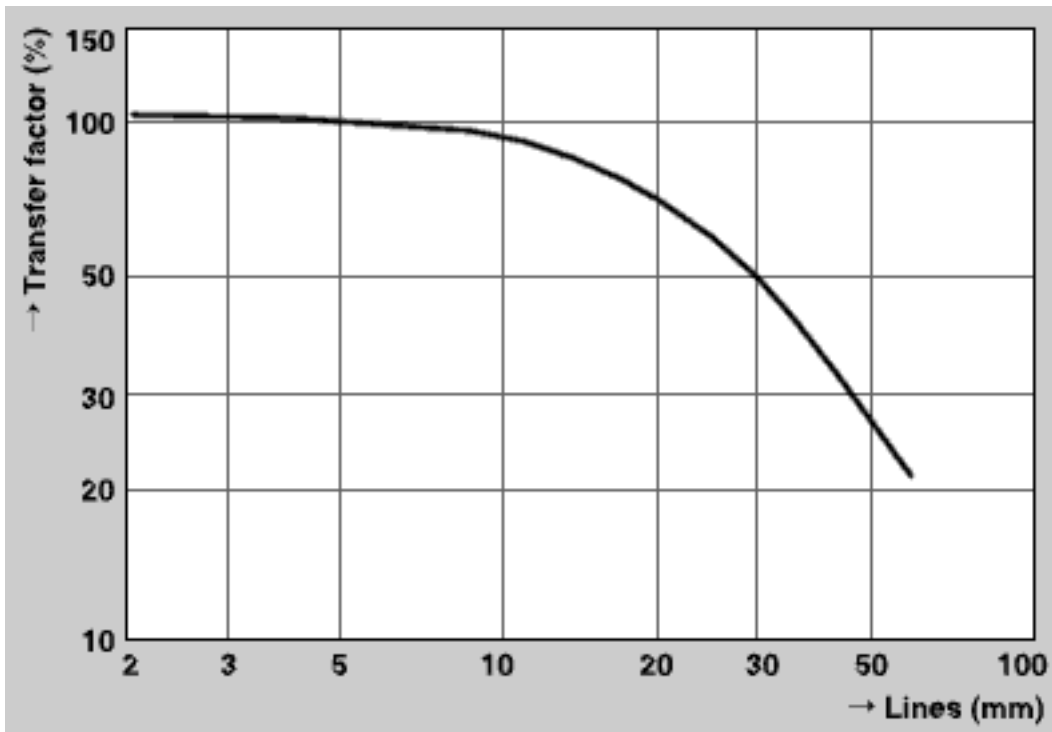
Sharpness

Modulation transfer function (MTF)

Densitometry: visual filter

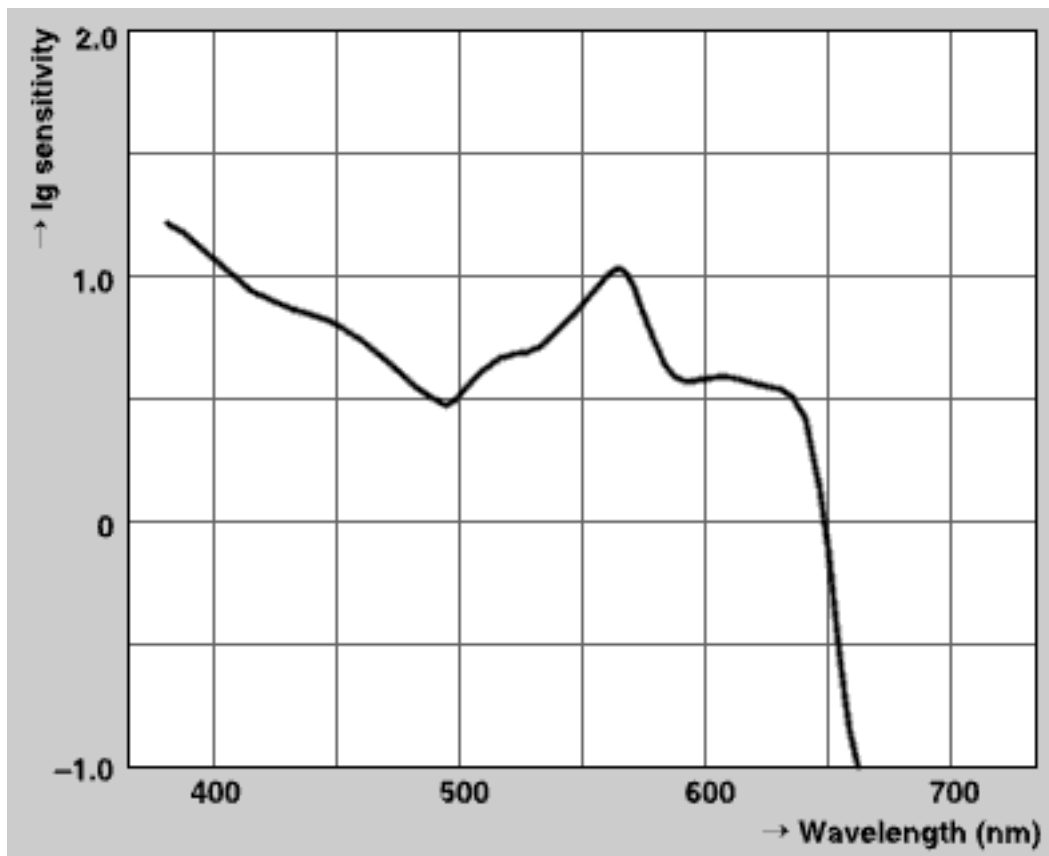
Exposure: daylight

Reference: ISO 200/24°



Spectral sensitivity

(related to equal-energy spectrum)



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Christchurch to Christchurch

by [Philip Greenspun](#), part of the [New Zealand Story](#).

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Aarangi Backpacker's shuttle picked me up at the train station and brought me back to their pleasant house across Hagley Park from downtown. I rented a 1970s touring bike from the proprietor. It seems that a German tourist had left it with him. Despite its vintage, the bike was a lot faster than the Flying Kiwi bikes with their fat knobby tires. Skinny tires and the flat terrain of Christchurch made me feel like Superman. I set off at 8:30 pm in shorts and a shortsleeve shirt for a tour of the town, which was still drenched in plenty of sunlight.

January 11

The old University of Canterbury was downtown in a set of beautiful gothic buildings that are now an arts center. In the 1970s, the school abandoned their distinguished campus for a set of modern buildings set amongst landscaped grounds on the outskirts of town. The computer science faculty set me up with an Internet connection to MIT, ripped apart my PowerBook to try to figure out why I was having trouble charging batteries, and took me out to lunch.

There are only two restaurants within walking distance of the university and my host Tim had been at the university for eleven years. One was a Chinese-run dim sum parlor and I asked him how it was.

"I've never tried it."

It was superb.

In the late afternoon, I rolled over to New Zealand Photocorp, the one professional photo lab on the

South Island. Work had ground to a halt so that employees could take pictures of a bikini-clad beauty sunbathing on a scaffold across the street. I left them my slide film.

Marita, Brigitte, Dorothea, Klaus, and Stefan had all just arrived in town and they met me at the Dux DeLux vegetarian restaurant/seafood bar/cafe, a famous tourist trap that was packed with Germans.

The women had taken the train down, but Klaus and Stefan had hitchhiked from Nelson. Given Klaus's massive size, their long hair and unshaven beards, I said that I expected it had taken them awhile to catch a ride.

"Ten minutes," said Klaus, "A television producer in a station wagon stopped. He was on his way to Christchurch. We asked him to let us off in Blenheim because we needed to pick up some stuff in Picton. He said `tell you what, I have some stuff to do in Blenheim that will take about an hour. Why don't you guys take my car and get your stuff in Picton, then come back and pick me up and we'll all go down to Christchurch?"

January 12

I was up a little earlier than everyone else, so I came down to the dining room, plugged in Samantha and toasted some bread for myself. Ten minutes later Brigitte appeared in front of me with dishes for six in her hands. Before I could move, she had connected two tables and set forth a feast of fruit, cheese, pate, jam, toast, cereal, and milk. It occurred to me that this demonstrated a fundamental difference in our characters.

Somehow on the Routeburn Track I had smashed the UV filter on my Nikon 28mm lens. Shards of glass had fallen from the broken filter into the lens itself and I couldn't see any way to get them out without scratching the front element. There is a Nikon Authorized Service Center in New Zealand, conveniently located 1000 km away in Auckland, but people said to go talk to Jack Ruth so I biked over there.

Jack's shop is called Technar Electronics and it is a musty workshop on the top floor of a building in downtown Christchurch. I found Jack, a man of about 60, and two younger assistants amidst a sea of old test equipment and tools. Jack inspected the lens for a minute, then managed to use a pointy tool to lift a plastic ring right next to the front element. He knocked out some of the larger pieces of glass with a hand blower, but it was clear that the lens would have to be disassembled.

The only thing I know about lens disassembly is "spanner wrench," but there were no slots for a spanner wrench on the front ring. Jack used a rubber emergency gas cap to get enough purchase on the smooth ring to unscrew it. There were only three screws holding the next ring, which was quickly removed to expose all of the broken glass. Jack went after the fine shards with the blower, then cleaned the exposed front element with cotton dipped in acetone before reassembling the lens.

The total charge for 20 minutes of expert precision work? NZ\$8.

Returning to New Zealand Photocorp confirmed what I already knew: having a good time and taking good pictures seldom go together. For one thing, I'd only exposed eight rolls of film since leaving the U.S.

Every day at 1 pm, a long-haired middle-aged man in a wizard outfit brings a red stepladder into Cathedral Square and delivers an oration.

"Men are smarter than women. Animals that are more intelligent take longer to mature and animals that are more playful are judged more intelligent. Thus, for example, we judge a dolphin more intelligent than an insect because it knows how to play. Women mature quickly and turn serious when they are very young. Men take longer to mature and remain more playful than women, ergo they are more intelligent."

The crowd of 100 listeners sat calmly on steps.

"Women are in fact the root of all evil. The world was a nice place until 7000 years ago when women became moral. Still, if you have to get married, make sure it is with a young girl. A man of 35 is a good match for girl of 18 or 19 because men mature later. Men who love to cry, suffer, change diapers, and say 'I'm sorry' are really women. Every time a man says 'sorry' is bullshit. Don't ever admit error because it changes your hormones.

Man's great weakness is willingness to obey his wife. This the only sin for which a man may not be forgiven by God. It says so in the Bible. God's punishment is forcing him to work, something I have not done since 1968.

Men know they are stupid, but women take them seriously. Women love work and think men ought to even though men hate to. You cannot please women, if you agree with them they despise you for being a wimp, if you don't, they hate you...

"I have tried so hard to be humble, but something inside tells me 'lucky you.' It is not just because I live here in God's own country. I wake up in the night thinking 'I might have been born Chinese, Jewish,



African or even... American. It is almost unthinkable, but I might have been born a woman.'

"Adam was the worst man in the history of the world. Why? Because he obeyed his wife and had kids. Jesus was the best man in the history of the world. Why? Because he had no kids, lived off young women, told them he was God's gift to them and they believed him. Check your Bible: women adored Jesus and touched his hair.

Right now I'm going to offer blanket forgiveness to all the women in the audience who have nagged men to death. Step forward if you want forgiveness."

Nobody budged.

"I like to do this. Men feel best when they forgive women, but when they say `sorry' they die."

An audience member accused the Wizard of misogyny.

"I love women. I live with three wonderful women. Women are better at everything practical. The only thing that men can do better than women is the ego trip: jumping bragging, shouting, lying. However, women have to think the man they are with is god. Women cannot have an orgasm without thinking that the man is god-like. Sex should be a women's religion and ego a man's; babies are a mistake."

The Wizard went on at some length to tear apart Christianity, which upset a man from Dunedin, then stepped down from his stepladder. I asked him what he thought of the French saying "God made man and saw that he was lonely. God made woman so that the man might feel his loneliness more acutely." This addition to the Wizard's stock earned me a free Wizard's Map of the World. The Southern Hemisphere is on top, with New Zealand, at the center.

The wizard's Web site: <http://www.wizard.gen.nz/>.

Audio clips of the wizard:

- ["There are nice women, those who don't marry and don't have children."](#)
- ["Wars are caused by men because they are naturally nasty, whereas females are naturally nice. Bullshit!"](#)
- ["Men don't cause wars, men only fight the wars."](#)

Photo and audio [courtesy of Christian Treber](#)

January 13

Klaus, Stefan, and I piled into their tiny rented Mazda hatchback. In hopes of sleeping in the back, they had reserved a station wagon from A1 Car Rentals, one of the many vendors of used Japanese cars (literally cars that have been used in Japan for three years then shipped to New Zealand because their owners didn't want to go through the hassle of the Japanese inspection).

Our first stop was the International Antarctic Center. Christchurch is closest stably governed city to the South Pole and the U.S. Navy runs a huge supply operation from the airport here. Like most fabricated tourist attractions in New Zealand, this one proved disappointing and we weren't sorry to head south on the coastal road.

After three hours pushing through the rain, we stopped in Oamaru and walked by chance into what must be the nicest pub in the world: the Last Post Inn. This is a renovated 1842 stone post office warmly furnished with leather upholstery. As the bill for NZ\$6.50 was presented for my (excellent) steak sandwich and salad, I reflected how nice it was to be in a society where I could afford everything. This was, of course, partly due to the wonderful-for-me exchange rate prevailing at the time, but also due to the lack of rich people and associated services. The huge class of credential-holding yuppie lords in the U.S. that support Mercedes dealers and \$80/person restaurants is either missing from New Zealand or isn't paid very well, e.g., doctors get about NZ\$40,000/year, which is about the same as an engineer's or manager's salary.



As we approached the famous Moeraki boulders, the heavens cleared just enough to make the 300 meter walk to the beach pleasant and photography with the Rollei possible. The boulders rest in the surf of the South Pacific and their preternaturally round shape and patchy quilts of rock crystal make them look like dinosaur eggs.

Jane King's *New Zealand Handbook* says "made of carbonate of lime, silica, alumina, and peroxide of iron, the boulders were formed by chemistry on the sea floor about 60 million years ago through the slow accumulation of lime salts around a small core; the cracks are filled with yellow calcite crystals."

The light was fading at 10 pm when we arrived

at the Elm Lodge in Dunedin, a super plush backpacker's high upon a hill overlooking the South Pacific. With a reputation as one of the nicest backpacker's in New Zealand, we weren't surprised to find that the place was full. However, Marita, Dorothea, and Brigitte had already checked in and they invited us to squeeze into their triple.



January 14

The girls served us breakfast and then Klaus, Stefan, and I headed out to the Otago Peninsula, which the girls had already toured. We worked our way out to the tip very lazily under rare blue skies. Larnach Castle, like most of the manmade things we'd read about, didn't live up to its description in the guidebook. We tried to have a picnic in Portobello, but high winds drove us back into the car. While inside, we had one of the strangest experiences of the trip. We watched two women in a sea kayak paddle into shore and then struggle to haul it up on the beach. They were about 10 meters away when it became obvious that they weren't managing very well and we got out of the car to help them. The "women" turned out to be only about 10 years old and hardly more than waist-high. Perhaps we were unaccustomed to the sunlight, but we didn't completely trust our senses after that.





Penguin Place is named for the blue penguins that come ashore *en masse* each night, but a fur seal colony hangs out there full-time. Although a "seals bite" sign cautioned us to stay off the rocks, we found that if we approached slowly, the older seals would tolerate us within about one meter.



In addition to watching the seals play and fight, we observed a group of about 100 cat-sized gray cormorants nesting in the cliffs. The ones on the beach would tolerate our presence within about three meters. Then we embarked on a tour of the yellow-eyed penguin sanctuary.



By standing in blinds, we were able to stay within five meters of the birds without disturbing them. The adults have yellow bands around their eyes, hence the name. We saw three families at the perfect time of day, around 5:30 pm when the parents had come back from the sea with food for their children. It would have been nice to have a 600mm lens, but I managed to get a few decent photos with a 200.



The most interesting part of the commentary was that the penguins, which normally live about 22 years, mate for seven years and then look for someone new--the

Seven Year Itch in the animal kingdom.



It was 6:30 pm and we had a mere three and a half hours of daylight left in which to explore the rest of the Otago Peninsula's wildlife. We stopped at the Royal Albatross Colony and were lucky enough to see 15 huge birds soaring in the air. This is billed as the world's only "mainland" nesting site for albatrosses, but these birds don't stick to New Zealand. One tagged bird was observed making a round-trip to Australia in three days. A 1000 km cruise in one day is typical and an albatross is able to hit 100 kph with a 50 kph wind behind it. Non-breeding males cavort in the air above the colony while the nesting birds sit with a serious mien.



January 15

After another night with the Brigitte, Dorothea, and Marita in their triple, we breakfasted together and watched them depart in their yellow Mazda. Klaus and Stefan hadn't hiked the Routeburn with the Flying Kiwi tour and were interested in doing it now. They asked the owner of the Elm Lodge what the weather was likely to be. He picked up the phone and made a couple of long distance phone calls to inquire. Then he gave us NZ\$6 to give back to the women because they'd paid more than our \$9/night.

Before leaving Dunedin, we ran some errands downtown. I was through with my foray into Australian literature and stopped into a used book store to resupply. Most of the shop was given over to pornography, especially old issues of Penthouse. However, right up front was a beautifully bound set of W. Somerset Maugham for NZ\$10/volume. Keep in mind that the U.S. is the First World's cheapest market for books and that a crummy paperback in New Zealand normally costs over NZ\$20.

"How long has this set been here?" I asked the proprietor.

"At least three months," he replied.

I bought *Of Human Bondage*.



We drove through farm country to Gore and then Te Anau. We'd been so spoiled by the drama of the Southern Alps that we found the landscape uninspiring and, although the weather was sunny, a fierce wind kept us mostly in the car.

Our backpacker's was cheap, clean, and run by friendly people. However, sometimes the social scene in the lounge just doesn't click and this one seemed to be filled with loud smoking women of various nationalities. When the national park visitor center

reopened at 7:30 pm, we stopped in to find out about Routeburn conditions and get permits for Klaus and Stefan. The forecast was for good weather and a couple came in who'd just walked the Routeburn for the fourth time. Nonetheless, Klaus was unsure, citing the 63 people already going and the potential for crowding in the huts. I finally bludgeoned him into going by telling him that the huts were enormous and that even in the unlikely event that all the extra mattresses were taken, he could take my Thermarest pad and have the huge dining room to himself.

January 16 (Saturday)



After Stefan and Klaus had shopped for their trek and we'd filled the car at the last gas station for 120 km, it was past 11. We stopped for some photography at the Mirror Lakes. Freed of the Flying Kiwi schedule and with Klaus helpfully carrying my heavy tripod everywhere, I was beginning to take a few decent pictures with the Rollei. At the Divide, I dropped them off for the Routeburn Track walk.

Did you ever wonder why roads have paved shoulders? I never understood why the government would waste so much money on two lanes that are never used. That was until the 109,000th kilometer in the life of our economy rental, which came 20 minutes after I dropped off Klaus and Stefan.

The car decided to go left. I turned the steering wheel to the right. The car still wanted to go left. Both of the tires and wheels on the left side became intimate with the sharp boulders that serve as the shoulder for the Milford Highway. Two tires were slashed and two wheels dented; I had one spare.

The next car to pass contained Jim from Montana and Wright from California. They helped me push

the car off the road and offered me a ride to a nearby ranch where they were staying so that I could call the AA. Then we realized that there was probably no telephone there. I pulled out my cameras, tripod, Samantha, and a change of clothing and locked the disabled Mazda. After Jim and Wright left, a small station wagon stopped. Warren, a Kiwi electrician, and his wife Estelle didn't talk much, but took me all the way to the backpacker's in Milford Sound from which I called the AA.

"We can't do anything for you unless you are standing next to the car with the keys," said the Automobile Association. "The closest garage is the Mobil in Te Anau. There is nothing in Milford Sound except a gas pump."

Te Anau was 100 km from the car and it was Saturday afternoon. I was getting a little depressed when the Mobil garage itself called.

"Just give the keys to any bus driver and ask him to drop them off here. We'll pick up the car for you and have it fixed tomorrow [Sunday]."



I did this and then turned my attention to getting out on Milford Sound while the sky was still blue. My only option was a 5 pm fishing cruise in a small boat run by Fiordland Travel. Rather than enjoy the smooth water and magnificent scenery of the Sound, we rushed out to the Tasman Sea where 1.5 meter waves made me long for the patch, sea bands, and ginger pills back in the Mazda. Nobody caught any fish; several people hurled.

As we came back in, I looked longingly at the Fiordland sailboat, which cruises into Milford Sound every night at 5 pm and returns the passengers to the dock at 8 am.

I was pleasantly surprised to have refrained from vomiting and also to find that The Kiwi Experience bus was willing to run me back to the Milford Sound Lodge for free. The dinner cooked by the lodge was mediocre, but the company was great. Jim and Wright showed up and we shared a table with guys from England and Germany. After dinner, I spent some time with Eric, a young Minnesotan who was traveling by himself on a loaded touring bike.

How did he like riding in the rainiest summer in New Zealand history?

"It's better than my last vacation. I went to the Philippines and got my wallet, passport, and camera stolen. I chased and caught the thief and dragged him to the police, but it soon became obvious that the police were part of it. I had to pay off a few people just to keep my stuff."

Why the Philippines?

"I've been teaching English in Taiwan for a couple of years and the Philippines are really close by. I

should never have gone, though. The country isn't especially scenic, it is racked by guerrilla war and fear, and is incredibly poor."

January 17

Milford Sound looks good from a boat, but much better from the air. In 45 minutes, our Fiordland Adventures scenic flight covered most of the surrounding mountains and I probably could have waved to Klaus and Stefan. I shared the plane with Frank and Petra, a young couple from Stuttgart. They gave me a lift back to Te Anau, patiently stopping for 30 minutes at The Chasm so that I could exercise the Rollei.



The Chasm is a collection of mossy rocks that have been sculpted by a stream plunging down 15 meters through lush forest. It was the most interesting photographic subject I found in all of New Zealand and relatively accessible thanks to wooden walkways constructed by the park service.

"Your steering's OK," said the overall-clad woman running the Mobil garage, "my father just tested it."

Why had the car drifted left?

"You probably got a hole in your left tire," she said, "there's no way to tell now that it is all shredded by the rock." [Something very similar happened to me on the Alaska Highway in Chapter VII of *Travels with Samantha*.]

"We put on two retread tires and one wheel."

Only one wheel?

"We used your spare on the car and managed to straighten one of the original wheels enough to use as a spare. She'll be right."

The bill was NZ\$510.85, almost exactly equal to the deductible on the rental car's insurance.

"Oh, make sure you go to the AA office in Christchurch. They'll reimburse you for the tow and some of the service."

It was a relatively crash-free two-hour drive to Queenstown. Without any rocks to hit, I got bored and picked up the first hitchhikers I saw. John was slightly built with a scruffy beard and a red bandanna. Julie, his girlfriend of one month, was about the same size with very fair skin. Both were covered with a generous helping of dust.

How long had they been waiting for a ride?

"More than two hours," answered John, "It has taken us forever to hitch from home, which is Invercargill. That's all the way on the south tip of the island."

How could people leave them stranded for so long on such a hot dry day?

"Kiwis treat foreigners a lot better than they treat their own sometimes."

That explained the Canadian flag I had seen some hitchers displaying. What were they doing for work?

"I was working as a cook, but Invercargill has a pretty flat economy. Now I'm working for the government," John smiled.

"That means he's unemployed," interjected Julie.

"We're going to stay for awhile with her brother in Queenstown and see if we like it."

The literal zenith of Queenstown tourism is the scenic gondola ride terminating in a mountain-top restaurant. I waited at the top with my Rollei for the light to do something interesting, but it never did. Saul, an expansive law professor in Australia, and his beautiful wife Allison, entertained me.



"I'm actually an affirmative action refugee from Canada," Saul noted. "I used to be a corporate lawyer in Toronto but I wanted to teach. Unfortunately, the law schools were direct about one thing: they were only hiring women. That's why I came out to Australia."

How did he like it?

"I like teaching, but Australians in general are lazy, uneducated, unintellectual, and crass.

Then of course, I have my students from Hong Kong who are even worse in some ways. They are just deal makers and have no sense of right and wrong or even that scruples might be worth having."

Did they long to return to Canada?

"Canada is problematic for its own reasons. Canadians always have a desperate need to justify Canada's existence. The fact is that Canada doesn't do very many things better than the United States does, but people need to come up with something to explain why they are still in Canada. A well-educated person with transferable skills can do much better financially in the U.S., which has higher salaries and lower taxes. This leads to a culture of denial."

Allison and Saul cooked me a superb dinner at their backpacker's and then I went back to mine to discover that Klaus and Stefan were already in town.

How had they done the track in two days?

"We made in all the way to the emergency shelter at Harris Saddle last night," said Stefan, "and then made it to the end of the track this morning before the ten o'clock bus."

"You won't believe what we saw," offered Klaus, "A 60 year-old guy from Schotland [Scotland] who was carrying his pushbike over the Routeburn."

A bicycle?

"He said he was touring the South Island by bike and wanted to do the Routeburn but not have to worry about getting back to his bike. So he took the pedals off and began hiking the Routeburn. He would actually pick up the bike and carry it for a few clics [km] then go back and get the panniers."

Why take off the pedals?

"To make it easier to fit the bike through narrow parts of the track."

January 18

We hung around Queenstown waiting for the weather to clear so that we could go flying with Saul in a rented Cessna 172. It never did so we pressed on to Makarora, where we'd started the Siberia Experience side-trip, and stayed in the cabins.

[Saul eventually did manage to get the plane and fly over to Milford Sound, but arrived just in time to watch the last cruise boat for two hours depart. They had to get the plane back by 6 pm so there was no way they could wait for the next boat. Red Boats, which operates the 200-person boats, offered to run a big boat out just for the four of them who'd come in by plane, plus another couple of tourists who happened by. No extra charge.]

New Zealand has reasonably good and very inexpensive ice cream, but they don't have "ice cream mixed with stuff" like we do in the U.S. Apparently Germany is also getting along fine without this product category, for Klaus and Stefan were surprised when I mixed M&M's into vanilla ice cream for dessert. Stefan appreciated the new taste, but Klaus thought it was insanity to put hard frozen chunks of anything into smooth creamy ice cream.

Before bedtime, I finished up *The Big Con*, by a Kiwi journalist angry over the dismantling of the welfare state. He questioned whether it is fair for some people to be ostracized from the tribe merely as a consequence of unemployment. This struck an odd note in my American ears, because I'd never heard anyone question the inevitability of millions of Americans being condemned to partial citizenship, forever wards of the state and never properly educated or employed.

January 19



We continued over the mountains to the west coast and caught up with Marita, Dorothea, and Brigitte in Franz Josef. There is a nice road and parking lot that lets you drive right up to the terminal of the Franz Josef Glacier. Or at least you could back in 1965 when the road was built. For some reason New Zealand's glaciers have been shrinking for several



decades and it is now a two hour walk from the parking lot to the face. One walks up a broad gravel-covered path that was carved by the Franz Josef Glacier when it was larger. One must cross numerous streams fed by meltwater from the glacier. Brigitte once again proved her mountain goat heritage by skipping nimbly over the stones while the rest of us pondered how to get over without taking a bath and/or a fast ride down to the really terrifying river emanating from under the glacier. This river was roiling with one-meter waves despite an absence of visible rocks. The water was an ugly gray color from the bits of granite stripped off the mountain by the glacier. I kept imagining with a shudder what it would be like to go rafting down the river, with or without a raft. It was much more pleasant to contemplate the waterfalls, some as high as 300 meters, that tumbled over cliffs on either side of the moraine.

The walk turned out to be well worth the effort, as the view over the glacier was beautiful, with shades of light blue filtering through the crevasses.



In the evening, we took Brigitte out for a 23rd birthday dinner at the best restaurant we could find. Frank and Guido, two bike tourists from Cologne, joined the crowd and I had a tough time following all the German.

January 20



At 7:45 am the light in "downtown Franz Josef" was a red glow. Our taciturn pilot pulled up on the collective with his left hand, pushed forward on the cyclic with his right and the helicopter lifted off smoothly. Clear low sunlight made ice castles on Franz Josef Glacier stand out and it was a real kick to land on the "neve" snowfield above Franz Josef Glacier. It is 500 km from Franz Josef to Mt. Cook by road, but both are in the

same national park and the 3,764 meter peak loomed over us. The snow was too hard-packed to support a real snowball fight, so we piled back into the helicopter and returned to Franz Josef over a landscape formed from the incomparable smoothness of melting ice.



The weather was so nice that we drove back south to Fox Glacier and took the easy stroll around Lake Matheson, which is famous for its early-morning reflections of Mt. Cook, then hiked up to Fox Glacier's terminal. This glacier is a bit flatter than Franz Josef and one can waltz right up the edge of the ice easily, albeit not without going beyond

Department of Conservation signs promising a quick death by falling rock or ice to anyone foolish enough to pass. A thick gray river raged out from underneath the glacier just as at Franz Josef.



Stefan manfully drove the entire distance to Arthur's Pass, about 250 km, with just a couple of brief rests. Arthur's Pass Road was built in 1865 to provide a direct route from Christchurch to the gold fields on the west coast. One stretch is only as wide as a single car, plus occasional wider turnouts. Steep grades, tight switchbacks, and incipient rock slides are the rule. We had no trouble believing that people searched for a year to find a better route before reluctantly settling on this one.

We arrived at the Mountain House Backpacker's to find Brigitte, Marita, and Dorothea cooking us dinner! The place was rather charmless and packed. We six were sharing an eight-bunk room with a Minnesotan named Fred who had been dolefully looking for someone non-German to talk to.



In the lounge, I met a Belgian woman who had emigrated to New Zealand six months before. She was about 25 and from Flemish stock. What gave her story a 19th-century twist is that she had never visited the country before making the decision.

January 21

The trail to the Devil's Punchbowl was described as "worthwhile in any weather," but it really wasn't *so* spectacular compared with a lot of other things we'd seen. We climbed for about half an hour with views from the trail of snow-capped peaks on the other side of the valley. When we got to Punchbowl Falls, we found it dropping about 150 meters into a basin and then trickling downhill to form the attractive creek we'd been following. Spray from the waterfall was drenching so we didn't contemplate the spectacle for very long.

On the way back to Christchurch, Klaus drove 140 kph at times, but Dorothea passed us and we didn't see the girls again until we arrived at the Bealey International Hostel, a really nice place with a garden. We had another excellent dim sum lunch at the university and were again the only white people in the place. The native New Zealanders were all patronizing the fish and chips takeaway next door.

As the Mobil garage had suggested, I stopped by the Automobile Association office and told them my sad tale.

"May I see your card please?" asked the pleasant woman behind the counter.

I confidently handed over the flimsy plastic.

"This expired on December 31st of last year," she pointed to the date on the card.

"Oh! I left home on December 11th and didn't realize that my card was going to expire," I explained lamely, "there is probably a new one waiting for me back in Boston."

"Have a seat over there and I'll see what I can do."

I wasn't optimistic. Back in the States, my AAA membership paid for only a 5 km tow and one would not get far with an expired card. Here I was asking for a 100 km tow on an expired foreign card.

Twenty minutes later, the counter agent sat down next to me and handed over NZ\$276.50 in cash.

"This is for your the tow and roadside service. We are supposed to write you a check, but we thought that you probably wouldn't have a bank account here, so I went down the street to my bank and cashed it for you."

Tim, a computer science professor at the university, and his wife Kim invited me over for dinner. I told them how amazed I'd been at the Kiwi ability to repair things.

"We took a sabbatical in Canada," said Tim, "and couldn't believe that used furniture and other used stuff is so cheap, or that people just throw things out. We still have the mentality that new manufactures have to come from far away and we'd better fix them ourselves or make do somehow."

How did they like living in Canada?

"One thing that took me time to get used to," noted Judith, "was how all the business people in North America treat every customer as a potential criminal."

I concurred that it was wonderful to travel through their country where openness and trust were the rule.

"That's a problem sometimes when Kiwis meet foreigners. My friend Elizabeth loves foreigners and believes everything they say. She fell in love with a Turkish man who promised to marry her. He kept needing money for things and took her for more than \$10,000 before disappearing."

Did that make her cynical?

"She repeated her mistake with another Turk a few months later."

Tim and Judith have kids in elementary school, where the conservative government has brought sweeping changes.

"They fired a lot of administrators," said Judith, "and now parents actually operate each school. The parents choose the teachers and set the curriculum, although the money comes from Wellington."

I said that it must be easier to work a system like this in a country like New Zealand where everyone was essentially middle class.

"Our society is actually becoming much more stratified, especially in the last couple of decades. People stick to their own neighborhoods and don't mix too much. We don't even know anyone who lives in a state-owned house," said Tim.

When I got back to the backpacker's, the other five were all raving about their trip to the Banks Peninsula, where pink light bathed the hills at sunset, particularly coming back on Summit Road.

"You must go there tomorrow," Klaus insisted, "It is the best thing I have seen in New Zealand."

As I was about to put my earplugs in, a necessary defense against Klaus's prodigious snoring, two undergraduates from Cal State Long Beach came in.

"We've been here for ten days," said Christine, who was tall, thin, tanned, and with crow's feet around her eyes that made me place her around 30. "We've been hitchhiking everywhere and this is our first night in a hostel. We've never waited more than ten minutes for a ride and whoever gave us a ride has always offered us a place to stay."

How did they like the country?

"It's fabulous," put in her companion Laura, who looked more like 23. "Everyone is an environmentalist. Now that George Bush is finally going out and Al Gore is coming in, maybe the U.S. will change."

Having grown up in Washington, D.C., I laughed at her optimism.

"Don't you believe in environmentalism?" asked Christine.

"Well, a German girl on the Flying Kiwi bus stopped me from throwing out a couple of AA batteries in a Queenstown trash can because she said there was a recycling bin somewhere in Wellington. I didn't feel that it was worthwhile to carry these dead batteries 500 kilometers to recycle them. What does that make me?"

A pig, it turned out. People who didn't recycle were all pigs.

"What about a guy who lives in Indiana and never travels anywhere, but doesn't recycle his newspaper?" I inquired.

A pig.

"But you two fly around on 747s all the time, burning so much jet fuel that it doesn't matter how much you recycle. Just living as an American squanders the world's resources and recycling only makes a tiny percentage difference. If you really wanted to go soft on the earth, you'd have to live in a Third World country like a Third World person," I pontificated.

"Don't you believe that if you take a footstep in the desert, that the chain reaction from that footstep might extinguish a species?" asked Christine.

"Sure, that's basic chaos theory. Bounded input, unbounded output," I agreed.

"Then why don't you believe that recycling a single can might save the Earth?" Christine asked with a triumphant expression.

I thought about trying to explain entropy, about how there were an infinite number of unordered states and only one ordered state so that the probability of landing by chance in a ordered state was zero. Then I reflected that my dime store knowledge of physics was probably inadequate for delivering a cogent explanation. I was proud of myself for remembering the classic example of the butterfly flapping his wings in New York causing a typhoon in Fiji a week later.

"We've heard of that. So?" asked Laura.

"Well, it doesn't work the other way. A butterfly flapping his wings in the middle of the typhoon can't stop the typhoon. That's sort of like drinking a Coke on a flight from LA to Auckland and then recycling the can at the end. You've already burned 10,000 gallons of jet fuel."

Laura and Christine were unconvinced and remained optimistic that simple steps could save the earth, but living in Los Angeles had made them cynical about men and their stories.

"People are never who they say they are," said Christine. "I was down in Puerto Vallarta a while back and a guy in a bar told me he was a medical student. I said, 'You're not in med school.' He insisted so I asked him 'What's the biggest bone in the human body?' and 'What's the largest organ?' All he could come up with was that he was specializing and didn't have to know this stuff. Sheesh."

As Laura took off her pants, I noticed a bandage on her knee.

"I fell when we were hiking and had to go to the hospital for stitches. It was great. No waiting and I got to see a real doctor instead of one of those nurse-practitioners we have back in the U.S. The funniest part was going to pay. I got stitches and a shot of antibiotics and stuff so I was a little nervous about the bill, but I figured I'd just pay by credit card and get my health insurance back in the U.S. to reimburse me. So I asked them if they took Visa and they looked a little confused. 'Sure,' they said, 'but your bill is only \$7.50.'

[NZ\$7.50 = US\$3.25; hospitals in New Zealand have all been privatized now so this is an unsubsidized service]"

January 22

Klaus and Stefan lent me the car for the day so I could go out to the Banks Peninsula. The radio had warned of a Nor'Wester with gale-force winds, but the air was perfectly still as I placed the heavy Rollei on the heavier ballhead on the still heavier tripod at an overlook on Summit Road just outside of Christchurch. Thirty seconds later, the wind was a steady 50 kph and the camera nearly blown over.



At 9 am the light was flat, the weather overcast, and I had a hard time seeing what had so captivated Klaus. I drove straight to Akaroa at the end of the peninsula. This town was settled by French whalers in 1840 and it has French street names, French-named restaurants serving English food, and a handful of nice Victorian buildings. I took refuge in the Astrolabe Cafe, which plays old jazz records and serves excellent food.

By 1:30 the weather had settled down to blue skies with a steady 30 kph wind so I headed off to the other town on the peninsula, Okains Bay. The town's main feature is a cove with a hard-packed sand beach that is lovely for walking or even driving.

A few hundred meters back from the beach, there is a Maori museum of sorts. The most interesting attractions were a brace of humongous canoes and a traditional-style Maori meeting house. Maoris traditionally lived in *Pa* (fortified villages) built on top of hills or ridges, in which the focus of life was the *marae* (central square) in front of the meeting house. This one was filled with weavings and wood carvings illustrating Maori legends.

A 21-year-old caretaker was the only other person in the museum. He'd lived on the Banks peninsula all his life. When I took out my wallet, he noticed a bit of green poking out from behind the colorful New Zealand bills.

"Is that American money? I've never seen any. Can I look at some?"

Had this been New York, I would have assumed that this was part of a Three Card Monte scam, but I handed over some cash without a second thought here. It was charming to meeting someone who hadn't been corrupted by the U.S. Dollar.



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Reader's Comments

Phil, Excellent story... I am considering visiting Christchurch.. thank you for giving me some excellent ideas of what it has to offer. Your pictures are breathtaking, I cannot wait to see the beauty that New Zealand has to offer.

Thanks! -Justus

-- [Justus Boatright](#), July 11, 1999

The Wizard was dead wrong about children. There is no pleasure like having grown offspring around when you're aging. And nursing a baby ranks up there with the greatest sensuality.

-- [Ingeborg Snipes](#), April 12, 2001

Christchurch is a city every visitor to New Zealand should see. It's quite amazing how much like Oxford or Cambridge it is near the University. The park next to the University is beautiful. It's interesting to see "punters" in New Zealand. I had to remind myself that all this Gothic Medieval architecture is completely imported from the other side of the world.

Christchurch also has a great little museum with lots of Antarctica Expedition equipment, and plenty of stuffed birds (some extinct, some not).

One of the sad things, however, was noticing how much of the old Medieval part of Christchurch was torn down and replaced with ugly modern concrete architectural

abortions. Still there is enough left to take a walk by the river and feel as if you're still in Old Blighty.

-- [Doug Smith and Rebecca Rook](#) --, April 27, 2001

"Medieval" is going back a bit far :-). Christchurch was settled in the 19th Century. We never really had a lot of stone architecture, so far as I know - most of the old houses were wood (I've lived in a few of them). Really, really good wood that you can't buy anymore, because they used almost all of it building houses. We do have a few nice old gothic style buildings as you noticed. Two of the better ones have been converted into two of our best restaurants - the Sign of the Takahe and Grimsby's.

-- [Seth Wagoner](#), July 11, 2001

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Camera

by [Philip Greenspun](#)

[Home](#) : [Learn](#) : [Making Photographs](#) : One Article

We've arrived at the last and, to my mind, least important chapter in the text. As noted on [the cover page](#), this is where most photography textbooks start. Generally your choice of camera will not have much effect on the final image. Certainly the brand of camera that you choose will have virtually no effect. However, if you're a nerd like me, there is a certain satisfaction in knowing what tools are available to the photographer and how they work.

Here are the factors that go into the choice of a camera for a project:

1. What is the required final image quality?
2. At what magnification will the image be viewed?
3. How much weight can you carry to the subject?
4. How much time do you have to take the picture?

Suppose that your project demands high image quality and high magnification. For example, you are going to make a 20 x 24 inch enlargement and display it in a corridor where people can walk right up to it to check out fine detail. This requirement pushes you toward using a large piece of film for the original exposure. The large piece of film will require a large relatively heavy camera surrounding it, which gets us into Factor 3: "How much weight can you carry to the subject?"

Annie Liebowitz goes to a portrait session with several assistants carrying her heavy Mamiya camera that exposes a 6 x 7 cm negative (4.5 times the area of a 35mm negative). Ansel Adams would pack his 8 x 10 inch camera into [the Sierra](#) with a mule. If you're the mule and your subject isn't in your home or photo studio, think about whether you'll have the energy to take any pictures after carrying around a particular camera and its accessories.

Different cameras work at different speeds. With the latest Canon or Nikon autofocus systems, you might be able to capture an unanticipated event on [a soccer field](#). Ansel Adams could not have done this with an 8 x 10 view camera, which requires many minutes for setting up the tripod, focusing, stopping the lens down to taking aperture, closing the shutter, cocking the shutter, film loading, dark slide removal, and exposure. If your subject is a big mountain, you can probably afford to take your time making the image.

Now that we have the factors in mind, let's dive into the types of cameras available:

- view cameras (sheet film + perspective control)
- single-lens reflex cameras (roll film, heavy in larger formats, very limited perspective control)
- twin-lens reflex cameras (roll film, light and cheap, no perspective control)
- rangefinder cameras (roll film, lightweight, no perspective control)
- panoramic cameras (view camera lens + rangefinder body or rotating lens)

Film Sizes

A camera won't do you much good unless you can buy film in the right size for it. Companies like Fuji and Kodak will generally make the same emulsion (film formulation) in a variety of sizes.

Almost every emulsion will be available in 35mm cartridges. The standard frame size for a 35mm camera is 24 x 36 mm.

Most emulsions are available in "120 size" roll film. There are many standard widths for 120 camera frames: 6x6, 6x7, 6x8, 6x9, 6x12, and 6x17. These numbers are ostensibly in centimeters although in practice a 6x6 camera such as a Hasselblad will expose a 56 x 56 mm frame. Comparatively few emulsions are available in 220, which is the same as 120 except that you get twice as many exposures/roll (24 rather than 12 for 6x6; 8 rather than 4 for 6x17 panoramics).

If you need a larger negative than roll film, you must use sheet film. Standard American sizes are 4x5, 5x7, 8x10, and 11x14. The dimensions are in inches. The largest sizes are wonderful for those who do darkroom work because they can be contact-printed into final framable results, avoiding the degradation of an enlarger lens. However, there is very little emulsion choice in 11x14 and not too much in 8x10 or 5x7 either. Given the high quality of modern optics and film, for most applications these days, a 4 x 5 inch sheet of film is large enough. Therefore that's where most of the demand is and where you get the best choice of emulsions.

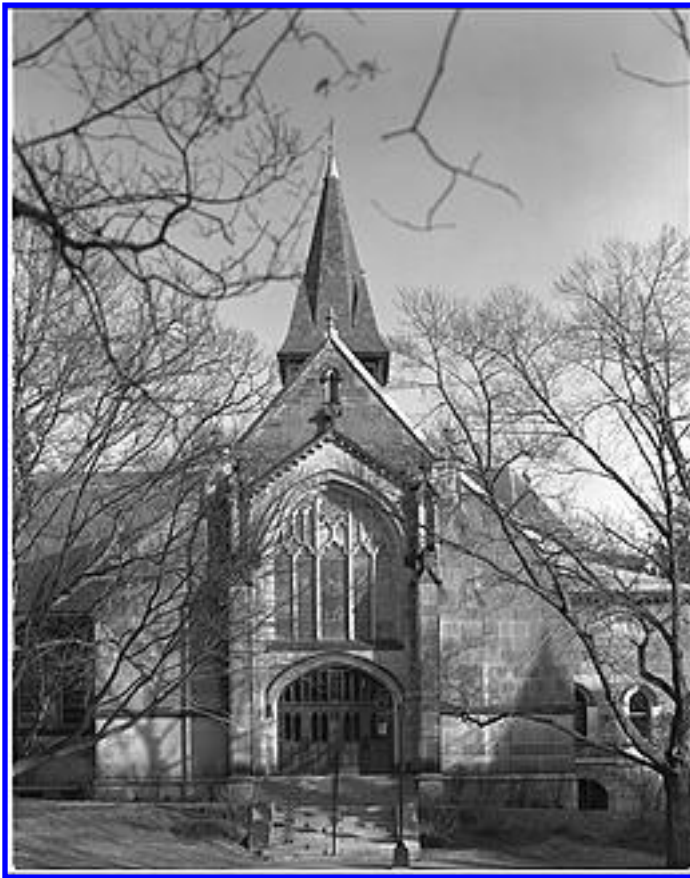
I'm not going to let [my article on APS film and cameras](#) serve as my repository for what I know about this format (somewhat smaller than 35mm). Despite the intriguing nature of spy cameras such as the Minox (Austin Powers used one to copy documents), film formats significantly smaller than 35mm are generally not useful for serious photographers.

View Cameras

View cameras are the most flexible cameras, usually made from a basic design that has not changed for over 100 years. You know the guy in the old time photo studio who photographs with his head under a cloth? He's using a view camera. Edward Weston? He took most of his best photos with an 8x10" view camera. All those luscious ads for food in magazines? Taken with view cameras.



A view camera is fundamentally a light-tight box with a slot at one end for a lens and a slot at the other for the film. You compose and focus your image on a groundglass, then displace the glass with a sheet of film in a film holder.



The lens and film aren't fixed parallel to each other. This opens up a huge range of creative opportunities that are unavailable to most photographers. For example, if you want to take a photo of a building, the obvious thing to do is point the camera up towards the center of the structure. However, this results in projecting the vertical exterior of the building onto the angled film surface. The lines of the building will converge towards the top of the frame. A view camera allows you to keep the camera level with the ground and either *shift* the lens up or the film down. The film is now "looking up" at the building through the lens, but the film is still parallel to the building exterior so lines don't converge.

If you're taking a picture of rocks in a stream with a view camera, you can achieve sharper focus by *tilting* the lens forward a bit. This will get the Scheimpflug Rule working for you: the planes of the subject, the lens, and the film should all intersect in a line. You can

achieve the same result by leaving the lens fixed and tilting the film standard back a bit. This will improve the focus and also increase the relative prominence of nearby rocks since they will be stretched out onto the film.

If you want to understand view cameras, you can start by reading [B&H Photo's introduction to large format](#) and the standard textbook on the topic: [View Camera Technique](#). I provide some view camera sample images in my [FlashPix References Images collection](#).

Above: the very first image that I made with a view camera, back in 1981. I was a 17-year-old undergraduate at MIT taking an intro photography course (the only one I've ever taken). We had old cheap metal view cameras, loaded Tri-X, and developed the film and prints ourselves.

Single lens reflex (SLR)

A single lens reflex (SLR) is a camera in which the same lens is used for viewing and taking pictures. A mirror in the body directs the light from the lens up into a prism for viewing, then flips up out of the way just before an exposure is made. Note that this is not an exotic technology; the standard Nikon or Canon camera body (photo at right) is an SLR.



Suppose that the photographer has chosen an exposure of $f/8$ and $1/125$ th of a second. Here is how most SLRs work during exposure:

- lens is kept open to maximum aperture (e.g., $f/2.8$) for ease of viewing and metering
- when the user presses the shutter release, the lens aperture is stopped down to the taking aperture of $f/8$. On old-style camera/lens interfaces (e.g., Nikon, Hasselblad), this is accomplished by moving a lever. With camera/lens interfaces designed in the 1980s (e.g., Canon, Rollei), this is accomplished by sending an electrical signal to a solenoid in the lens.
- the mirror is flipped up out of the way of the light (and parked flat up against the prism)
- now that the lens is stopped down and the mirror is up, the shutter opens and light begins to strike the film
- as soon as the shutter is fully open, the camera signals an electronic flash, if attached to fire
- when $1/125$ th of a second has elapsed, the shutter is closed
- the mirror is pushed back down to viewing position
- the lens aperture is reopened to its widest setting

SLR manufacturers generally provide a range of interchangeable lenses. This works out nicely because changing the lens simultaneously changes the scene magnification on film and in the viewfinder. Unlike view cameras, it is tough to mix and match brands. Camera bodies and lenses are coupled mechanically and perhaps electronically in non-standard ways (partly to accomplish the exposure sequence detailed above). So a lens for a Hasselblad SLR won't fit a Rollei and a Canon EOS lens won't fit a Nikon body.

The best thing about an SLR is that what-you-see-is-what-you-get. If you've left the lens cap on, fitted a really long telephoto, attached a strange filter, you can see the effect in the viewfinder. This is also true for a view camera, but with an SLR the image is right-side up and available until a few milliseconds before the exposure.

One obvious problem with an SLR is weight. The prism on top of the body that lets you see a properly-oriented image is heavy. For medium-format SLRs, the prism is very heavy and is usually optional. If

you don't mind looking down into the camera and seeing an image that is reversed left-to-right, you can use a lightweight metal viewing hood rather than a prism.

Another problem with the SLR is noise. The mirror is light but it has to be flipped up as fast as possible. This is noisy. With a medium-format SLR, the mirror is four times the size of a Nikon's and very noisy.

A final problem with an SLR is exposure latency. If you wait for the decisive moment and press the shutter, the camera doesn't take a picture until it has stopped down the lens and flipped up the mirror. This takes between 50 and 100 milliseconds for the average 35mm SLR.

Note that a few 35mm SLRs have been built with fixed semi-transparent mirrors called "pellicle mirrors". The Canon EOS line includes a cheap discontinued EOS RT model and an expensive current EOS-1 RS model. The RS's mirror sends one-third of the light to the viewfinder and two-thirds to the film. Thus the viewfinder is more than 1 f-stop dimmer than a standard camera and the film gets 2/3 f-stop less light than with a standard camera. Advantages are that the picture gets taken 6 ms after you press the shutter release, you retain your view of the subject at the exact moment of exposure, the motor drive can operate at a blistering 10 frames per second, and there is less vibration.

Twin lens reflex (TLR)

A twin-lens reflex has two lenses (the *twin lens*) and a mirror to bounce the light from one of them onto a ground-glass focusing screen (the *reflex*). Lacking a prism, a TLR tends to be lightweight. Since the mirror remains fixed at all times, a TLR tends to be quiet and exposure lag is minimal. TLRs are mechanically very simple. Consider that in an SLR the lens must have an automatic diaphragm that remains open until the instant before exposure, then stops down quickly to taking aperture. With a TLR, there are separate *taking* and *viewing* lenses and therefore the aperture knob can directly open and close the diaphragm blades.



TLRs suffer from potential misalignment, e.g., when the image is focussed on the ground glass by the viewing lens, it might not be focussed on the film plane by the taking lens.

TLRs suffer from *parallax*. The viewing lens is higher than the taking lens and captures a different image. If the image is a mountain 20 miles away, the three inches of separation won't be significant. However, you can forget about doing [macro work](#) and you might get interesting framing errors if you're close to the subject.

The classic collectible TLR is the Rolleiflex, which takes 120 and 220 roll film. Though there is no technical reason why TLRs couldn't be built for other film sizes, virtually all make 6x6 cm images on 120 film. The TLR that poor photography students use is the Yashica 124 (see photo at right; I took it during my junior year at MIT). The TLR that wedding photographers use is the Mamiya because you can change the lenses. The only TLRs currently in production are the Rolleiflex, which is priced from \$3000 and sold to collectors, and various Chinese-made inexpensive toys (e.g., the Seagull for about \$130). Used Mamiyas, Rolleiflexes, and Yashicas are common, however, and quite inexpensive. They are great for people taking darkroom classes who don't have much money but want a larger easier-to-handle negative.

Rangefinder and lens-shutter cameras

The simplest lens-shutter cameras are like [my Fuji 617](#). Fuji took a view camera lens, with its shutter, and glued it to a rigid body that holds roll film. You lose the perspective control of a view camera but the result is a much simpler and more compact camera. Focusing on the simplest lens-shutter cameras is done by "guesstimation"; the focusing ring on the lens is marked in feet and meters. You try to figure out how far away your subject is and then turn the ring accordingly.

Most SLRs have focal-plane shutters. After all, if you're going to buy 10 lenses and one body, it makes more sense to put an expensive shutter only in the body. But if you've got a camera with a permanently affixed lens, it makes just as much sense to put the shutter in the lens. In fact, if a lens is very small, as with a consumer's point and shoot camera, a between-the-lens shutter can often be very small and therefore cheaper and faster than a focal-plane shutter that must cover the entire exposed film area.

With a lens-shutter or rangefinder camera, you can't look through the lens. You view the image through a separate optical viewfinder. As with the TLR, the image on film will be a bit different than what you viewed due to parallax: the viewfinder isn't exactly aligned with the lens.

It turns out that people aren't very good at estimating distance precisely. So companies began putting military rangefinders into lens-shutter cameras, coupled to the lens and the viewfinder. The photographer turns a ring on the lens until two superimposed images are aligned in the viewfinder.

Modern lens-shutter cameras tend to have some sort of autofocus mechanism.

Without the mirror and prism, lens-shutter cameras can be much lighter and more compact than an SLR using the same film format. Mamiya and Fuji roll-film rangefinders are actually lighter than the big Nikon and Canon 35mm SLRs, despite the fact that roll-film cameras produce a negative that is four times the size.

With no mirror to slap, lens-shutter cameras are also much quieter than SLRs. The United Nations, for example, requires that photographers use Leica 35mm rangefinder cameras to record events.

Panoramic Cameras

Any camera can be a panoramic camera. You need only take a negative to a professional laboratory and say "make me a long skinny print from this portion of the negative". Or take a negative to any lab and say "make me a big print from this negative". Once you get home, use a pair of scissors to trim the big print until it is long and skinny and contains the subject matter of interest. This may sound absurd but it is in fact how most 35mm "panoramic mode" cameras operate. They use the same lens as in normal mode and mask off the top and bottom of the frame. Then the laboratory knows that you wanted a long skinny print and it is obvious which portion of the neg to print (i.e., the non-blank portion). APS cameras do the same thing except that they record the panorama mode magnetically on the back of the film. The entire frame is exposed and you could later change your mind and ask the lab to print the whole frame.

You won't get very high image quality if you print from only a tiny portion of a tiny negative. But that doesn't mean you need a true panoramic camera. You could just use a big view camera and bring the resulting 4x5, 5x7, or 8x10 sheet of film into a pro lab and tell them to print only the central portion.

If that seems like a waste of film and effort, then [the Fuji 617 that I own](#) is for you. Fuji takes one of their 5x7 view camera lenses and attaches it to a body that handles 120 and 220 roll film. So the photographer is freed from the bulk of the 5x7 view camera, from the drudgery of loading sheet film into film holders, and from having to spend \$6 per exposure on film and processing (instead it is perhaps \$3 per exposure).



Panoramic cameras don't have the perspective correction flexibility of the view camera from which they were cut down. This is very annoying if you're trying to capture architecture in a city. Panoramic cameras don't have the close-focus capability of view cameras. This is annoying if you want to include a person's face prominently in your image. Panoramic cameras can be unbelievably expensive compared to the view cameras from which they are derived. For example, Linhof makes a 617 camera similar to my Fuji. A Schneider 72mm lens for the camera is \$4000. The same lens ready for use on any view camera was \$1500 (prices from [B&H Photo](#) in December 1998).

There are panoramic cameras that do things you could never do with a view camera and cropping. These have rotating lenses that capture up to 360 degrees onto long strips of film, e.g., the \$650 Spinshot camera makes 7 frames on a 36-exposure roll of 35mm film. The Noblex is the standard rotating-lens 120 roll-film camera. It captures 150 degrees on a 6x12 frame.

I'm not really an expert on panoramic photography but I think that the main advantage of the fixed lens camera is simplicity. A camera with a rotating lens can produce very strange results if the lens does not rotate smoothly. The big advantage for the rotating lens cameras, in addition to wide field of view, is that they are free of the edge distortion and light falloff that you get with wide angle lenses.

One thing to keep in mind is that if your panoramic camera produces an image that does not fit into a 4x5 enlarger, you won't be able to print images yourself in a darkroom and will be forced to use a professional laboratory where they have an 8x10 enlarger. Note that 6x12 fits in a 4x5 enlarger but 6x17 does not.

More

This chapter is meant to provide background, not purchasing advice. I try to keep some current practical advice in the following articles:

- [What Camera Should I Buy?](#)
- [Building a 35mm SLR System](#)
- [Where to buy a Camera](#)

If you are intent on getting a new camera, you can help defray the cost of running photo.net by buying from [Adorama](#), [Photoalley](#), or [ritzcamera.com](#).

philg@mit.edu

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Dead Trees

and what they can teach you about photography.

by [Philip Greenspun](#)

[Home](#) : [Learn](#) : One Section

Books about Photographers

alive

- To be inspired by how much photojournalism can change your mind, start with a trio by Peter Menzel and Faith D'Aluisio: [Material World : A Global Family Portrait](#), [Women in the Material World](#), [Man Eating Bugs : The Art and Science of Eating Insects](#) (it probably won't change your mind but the duo's [Robo sapiens: Evolution of a New Species](#) is also fun)
- [Mary Ellen Mark : American Odyssey, 1963-1999](#) contains a poem by Maya Angelou ending in "we are more alike, my friends, than we are unlike". If you're an insurance salesman or a computer programmer, the photographs will contradict Ms. Angelou's point rather dramatically.
- [Henri Cartier-Bresson and the Artless Art](#) is a reasonable place to start exploring Cartier-Bresson's work, though any of his books are worth having, e.g., [Europeans](#)
- Elliott Erwitt will inspire you to carry your camera around more often with [Dog Dogs](#) and [Personal Exposures](#)
- William Wegman will inspire you to stay in the studio with your dog and imagination. All of his work is creative but [Fashion Photographs](#) is over the top. If you're building a library you'll want the one that started it all: [Man's Best Friend](#).
- All of the work by the husband and wife team of Bernd and Hilla Becher: my favorites are [Water Towers](#) and [Industrial Facades](#)
- [Cindy Sherman : Retrospective](#)
- To decorate a self-consciously hip lobby, Helmut Newton's [SUMO](#), with its included stand, makes a bold statement.

dead

```
There is no frigate like a book
  To take us lands away,
Nor any coursers like a page
  Of prancing poetry.
This traverse may the poorest take
  Without oppress of toll;
How frugal is the chariot
  That bears a human soul!
```

-- "A Book" by Emily Dickinson

- Ansel Adams: Forget the cheaper, smaller format books--they don't work for this kind of photography. In August 2001 we were blessed with [Ansel Adams at 100](#), which contains an introduction and personal selection of images by John Szarkowski, one of the strongest writers on photography. [The American Wilderness](#) is also a great book.
- [Atget](#), by John Szarkowski. Beautifully reproduced photos, each accompanied by prose that could only have been written by Szarkowski, the former curator of photography at MOMA: "Except occasionally, ... the French have managed very well to sublimate the periodic human tendency to behave violently toward one's fellow men, and have directed these impulses toward their trees." (opposite a photo of a garden gate made from trained trees)
- [Mathew Brady and the Image of History](#)
- [Brandt : The Photography of Bill Brandt](#)
- [Brassai : The Monograph](#)
- [Walker Evans: The Getty Museum Collection](#)
- [Andre Kertesz : His Life and Work](#)
- [Muybridge's Complete Human and Animal Locomotion](#)
- [Man Ray : 1890-1976](#)
- [Steichen's Legacy : Photographs, 1895-1973](#)
- [Alfred Stieglitz : Photographs & Writings](#)
- [Edward Weston : Forms of Passion](#)
- [Winogrand, Figments from the Real World](#). The art and technique of Garry Winogrand, the definitive street photographer of the 1960s.

collections

- if you're only going to have one... [The Photo Book](#) will give you one page on each of 500 important photographers
- [The Family of Man](#), collected by Edward Steichen, is the catalog from the show that boosted photography as a respectable museum art form
- [A Thousand Hounds: The Presence of the Dog in the History of Photography 1839 to Today](#) is the perfect gift for the dog-owning photographer. This is 600 well-printed pages of photo history, interesting quotes ("I have discovered photography. Now I can kill myself. I have nothing else to learn." -- Pablo Picasso), and the full text in English, French, and German.
- [Passage to Vietnam](#), a ground-breaking CD-ROM with a lot of good background on the photographers (also a nice coffee-table book)

Elsa Dorfman has several thought-provoking book reviews on [her page](#).

Books about Photography

- [The book that turns novices into serious photographers at RIT](#): probably the best place to start any inquiry into photographic technique.
- [Photography](#) by Barbara London and John Upton, is a good all-around introduction.
- [An informal and personal introductory textbook](#) by Bernhard Suess, limited to black and white photography
- [View Camera Technique](#) by Leslie Stroebel
- [Kodak Professional Photo Guide](#). Carry it with you at all times.
- [The Preservation and Care of Color Photographs](#), very important if reading the preceding two books results in any images you hope to enjoy a few years from now.
- [Nudes & Glamour](#) by John Hedgecoe
- [Infrared Photography Handbook](#) by Laurie White
- [Copying and Duplicating](#) by Eastman Kodak
- [On Photography](#) by Susan Sontag



Magazines

- [Lens Work](#) is a beautifully printed black and white monument to the craft of fine art photography.
- [Aperture Quarterly](#) is probably the premiere U.S. journal for art photography.
- [Popular Photography](#), holder of the U.S. monopoly on the mass-market photo magazine business. If manufacturers want you to know something, they tell the editors of Pop. Photo. The magazine is therefore useful for equipment news and advertisements (though you may be very sorry indeed if you order equipment from an advertiser who is not recommended on [the photo.net where to buy page](#). Their camera tests are marred by their sycophantic attitude toward the manufacturers. They like new for the sake of new and in a 10-page camera review they somehow manage to miss the kinds of annoyances and deficiencies that almost any photographer would find merely by going out and using a camera for a project or two. Probably worth \$10/year anyway.
- [Shutterbug](#). This is where to find ads for used equipment. The quality of the articles is variable, however, and don't expect to be inspired by the images (in any case the magazine is not printed on glossy paper).
- [American Photo](#). Very glossy. Good coverage of fashion photography personalities and great photo editing. You probably won't learn anything that you can take to the bank, though.
- [Petersen's Photographic](#). Please.
- [Photo District News](#). If you want to find out what happens in the advertising and studio photography worlds, this is the place. Unfortunately, much of the news seems to be about photographers suing their clients and vice versa. It can be disheartening and disillusioning. Great photo editing, large format, always impressive.
- [Outdoor Photographer](#). Beautiful pictures but somehow empty of feeling. You aren't going to learn much from this magazine except that if you buy a really huge camera and/or lens and have the patience to sit in front of a mountain or animal for two weeks that you can probably get a decent picture. I let my subscription lapse.



Newsletters

- [Photograph America](#), by Robert Hitchman. If you want to find the top spots in North America for landscape and nature photography, and get practical guidance for capturing the best those spots have to offer, this is your newsletter. Subscribe or just order back issues by calling +1 (415) 898-3736 or writing to Photograph America, 1333 Monte Maria Avenue, Novato, CA 94947 USA. Back issues are \$8.50 each; subscriptions are \$30 for 6 issues. I subscribe and every month that I get an issue when I'm sitting on my sofa it reminds me that life is short.



Note: if you have a favorite book, magazine, or newsletter that I haven't mentioned, please either email a review (if you "Save As" one of my existing reviews for HTML style, that makes life easier), or write something about it in the comment section (below).

philg@mit.edu

Reader's Comments

There are also a number of interesting magazines that are published outside the US. Practical Photography, published in the UK is one that I have enjoyed. I think that there are at least two magazines with the title Photo Technique. Magazines like Aperture put the emphasis on the photo, rather than on the mechanics. Natures Best offers images of the natural world that rival the very best published anywhere.

The best source for many of these magazines is a book store or news stand with a good magazine section. Borders is a national chain that started in Ann Arbor, Michigan, and their outlets often offer a greater selection of titles than some of the better known Mall Book Stores. If you can't find what you want at your local store, perhaps they can order it for

you. With foreign magazines it is often cheaper to get them on the newstand than it is to subscribe because when you subscribe, you pay for the mail charges for delivery of each single issue to your door. When you buy at the newstand, the shipping charges for a whole bundle of magazines is spread out over all the magazines in the bundle.

-- [Glen Johnson](#), January 15, 1997

"Lens Work" is a quarterly magazine that I just found out about. It is about "essays and articles on photography and the creative process". The Fall 1996 issue I have has excellent photos that are reproduced very well, along the "Aperture" lines. Call 1-800-659-2130 for further info. About \$9.00 per issue.

-- [Barry Pehlman](#), January 30, 1997

EF Lens Work II is a \$23 book on the Canon EOS EF lens system that is published by Canon. It is actually quite informative and well done. It is approximately half an inch thick. I received my copy yesterday, and I would recommend it to anyone who is seriously interested in the EOS lens system. You can get a copy by calling Canon at 1-800-828-4040. B&H used to sell the previous edition (EF Lens Work), so they may carry EF Lens Work II also. The books were just shipped from the printer to Canon last week, so it may be a while before there are stocks at B&H.

-- [Glen Johnson](#), April 8, 1997

There are two books and a magazine which may be valuable to those who love photography. 1. 40 Years of Photography by Jeanloup Sieff - All BW photos. Look the way he uses his 21mm Leica M lens. 2. Looking Back by Todd Wedd - All BW photos. I like his writing style, clear and straightforward. 3. W - A lillte bit more than a fashion magazine. I like their non studio photos. Thank you for your attention.

-- [KENNY CHIU](#), August 8, 1997

I recently read Capturing the Landscape With Your Camera, by Patricia Caulfield. Being a seroius amatuer photographer, this book really helped me with composition, technical aspects, lenses and cameras, light basics and exposures, and general field work. It provided me with easy to read, helpful information about my most favorite hobby. The author gives you the technical information first, and then sums it up right away with examples. Also, almost every picture tells you what settings were used and about the area where it was taken. This would be a great book for serious amatuers to read. Capturing the Landscape With Your Camera, by Patricia Caulfield. (c) 1987, AMPHOTO, New York, an imprint of Watson-Guption Publications ISBN - 0-8174-3658-8

-- [Mike Snyder](#), January 15, 1998

Photo Techniques (formerly darkroom something or other) is one helluva nice rather technically based magazine. It also has a few very good writers. unfortunately they don't have a web site so if you want to check them out good luck. ;-)

-- [Jammy Straub](#), February 19, 1998

How Do You Photograph People, by Leigh Wiener (published 1982).

Here is a book I enjoyed thoroughly, and I'd just like to pass on my recommendation. No idea whether it's still in print - I took it out of the library.

It is not a how-to book like most others.

Wiener's format consists of short responses to photography questions posed by famous people he has photographed -- a novel approach that can engage readers with little technical knowledge as well as masters of the art.

The pleasure here comes mainly from meeting this highly skilled photographer and hearing his anecdotes, which take

the reader to one session after another for Fortune, Time, Life, the Los Angeles Times, New York Times, etc.

Read what Frank Sinatra, Bing Crosby, Ed Asner, Eleanor Roosevelt, Andre Previn, Upton Sinclair, Mickey Rooney, J. Paul Getty and John F. Kennedy -- among many others -- have asked Wiener.

Find out why Groucho Marx accused Wiener of shooting pornography.

See some fabulous black and white photos.

Find out how eating oysters makes it possible for Wiener to handhold a camera at one-half second.

All in all, an entertaining read for the backyard hammock or under a beach umbrella.

-- [Michael Fuhrmann](#), June 29, 1998

Just grabbed a copy of The Complete Idiot's Guide To Photography by Roger Woodson. I would call it easily the best introductory book targeted at the hobbyist I have found. It runs the gamut from point and shoot to building and using an SLR system to doing one's own darkroom work. He covers the theories of exposure and lighting and does a reasonably good job of it. I do however have a number of ethical problems with this book:

1) He actually suggests that one spend time at a local camera shop trying out cameras and asking questions and then buy from one of the NY mail order houses. This is a real good way of losing the local camera shop and is also rude to a salesman who has spent time with you. For crying out loud, spend the extra \$50.00 the local store is charging and consider it the price of the time the clerk spent teaching you how to operate the equipment. (The advice the author gave was directed at the rank beginner who would need to have all an SLR's functions explained). If you don't buy a camera there, by a lens, but making a major purchase at a local shop develops a relationship.

2)The Author actually suggests baiting wildlife to one's back yard. All well and good if one is talking bird feeders, but he suggests salt licks for deer and sardines for racoons. If you are wondering just what is wrong with this, check out the Baiting Animals thread in Nature Q&A.

-- [Rich Furman](#), December 7, 1998

This outstanding site is incomplete without a mention of John Shaw's work. For serious beginners and intermediates, I especially recommend two of his works, "Closeups In Nature" and "Landscape Photography". These widely-available books (and Shaw's others as well) are superlative introductions to 35mm photography in the field.

In both, Shaw gives extensive and specific coverage to types of equipment to use under various conditions (cameras, lenses, filters, films, flashes, etc.) as well as invaluable help with setting up and shooting every imaginable situation in the field.

He never insults the reader's intelligence, yet manages to include basic information as well as readable, "meaty" introductions to some of photography's more arcane but essential concerns.

As an added bonus, he is an outstanding photographer himself, and his books are loaded with tons of beautiful illustrations, several for every technique he discusses.

I can't recommend his books highly enough for the earnest amateur.

- Dan Dresner (an earnest amateur...)

-- [Dan Dresner](#), April 22, 1999

Just wanted to bring attention to "shots" magazine. It isn't high tech at all (printed on newsprint, b&w only) and doesn't really have anything in the way of instruction or ads. But it is a place to look at photos from photographers from every walk of life and geographic location. "professional" photographers may stub their noses at it for being "amatureish", but that's fine with me. I've found that you can learn something from almost ANY photographer or photo anywhere. Every issue has some sort of theme to the submissions. i.e. cars, toy cameras, portfolios, first timers, old timers, etc. Shots can be found at most any independant news-stand around my area (Washington state). And the AfterImage Gallery has a page (<http://www.afterimagegallery.com/shots.htm>) on their website about Shots with subscription and contact information.

-- [Josh Root](#), April 27, 1999

For the financially challenged among us, and for those who delight in affordable copies of out of print books and remainders, may I humbly suggest the world's greatest used book store, Powell's in Portland, Oregon. They will never be any kind of threat to the Student Union Bookstores at M.I.T. or R.I.T., but they offer a magnificent range of titles (in dozens of areas additional to photography) and do so at an affordable cost. They are at the commonplace site of www.powells.com or at 1-800-878-7323. Respectfully submitted, Mr. A. LeRoy Oakville, Ct.

-- [Arlen LeRoy](#), June 29, 1999

I would like to add the following selection of references, that I have found very useful, to your recommended "Books about Photography":

- Lisl Dennis, 1989, "The Essential Image", AMPHOTO, ISBN 0-8174-3933-1 //
- Andreas Feininger, 1973, "Principles of Composition in Photography", Thames and Hudson, London, ISBN 0-500-27033-3 //
- Tom Grill & Mark Scanlon, 1983, "Photographic Composition. Guidelines for Total Image Control Through Effective Design", AMPHOTO, ISBN 0-8174-5419-5 //
- Freeman Patterson, 1979, "Photography & the Art of Seeing", Van Nostrand Reinhold, ISBN 0-442-29779-3 //
- Albert Moldway, 1981, "National Geographic Photographer's Field Guide" ISBN 0-87044-395-X //
- Bryan Petersen, 1989, "Learning to See Creatively", AMPHOTO, ISBN 0-8174-4177-8 //
- John Szarkowski, 1973, "Looking at Photographs. 100 Pictures from the Museum of Modern Art", MOMA, ISBN 0-87070-515-6

Julio Garcia Coll, August 29, 1999

-- [Julio Garcia Coll](#), August 29, 1999

Jammy Straub wrote,

>>>Photo Techniques (formerly darkroom something or other) is one helluva nice rather technically based magazine. It also has a few very good writers. unfortunately they don't have a web site so if you want to check them out good luck. ;-) <<<

Actually, we do have a website: www.phototechmag.com. Also, the British _Photo Technique_ has ceased publication; we are _PHOTO Techniques_ (published in a suburb of Chicago) and our former name was "Darkroom & Creative Camera Techniques" (no wonder we changed it). Our Contributing Editors include Phil Davis, John Sexton,

and David Vestal.

I can be reached at michaeljohnston@ameritech.net.

--Mike J. (Editor, _PHOTO Techniques_ magazine, Niles, IL)

-- [Mike Johnston](#), September 4, 1999

An excellent magazine that I came across on the newstand a few months ago is "Black & White"(the masthead reads "B&W"). The editors classify it as a magazine for collectors of photography (*every* photograph in the magazine is for sale), though they do recognize the value of their magazine to photographers. Each issue (thus far) contains a nice mix of old and new talents working in every format (so along as the results are in black & white). Each photographers'works are accompanied by some brief biographical information or a short interview that provides a nice bit of context.

Not a place to get information about equipment or other technical matters, but if you enjoy learning by looking, get a copy of this magazine.

-- [Ronald Buchanan](#), November 9, 1999

I subscribe to 2 other magazines primarily to learn photographic techniques. DoubleTake is a quarterly magazine with numerous photographic essays. It has both color and b&w photography. Not related to photography, Double also provides plenty of good fiction.

I was quite surprised to see that Life magazine was not listed. Dazzling photographs in every issue. A qualitative way of learning about photography, seeing what appeals to you.

-- [Gary Marshall](#), November 21, 1999

No-one's mentioned Amateur Photographer, which claims to be the oldest photo journal in the world - certainly they've been in continuous publication for well over a century. It's a UK magazine which is perhaps why it's not mentioned here. It's weekly, so there is a feeling that some weeks it can be a bit thin - not much news that week, the selected photos aren't terribly good, uninteresting reviews - but on other occasions it can be excellent. For example their Millenium issue was very good - a review of the photographic century, with lots of old photos (often from their own archives - one advantage of having over 100 years of history to draw on). And there was a fascinating comparative review of cameras (all from Kodak) from the beginning, middle and end of the century - a Box Brownie, a RTetina (I think) and a digital. Interestingly they praised the Retina, were complimentary about the Brownie, but were critical of the digital (and I can't remember which one it was).

Also I think they're pretty frank about equipment reviews.

-- [Tom Burke](#), January 13, 2000

The Photography Book by the Editors of Phaidon Press, 1997 Phaidon Press Limited. ISBN 0-7148-3634-6. 512 pages. You can order this book from amazon.com.

If you wanted to show off the history of photography, covering 150 years, how would you do it? If you were Philip Greenspun, you'd put together a Web site. Fortunately for the non-web world, Phaidon press decided to make a book, called "The Photography Book."

Their choice, to exhibit the gamut of photography, was to showcase the work of 500 different photographers, some famous, others not. Each photographer is represented by a single photo and very brief biographical information. To heighten interest, the editors have chosen to interpret each photo, perhaps in a new way. I found myself thinking as much about the interpretation as I did the photo itself.

Many of the photos are famous; we've seen them in the news or on the coffee table before. Others will be new to most readers, yet are equally worthy of collection here. Interestingly, some of the photographers are not known for that avocation; for example, Neil Armstrong ("Buzz Aldrin on the Moon") is better known as an American astronaut. Although American photographers are well-represented, they do not dominate. This is truly a world book.

One of the most helpful features of the book is an extensive cross-reference between the pages. (If you like Ansel Adams, you'll surely enjoy Willard Van Dyke.) Also helpful are a glossary of techniques and terms; a glossary of movements, groups, and genres; and a directory of museums and galleries.

I've really enjoyed this book. I can flip it open to any page and spend a few minutes absorbing a handsome photo, then reading some more about it. I don't always agree with the commentary (as I never agreed with my English literature teachers), but I find it thought-provoking nevertheless.

There are few faults. The book is even heavier than a wooden tripod, or seems that way. Color photography takes a back seat to black-and-white. And computer-manipulated photography is under-represented (though present.)

-- [John L. Shelton](#), July 25, 2000

Amateur Photo (UK): if you live in the US you can probably get it from a Barnes+Noble store. It's expensive (something like \$7.50). It's weekly. I don't like their reviews - they look to me more like "how to use this new toy" guides. Lens tests? Not very scientific, IMHO.

Petersen's Photographic (US): PATHETIC! I recently got one for their Minolta Maxxum 7 "review". I strongly doubt they actually got their hands on this camera. First of all the article is signed "by the Editors" and then the pictures of the camera are the ones you can find in the press kit. No serious testing, only opinions such as "we liked Maxxum 7 a lot". Bottom line: forget it.

Popular Photography (US): pretty extensive equipment tests. No negative comments though. All the products are brilliant, some of them even perfect. No comparison, no pros and cons, everything is good and the sky is blue. Only the lens tests are better IMHO and they should give you an idea about the real optical performances. My advice is to use them as a guidance only. BTW, if you want to get a second opinion on lenses go to www.photodo.com

Chasseur d'Images (France): I finally got my hands on one issue. Wow! It's so much better than any other photo magazine I've seen so far! More editorial content than their American equivalents. The lens tests are HONEST and they point out the pluses and the minuses. Example: the Tokina 19-35 lens was tested by both PopPhoto and Chasseur d'Images. According to PopPhoto this is an almost incredible bargain, with good performances and no flaws. The French article speaks about things like an edge being sharper than the other one and so on. None of these minuses shows up in PopPhoto's test.

Color Foto (Germany): Can someone please comment on this one?

-- [Petru Lauric](#), September 19, 2000

I cannot find much useful info in many U.S. magazines but at least they are cheap! I do like UK's Practical Photography, very nice and loaded with a lot of good information. It is rather pricey to get here in the states at \$7.50 an issue but I think it is well worth it. The mag seems a little biased toward Canon but it is not very noticeable and not nearly as bad as any U.S. mag. My local book chains regularly get it in every month and I always get one around the 20th of the month. A great source and fresh break from Pop Photo and Photographic! I highly recommend John Shaws book on Macro photography for anyone interested.

-- [Lee Lemmon](#), September 26, 2000

I live in the UK, and the only photo magazines I bother buying regularly is *Camera & Darkroom* (www.camera-and-

darkroom.co.uk). I tried a subscription to Photo Techniques for a year, but it wasn't consistently interesting enough for me. C&D is far more inspirational and useful IMHO - I keep and re-read every single issue.

-- [Simon Evans](#), November 13, 2000

French "PHOTO"(<http://www.photo.fr>) is a great magazine for fashion and glamour photography. They feature also great portfolios of well-known photographers. Good coverage of photographic events in major cities.

German "fotoMagazin"(<http://www.fotomagazin.de>) is another good magazine, loads of very technical tests and reviews. Good portfolios and the latest equipment news. I personally do not like the German "Color Foto".

"National Geographic Photography Field Guide"(ISBN: 0792274989) is a brilliant reference books, featuring latest equipment, films, techniques and insider stories and tips from the prestigious photographers of the magazine. (The inside cover is a grey card ! :))

-- [Eduard Fabian](#), November 24, 2000

I have John Shaw's "Landscape photography", which I like very much. Practical tips, beautiful photographs and, overall, a down-to-earth way of writing. ISBN 0-8174-3710-X

I also like Charlie Waite's "The making of landscape photographs". Perhaps not as good as Shaw's book, but still very much enjoyable. Charlie shows some excellent images and includes notes with each image (technical notes, hints on how to improve the picture etc.) ISBN 1-85585-149-0 for the paperback edition.

Thirdly, I can highly recommend "National Geographic, the photographs", edited by Leah Bendavid-Val. Featuring Steve McCurry's famous Afghan refugee image on the cover, this books contains some very exciting material. When I browsed it in a book store, I opened it on page 80, with a very striking image of a whale hunt; a few more pages and I decided to buy the book. ISBN 0-87044-986-9 or 0-87044-987-7 for the deluxe edition.

-- [Patrick Hudepohl](#), December 6, 2000

A UK magazine that no one has mentioned is "digital photo art"(sic). It has lots of articles about tricks and techniques with Photoshop and equipment reviews, though much of the stuff isn't readily available in the US. They publish lots of neat images, and describes how some were done. Their web page is

<http://www.amphot.co.uk/content/creatmono/cm2.htm>

-- [Joe Hearst](#), January 29, 2001

Photographic. Yup, the magazine bites... BUT! Once a year (I think) they have a special issue, called "The BIG BOOK of photograpy"(the capitalization is theirs). It is a fairly well written introduction to photography. The magazine is divided into chapters that teach basic photography skills. I picked up a copy for about 5 bucks last year and I am damned if I can't answer at least 80% of all questions asked in the unmoderated forum straight from the pages of this magazine (priced and printed) book. Petersen's does somethings right.

-- [Jeroen Schouten](#), April 15, 2001

Seeing the comments above regarding the high price of UK magazines in the US, I would suggest checking the subscription prices. From a UK perspective, I often find it cheaper to subscribe to US magazines and have them arrive airmail to my door than to buy them in the (few) outlets that stock them.

I have a copy of "Outdoor Photography" in front of me, and the subscription price is US\$70.95 for 12 issues - this

should compare well with store prices, and no worries about availability.

Incidentally, Outdoor Photography (not to be confused with Outdoor Photographer) is an excellent magazine for landscapers, but the locations are, as you might expect, heavily UK biased.

-- [Sean Buckley](#), June 12, 2001

Janet Malcolm's "Diana & Nikon" (Aperture, 1997) is an excellent collection of essays on photography. Susan Sontag's "On Photography" is pretty good too.

-- [Don Rivington](#), June 12, 2001

I've been buying occasional copies of "Photo Life", a Canadian publication, for about a year or so. It's a well laid out magazine with generally excellent reproduction of photos. They have started recently to include a digital section of a "magazine within the magazine". It's not very heavy into technical issues but does do some equipment reviews. It's the only source, other than John Shaw's column in the online Photo Safaris magazine, that I have read which mentions the new Nikon 80-400 VR's problems with slow autofocusing. Reports seem to be very well done.

An online publication I have recently discovered and have been following is the monthly Digital Journalist (www.digitaljournalist.org). As a former news photographer, I can fully appreciate the issues involved. I would expect the archive of photojournalism would appeal to a large segment of a population who grew up with the great news magazines of the past.

-- [Lee Shively](#), November 23, 2001

Read this page and you will get the mistaken impression that most great photographers are American, and at the most a couple of Western Europeans can hold a camera, with the rest of the world being photographically illiterate. Outside of Western classical music (which had a totally valid reason) photography has to be the most provincial of the arts.

In no particular order, check out books in the bookstore by

1. Koudelka 2. Graciela Iturbide 3. Sebastiao Salgado 4. Abbas 5. Raghu Rai and/or Raghubir Singh. etc. etc.

A considerable body of work by African Photographers also exists, though mostly on the web. There is a standard (and rather tedious now) view in American circles that photography arose and was mostly advanced by certain U.S. (and a few European) photographers, such as Steiglitz, Steichen, Ansel Adams, Cartier-Bresson and the like.

IMHO, the truth is far more complex. Photography is an unusually accessible technology and art form, and its practitioners have ranged across the globe over the last 150 years (look at the work of Raja Deen Dayal, in 1870s India) and the commonplace historical narrative of artistic development (Steiglitz et. al) is actually quite arbitrary and seeks merely to create easily understandable (and self-centered) coherence out of a huge global swirl of artistic activity.

Walk into a store and pick those books out of the shelf at random. There are and have been many equally great and equally important photographers in this world.

-- [Mani Sitaraman](#), November 29, 2001

Mani Sitaraman's comment is very valid. One of Sebastiao Salgado's pictures haunted me after seeing it in the November 2001 issue of Popular Photography. The image showed three lines of people waiting to receive clean water. Each night I picked up the magazine and would study the expression on each person's face. The people weren't smiling, smirking, or even casual toward Salgado's lens. Instead, each of them seemingly revealed themselves without

guile, showing varied expressions of weariness, concern, and even laughter. This can only happen when the photographer has earned the trust of the people he photographs. Despite what some people think, Salgado is not just capturing horrific human conditions. For me, Salgado shatters the barriers that stop us from actually seeing one another. Instead, of poor, backwards, miserable people we are left seeing human beings, like you and me, often living in unbearable conditions. I recently bought Salgado's Migrations and Workers books. The books are excellent from the stunning photography to the excellent print making and reproduction used in its making. I have enjoyed these books enormously and in sharing them with friends.

-- [Gary Przyborski](#), December 18, 2001

Photography is A Language

"Photography is A Language" is the first sentence in the forward of the book "Camera and Lens - the creative approach" (Ansel Adams, Morgan & Morgan, 1970) and the title of a book by John R. Whiting (Ziff-Davis, 1946). These two books are in my holiday reading list. Although I am using digital camera, I found these two books are very inspiring, especially the second book which was published just after WWII. It is a book written for the population of photography "expanding like a slow-motion explosion" in the late 40s. But I think it is also a perfect book for our generation. In fact, there is not too much difference between the amateurs in our generation and in their generation (the same for professionals).

Here are the topics discussed in that book.

I. Photography Is a Language

The camera as a tool of examination and transmission of facts

II. Camera's Century

III. Photographer at Work

Ways of making pictures forceful: the closeup and long shot, depth, lighting, picture design, angles, motion, variety, vision

IV. The Picture Story

Subjects for picture stories, how to organize a photo-essay, working methods on the job, and continuity control

V. Using Photographs

Idea researching, the picture editor's tools, layouts, caption writing, picture copy for reproduction

VI. Picture Careers

Training for editorial and photographic jobs, new fields for work, free lancing, building a picture background

VII. The Beginning Cameraman

What every young man needs to know about photography for fun, where to start, how much to spend

VIII. Twenty Interviews

Portraits, science, color, fashion, reportage, documentary camera work --- by top-flight specialists.

You see, there is much more than DOF and f-stops.

Here is my question to those amateurs and professionals who **have read** that book. What do you think about that book and how does it affect your photographs?

If you haven't read that book, don't say anything about that book but tell me what you would write about these topics in the internet age.

-- [S. LIU \(NYC\)](#), December 23, 2001

Manual of Photography, Photographic and digital imaging, 9thedition

Ralph E Jacobson, Sidney F Ray, Geoffrey G Attridge, Norman R Axford

ISBN: 0240515749, [Publisher, Amazon](#).

This book is simply wonderful. It is a detailed book on the physical, optical, chemical and otherwise scientific theory behind photography (the authors all have a bevy of these wonderfully quaint British learned society titles, in addition to a hefty list of PhDs and graduate degrees). Also distinctive is that the first edition was published in 1890! I've been looking for a long time for such a book, that explains the theory without patronizing a scientifically literate reader. If you are afraid of equations, this is not the book for you.

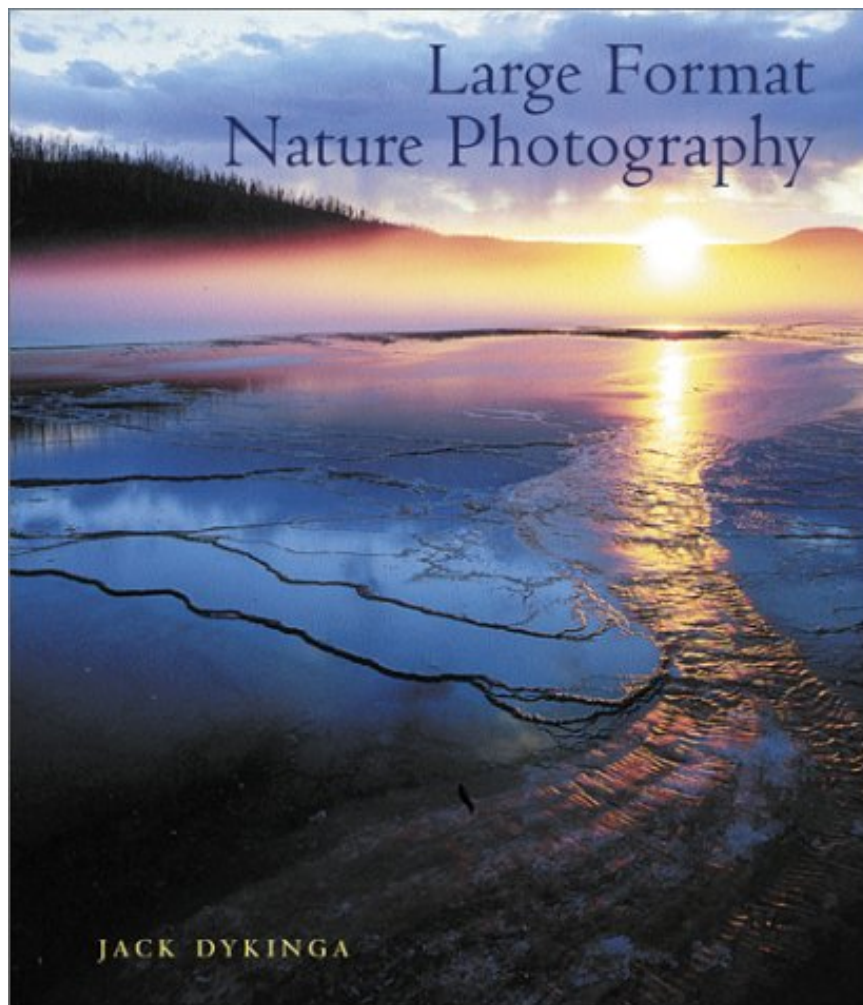
-- [Fazal Majid](#), March 26, 2002

Thanks Eduard, I've been wondering if anyone was gonna mention that, but I can second that the *National Geographic Photography Field Guide* is an excellent all rounder book with some really nice inspirational photos and tips.

Natural Light Photography is also a really good inspirational book. Not everyone's cup of tea as almost all text is written in caption style to photos but I certainly found Jim Zuckerman's tips quite useful.

And yes I'd love to subscribe to *Practical Photography* but at over \$150 AUD a year I can't really justify it right now :-
)

-- [Nathanael Boehm](#), April 11, 2002



I wanted to add my recommendation for Jack Dykinga's book, "Large Format Nature Photography".

-- [Doug Dolde](#), May 10, 2002

I'd like to differ regarding Philip's comments regarding Popular Photography magazine. He states that its 'probably worth'\$10/year. On principle, I refuse to spend 1 penny on a magazine that contains ads from many unscrupulous vendors, most of them endorsed by the magazine's 'consumer protection'program. Instead, when I happen to be at my local public library, I spend a few minutes reviewing back issues there. When we keep subsidizing the magazine, there is no reason for them to change.

-- [Reuven K](#), June 1, 2002

[Add a comment](#)

Related Links

- [101 PROFESSIONAL TIPS TO MAKE YOUR PHOTOS SING](#)- Old pro photographer and short-course teacher writes book of best photo tips he found in 35 years as a magazine and stock photographer. The book is available from amazon.com or direct from the publisher and costs less than shooting two rolls of film. Complete details about book and author, plus a gallery of photos, await your visit to www.robuckpress.com (contributed by [Billy E. Barnes](#))
- [The photographic lens](#)- About 300 pages; each pair of facing pages addresses, with a fair amount of mathematical detail, one specific subject. Some examples:

Test Charts: Use

Zoom Lens Design

Lens Flare -- The Solutions

Lots of diagrams. This book would probably answer the majority of questions about lenses that appear on photo.net.

The photographic lens

Sidney F. Ray.

Oxford [England] ; Boston : Focal Press, 1992.

355 p. : ill. (some col.) ; 22 cm.

Includes bibliographical references (p. 336-338) and index.

Note that I'm basing this review on an older (1979) edition, and I'm assuming that the current edition, which I haven't seen, is substantially the same. (contributed by [Eric Hanchrow](#))

- [Magnum - An article](#)- A hugely entertaining account of the legendary agency. (contributed by [Mani Sitaraman](#))
- <http://www.explorephotography.com>- Explore Photography - A Resource for Aspiring Photographers. This website is primarily intended for casual or amateur photographers that would like to improve their skills to the point where they are capable of taking exceptional photographs. It does an effective job of describing the most important technical photography skills needed and what to consider when purchasing a camera or lens. It's also organized in an easy to read format. It may not be of great benefit to a professional photographer, but for anyone who is still learning this is a great place to get started. (contributed by [Marji Olson](#))
- [More book reviews](#)- I've put up a few short book reviews on my photo.net webpage. (contributed by [Patrick Dumais](#))
- [1000 on 42nd Street](#)- 1000 quickly-taken portraits of people on 42nd Street, NY, on two days in 1998. Inspirational. (contributed by [Eric Hanchrow](#))
- [f o t o b i b l i o g r a f i c a](#)- a resource for collectors of fine photography monographs (contributed by [Claudio Vanin](#))
- [Weather Report](#)- This is a gem of book. 27 high quality duotone prints which are, predominantly, landscapes taken in Scotland , Ireland , Wales and England. The photographer is Denis Balibouse, a Reuters photographer based in Switzerland. The book is limited to only one run of 500 copies (From Aug. 2001) and can only be ordered from the website shown here. (You can use credit cards online via PayPal or Kagi.) I have purchased a signed copy (for only \$22.50 plus p&p). The style is very evocative and similar in feel to Bill Brandt, Fay Godwin and Michael Kenna. The (little) text is in French but should be of no concern as the pictures are sublime. (contributed by [Trevor Hare](#))
- [she walks in beauty](#)- A site dedicated entirely to the beauty of women and nature. Hundreds of nudes by a photographer whose work has been exhibited all over the world as well as purchasing info for the prints and a new book. (contributed by [Dejan Dizdar](#))
- [The Official Photo.net member book recommendations.](#)-

Also accessible via

My Workspace : Community : Member Recommendations : Books (contributed by [Conrad Drake](#))

- [Photographic Lighting and Posing - PORTFOLIO](#)- A fantastic book with over 100 images from the personal PORTFOLIO of Art Ketchum. Tips on improving your photography. Shutterbug gave a fantastic review and states the images are magnificent with all the details on how each was executed. (contributed by [Art Ketchum](#))

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Film Recommendations

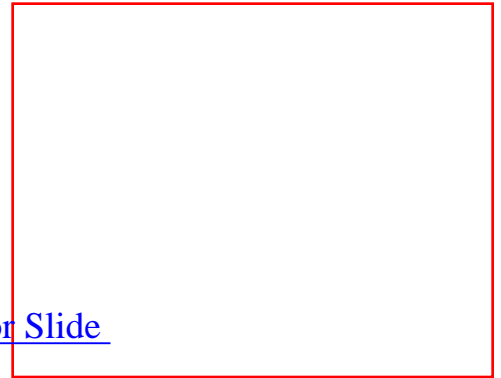
By [Philip Greenspun](#)

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[Reader's Comments](#)

Color Slide Film

Color slides make you feel like a hero. Slides viewed on a light table have much more tonal range than a print viewed with reflected light. Also, your images won't be ruined by the slings and arrows of outrageous automated printing machines.

Color slides will sometimes result in heartbreak because they offer so little exposure latitude. If you are a little over, you've lost detail in those highlights that a color negative film would have preserved.



Slides are good if you want to sell to traditional magazines and stock agents. Oh, and if you want to sound like a pro, refer to slide film as "E6" (after the Kodak process that is used to develop all slide film today except Kodachrome (K14) and infrared Ektachrome (E4)) or "chromes".



Slide films are sold in two broad categories: "professional" and "consumer". Consumer film is produced so that it will look its best after a few months of aging at room temperature. In theory, professional film is produced so that it gets shipped from the factory when its color balance is perfect. It is designed to be exposed immediately or refrigerated. In practice, the consumer and professional versions of the same film usually produce indistinguishable pictorial results. Fuji Velvia is sold as professional film in the United States where amateurs have abandoned slides. People watch the shop pull the film reverently out of the fridge and read the "refrigerate me" on the box and wring their hands if they leave the film in a spare camera body for a few months. In Europe, where amateurs still give slide shows, the same film is sold

as a consumer film with no refrigeration in the store and none indicated for longer term keeping.

Why do professionals uncomplainingly pay a few dollars more per roll? Partly for guaranteed consistency. They'll buy 100 rolls from the same emulsion batch, test a couple to see exactly what in-camera filtration will result in neutral gray, then photograph an entire clothing catalog with that batch. Sometimes Kodak and Fuji don't bother getting a professional batch exactly neutral because they expect professionals to test and use color correction gels. In those cases, you actually get better results with consumer film. Another reason professionals buy professional film is that they want an old emulsion like Kodak EPP that is technologically obsolete. Kodak doesn't make it anymore for consumers because their new T-grain slide films are dramatically better. But if you and your catalog printer know exactly how to maintain color fidelity from the clothing to the printed page with EPP then you aren't going to want to switch film just to get finer grain (especially since you are probably using 120 or 4x5 size and not enlarging much).





If you are only exposing one roll at a time and don't have any special expertise with a particular emulsion, there are only two real benefits to professional slide film. First, pro film comes in more flavors than consumer film. Kodak in particular seems to release its professional slide films in "neutral" and "warm color balance" versions. The same film packaged for consumers comes in only one color balance. The second real benefit to professional film is only for those who cling to old-style retouching methods (i.e., not PhotoShop). Sometimes the professional version of an emulsion has a coating on the base side to facilitate traditional retouching.

Should you happen to be using professional film, don't obsess over keeping it refrigerated. If you end up leaving it at room temperature for a few months, then what you end up with is consumer film. Which is more or less the same thing.

Note: If you do refrigerate your film, make sure that you *do* obsess over letting it come up to room temperature in its sealed container before using it. If you pull film out of the fridge and start using it immediately on the beach in Florida, you'll find that water condenses in little droplets on the film, leaving unsightly blotches on your processed images. From the 55-degree fridge to a 70-degree room, Kodak recommends about 1 hour for 35mm film, 30 minutes for 120, and 2 hours for a 50-sheet box of 4x5 film. Double these times if you've been keeping your film in the freezer. I'd also double them if you intend to use film outdoors on a hot day. I've been a bit sloppy with these times myself and never gotten burned with Kodak or Fuji film, but had some Agfapan 25 experiences that were horribly painful.



Fuji Velvia

ISO 50. Incredible color. Saturated and yet still capable of subtlety. My favorite for scenery. Can do violence to flesh tones, although allegedly Fuji is working on this problem. I used this film almost exclusively in [Travels with Samantha](#).

[Reciprocity correction](#) is minimal.

Example: Parco dei Mostri (Park of Monsters) below the town of Bomarzo, Italy (1.5 hours north of Rome). This was the park of the 16th century Villa Orsini and is filled with grotesque sculptures. Rollei 6008, Zeiss 50mm lens, tripod,

120 size film.

Fuji Astia and Provia F; Kodak E100S and 100SW

ISO 100. All three are good all-around slide films with extremely fine grain and saturated yet fairly accurate color. The Kodak E100SW version is allegedly warmer than the E100S. If you want to save money and need a huge pile of film, Fuji Sensia II and Kodak Elite 100 are the consumer versions of these films.



Example (right): Fuji Astia. two MIT professors at [our 1998 graduation](#), Canon EOS-5, 17-35/2.8L.

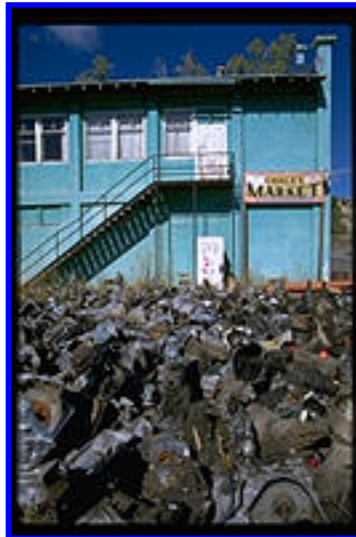
Below: a few images from [The Game](#), taken with Fuji Astia in my studio.



Below: some Kodak E100S fed through my Canon system near the [Oregon/California border](#).



Lava Beds National
Park. Tulelake,
California



Below: Fuji Provia F (fine-grain) in Florida:

Poolside, Sanibel Harbour Resort
(one of the world's worst), Fort
Meyers, Florida





ISO 200

Kodak has great marketing for its E200 slide film. I used a lot of it at [MIT's 1998 graduation ceremony](#) and the results were pretty bad compared to those obtained with Fuji Astia shot on the same day. Fuji has its MS 100/1000 "multispeed" E6 film but I haven't tried it.



ISO 400

I've never found a decent ISO 400 slide film. The grain is intolerably intrusive.

A lot of pros use Kodachrome 200 pushed. I haven't tried Fuji Provia 400 but I don't think it is a lot better than the T-grain Kodak Elite 400, which I



tried in 1993 and found wanting. I recommend using ISO 400 negative film.

Example: from [Chapter XII of Travels with Samantha](#).

Tungsten

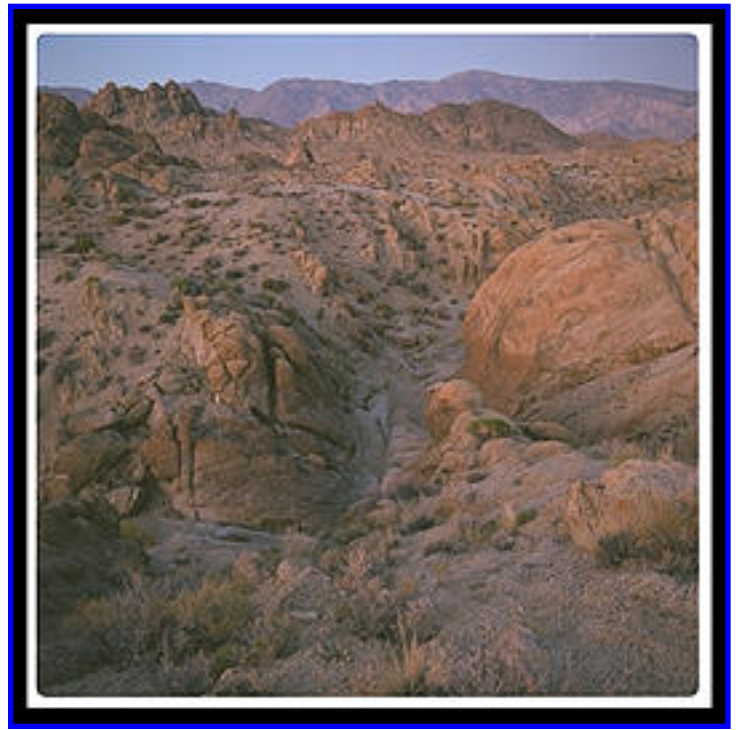
Scotch 640 is remarkably awful. Avoid it; Kodak's 320T pushed 1 stop looks far better. Kodak's 160 and 320T films are pretty darn good.

Color Negative Film

Color negative film is very tolerant of exposure errors. You can be off by 2 or 3 f-stops and still get a print that is barely distinguishable from one from a correctly exposed negative. This frees your mind to concentrate on composition, focus, timing, etc.

Color negative film never gets very dark and therefore is good for CCD scanners, e.g., all desktop machines and also the scanners for PhotoCD workstations.

Pro lingo for negative or "print" film is "C41" (official Kodak name for the development process). If you have always wondered "Why does negative film have an orange color," then [this is the link for you](#).



Because a negative is never the final product and there is so much slop in the printing process, there isn't as much demand for "professional" print film as there is for "professional" slide film. Professional negative film tends to be produced for wedding photographers who want low contrast and photojournalists who want to push-process their C41.



Kodak Gold 100

Every 1 hour lab in the world knows how to print this film accurately, which is an important selling feature. Excellent sharpness and color. Some of my friends swear that Fuji Super G 100 is better, especially for skin tone, and they're probably right but I don't use a lot of ISO 100 print film.

Example: [Rollei 6008](#), Zeiss 120mm macro lens, extension tube, tripod. Hilo, Hawaii 1990. (120 size film.)

Fuji NPS/Kodak Portra 160NC

ISO 160 low contrast films. These are designed for weddings where the groom wears black and the bride wears white and you want some detail in both fabrics. Also nice for smoothing out skin blemishes. One of the great things about these films is that labs in every corner of the world know how to make beautiful portrait prints from them. Fuji NPS is probably preferred if you expect mixed or fluorescent lighting.



ISO 400

For most people, most of the time, this is the correct speed color negative film to use. Whether you go Kodak or Fuji, you'll be amazed at how fine grain and color saturated the images are. Enlargements to 11x14 from 35mm look pretty good.

My personal favorites in this category:

- Kodak Royal Gold 400, bright but not lurid colors
- Fuji NPH, lower contrast, best exposed at ISO 320
- Kodak Portra 400NC, another good lower contrast portrait/wedding film

Example: Fuji Super G+ ISO 400. Canon EOS-5, 70-200/2.8 lens at f/4 and 1/125, fill flash set to -1 stop. Manhattan 1995.

Fuji NPH, exposed about 1/2 stop over

Here's some ISO 400 wedding film, used at a wedding!

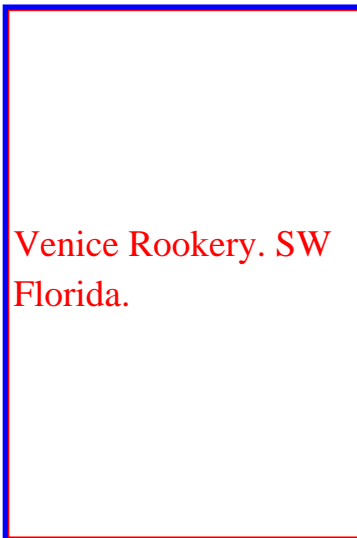


I like NPH for general outdoor photography as well. For example, here are some pictures taken on a

bright Florida day. Notice how the colors aren't pushed to the extremes as with most consumer film:



Boca Grande. Gasparilla Island.
SW Florida



Venice Rookery. SW
Florida.

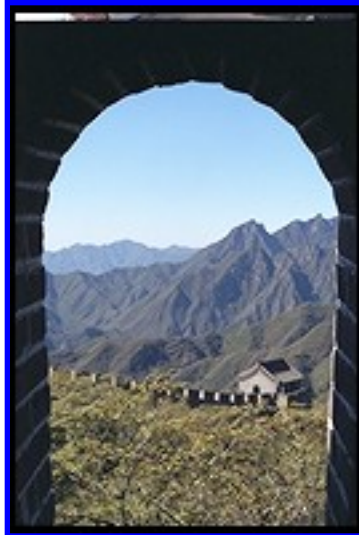


Kodak Portra 400NC

A few snapshots from Japan and China...



Edo stroll garden at
New Otani Hotel.
Tokyo



Fuji NHGII 800

Photojournalists are heavy users of ISO 800 color negative film. Grain is acceptable if you don't enlarge beyond 5x7. Contrast and color saturation are surprisingly good. Kodak competes in this market with a variety of confusingly named products, e.g., Kodak Gold MAX. But Fuji seems to have the quality edge and that's what everyone uses.

Films to avoid

- Agfa Ultra 50. This film has very high color saturation, but it seems to only have one shade of each color. I.e., a slightly red leaf is rendered in the film's only red, which is bright. Grain is also

surprisingly coarse (worse than most ISO 100 films?), though I have enlarged 6x6 cm Ultra 50 negs to 20x24".

- Anything 200 speed. If you're going to be shooting bad pictures outdoors in bright sunlight, go for the 100 and then you can make huge enlargements. If you're going to be shooting with available light and/or fill flash and/or in deep shade, you'll need the extra stop from ISO 400 (and maybe more). 200 really isn't noticeably better quality than 400 and it isn't noticeably faster than 100.
- Any color negative film not made by Kodak or Fuji. It takes big bucks and a lot of R&D to compete in this market. Other companies are generally catching up to where Fuji and Kodak were three years ago.
- Anything derived from movie stock, e.g., Seattle Film Works. Movie film is lower quality than photographic film and it is also non-archival. Your memories will fade very quickly if you don't keep your processed negatives in the freezer (which is what movie studios do). [Note: normal color neg film will say "Process C41" on the canister. If it says "Process ***something else****" then you've got movie film. This is why the junk that Seattle Filmworks respools cannot be processed at your local minilab.]

Black and White

I'm not sure why Black and White film makes sense any more. When I want black and white, I can just choose "desaturate" in PhotoShop and it is done. Still, if you want to work with traditional processes (i.e., you don't want to scan) and you want a negative that will last for hundreds of years, black & white is the way to go. **Afgapan 25** Great for scenery. You're going to need a tripod anyway to take those Ansel Adams-esque shots, so you might as well get the finest grain you can.

Ilford Pan F

ISO 50. Very fine-grain. Good for studio use.



Kodak TMAX-400 CN

My first few rolls of this new C41-process film have made me think that it is time to stop using TMAX-100. Ilford started what they thought would be a revolution with XP1 and XP2, black and white films with extremely wide latitude that could be run through any One-Hour lab in the world.

Unfortunately, a lot of people (including me) couldn't figure out how to get the pictures that we wanted. In terms of contrast and density, TMAX-400 CN seems to behave more like a standard B&W film except that it has very fine grain (finer even than TMAX-100) and can be processed anywhere that color negative film can be.

Caveat: TMAX-400 CN probably won't have the archival stability of "real B&W film". You'll have to take more care in storing the negs (see [the Wilhelm book](#) for how standard color negs fare) and should probably make high-res scans of priceless images.



If you click on this thumbnail (or the one at to the upper right), you'll be offered the option of viewing a FlashPix. This was made from a 4000x6000 pixel ProPhotoCD scan and you ought to be able to get a good idea of the underlying film's properties.

More samples of TMAX 400 CN: in my [Cape Cod photo essay](#). Very similar competitor: Ilford XP-2 Plus.

Kodak Tri-X

Introduced in 1954. Classic look. Nice contrast. Grainy but consistently so and people like the look of Tri-X grain. Confusingly, Kodak actually markets two very different emulsions under the "Tri-X" name. The first is "Tri-X Pan": ISO 400, available in 35mm and 120, much mid-tone separation and not much highlight separation. The second is "Tri-X Pan Professional": ISO 320, available in 120 and 4x5 sheets, not much mid-tone separation and enhanced highlight separation (allegedly better for studio lighting). When people talk about "Tri-X", they generally mean the ISO 400 Tri-X Pan that was made famous by photojournalists using 35mm cameras.



Ilford Delta 3200

Remarkably fine-grained film for its speed (a true ISO 1200, designed for push processing). Here is an image exposed at ISO 1200 with [a Fuji 617 camera](#):



Kodak TMAX 3200

Really only an ISO 800-1000 film that is designed for push processing to 3200 or 6400, this is great for experimenting with grain. I like to have it developed by Kodalux (with an \$8 DP-36 mailer).

Example at left: [George](#) in front of Charles River. Red (25) filter. Nikon 8008, 20/2.8 AF lens, f/8 and be there.

Infrared

You basically have a choice of two emulsions here: (1) [Kodak High Speed Infrared](#); (2) Konica Infrared 750. Konica is slower, has a narrower spectral response and results in higher contrast, finer grained images. I don't really have enough experience with this art form to say too much. I recommend reading Laurie White's excellent [Infrared Photography Handbook](#).

Special-Purpose Film

All of the preceding films are "pictorial" or "general-purpose" designs. They have the appropriate amount of contrast to pleasingly render the average scene. Fuji and Kodak (especially) make a long list of special-purpose films. These are good for

- slide duplication (low speed; low contrast)
- interneg production (negs from slides)
- making slides from negs
- making color separation
- making high contrast line drawings (for business or creative reasons)

Some of these special purpose films are described in [the Kodak Professional Photo Guide](#). Another good resource is the book [Copying and Duplicating](#). The biggest and most competent [photo retailers](#) will stock special-purpose films in 4x5 sheets, in 100-foot rolls, and sometimes in 36-exposure canisters for 35mm cameras.

Where to Buy

Try to buy film from a professional camera shop. These shops have fresh inventory and keep most of their stock in large refrigerators. If you want to save money, don't try doing so by bulk loading your own rolls. It is too difficult to avoid getting dust inside the canisters. However, buying gray market film from one of the large New York retailers, e.g., [Adorama](#), is a reasonable way to economize.

More

Remember that you're going to need your [film processed](#).

[[top](#)]

Reader's Comments

I tried Agfa color negative film (400) (after reading about Afga in the "magazines") for going away programs for someone at my church. Well, I'll never use anything other than Kodak or Fuji again. The color was bad, the contrast was bad, and the grain was even worse. I have a Canon 10s. I used a Canon 50mm lens, with a Canon Flash. The pictures looked like I took them with one of the small instamatics from the 70s. Live and learn. Unfortunately, I can't redo five rolls of pictures for this one time event.

-- [Kim Johnson](#), December 16, 1996

I've been looking at a lot of slides that were shot back in the 60's and 70's lately. I did not use Fuji at that time. Fuji was relatively new to the US market, and I had a lot of family working at Kodak. I used Kodachrome, Ektachrome (processed normally and pushed), and Agfachrome. Oddly, the Kodak relatives didn't seem to mind Agfa nearly as much as they did Fuji. I later worked for Kodak myself.

Agfachrome was available for about \$7 for two 36 exposure rolls, processing included, so it was attractive to a college student on a budget.

The good news is that the Kodak products have held up extremely well over time. They haven't been projected very often, but colors have remained pretty close to my memory, and all of the color casts remain "pleasing." The bad news is that many of the Agfachrome slides are noticeably less "real" looking than I remember them. The colors seem to have shifted toward green or blue.

I would be very careful about using brands other than Kodak or Fuji for any critical projects.

-- [Glen Johnson](#), January 5, 1997

In regards to black and white film, your mention that no one likes Tmax 400 is right on. However, if you reduce development times for Tmax 400 in the 15-20 percent range, the tones will appear better. But it doesn't equal Tri-X in the comparison. I like the tones with Tri-X and the grain is not an issue with my style of black and white photography. Moreover, even using black and white for scanner use, Tri-X seems to have a nicer tone curve even in electronic situations. It seems easier to work with an image in photoshop that was shot on Tri-X. My favorite developers for this emulsion is D-76 and Tmax developer.

-- [anonymous anonymous](#), January 18, 1997

You've not mentioned Fuji Reala among the negative films, which is a pity, because it is really, really nice. It has many different shades of each color and also very high saturation. It's much better than Super G+ (OK, also a bit pricey), however it should be noted that in dull weather the difference is not that large. Reala is ideal for portraiture and I use it for landscapes too (and for also everything else, except where very high resolution and fine grain are required). The new Reala incorporates the technology Fuji uses in APS films.

-- [Peter Farkas](#), January 20, 1997

It seems like we have a different Film/Photography world up here in Toronto. B&W is still very popular. Colour Materials are far from producing real B&W Fine Prints. Anyway no one mentioned Ilford. I use their FP4 a lot and find it pretty well stacks up to the T-max 100 which I also like when I'm in the mood. Paper and film for B&W images are very much appreciated around these parts and I expect that will be so for along time to come. When I have to shoot colour prints I find GPX an excellent product.

-- [Stephen Lehmann](#), January 20, 1997

I'm one of those folks that didn't like TMax 400 (TMY). Well, I started using the new Kodak developer Xtol, and TMax 100 looked so nice in Xtol that I decided to test some

TMY. Guess what? TMY in Xtol looks positively great IMHO. I started using it, even in 35mm. I like it - the grain is very fine and sharp, the tonality is, to my eye, excellent. If you've given up on TMY (like I had), you really ought to try some in Xtol. A scan can't really do the film justice, but send me a note and I'll send you a scan or two from a test I shot on TMY 135.

-- [Dana H. Myers](#), January 31, 1997

I've been using Fuji Sensia 100 for a while now, and I've been very pleased with the saturated colors it produces.

Some samples can be found at <http://www.kjssl.com/~javier/photo/photo-exhibits.html>

-- [Javier Henderson](#), February 18, 1997

Concerning TMY, I've had excellent results when developed in PMK Pyro and printed on variable contrast papers. The steepness of the curve in the highlights is controlled very nicely by the built-in low contrast filtration of the pyro stain. Finally, the speed of TMY (close to 400 ISO in PMK) makes large format photography of vegetation in wind feasible.

Charles Schuetze Anchorage, Alaska

-- [Charles Schuetze](#), February 28, 1997

I bought 5 rolls of Sensia 400 in 9/96, shot one of them in open sun, and re-fridgerated the other four. The roll I shot in 9/96 turned out acceptably well. Grain was acceptable and colors were good. I didn't get around to using the other four rolls until recently. Two were shot with an EOS 1N and EOS EF lenses. Two rolls were shot with a Nikon 35 Ti. All four rolls were processed by Fuji in Phoenix. They were mailed on different days (several days apart), but two were returned together twice, leading me to wonder if Fuji batch processes specific emulsions instead of running all E-6 films together. I've noticed that my Velvia often comes back bunched together too.

All four rolls of Sensia 400 turned out horrid. I used these rolls in overcast, and late in the day when light was low. Grain was huge. Colors were weak and washed out. On each roll there were a few frames shot in open sun, and these frames were all acceptable, although not as good as what you can get with Kodak and Fuji ISO 100 emulsions.

I won't be doing more experiments with this film because it isn't worth it. In the low light situations where it ought to have represented a reasonable choice, it really stunk.

-- [Glen Johnson](#), April 8, 1997

I just wanted to second the recommendation someone else made above for Fuji Reala. I like Reala a lot, for its fine grain, excellent sharpness, and good color rendition and (medium) contrast. I've gotten good results with *partial frame* enlargements to 11x14! I haven't tried pushing it beyond that though.

A couple notes about exposure and printing, though: 1. You don't want to underexpose it. Contrast and color are good, but grain is much more evident when underexposed. For this reason I usually override the DX coding and set it to ISO 80. A little bit of overexposure is much, much better than a little bit of underexposure.

2. The color balance is tricky to get right in the printing stage unless the lab has a balance neg for Reala. I had almost given up on using Reala when I finally found a lab that does it right. The results are great now. So if you want to give it a try, don't assume that poor results are due to the film; it's probably the lab's fault.

-- [Russ Arcuri](#), April 25, 1997

I just finished a week of cleaning up and reorganizing about 1000 of my father's Kodachrome and Ektachrome slides. These were all taken between the end of WWII and the early '60's. They have been stored in an attic environment for the last 30 years. They were filthy, but they cleaned up well with a static master brush.

I was impressed with several things. First, even in these poor storage conditions, once these slides were cleaned up, colors were very natural. Second, about half of the slides were in the 828 format (slightly larger than 35mm, but still mounted in 2"x2" mounts), and the other half were 35mm. All were taken with a single focal length lens. I didn't get the impression that the single focal length was terribly limiting. Third, these slides were generally sharp. The 828 camera had a 48mm f/4.5 "luminized" 4 element lens. It was a very capable. Lack of sharpness nearly always appeared to be due to camera shake problems that come with an f/4.5 lens and ASA 25 film. Fourth, I was impressed with the lighting abilities that they used for indoor work. I only saw a few shots with either red eye or harsh shadows behind the main subject. The vast majority of the shots showed no distracting red eye and no distracting shadow. Fifth, Kodak apparently expected consumers to be smarter in those days. For \$.25, my Dad bought a Snap Shot Kodaguide that provided the basis for exposing all of the Kodak films of the day without a meter. It was quite straight forward, and anyone who owned one of these would pretty quickly learn how to judge a scene. Finally, based on looking at these slides the past week, I am impressed by how well you can do if you actually think about what you are doing, instead of relying on the modern technology to save you.

Last comment. He also had a bunch of 126 slides that were taken with a Minolta camera in the 70's. I know for a fact that that camera had a meter in it, and that there was no way to provide photographer selected compensation. These slides were uniformly well exposed. If Minolta knew how to do this in the 70's, why are so many modern P&S cameras so incapable of dealing with slide film?

-- [Glen Johnson](#), June 5, 1997

Kodak's new black and white film TMax T400CN is a remarkable product. It is a C-41 emulsion that produces a monochrome image, like Ilford XP2. Unlike XP2, T400CN produces images with a nearly straight exposure curve, similar to other TMax films. XP2 is more like a traditional B&W film that has a longer toe and prominent shoulder. Kodak claims that T400CN offers grain and sharpness comparable to other EI 100 B&W films, and my experience so far is that this claim is valid. While I'm one of the people that likes TMY (when processed in Xtol), T400CN has become my EI 400 film of choice. The downside is that T400CN is a C-41 emulsion and may not have the permanence of silver films.

-- [Dana H. Myers](#), July 26, 1997

Some of the film comments surprise me. And what happened to Ilford?

Ultra 50: I find this a wonderful film. Either the formulation has been changed or there is a complete difference in processing. I get very fine grain and a broad spectrum of saturated colors. I use it quite a bit, always in 120.

Scotchchrome 640T: Well you are right that this is a terrible film. On the other hand, that is no reason not to use it. I push it two stops and cross process, I get incredibly grainy stuff that, properly used, is very effective. I used to shoot a lot of Scotchchrome 1000, but it was discontinued. This is one of the only high-grain color films left.

Ilford XP2: I really like the tonal range of this film, and it is what I usually shoot in black & white. It has a very smooth, almost creamy, feel to it. I haven't tried the new Kodak equivalent, but since I don't care much for the newer Kodak b&w formulations (I still use Tri-X on occasion), I haven't been real motivated.

-- [Jeff Spirer](#), July 28, 1997

Previously my film of choice was EPP100 4x5 but Kodak informed me that E100S doesn't suffer from the reciprocity effect like EPP100 does. They were right. It also renders the color of river water here in the Italian Dolomites more accurately.

-- [Joseph Alsko](#), August 16, 1997

I would just like to add to your section some of my own observations about film. For one I have found through experience that your recommendations for film are spot on r/e Royal Gold 25, Gold 100 etc. One film I would recommend to all B&W shooters is technical pan from Kodak, its amazingly sharp, although it takes care in the processing. If you really want to see just how sharp your lens is use it.

-- [anonymous anonymous](#), August 17, 1997

Ultra 50 - tried a roll on store advice, unfortunately shot end of vacation portraits of the entire family with it and guess what? We all look like pumpkin heads or tomato heads in a frame of ridiculous blown out colors. Live and learn.

-- [G Deen](#), September 18, 1997

Would highly recommend that you try Kodak PMC 400. It is, by far, the best 400 ISO color negative film I have used. I have been able to make virtually grainless enlargements from 110 size areas of 120 format negatives. Shadow detail is exceptional while still maintaining highlights. Contrast and color rendition are great. Low in contrast and color that is very, very slightly warm. If you're tired of the screaming Fuji (not the rock group) color greens & blues, try it.

-- [PhotoDr --](#), October 29, 1997

For B&W I like using Ilford Delta films. They offer fine grain comparable to Kodak Tmax films and are not as contrasty as Tmax. For color I like Fuji Astia. Skin tones are right on the money, the film pushes up to 2 stops without too much fuss. Kodak E100S is nice too. For nature colors nothing beats Fuji Velvia. I often hear people recommending "over" or "under" exposing their film. That is an esthetic judgement, and only you can decide if you like the final results. Run a test on each batch of film, as emulsion characteristics differ, and then decide. MacBeth color chart is the standard for calibrating colors in the industry. Good luck!

-- [Agnius Griskevicius](#), November 13, 1997

There is an alternative process for B&W film that I've done some experimentation with. It involves using older tech film like hp5, or Tri-X. You need to play with the development a bit but the results are worth it. Expose the film at ISO 50 or so, (3 stop over). Then using D-76 diluted approx 15:1 (water/stock) develop for approx 20 min. The resulting neg is bulletproof thick, but the tonal range is huge, and there is no grain to speak of.

-- [Dan Moore](#), December 7, 1997

You mention that you don't know why someone would use B&W film today, except maybe longevity. Well, I suppose it depends on your purpose for taking photos.

For me, longevity is the most important thing about photography. It allows me to capture a moment (maybe even an emotion) and show it to someone at a later time. I would like to think that someone 100 years from now would enjoy some of the images I've captured.

And I think it is almost selfish to only worry about using the photo in the near future. Any color film will quickly fade compare to B&W, but digital is even more temporary. I'm pretty skeptical about the longevity of any digital format. Even if a file isn't stuck on some obsolete media, there's always the chance that the format of the image couldn't easily be converted.

For commercial work, color (or better yet, digital) makes more sense, because you're going to be using the photo right away, and it'll have a pretty limited life.

But, imagine if all the great paintings of the world had become unviewable after 100 years! The world today would have lost so much, and I like to think that the world of the future will have something to gain from the photos made today.

I may sound like a Luddite, but I'm really not (I do have a CS degree). I think digital will be great for journalism and professional work where the photos are taken for some commercial reason, but I photograph for myself, and I'll keep using Tri-X for a long time, and I'll be making home-movies with a 16mm camera on B&W film knowing that some future generation might enjoy what I've done, while video tapes, and color film will have long ago become junk.

-- [Bill Bereza](#), December 9, 1997

Concerning neg. (because results always depend on every step and handling) to me Tmax 400's contrast is too extreme in some cases (exposed at 400 ASA, developed in Tmax Dev. according to Kodak instructions) leading to good black but very thin high tones. Tmax 100 when pushed is even worst. Compared to Tmax Tri-x gives a far more stretched (rich) tonality. Maybe interesting lightly blurred shots seem to be 'sharper' with T technology films.

-- [Christian Becker](#), December 12, 1997

I didn't see any descriptions of lith films. I've been working with them on and off for two years to make landscapes and other "real" pictures (i.e., not title slides). Because I don't want to futz around with copying from regular B&W negs onto lith film (I use 35mm

format), I shoot the image directly, in-camera. Strictly tripod work!!!! The films are very slow but extremely fine-grained.

I've tried Kodak Ektagraphic HC and AgfaOrtho with three developers each: Agfa Neutol, Agfa Rodinal, and Kodak Super RT. The Rodinal suits me best but it's expensive.

Note that the Kodak film has a yellow-brown cast to the emulsion, whereas the Agfa film has a blue cast. This doesn't matter for B&W prints but it does for color prints.

-- [Patricia S. Lee](#), December 15, 1997

Re: Kodak TMax400CN. It is more predictable than Ilford XP2. It is so fine-grained that I could not find grain to focus on with my good quality grain focusing devise in a 6x7cm neg when making an 8x10in. image. I'm going to have to buy an image focuser.

-- [Bob Pliskin](#), January 29, 1998

Kodak and Fuji films are often very good but I used, by mistake, Konica VX 100 and became very surprised. How deep and clear colors! Maybe the filmbase is a little bit to thin but the colors are the best I ever have seen!

-- [Harald Gaunitz](#), February 5, 1998

I see a lot of comments about which films are good and which films are bad. But I also see that most people don't find out what the manufacturer intended the film to be used for. For example the person using ultra 50 for portraits. Thatfilm was intended for high contrast vivid unreal saturated colors. That is why all manufacturers make a portrait film. Or why would you try out a film at an unreplacable outing. I would suggest that person try another photo lab because it was obvius to me that the labe didn't print the order properly. I have been a photofinisher for 25 years, most of the self standing drugstore or discount stores are operated by people with less knowledge than the person bringing in the film. Also most overnight photolabs are now owned by kodak or Fuji. Would it be beneficial for them to print thier competitors film to it's maximum standards. Most labs use a standard process in color and black and white. They do not use d-76 or a certian process they don't have time for that. If you want optimum processing in black and white the best result is to do your own. When people come to my lab we ask questions and make recomendations, and we usually get the customer the film they need for the proper reason. Not because the supplier is our owner. I regularly use Agfa, fuji, Konica , ilford and even Kodak occasionaly. But I us the film the way the manufacturer intended it and i find I get the results they intended me to get. If you are getting bad color try another lab, and be sure that it is really another lab. In michigan Arbor, Rite Aid, K-mart, Meijer, and Target are all processed by the same photolab but done under the store name. Isn't it

amazing that in the 80's k-mart tried to do one hour processing and found it was not cost efficient or profitable. why is it that they are in all thier stores now. I welcome any questions about photography at my e-mail address.

-- [Don Nicholson](#), February 15, 1998

Speaking as the resident retrogrouch, let me put in a good word for Ilford Pan-F (ISO 50), where a very fine grain is necessary. I have seen this film exposed at ISO 50 under a No. 4 photoflood (about 1/30 @ 5.6), developed in Pyro/PFdiamlene/Metol/ss developer and enlarged to 16x20 in a diffusion enlarger produce Extalure prints that were essentially grainless while presenting a full tonal range (this was 35mm, remember) Zeiss Sonnar 85mm lens. Subject matter: human portraiture. By same token, Tri-X processed identically has produced very fine grain and 35mm negs enlarged up to 11x14 w/ cold light show little if any grain and 16x20's are just fine, also, thanx. It's exposed at ISO 200 unfiltered or 300 with a G filter on sunlit landscapes. My personal fave was Royal Pan, discontinued in the early 90's, alas, which had a tonal scale as long as your arm and could REALLY record scale when developed in pyro (above). If anyone knows of any emulsion that comes even close, I'd like to hear about it so I can start shooting it.

-- [Stevan S.Yasgur](#), March 7, 1998

Just a brief comment on my recent experiences with different films. I shoot mostly slides, as contrast and colour are better. When I have a really good one I go to my trusty Kodak pro-lab and order a high quality print.

I have tried Fuji's Velvia and Sensia, the latter is ok, but the former is too saturated for the sort of climate I live in (Portugal, plenty of sunshine available). I reckon it works better for touristy adds and countries with dull weather. So lately I have settled with E100SW, which gives a much more natural rendition of what is going on around the viewfinder. excellent results with flash too.

As for print film, I like Reala for 100 ISO and Royal Gold 400 for my P&S. B&W I like Tmax 400, I have just made a 20x25 cm enlargement of a portrait and the somewhat grainier texture is just beautiful.

Next I will try the new E200, if grain and rendition are the same as the E100 emulsions I may change again my preferences. I just love APS, it has provided a whole new range of improvements to 35mm film emulsions and technologies.

-- [Paulo Bizarro](#), March 17, 1998

I've tried 'Scala' by AGFA. This is a very interesting B+W slide film for those of us without darkrooms, and who shoot only slides. It's rated at ISO 200, but can be shot at 100 or 400, just not on your envelope. There are only 3 labs in the country to process it. I have used it with great results on automotive subjects. I've shot it at 200 and 400 (higher to increase contrast) and got the results I had hoped for. Try it!

-- [Bob Coffman](#), April 2, 1998

I agree and disagree with some of your recommendations for one .

B&W - I have been using the Agfapan 25 and it is incredible, but I also can say that the Ilford Delta 100 is just as good and when you don't want to use a tripod it's the way to go.

Secondly- Royal Gold 25 is very nice, but I have had much better results with the Agfa Ultra 50.

Their are my two cents!

Michael

-- [Michael --](#), April 26, 1998

Why is it that everyone posts information that suggests fast films are the only choice for photographers? I use Kodachrome 25 and 64 for 90% or higher of everything I shoot. Face it, the slow Kodachromes are not only superior to the fast stuff, but if the photographer knows what he is doing, sufficient.

One major user of Kodachrome used to be National Geographic. Go through issues from the 40's, 50's and 60's and you will see virtually every image with a tag line that says Kodachrome by (Photographer's name).

Please, whoever is reading this, use more Kodachrome 25 and 64. You will obtain far better results.

-- [Robert Maxey](#), May 19, 1998

Robert Maxley's comment about Kodachrome is misleading. Kodachrome in the 40s, 50s, and 60s, was a different emulsion than Kodachrome is today. Kodachrome II was a highly saturated, high silver content emulsion which came in only one speed: ISO 25. Today's Kodachrome 25 and K64 have much lower silver content, are not as saturated, and was introduced in the '70s to help Kodak with the higher silver prices. Don't let the

branding fool you. K25 and K64 are not like Kodachrome II.

-- [Piaw Na](#), May 24, 1998

Film what kind is a good question. Next question is : When I travel will the undeveloped film be destroyed by Airport Anti Terrorist scanners/x-ray machines. This summer the new scanners are being deployed. How bad are the new scanners? David Attenborough, lost 5 weeks of film work for the BBC series Birds of the World! see Popular Photography june 98.

-- [Thomas Gay](#), June 20, 1998

Piaw Naw's comment on Kodachrome is itself somewhat misleading. While the 25, 64, and 200 emulsions are not the same as Kodachrome II, the K14 *process* has not changed. And these are great, if tempermental, emulsions.

For a number of reasons, the K14 process is inherently superior to the E6 used for virtually all other transparency films. K14 offers higher resolution (though not necessarily higher *acuity*) and better permanence than E6. In addition, many (including myself) prefer the Kodachrome palette to any other. The only other slide film that I really like is Fuji Sensia.

-- [Alexey Merz](#), July 8, 1998

I want to say that I just finish testing the new fuji 100-1000 film. Man this film blew me away when I push it to 1000 I shot it to 1000 and pushed to 1000 this film kicks ass I think atleast a photographer should carry one or two of these films. It's a transparent film which shot to 1000 and push to 1000 the color saturations are beautiful. I have to give it up to fuji they rule. Tony

-- [Tony --](#), July 9, 1998

About a year ago, I commented that T400CN is a remarkable film, that it had become my EI 400 film of choice (over TMY/Xto1). Well, T400CN isn't actually my EI 400 film of choice, it turns out. Instead, I find I still prefer TMY for the same uses I always have, and T400CN is an alternative to TMX (!). Ironic, eh? When it really comes down to it, I believe TMX has a bit of an edge in sharpness, and I like the ability to manipulate the neg contrast in processing sometimes. However, T400 may have an advantage when shooting people.

-- [Dana H. Myers](#), July 10, 1998

In reference to the comment on not to use 200 speed slide films, but to use 100 ISO's pushed.

I would agree to that until lately. The new Elite Chrome 200 from Kodak is tolerable. The Agfa CTX 200 is more than tolerable...I will be using it alot for my animal/bird photography, mainly hand held.

I will no longer use Kodachrome 200 while the above two films are available.

-- [Fred Barnes](#), August 29, 1998

I was amazed at the lack of coments regarding Fuji Neopan B&W films. Available in 400 and 1600 I have found them to be not only the finest grained film in their ISO's, but also some of the most inexpensive. I recomend XTOL. Regarding TmaxCN: Working at a Pro lab for many years I have seen this film take off in popularity. I have found it to be a great film, though a little flat so I shoot it with a yellow filter. Keep in mind, this film is not as archival as other B&W films but it's great for portraits and weddings. Cross Processing:I would recomend Agfa for anyone interested in xprocessing. Highly saturated images without the blue/green cast I've found with kodak and fuji films. Color print film: There is nothing out there as good as Fuji Reala and Fuji 400HGpro. I've seen thousands of professionally shot negs on every film in the market and nothing else comes close.

-- [chris golz](#), September 10, 1998

I didn't see a mention of Kodak Pro 400 color negative film. I've gotten good results with it both outside and under flash. My wedding photo friends seem to like it for people and clothing, especially the MC version of the film.

They also like Pro 100. I've tried a roll or two but haven't done any comparing.

Among slide films I still like Kodachrome 25 better than Velvia for landscapes and living things. Better color balance to my eye.

-- [Gib Robinson](#), September 22, 1998

I shoot sports on the newspaper staff of my local community college. Lighting conditions, not only in our gym, but also outdoor at night sports, are absolutely dismal. I need to use a 540ex or a Quantaray PZ-1 (Sunpak 4000af)... Or actually, both linked to a hotshoe distributor, to get an exposure. It's usually simpler to push a film, and in the push-processing department, I've found Tri-X to be hands and feet over TMAX400, which I've

also tried. I am doing experiments with Neopan, so I'll get back to you on that. Anyway, you can still retain the tonal quality that TriX has when exposed at 320, and even though it gets grainy, you don't notice at all when you screen the image for newsprint. Esp. if you use the Curves adjustment in Photoshop... but more on that later. I just think that it's interesting that noone mentioned this property of TriX over Tmax. Other than that, I still love Tmax for every day B&W use, and I do alot of that.

-- [Karl Katzke](#), September 25, 1998

Since there seems to be very little comment on it (perhaps it isn't required? :-), I thought I'd throw in my \$0.02 about Astia.

In case the above wasn't a dead giveaway, I'll come right out and say I love it! I've tried E100S, E100SW, and Sensia 100, and Astia is the best I've found so far. To keep it short: Colors seem accurately rendered, yet they also seem more saturated than the other 100's (but not nearly as heavily as Velvia). It has higher contrast than Sensia, and appears to be sharper than any of the 100 speed chromes I've tried. The best word I can find to describe the slides from this film is "vibrant".

Will this film ever replace something like Velvia? Hardly, but I think it will take it's place along side it as one of the best slide films around.

-- [Steven J. Owens](#), September 28, 1998

Re: Alexey Merz's comment about K-14 remaining the same process between Kodachrome II and K25/64. This is not true. The process used to proecess Kodachrome II was, I believe, K-12, not K- 14. It might indeed be the same process and Kodak might have renumbered the process without changing the chemistry involved, but I suspect that they had to do something to the chemistry to account for the lowered silver content of K25/64. There's nothing wrong with K25/64, if you like it go ahead and shoot it. Just don't confuse what you can buy today with what Ernst Haas used to shoot "The Creation."

-- [Piaw Na](#), October 3, 1998

I understand that many folk's perceptions about B&W photography rarely extend beyond the grainy and tonally-disadvantaged pictures in the newspapers. I currently use Plus-X film developed in PMK Pyro. The subsequent prints are tonally beautiful and so sharp you can hurt yourself.

The current trends towards APS and the insidious digitalization of our lives is a disturbing trend. By continually lowering the bar of our expectations we are degrading

our ability to both evaluate and to appreciate a technically fine image.

Creating technically excellent images takes time, effort, and exacting standards. By relegating certain films and processes to the dustheap simply because they are "outdated" and not "modern" only serves to deprive the artistic community of many time-honored options.

For myself, there is no substitute for a meticulously produced and technically perfect contact print. Nothing can come close to the stunning beauty of such an image.

-- [Mark Finhill](#), October 14, 1998

Having seen Mr. Greenspun's many Velvia images, I was afraid that if I shot chromes, my pictures too would be unrealistically vivid. However, I've discovered the Agfachrome RSX 50... And I'm in love. Shot some yesterday at the zoo, dropped 'em off at the local 2 hour lab... and they look EXACTLY like the animals we were taking pictures of. Color is THERE. Nice and sharp.

And, It makes Fuji Sensia II 100 look like a sandbox in comparison (i.e. full of grain).

-- [William Baguhn](#), October 16, 1998

Well, that was yesterday... This is today.

Out shooting fountains and other interesting pieces of concrete around the town today.

Agfapan 25 is remarkable. Developed in Rodinal, noted for how it makes the films come out somewhat grainy... and dropped it on the enlarger.

I was looking at 16"x24" from a 35mm negative with no discernable grain.

I didn't print it; Just inspecting on the enlarger. If you haven't tried this black and white film, you owe it to yourself.

Note to technical pan film users: if you like techpan, but hate technidol's mandatory oddities for developing (i.e. drop the reel into a vat of technidol), TRY Agfapan 25. It develops like a "standard" film. 6 minutes in Rodinal 1+25.

-- [William Baguhn](#), October 16, 1998

In regards to slide film usage in the U.S.A. There are a lot of Camera Clubs in the U.S.A. that still use expressly slide film. The Photographic Society of America

(www.psa-photo.org) is a very good place to check out clubs that still use primarily slide film. If you would like to know more about camera clubs, please check out their web site, or email me and I will locate the club closest to your city. The P.S.A. is a world wide organization with members from all over the world and welcomes both amateur and professional photographers.

-- [Doyle D. Weece](#), October 17, 1998

For a much less grainy high speed black and white film, try fuji neopan 1600. it has far smaller grain particles than Kodak TMY 400 and is more resistant to development abuse. I use it to shoot ice hockey in the NCAA Final Four event last year and was very impressed.

-- [J. Edmunds](#), October 23, 1998

It's becoming a cliché, but...why has no one mentioned Fuji NHG-II print film? I recently shot a couple of rolls of this for an assignment for school and was thrilled with the lack of grain. Not "lack of grain for an 800 speed film". The skin tones looked great and there was no oversaturation of color. I believe that proper development of this film key. The reason behind this statement is that a woman in the same class showed prints that were a little washed out and quite grainy. The interesting thing is that her rolls were from the same pro-pack that I shot from (I sold her two rolls). For those of us shooting medium format, this kind of good, fast film is a really great thing.

-- [Ken Kisting](#), November 3, 1998

Umm, are you taking drugs, or am I doing something wrong. As far as I can tell, Kodak 400 speed film is incredibly inferior to Fuji 400. I don't pretend to be an expert, for example I don't notice much difference between Kodak and Fuji at 100 (though I do notice the bright colours of Agfa at this speed), but I notice a big difference at 400. In fact, I would go so far as to say that Kodak 400 is the most noticeably inferior film I've ever bought from a major manufacturer.

-- [Martin Richards](#), November 14, 1998

Films: I have been taking photographs since 1964, when I was 14. Some things have changed, but others haven't.

Slide films: Kodachrome professional films are hands down the best slide films OVERALL. The color accuracy, sharpness (acutance), and durability are simply stunning. Velvia is a sick joke. If you think the saturation of Kodachrome is poor, it's probably because you're using a Japanese zoom lens. Use a Leica M or R camera with a single focal length lens on it. Expose properly (about 1/3 stop less than the meter says).

Get your slides back. Rejoice and enjoy.

Fuji Astia is a good choice for and E-6 film.

For Black and White, I have the following observations:

Remember that the point of working with a 35 mm camera is spontaneity! Therefore: Forget the zone system (It's useless and detrimental in 35 mm work!)

TMY is admittedly a difficult film to work with. I prefer to use Ilford Delta 400 film for this reason. My best advice is to use a highly dilute, non-phenidone developer to help with the highlight problems.

Other advice for 35 mm B&W: Use a condenser enlarger! Use a Leica enlarging lens (Focotar 2, 50 mm f/4.5. Costs about \$800? ALL OTHER LENSES GREATLY INFERIOR!). Develop film to CI about 0.42. (Use a developing time about 0.7 to 0.8 of that recommended by Kodak.)

Any other advice is caca!

-- [Michael Scarpitti](#), November 15, 1998

I am taking photos in the Brazilian savanahs. I have compared Provia to E100S and E100SW under a variety of conditions. I have found all to give excellent results under most conditions (I "feel like a hero!"). However, when there is a cloudy sky (very common in the rainy season), and especially if any of these clouds are black, then Provia gives a nasty, very cold, blueish colour, under these conditions the E100S and E100SW give a better, warmer result. Also, the E100S and SW give fabulous, saturated colours, which are more realistic than Provia. For this reason, I now use mostly E100SW.

-- [David Bertioli](#), December 2, 1998

Hi, I saw no comment on Kodachrome 25. This still remains, IMO, the all-time classic color film by which all others are measured. Zero grain. Absolutely accurate, not jazzy colors. Spectacular film! The color rendition is so perfect, it cannot improved upon. Films can be made faster but not better. I beg to differ with the asserion that TX-400 is a grainy film>>>it is only grainy if you follow Kodak's development times, which OVERdevelop the film. Using either HC-110 or Xtol, TX-400 is a relatively fine-grain film with much better lattitude than T-MAX.(I don't care for T-MAX at all) It is best test for personal ASA and development times as outlined in Fred Picker's book, The Zone VI

Workshop. I develop about one-half the time recc. by Kodak for HC-110 and TX!! Great result, fine grain!!

-- [Howard Posner](#), December 3, 1998

Recently I have been asked by a number of people to sell some of my work. I have always had a philosophy that I would be pleased to share my work with those that liked it free of charge. However, I recently received a request for several large prints. Needless to say I was not overly satisfied with the Ilfochromes that I had made from 35mm Velvia and Astia chromes. Please, do not get me wrong, they were made with contrast masks on exhibition grade material with museum quality printing and attention. The buyers loved them! I was just not satisfied.

A local lab told me about results they had recently gotten from the new Kodak Portra 160 VC and Portra 400 VC films in both 35mm and medium = format. I looked at a 16"x20" enlargement of a bird photo made from a 6x6 negative. The image was sharp and fairly well saturated. I was still skeptical.

I ordered 10 rolls from B&H. Last week armed with my F5 and a AF-S300/2.8 and 2X extender I burned 5 of the rolls. I shot everything I could. High contrast, low contrast, low light, bright light, deep shade etc. I then has it processed and contact printed. I selected a frame and had it enlarged to 11x14 at a local custom lab. This evening I picked it up. The image was fantastic. Everyone in the lab was ongratulating me on such a fantastic image.

The color was very nice. Colors were saturated and very close but not quite as saturated as the results I get from Velvia, but more saturated than Astia. BUT, the most impressive thing was the lack of grain. I had to use a 4X loupe to find any grain. Again, this is from an 11x14 print from a 35mm negative. Sharpness was very impressive. I compared that print to an 11x14 Ilfochrome made recently and there is no question, the Portra 160 VC appears (to my eye) to be as sharp if not sharper than Velvia. Color saturation was vivid but natural.

Shadow areas held detail like nothing I have seen. Highlights, especially those that were a bit hot printed with full detail. Something I could not get to happen with Velvia.

Monday I will be ordering 60 rolls of the Portra. Hell, to pick up almost 2 stops with these results is reason enough for me to burn some negative film. I am not saying that I will no longer shoot Velvia and Astia or even Ektachrome E100SW, but for sure the envelope is being pushed.

Mike

-- [Michael J. Kravit](#), December 18, 1998

in reading the previous comments, i noticed that only one person mentioned Agfa Scala film. (This is B&W slide film) i shot my first roll of this a few weeks ago, and its very interesting film. very smooth look, w/little grain. it also seems to have a lot of "pop"..the images seem very vivid. also, its nice to once again be free of printers decisions. the only big drawback is that this film is a licensed process, and i had to send my film to a lab in FL that took 3 weeks to process it.

so, go try this stuff, if you want a little change from the usual. just buy the mailer from B and H when you buy the film, and dont expect to get your slides back anytime too soon.

one other issue: Kodak recommends that if you want to push elitechrome 200 1 stop, you should shoot it at 320. however, when you send it to kodak, they'll only develop it as a 1 stop push to 400. DOH!!

-- [alan mandel](#), December 30, 1998

You haven't tried the Fuji R MS 100/1000 yet? Buy a dozen rolls! Can be rated anywhere from 100-1000. At ISO 800 it is easily the best colour slide on the market. The sharpness is awesome! The colours are vibrant and clean with good skin tones. Lovely film. Available in 135 and 120/220.

For special purpose Kodak films see [the Kodak web site](#) instead of any dead trees versions.

-- [Allan Engelhardt](#), January 24, 1999

I mostly shoot TRX 400, people in low lite situations. Trx is great & versatile. If I want grain I push it & develop it in D76. If I want to lose the grain I use a med. format camera & develop it in Acufine.

Recently I started a series outdoors in the SUN! Heavens I'm gonna have to learn to develop Tmax 100.

I find the ilford films too flat for my tastes. And I've had a couple of die hard fans press various speed ilford film into my palms saying "Try this -- you'll be a convert yet!". I'm always disappointed.

-- [erin o'neill](#), February 3, 1999

I have used varies B&W film, Tri-X 100 to 400, T-Max 100 to 3200, Ilford Delta, XP2, HP2. and others. But for my money I would but the Ilfords. They give you better contrast and the grain is more finer (if you like to see the grain you should use the T-Max, it would give you grain size of softballs.) Personally I try not to use Kodak at all. My B&W paper is Ilford, and my Color paper is Fuji as well as the color film I use. And I have "taken picture for 9 years non-stop.

-- [HyunHo A. Han](#), February 10, 1999

Much of what we do is taught in schols, or one can self teach by visiting the public library, or making a lunch and perusing this site until their eyes water. Even as I say that, I was astonished to learn, only a few years back, maybe five years ago, that most, nearly all photo related publications are geared toward slide shooters. Whereas more that 97% of shooters here in America shoot prints, every piece of advice in American publications is slanted toward slides. Why? Why aren't we print shooters considered?

I am a long time (37 years) PJ (Phohtojournalist), who, having shot more than 460,000 frames of 35 mm emulsions, have never shot a slide.

Can we print shooters get a break from all the up-tight, gotta do this to get that result slide talk? After all, how many readers of this post will be slide shooters? Must slide shooter's think of themselves as somehow above the crowd, we, the great, unwashed mass of uuugh!, print shooters?

When advice is given, what is good for the slide shooter'

-- [Suda Mafud Atheem Al Asaad Jebel Musa Ali](#), February 17, 1999

XP-2 is currently my B&W film of choice. The reason most people have trouble figuring it out is that it works differently from any other film. With XP-2 (in its recommended ISO range) the highlights do not block. This creates a situation where overexposure puts additional exposure in the shadows, thus lowering contrast. Conversely, underexposure creates more contrast. Fortunately, this is just what we want. In open shade, the light is dimmer and flatter. Increasing your EI to 800 adds 1/2 filter grade. In bright sun, where the contrast is often too high, we usually have an excess of light. Rating XP-2 at 200, 100, or 50 will reduce the contrast 1/2 grade per stop.

The caveat here is that if your roll of film is all over the map with respect to EI, your proof sheet will look like a checkerboard. It is much better to shoot the entire roll at or near the same EI.

-- [Steve Sosensky](#), February 21, 1999

In reponse to the post by Piaw Na, May 24, 1998, on Kodachrome films. 1. Kodachrome K-14 process was introduced in 1974. The silver price at that time was not in the rapid upward spiral that you are thinking of. That happened in 1979-80. Remember that a new process like K-14 (or E-6) takes many years to work out. The price of silver was not likely a factor in the development of the K-14 process. Other costs (labor, marketing, advertising, materials other than silver), in any event, overshadow the cost of silver in film. 2. Yes, Kodachrome 25 and 64 (1974) are different from the older (1961/1963) KII and KX: they are far better films. As for "low silver content", this is absurd. The "silver content" is applied in layers in any color film, and even in some B&W films. "More silver" actually means nothing: how is the silver distributed? How are grains shaped? How thin are the layers? Thinner layers generally suffer less from irradiation and other blurring effects. Finding more efficient ways to capture light with smaller and more uniform grains is what constitutes progress in emulsion making. In any event, it is the yellow dye in the K-14 films that is substantially different. The new films also had a prehardened emulsion (introduced also with E-6 Ektachomes) that made the use of a hardening bath unnecessary; this bath caused a yellow stain in the highlights that may be what you fondly remember about the K-12 Kodachromes. It made the film look somewhat warmer, but the colors were less accurate. Take a good look at a Kodachrome 25 slide and compare it to the reality. The resemblance is stunning!

-- [Michael Scarpitti](#), March 1, 1999

To all you colour junkies (southern hemisphere spelling) out there- give Agfa Ultra a go. Totally over the top - just like turning the bass and treble up full on your hi-fi- but magic with the right subject matter (no faces!). A purists nightmare but heaps of fun and particularly good in low light situations with a tripod. 50 asa colour negative.

-- [Derek Smith](#), March 5, 1999

As far as black and white film is concerned I'm sure there's one film that beats them all. The HP5plus by Ilford. I've been working as a sportsphotographer for a local newspaper for over a year now. Because of old-fashioned production processes it's necessary for us to use black and white film. In the past year i must have used them all; kodak, fuji, etc. HP5 is the only 400 film that i know of that can be push processed to iso 3200. The Quality at iso 3200 is excellent, I prefer it to Kodak TMY (T-max3200). The developer i reccomend for use with HP5 is Ilfotec HC. Just try it I guarantee you'll love it.

Dennis Boxem, The Netherlands

-- [Dennis Boxem](#), March 10, 1999

I would like to make a recommendation of Kodachrome 64 Professional, which I believe to be the best color film. Granted, it is a bit costly to shoot \$12/roll film, spend \$6 on processing, and then spend \$40/print or so having Ilfochrome prints made, but the images are simply astounding. There's a reason why, after sixty years, Kodachrome is still the benchmark color film. Velvia is also wonderful--comparable, in fact, to Kodachrome in most situations--but why change for the sake of change. Kodachrome is my favorite.

For color-negative film, I use Royal Gold 100, an excellent, professional-quality film at a consumer price. I have not been able to tell the difference between Royal Gold and the Kodak professional film.

Tim Breihan <breihant@cbc.stl.org>

-- [Timothy Breihan](#), March 16, 1999

I too am amazed at the relative lack of enthusiasm for Agfa Scala 200 B&W slide film. This is great stuff, people! I have 16x20 enlargements from 120 AND 35mm that are sharp and relatively grain-free. You can pull or push one stop with no discernable image degradation. The mailers from B&H are cheap (\$5.95 for 120 or 35mm). I just wish it came in 4x5 size. The only other B&W film I use is TechPan.

As for E-6: Velvia and Astia are it. Kodak just can't seem to make a decent slide film. Kodachrome is great if you can get it developed properly. But even A&I can't seem to get it right.

C-41: Only Fuji Reala (100) seems to have a sharp, grainless emulsion that is useful in almost any lighting situation. Prints from Reala negs look so GOOD. Kodak has simply dropped the ball; why they ever discontinued Royal Gold 25 (a/k/a Ektar 25) is the great film secret of the century.

-- [John Costo](#), March 20, 1999

I haven't heard any mention of Fuji Neopan 400... I've had good experiences with this B&W film, I really like it when rated at normal ISO and processed in Diafine. Fairly tight grain, nice, smooth tonal range that fuji's known for... without any color balance problems. :)

Question: Has anyone heard of an Agfa 160 Portrait film? In their professional line. Anyone know how good this stuff is? I'd like to try it, but I'm not excited about spending

the money just for a test.

-- [Karl Katzke](#), March 22, 1999

With the renewed interest in B&W film, you may wish to experiment Ilford HP5. Can be pushed three stops (to 3200) with no serious problems if developed properly. Also it's available in bulk at #30 for 30 metres in the UK. It's not quite as tight as Neopan at its normal rating but its exposure latitude and price are strongly in its favour. In response to an above comment, neopan 400 is as flexible but I haven't actually pushed it too far. I have managed to print the pushed HP5 up to 16x12 with an acceptable amount of grain.

-- [Matthew Grime](#), March 29, 1999

I used Kodachrome until, what I believed to be, the bitter end. It's still available and the film may be as good as the past. The problem with Kodachrome is obtaining consistent, high quality processing. Kodak seems to have abandoned the process and focused on digital and avoiding antitrust suits. I vaguely remember that the network of Kodak labs processing Kodachrome with excellent results were spun off in an antitrust suit. The quality has never been the same. I have gone to Fuji for E-6. I like Sensia.

My father used Kodachrome in the 50's and 60's exclusively. His slides are still in excellent shape with good, punchy and balanced color. For life of the image and fine grain, Kodachrome cannot be beat. If you could only get good processing, I would use it today.

On black & white film, I did not see any mention of Kodak Technical Pan. Processed in Technodol, it renders the sharpest and finest grain negatives that I have seen. The tones are contrasty but smooth, with good separation. Prints from 35mm look like prints from a normal 4x5 (almost). The shadow detail can block up at the rated 25 ISO. However, scanning Tech Pan may be good due the almost colorless base left after processing.

When processing Tech Pan, the vigorous agitation method described in the processing instructions - that come with Technodol - is critical. Everyone I know who has been disappointed by Tech Pan has failed to follow the agitation instructions. Another processing point, don't use a strong acid stop bath. Tech Pan emulsion seems to be prone to pin hole spots from a strong acid bath. I use a water stop bath or a weak acid, about 1/3 normal strength. I prefer to shoot at ISO 16 and get more shadow detail. My processing time is the time recommended for ISO 25. 6x6 negatives shot on a Rolleiflex with an f3.5 Tessar are unbelievable. Under my grain focuser, I cannot see grain. I see more image detail. Tech Pan is the only Kodak film that I use. For all other black & white work, I like Ilford Delta 100 and 400 processed in T-Max or one to one in Ilford ID-

11.

-- [Doug Landrum](#), April 4, 1999

I would dispute some of what was said about AGFA Ultra 50 speed. In particular the comments about coarse grain and color. I have enlarged 16x20 35mm shots of this film with NO APPRECIABLE. Certainly far less grain than what you get with any of the 100 speed films I have used (in either the pro or amateur print films).

The color range though super high in saturation and contrast is one of it's stronger aspects. As long as you don't make the mistake of shooting people, or subjects with high degree of "Bright White" such as snow, or a low contrast shot such as fog, you can have a lot of fun with this film. In my case I use it pretty heavily for nature and sunsets shots. If anything when I shoot a sunset with it many of the colors that I missed are suddenly "popping out". I have recommended this film in the camera store I work in for years without any complaints, and will continue to do so. Again so long as you understand this strange film it is a lot of fun to shoot with.

One minor note: I should mention I have seen many lab processors groan and on occasion freak when they get ULTRA 50 to process. As it can really be a tough film to color balance in the lab. So try and avoid using the one hour mini-labs with this film.

-- [Andrew S](#), April 26, 1999

after more than twenty years working with different film material my first and most important advice to people asking me which film they should use is: it's not important which film you use, but you should work with the same film over a long period. because it's the experience with the instrument you are using that makes the difference. if anybody develops his own films for years by himself, he will find out that films behave different in different chemicals. so nobody should wonder that a fuji film processed by a kodak lab doesn't look perfect or vice versa. very often bad results are not based on a wrong film material but on using and treating it in a wrong way.

-- [jacques f. lecoultre](#), April 27, 1999

On the Velvia/Sensia debate: I recently did a Velvia/Sensia shoot-out. I shot three rolls each of the two films on the same weekend, similar shots, same lighting, etc. All of this was outdoor/nature work. The Velvia gave lovely color saturation, contrast, and tone. The Sensia fell disappointingly flat in all three categories.

-- [Kendra Wise](#), April 27, 1999

I too was dissatisfied that little was said of the Ilford products. For B&W I use 400 Delta exclusively, in both 120 and 35mm. I develop in ID-11 1:1 (with a 10% increase in time for the 120) and the results are wonderful. I also use Ilford MG IV paper. I switched from Kodak B&W to Ilford about 10 years ago and never looked back. Using 400 in my Canon I can consistently get very good enlargements up to 16x20. Same film in the 6x6 and the sky's the limit (almost) and the tonality is beautiful. If you need to understand what tonality is (hard to describe) just look at two prints, one from a 35mm and the other from a 6x6. If you run 100 Delta through the 6x6 the sky IS the limit.

For color I use Fuji film and Kodak Paper. The NPS at an ISO of 160 is wonderful for skin tones and the contrast is "oh so perfect". For other shooting I use Reala, and I find no faults. Funny, but customers always turn over the print and look for that "Kodak Professional" printing on the back. Kinda like the "Hallmark" commercial. I can find no discernible difference between the Fuji and Kodak papers, so I use the Kodak paper and let the customer find the "right words".

-- [Katherine Queen](#), May 7, 1999

I was just reading your page and I think that you should have said more about kodachrome 64 which is still by far the best film, whilst fuji is nice and rich kodachrome is so natural, and great in low light. Don't forget that The National Geographic still prefers kodachrome.

-- [jack craft](#), May 12, 1999

I just got back from Ireland and, believe it or not, found a camera shop that still had a bunch of rolls of Royal Gold 25. I ended up buying all 10 rolls that he had left over in his fridge. The expiration date was last month, but I'm praying that the test shots I took today will come out okay. So, my point is, when travelling check out the little out of the way camera shops and you might come across a pot of gold.

-- [George Maurice](#), May 14, 1999

Much has been said about the extremely saturated color rendering of Velvia. Some people find Sensia to be less saturated than they would like. Well, folks, it's quite easy to get what you want! Underexposing any slide film intensifies colors, overexposing reduces them. If you expose Sensia 100 at ISO 160, and Velvia at ISO 32, you get pretty much the same color rendering. The grain of Velvia is still better, but you pay for this both in money and in exposure time.

It's easy to get "National Geographic style" colors by underexposing Sensia or almost any

other good slide film. But of course, that's just one aspect... The other qualities of that magazine's photos are a bit more difficult to duplicate! Mainly, shooting 100 rolls to select the 5 best frames!

I agree with those who say that Velvia is really an ISO 32 (or even 25) film. It comes out much too dark and contrasty when exposed at ISO 50. But if you like that (why not...?) it's OK!

-- [Manfred Mornhinweg](#), May 21, 1999

Dont forget that The National Geographic still prefers kodachrome.

That's not what the National Geographic says. They are online, and it is quite easy to find their views on film. If you click [here](#), you will find out that: *Brand and type are up to the photographer, but most use three or four different emulsions, depending on the situation.*

-- [Jeff Spirer](#), May 23, 1999

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-- [Jeff Spirer](#), May 23, 1999

Careful testing of TMax 400 a few years ago lead me to believe that it would not yeild a true 400 e.i. when processed in commonly used developers such as HC-110 and D-76 even when using Kodak's time/temp. reccommendations; the shadow areas show no detail (they fall into the toe of the curve). One gets good results rating it at 100 e.i., but what's the point? Just use TMax 100. I now employ TMaxT400CN almost exclusively, and both I and my custom processing lab love it. Bob Pliskin

-- [Bob Pliskin](#), May 24, 1999

I think that Agfa film has garnered a bad reputation for what it used to be like, not how it performs nowadays. While it doesn't quite have the sharpness that Kodak and/or Fuji have, it also doesn't have the price, either.

I've been using the new HDC+ emulsions for the past few months, and I'm very impressed with the color rendition (although I never have been able to reproduce the warmish-red cast the film gets when you run it through conventional overnight service; it really made my pics of Santa Monica glow!)

-- [Lawrence Wilson](#), May 27, 1999

Phil mentions that: Velvia is sold in Europe as a consumer film where there is "no refrigeration in the store and none indicated for longer term keeping". This is not true (not where I live in Germany anyway). The film is marked as "for professionals", it states on the box "keep cool, process promptly"(I've actually never seen transparent film sold w/o this indication) and the store where I buy my film keeps it in the refrigerator. The paperslip reads "keep unexposed film in the refrigerator at 15 deg C (59 deg F) or lower [...]".

-- [Bo Stahlbrandt](#), May 28, 1999

I haven't seen anyone talk about Fuji Provia 100. I prefer this film over Sensia or Velvia in many situations. It has more saturation than Sensia and less than Velvia. It blocks up more than Sensia but less than Velvia. Try to underexpose by 1/3 of a stop for best results.

Here are some other random thoughts I have on film:

Velvia and Ultra 50 are wonderful films when you want exaggerated color. The latter seems to be the most saturated without so many problems blocking up.

Grain of Sensia (old version)/Provia 200 and 400 is a bit poor - better off pushing the 100 one stop or using Fuji 800 print. I can't speak for the new version of Sensia, Sensia II, since I have only used the 100 (no complaints).

Fuji 800 print is a great film when you "feel the need for speed".

I had a friend who used some Scala (around 1995) - it looked nice.

Whatever happened to Kodak Ektar? - I used some back in 93(?) and it was great.

-- [Jon Watson](#), June 14, 1999

Any one into Color Infrared slide film (E-4)? A bit of a pain to buy and process in the

U.S. Here in Geneva, Switzerland I just hop down to the local photo shop to buy and process(sent out like the rest of their film and back in a few days). If you like color shift, Velvia and Ultra you might be into this film. There a few sites on the net where you can see some peoples work.

-- [Jon Watson](#), June 14, 1999

Man, what a great time to be a photographer! We've got so many new films coming out all the time that sometimes it's hard to stay on top of them all. I'd like to add a coment on what Phil has to say about 200 speed films, and higher speed slide film in general. I have been doing some field tests lately, and was surprised with what I have discovered. The new Agfa RSX II is amazing film. I know that Phil says to stay away from anything other than the 'big two'(Kodak, and Fuji), and not to bother with 200 speed film, but this stuff is well worth a look. I have tried the 100 iso version and liked the results, but was hesitant to try the 200 speed film because of what I had heard. I've got to say that after getting my slides back this film is great! Sure, you're going to get a little more grain than 100 film, but as far as colors go, this film is awesome. I'll have to admit that until recently I had pretty much given up on faster slide film. There just wasn't anything decent out there, but I've since had to revise my opinion. For a 200 speed film this stuff is sharp, but what really makes it special for me is the colors. I'm willing to trade off a bit of grain for realistic colors any day. Don't get me wrong, I still have my favorite Fuji &Kodak films, but I think that it's a matter of finding the right film for the job.

-- [Joe Toole](#), June 20, 1999

I'm going through shooting a bunch of Kodak E100VS, the new version of E100S with increased color saturation, and I'll let everyone know how it turns out if anything particularly interesting happens. However, and this is what I thought was notable enough to post, I was in Wal-Mart tonight and noticed they had Kodak Elite Chrome "Extra Color"film. Is this in fact a consumer version of E100VS? Looking at the Kodak web site it looks like it, but of course they don't say.

-- [Mark Wilkins](#), June 27, 1999

Anyone who says, "I'm not sure why Black and White film makes sense any more. When I want black and white, I can just choose 'desaturate'in PhotoShop and it is done", is hardly a person qualified to offer opinions on black and white materials.

For my money, T-Max anything is crap: difficult (and expensive) to develop and fix, with a soft, easily scratched emulsion. (Anyone who likes T-Max, and who has a few days with nothing to do, is welcome to come over to my studio and spot the scratches off prints made from 8x10 T-Max before I switched over to Tri-X.) Ilford Pan-F and the Delta films, on the other hand, are beautiful, especially in PMK.

Anyone who wonders if *I* am a person qualified to offer opinions on black and white can check out my page at: <http://www.ravenvision.com/rvapeter.htm>

-- [Peter Hughes](#), June 28, 1999

I thought the previous statement:

>Anyone who wonders if *I* am a person qualified to offer opinions on black and white can check out my page at: <http://www.ravenvision.com/rvapeter.htm>

was a pretty arrogant challenge. Then I went and viewed Peter's work on the site at that URL. My response was, "It isn't arrogance if you can back it up." Peter, your work is beautiful. You definitely understand B&W photography, not to mention composition.

-- [Tom Hammer](#), July 8, 1999

(I wonder if Phil will ever add threading to his comments server: the discussion on this page is very interesting but is getting out of hand.)

Regarding Fujichrome Multi-Speed (RMS):

I have some example pictures on my web site, mostly shot at ISO 100 and ISO 400. Two of them ([Ruins in York Museum](#) and [View West...](#)) are available in larger (1024x1536) format JPEG images.

Note the shadow detail, in particular on the first example (bushes in lower left still has detail). The colours are clear and natural. This really is a fine film! I always keep a few rolls in the bag.

More examples and discussion at <http://cybaea.com/photo/film.html>.

One day I will have enough web server space available for the PCD files. For now you'll have to live with the damage JPEG does to the image.

-- [Allan Engelhardt](#), July 13, 1999

TCN400 and B&W+

Does anyone have any information on Kodak's new Black and White+ film, especially how it relates to TCN? I've been using TCN for a couple of years now, and really like it. I bought some B&W+ assuming it was just TCN repackaged to be more consumer

palatable, but the film itself looks and feels different from TCN. I've found precious little on Kodak's webpage.

Thanks, Brad Daly

-- [Brad Daly](#), July 13, 1999

I've just used the consumer "Kodak Select" B/W 400 plus, which is the TMax CN 400 in consumer dress. Results were overall fine, even though conditions were overcast and I was using a Rollei Prego 90. The mild surprise came in the printing; seizing on a deal on 5 x 7 prints, the lab (Qualex) gave me pictures that were remarkably akin to sepia tone. This, Qualex tells me, is the result of printing the B/W film on color paper. My local lab informs me that I won't get a true B/W output unless I print on B/W paper. However, the sepia effect (particularly when the subjects are historic 1812 battlegrounds, and an old lighthouse on the St. Lawrence River) is not displeasing. You just have to remember to specify the type of paper you desire for the preferred effect.

-- [Dave Kassnoff](#), July 16, 1999

Just a point about longevity. I shot two rolls of film one foggy morning in the fall of 1976. One of Agfachrome (speed forgotten but probably 200) and one of Ektachrome 160 (high speed Ektachrome it was called) both were stored together in lousy conditions. The ektachromes have many areas where the blue layer is all that is left, especially around the edges of the picture area. The agfa is a crazy quilt of colours - I doubt I can save any of them. I have Fuji chromes going back to 67 or 68. They have not shifted a bit -- I would say as stable as my Kodachromes from the same era.

-- [a.p. spadaro](#), July 17, 1999

Back in the '70s and '80s I used slide film almost exclusively: Ektachrome, Kodachrome, and Agfachrome. I tried Fuji a few times, but gave up on it: the flesh tones were truly cartoonish. (Funny that after all this time Fuji still seems to have problems with flesh tones.) However, by the '90s I got tired of having to drag out the slide projector just to show friends and family a few pictures, so I started using print film.

Well, I've just about decided to go BACK to slide film...I'm totally frustrated with modern consumer print films because too often I'm not getting the results I expect. I don't think it's the fault of the films, though. The problem seems to be that all the photofinishers are using highly automated mini-labs now, and these machines insist on correcting for color balance and exposure. That's great for most people with mass-market point-and-shoot cameras, but unfortunately for me I found that the mini-lab computer

was constantly second-guessing my intentions. (And usually getting them wrong.)

I asked one of the better shops in town if they could turn off the auto-correction when they printed my rolls, but they told me the mini-lab wasn't set up to handle that. The only alternative was to print off a contact sheet, and then choose the pics I wanted to get enlarged. That's practical when shooting pictures at something like an anniversary party, but not so great when I have a whole bunch of travel shots.

Guess it's time to dust off the old slide projector again. I'd rather have good shots that are inconvenient to show, instead of crappy prints that are convenient (and embarrassing) to show.

-- [Alastair Reeves](#), July 19, 1999

I just got back my first three rolls of Kodak's new Black & White + film and ran off some contact sheets. Here are the differences i noticed:

First, the film base seems to be about 1 stop darker than that of Kodak's T400CN, the professional C-41 b-w film. It has a much redder cast than TCN, which has the brown we're used to seeing on color negatives.

Second, the film base seems a little stiffer, which probably won't make any difference to anyone for any reason, unless there's any difficulty getting it to lay flat in some negative carriers.

Third, and most troublesome, it seems to have different contrast characteristics when printing than does TCN. I did contact sheets at grade 3 on Ilford Multigrade IV RC Glossy and ended up with some dull, gray skin tones. I fear that the extra red in the base may have an adverse effect on multigrade paper. Some TCN I printed at the same time looked perfectly good for a contact sheet. I didn't have time today to do any full-frame projection prints, so we'll have to wait and see on that.

Also, I spoke with a Kodak representative on Friday and discussed this film, he told me some of what I've noted above--darker film base, different color/cast--which are designs intended to make the film easier to print on one-hour photo lab machines, that is, that the film is really intended for people who plan on one-hour prints being their final product. He also stated that B&W+ actually has an even finer grain than TCN, which will be pretty impressive if true. TCN already has an incredibly fine grain. I'd love to see what Kodak could do with a 100 speed C-41 film.

--Brad Daly

-- [Brad Daly](#), July 19, 1999

You really should view the minilab results you get with chromogenic films (T-Max 400CN, Ilford XP2 (and Super) as proofs, in the old-fashioned sense. The black-and-white results spook operators and maybe some machines. I've been working on a series of portraits this week. My minilab prints are, variously, sepia or blue. But when I have the negatives printed onto Kodak Polymax, a true black-and-white paper, the results are wonderful. I get a full tonal range, from nearly pure white (the "nearly" may be a function of the paper's color) to absolute blacks.

-- [Ed Baumeister](#), July 22, 1999

I have been using XP2 and now the SUPER form, and really like the unique qualities the film renders. The lab I use, a good one hour mini lab, suggests that the Kodak 400CN is a better film. They say they get more consistent results when printing on colour paper in the sepia range, and a truer B&W tonal range which prints well on there B&W paper. I am still however a fan of XP2. I like the altered tonal range (shorter?) and find it handles being underexposed up to a stop quite well. The only problem seems to be on overexposure where the colours start going wild - anything from bright orange to intense purple - when they attempt to print sepia. All in all I use it for most scenarios at the moment. Now my challenge is to find a B&W film-developer combo I like as much. Any suggestions?

-- [Michelle Maria](#), July 25, 1999

I just want to say that I am one of those who prefers the resolution and purity of B&W negatives over the sh*ty resolution of digital. I use asa25 agfa (pyro PMK developer) and the Rz 67. Absolutely worth trying!! Amazing 20x24 prints. Totally agree with Peter about the whole 'desaturation'nonsense. The difference between digital and film is so big that both terms can't be used in the same discussion. On the other hand, I love this page and salute people who give time &effort (for whatever reason) to keep them up.

-- [Marcel Perez-Calisto](#), August 2, 1999

I can't believe that you don't even mention AGFA film in your page on Films.

I use AGFA RSX (Slide), AGFA APX (b&w) and AGFA Optima (Color prints) with VERY GOOD RESULTS!!

-- [Franco Marx Janse van Vuuren](#), August 5, 1999

I can't believe I'm the only who likes Agfa Ultra 50 for portraits. While it true that I have a very good makeup artist to control face tone mottling, and I reduce the lighting contrast, the ability to make the eye color jump out is worth it.

-- [Dan Arsenault](#), August 6, 1999

re: TMAX CN: I was using XP2 a few years ago and never was really pleased with it. Maybe back then, minilabs weren't used to doing monochrome. Even on B&W film at a 'pro'lab, the proofs weren't that pleasing. Flat, low contrast, a bit dull. However, lately I've been using the new Kodak stuff, and I've been very impressed. My experience in the dark room with it was good too, compared to Delta and TMX. And for snap shots, it's been very satisfactory... I'm wondering if the minilabs have gotten used to monochrome now- they are printing on B&W paper, I've noticed.

re: slides: I've just started using Kodak's new E100 VS. I forget what VS means- perhaps very saturated? Because it really is. Very nice stuff, reminds me of Velvia actually, but a full stop faster. I would highly recommend anyone to try it out.

E200. This is nice stuff too, but not as strong and punchy as the E100 VS or Velvia of course. I took many rolls pushed to 400, but unfortunately apparently didn't have a good lab to push for me. Unpushed, it was quite good- reminding me sort of Sensia-- nothing terribly brilliant (of course, these rolls were shot where it seemed overcast the whole time I was there).

re: print: Has anyone had much experience with the Fuji 800? It reminds me of 400 film a few years ago. I've been quite pleased with it in my P&S. The Kodak MAX, also 800, has proven to be a dog, in my experience.

I would like to try the Reala more- but I don't seem to run across it as easily, and I have to find a really good lab, I think, to take full advantage of it.

My \$0.02.

Tse-Sung, San Francisco, USA

-- [Tse-Sung Wu](#), August 13, 1999

To those who say about traditional B&W films "X is too flat, Y is too contrasty": manufacturer's development times and exposure indexes are just starting points. You must learn to evaluate negatives and more importantly prints and make adjustments to get the results you want. I have used Tri-X, Tmax, Delta and APX films and adjusted their contrast to the level I desire. My favorite B&W films are TMX and TMY developed in

Xtol. I don't think other developers do Tmax justice, except Microphen for shooting TMY at ~EI 800. In my darkroom TMY has finer grain than Delta 400 or Tri-X. I use two bath rapid fixer and have had no fix related problems with Tmax. I use a temp controlled water bath and get consistent development with Tmax. I've used Tech Pan for lens testing (developed in Microphen diluted 1:5) but prefer APX 25 for virtually grainless prints because it's cheaper and easier to use. I think 120 size Agfa Ultra 50 is great for low contrast subjects. For me Fuji NPH is the best all purpose color print film. Just because someone has done beautiful work does not give validity to a claim that "so-and-so is crap". They are not the only ones that have done beautiful work. Lastly, a scanned image on a web page does not tell the whole story.

-- [Tim Brown](#), August 20, 1999

Re: Kodak Elite Chrome Extra Colour (EBX)- I'm pretty sure that this is the consumer version of E100VS (I believe, also, that VS stands for 'Vivid Saturated'). I got a couple of rolls of EBX free by buying two copies of Amateur Photographer magazine here in the UK. I got some good results (my favourite being a sunset sky that goes all the way from deep blue to pink) but to be honest I'm still a beginner and not in a position to compare it to other films. I'm still waiting for Kodak to return my first roll of K25....considering the lab is only about 10 miles from my house they're taking their time!

-- [Richard Galloway](#), August 20, 1999

I agree with those people who really dislike Agfa color negative film: a bunch of unnatural colors. Konica has now become much better than it used to be; recently I shot three rolls of (color negative) film, two Konica and one Fuji (200 ASA). I was very suprised because from the results alone I wasn't able to find out which roll was which brand!

-- [Klaus Ziegler](#), August 24, 1999

Being an avid photographer, I've been afflicted with friends and co-workers who think I'm running short on film. As they've all got at least 2 rolls of "free film" from Seattle Filmworks, they waste no time in bringing it by my desk and bestowing it on me... most of them genuinely feeling they've done me a service. ("Why certainly, Bob, I'd love to use it.... just let me toss out this roll of Portra 400VC I've been wasting my time with.")

Well, turns out I **do** have a use for the SFW offal after all. My dear old mother has been wanting to get into photography, but has no experience loading 35mm cameras. I was able to use that drawerful of lab rejects to give her a good morning's practice, and now she doesn't worry about misloading real film. Thank you Seattle Film Works! ;)

-- [Jim Foster](#), August 25, 1999

I'd like to reinforce the comments I've read here about the Agfa slide films. I've recently been shooting Agfa RSX II (mostly 100 speed), and find it to be absolutely superb. The colours are very natural and rich, without being over-saturated like many other slide films. I highly recommend you try a few rolls!

-- [Chad Simpson](#), August 26, 1999

It seems as though I am the minority here, but the couple of tries that I have given to TMAX-CN have been disappointing. I was shooting stills on a student film set (behind the scenes/ photo-journalistic style) and threw in a roll both during the day and at night. I did not use a flash... all nighttime light was provided by ambience from the set lighting. I also later tried a roll during a Wisconsin snow storm, to give the film a second chance.

The photos that returned mimicked the latitude of video. I lost details in the shadows and the highlights were blown out (no detail as well.) But the interesting thing was there was no reference white in the prints. The highlights (blown-out) were a light grey. This was from two different labs at different times (film set versus snow storm.) Same results from both. I was very dissatisfied.

However, since the film has gotten such positive reviews from other people, maybe it was the consumer grade labs and the color paper they used. I'll try taking the negatives to a pro lab (A&I in L.A.) and see what they can do. So, I'll give it a third try. I could be wrong.

-- [George Feucht](#), August 29, 1999

I've tried Agfa Scala and I have found it very interesting. I agree with other people comments. I used a couple of rolls in Venice. Grain is fine and the projection of B/W slides is very fascinating. Also here in Italy you have to wait a couple of weeks to get your slides back.

-- [Carlo Strapparava](#), September 1, 1999

quick tech comment for those who are submitting all these b&w comments with too little info. as i read many comments i am surprised to hear people either cheer or boo various emulsions without giving their development methods. tri-x developed in dektol looks nothing like tri-x developed in d-76 1+1. so if you hated the film, what developer, time, temp etc... did you use.

also, if you are going to a one hour lab, then you are in some ways doing yourself a disservice. as a former employee of a one hour lab, i can tell you your b&w negs will look like crap. most, not all but most, one hour labs run b&w film through a machine with chem temps close to 100 degrees to bring times way down. if you want to get good results, with any film, test test test to find what works best with that film. and despite whatever accuracy or disaccuracy you find on this comment page, test the film yourself anyway. you'll be glad you did.

and about color neg films. if you think you are getting really awful results, look at your negs, not your prints. i know this sounds very basic, but after reading some comments about various films, i am very surprised about results. if you have a pic you like, but think the film is at fault for poor results, take it to a custom lab and have a custom 8x10 made. see what it looks like. you may find it is the lab not the film that has given you poor results. if you buy off brand film though i take that back, most off brand, ie rite-aid, cvs, or k-mart film is crap. though often made by a bigger manufacturer (sometimes even kodak or fuji) it often is far poorer than the kodak, fuji or agfa offerings.

just for the record, i have shot hp5+, tri-x (both versions in both 35 and 120; almost all 100, 200, &400 speed offerings from fuji and kodak in neg film; and kodak elite 100 and 200, and various fuji slide films, notably provia. i have been able to attain the results i want with all of these films. it isn't the film so much as the knowledge of how to best use it that brings about good photographs.

do your homework. test your films just as you would test a camera. the best comments and results on this page have come from those who tested their films and tailored their habits slightly to fit the film or who have tailored their film to fit their habits. michael meyer

-- [michael meyer](#), September 14, 1999

I agree with Mike Meyer totally. I am a commercial/industrial photographer, and if I have a problem with an image, I have to look at the negative itself. I have found that there is no all-purpose film for anything I do. I use quite a variety from B&W to E-6 to C-41 films, and if you follow the manufacturer's recommendations, chances are your results will be less than satisfactory. Every meter, body, lens, development technique, etc combines to produce unique results. The key is gain the technical knowledge to become consistent, and to do that, well, there is not enough space here to even scratch the surface of that subject.

-- [Kevin Stephens](#), September 15, 1999

I always get a kick when I hear people rag on T-Max 100 and 400. I started with the films right after they came out. After learning to use them, I tried several other films, like

FP-4 and the older Kodak types. I always come back to T-Max. I don't like Ilford's quality control and thin film bases, my main complaint against them. I have my entire portfolio, photos I show in galleries, made on T-Max, mostly 100. I could convert to another film if needed, but I have fallen in love with the smoothness and tonality of my T-Max negatives. I guess it pays to not give up too quickly.

-- [Chris Wray](#), September 24, 1999

After using Kodak Portra 160 NC for taking outdoor (wildlife, birds and landscapes (Maybe the film isn't made for this)) i said to myself: I will never use this film again, such a bad color. Maybe VC is better i thought, O No, it wasn't. Snow was white brown in stead of white. Good films for nature photographing: Fuji: Reala, Velvia, Provia (testing NPS/NPH/New Superia) Agfa: Optima, RSX Kodak: (testing: Royal Gold, VPS, EPP, E100S) Films i used mostly: Fuji Reala negative; Velvia Slides

-- [Ken Hawk](#), September 26, 1999

Recently tested 2 rolls of Agfa HDC 400 shooting flowers, landscapes, mountains and snapshots. Absolutely blew out the Reds, way oversaturated. Blues and yellows real nice, greens very realistic but I would have liked a little more punch, and earthtones real, real nice. Blacks were great with very good detail, and whites very good. Skin tones suprisingly realistic. Contrast medium. Used in a Nikon 8008s and my Pentax 928 P&S, sometimes with flash. Developed by a Pro lab on Kodak paper and an Agfa dealer on Agfa paper, better way to go and paper real nice. Both sizes 4x6. If they could get the reds under control they'd have a nice all around 400 film.

-- [Wayne Crider](#), October 2, 1999

Recently I've been getting mostly good results with Kodak Portra 400NC with Fuji processing. This has worked for portraits, as well as for scenics. Finding the stuff while on vacation when you run out of rolls can be a real problem though! I agree with Spadaro... as much as I like the Portra, I still find neg processing somewhat hit-and-miss. Forget about shots with high contrast light. Mini labs, as well as so-called "pro" labs (machine) print these scenes too light, time and time again. For critical shooting, when I'm counting on limited exposure latitude, I shoot with slide. I like E100SW and Velvia for scenics. I've also get good results with Sensia 400 when shooting in low-light and Provia 1600 when I REALLY need speed.

-- [Dennis --](#), October 15, 1999

I salute all of you who use Agfapan APX25 and Techpan films; I personally find them impossible to use. Phil mentioned "Ansel Adam-esque landscapes" via APX25, but consider we need 1.) small appature for depth of field, 2.) morning or evening light for

shadows and dimensionality, 3.) filter for contrast/tone adjustment. Pretty soon one find one need exposure of several seconds. But then we need to adjust for reciprocity failiure. Soon one's driven to a 10-15 s exposure. Things (grasses, tree branches) start moving and the print looks blurred.

-- [Ling-Nan Zou](#), October 16, 1999

In response to Mr. Wray's comment about Ilford's quality control; I have never experienced any problems with Ilford film that are not the result of an error on my part. Quite the contrary, I find Ilford films to be some of the most consistant on the market, and for this reason use Delta 100 almost exclusively for B&W.

-- [Timothy Breihan](#), October 19, 1999

I shoot theatrical and PJ images for local concerns, and I've found that if you use a fast ED lense, Fuji NPS160 and NPH400 yield excellent results. I shoot it at The Texas Renfest and they've used some of my neg shots in their advertising. I shoot Astia for portfolio shots for the actors, and NPL160 (the tungsten stuff) for cast photos. I plan to take 80 rolls of the NPS and NPH to Cairo with me in December; I'm THAT impressed with it. I think alot of the comments so far will change significantly as soon as they experience some of the digital mini-lab processing. I've gone to it almost exclusively. The "almost"exception is B&W. Either they don't know how to operate the machines right, or the machines just won't properly handle the tonal aspects of B&W, but they blow chunks on B&W.

-- [Jay Hargett](#), October 21, 1999

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Jay Hargett, Tomball College

-- [Jay Hargett](#), October 21, 1999

I am not a professional photographer but have been serious about this art form for many years. I have gone through the Kodachrome years, the garish early Ektachrome years and the old Anscochrome (which by the way was horrible) and I feel blessed to have the choice of film available today. My major interest is in slides so I have tried many films and most are pretty darned good if you know the characteristics. I almost always used to shoot with EPP and Fujichrome but now use a lot of 100 ESW, Fuji Astia, some Velvia in medium format only, but have a new favorite----hands down it is Agfachrome in either the RSX (pro) or CTPrecisia (amateur) varieties. I have NEVER been disappointed with this film and shoot it about 75% of the time. Supply is sometimes difficult but I order in large lots. I do like Ektachrome and Fuji and have tried them all including the dreaded 400 and you know what, they are also good. I shoot less and less negative film even though I believe that the film is not nearly as big a problem as the processor. I have tried Agfa HDC with exquisite results but have been horribly disappointed by another lab. I generally use Fuji Superia or Reala and find no complaints if the lab is good. It pays to find a good lab and stay with it. A good machine operator who recognizes the need for different printing channels is a God send. Finally, most black and white disappoints me. Not the film but the lab work. I have a full black and white and color darkroom but business dictates that I have not enough time to do my own work now and the black and white lab work has ranged from plain crap to work that has caused me nausea. I will return to black and white when I have some time to really devote to processing and printing myself. In summary---fellows and gals---the film is wonderful--it is marvelous--with the exception of that movie stock film which is given away free.

Mel

-- [Mel Gregory](#), October 22, 1999

If for HP5 is a wonderful film. When exposed at EI of about 200 and developed in HC110B it will knock your socks off. Forget "push" processing; it doesn't work.

It's also the ONLY 5x7 sheet film available in 25 sheet boxes. Kodak wants you to buy 100 sheets at a time.

Tony

-- [Anthony Oresteen](#), October 23, 1999

Has anyone experiences with the new Fuji Provia 100F (III)? I'm shooting now mostly very saturated dias (the life itself is colourless enough :)))), Velvia and 100VS - both great films, no complaints.

My favourite german "Color Foto" magazine (really professional one on tests) is going to have a test in their december issue. It has been announced as "Really as fine grain as Kodachrome 25 and saturated as Velvia?"silently assuming a big YES on both answers.

Since I have read many of "they told"-style comments, I wonder if somebody could share his OWN experiences with that new film.

Akos

-- [akos buzogany](#), October 24, 1999

Iford FP4 has well defined fine grain and a beautiful rendition of mid tones and handles contrast, but is a little slow for handhelds Tri X Has great character with its well defined grain and is capable of reasonable tonal subtlty if the exposure is well shorted, I cant get on with T grain films they just dont seem to have the tonal depth of FP4 of the grit of Tri X. XP2 has very wide exposure latitude and pulls in shadows and highlights generating negs with smooth tonality but can seem a little flat. The big trick is getting the exposure correct dont trust the ASA, make your own tests with your camera/meter I find overexposure by as much as a stop and a half when just trusting the evaluative metering on my canon 600 with tri x. develop for 9 min in Aculux.

-- [jim walters](#), October 25, 1999

AGFA ULTRA 50...

Tried it...the colors are extreme...i liked the blues, greens and yellows just fine, (for blue sky, it beats a polarizer!) but the reds were so saturated the image lost detail...my advice is to avoid using this film on subjects that have bright red/orange in them, because it will overpower them...on a hazy day, this film might be just the thing to compensate for dulled colors...

and doesnt tiffen make a color-enhancing filter that you can use to make eye-color pop?
it would make using this film to achieve that end unnecessary...

i used it to take pictures of the fall colors, and in most frames, it went farther than i
wanted...(i used my T4)...only 2 frames were blurry (my fault), so im once again
reassured that fast film isnt "standard"for point&shoots...

im trying E100-extracolor now, and ill let you know how it compares...

if youre really interested, ill email you a scan...

-- [james bailey](#), October 26, 1999



Punx, By Jason

I have been using Fuji Chrome (usually 100iso, amateur quality) for a while now, never having the chance to really try out other Chrome films, In may, im going to travel to San Fransisco to do some local work for a choir company, I need a film that has excelent grain and can handle high contrast between the harsh hot studio lights and the pitch black backgrounds... should i stick to Fuji Chrome or try another brand or type ie:Velvia or Kodakelite ?

thanks

Jason

Vancouver WA.

-- [Jason Cook](#), November 5, 1999

Decided to try Kodak T400CN Professional (C41 - B&W) as my wife complains every time I come home stinking of fixer - she REALLY hates it and I have to get straight in the shower. This, at least would reduce the pain. Took a few informal outdoor portraits of a friend and dropped it into the Fuji lab that usually does my Superia/Reala. The next day I looked in horror at the brown and white prints - I was expecting warm tone but brown - I mean really brown? Then I took them into the darkroom. Where was the grain? This was finer than Delta 100! Multi-contrast filter? Tried it without at first on some Kentmere gloss (no longer imported into Australia unfortunately). Absolutely superb soft, even tone. I'm hooked. I used to be addicted to contrasty, dark prints but no longer. The extra two stops will be appreciated too, given aging eyes and slow zoom lenses.

-- [andrew fildes](#), November 7, 1999

Phil's comments are spot-on 99.9% of the time so no arguments there. However, I wouldn't give up on Agfa Ultra film just yet if I were you. Once you know the characteristics of a film, you can use that to your advantage. Agfa Ultra film has, as Phil's page says, *extremely* high colour saturation which creates surreal colours (I managed to produce great colour gradation with this film, unlike in Phil's experiences) and this can even look cross-processed without much effort. Many of the colour fashion images on my web Portfolio were taken with this film to great effect - go have a look!

Regards,

[djh](#)

-- [darryl humphrey](#), November 11, 1999



Halloween 99 on mexican TV

Well put and documented. Great page. It may be important however for your readers to know that a new color print film in the market has very good ratings and was voted among the best ten recently: Konica Centuria 200. I've tried it and it is superb; not only color rendition but contrast and shadow detail, not to mention sharpness. Have a great time.

J. Ramsn Palacios

[e-mail](#)

[Brief Love Story](#)

-- [J. Ramsn Palacios](#), November 11, 1999

In reply to above questions about Fuji Provia 100F (RDPIII). Just got back first two rolls. Very sharp with no apparent grain at 10x, good outdoor skin tones with sunlight+fill flash. Saturated but not unreal. Much better than previous Provia which I always found to

have somewhat muddy color separation.

-- [Glenn Kroeger](#), November 13, 1999

Black and White Slides with Tmax400CN ?

What an interesting perspective. You can get slides when processing C-41 film in E-6 chemistry so I thought, why not try this with the new C-41 B&W Kodak T400CN ?

Well, if there is indeed a positive B&W image on the processed film, there is also a **very heavy dark green basemaking** it extremely ugly. It's even stronger than the usual orange base of standard negs, and you can only guess at the positive image. Maybe someone will want to try it with XP2 or Kodak B&W+ to see if they get fancy colors too ?

-- [Pierre Caillaud](#), November 16, 1999

My findings.

I found this really odd, but when I questioned people on what was the best make of film in the World, I got the following:

- Fuji and Kodak were most popular, and practically inseperable.
- Agfa and Ilford were half as popular as the first two, again both were practically the same in popularity.
- Konica was a third as popular again as Agfa/Ilford.
- Practically nobody liked independent films!

This striked me as so unusual. I would have though that Fuji would be miles ahead because it makes brilliant colour, B&W, slide, *and* print emulsions, whereas Kodak has some good and some very dodgy offerings in all areas...have [a look at the results](#)yourself.

Regards,

djh

-- [darryl humphrey](#), November 19, 1999

I've noticed a number of entries above which suggest that slides shot on Agfa films don't last as well as Kodak (especially Kodachrome). I used Kodachome 25 and 64 from when

I got my first camera (Instamatic 50) up to May 1975 when I switched to Agfachrome CT18 and CT21. I know this because I shot the first part of the Sywell Air Show of that year on Kodak and the latter part on Agfa.

Going back and comparing the 24-year-old chromes was interesting. The Kodak and Agfa slides differ of course, but they've both lasted well. The colours in both seem to have very much the same characteristics they had when I first got them processed. They've been stored semi-carefully in cool, dry, dark places, but never refrigerated.

Since then I've used successive versions of Agfa's 100/21 speed slide film (I like to stick to a limited range of materials), and now use CT Precisia. I've been happy with the results, and I'm sure that the limits on the quality of my photographs have little to do with the film I'm using.

-- [Robert Bryett](#), November 20, 1999

Neopan 1600 ----- While Fuji Neopan 1600 does have the finest grain in its class, it also has terrible shadow detail with the developers I have used (Diafine, Xtol, Microphen (3200), and HC-110). To me, this translates into marginal image quality. I'd rather have a very grainy film with maximum shadow detail and tonality than a fine-grained film with no shadow detail. I shoot T-Max p3200 or Delta 3200. I've had very good results with Microphen. YMMV. For best image quality with Neopan 1600 at EI 1600, develop with Diafine. But with this combo, the grain isn't much better than T-Max p3200 at EI 1600.

Neopan 400 ----- Works well in Xtol (1+1). It has slightly finer grain than Tri-X and smooth tonality. I pushed it to EI800 in Microphen once, and it had good tonality but it was grainier than Tri-X at EI 800 in Xtol (1+1). I'm going to try pushing it in Xtol for less grain sometime in the near future.

Tri-X ----- I love this film in Xtol(1+1). Finer grain than in D-76, good tonality. It also pushes extremely well to EI800 in Xtol(1+1) -- in fact so well that I can barely tell the difference from an unpushed neg.

-- [Devin Shieh](#), November 28, 1999

I have read and re-read this page on film many times, but this Thanksgiving weekend I shot some family portraits with some Kodak VPS 160... here's the catch...In Arizona, even the Thanksgiving weekend can give 87 degree weather, and part of my photo shoot was outside, and most of my subjects were younger than 5. Moral of the story? Be very sure that you allow the film to come up to temperature when shooting fidgety children in Arizona. Invariably the mothers will start rushing you and you will want to just throw the film in and start shooting. I did get those unsightly splotches Phil warns about on one of

my rolls... fortunately I knew to burn lots of film to come up with a few good shots.

-- [Henry Gonzalez](#), November 29, 1999

I've just recently started to process my own B+W film again after many years away from it. As far as I can tell, this might be termed "The Golden Age of Silver." Naturally, everyone will have their favorite(s), but I've tried most, if not all, of the films mentioned in the comments and I've been rewarded handsomely. The two films I've been most impressed with are Ilford 100 Delta, processed in Agfa Rodinal, 1:24, 68F for 9 minutes. This apparently produces the effects of water-bath development, since I agitate for only five seconds each minute, rather than at the Agfa-recommended 30-second intervals. Eminently printable negatives with very little PC-filter tweaking is required to get full range prints.

I recently exposed a roll of 6x6 Tech Pan @ E.I. 25, using Kodak's foil packet developer. I have a darkroom space, but most of the dark seems to leak out, so I use the changing bag to daylight tank method of loading the film, which rules out being able to place the loaded film "in the vat "as someone observed. Instead, I used a 2-minute pre-soak at 77F (if memory serves, that is one of the recommended temps and I used the corresponding recommended time). The vigorous up-and-down agitation was used and the rest of the processing was finished at the same temperature.

Well, I'm glad I looked at the resulting negs while seated in an armchair. That stuff will teach you how strong your heart is. After looking at them through a good loop (several times- I just couldn't believe what I was seeing), I took them to my friend's house where my enlarger currently lives (the dark stays put there) and proceeded to amaze both of us.

Someone who uses the same photo store as I do, has developed Tech Pan using C-41 developer!?!?!?! He claims he exposes at E.I. 100 and gets grainless results. I've yet to try this, but he uses the store's C-41 developer from their in-house processor and I've been told that I can do the same when I'm so inclined.

I have been VERY pleased with Agfa Scala. Seeing a B+W transparency that looks like a warm-toned, full-range print is OK by me. Has anyone ever tried to print one of these on Ilfochrome? It might be contrasty, but there is somewhere on the web, instructions on how to use the Tetenal E-6 kit that produces a lower D-max for Scala. So many possibilities and so little money!

-- [Michael Brodie](#), November 30, 1999

Hello all, here's my tried and true formula for 22 years (since 1978 or so):

- 1) **Ilford HP5 rated at 800 ASA**, Ilford Microphen developer, diluted 1:1
- 2) **Ilford FP4 rated at 200 ASA**, Ilford Microphen developer, diluted 1:1

This has given me super-consistent results in combination with my Canon F1 and EF. See my photojournalism gallery at <http://planetcast.com/historic-moments/>

-- [William Stratas](#), December 4, 1999

As to why to still shoot B&W film, when you can digitally desaturate a color scan, I would say that for the same reason to practice scales, rounds, and other simple exercises on a cello; it forces you to focus on your technique in a more limited environment, and prepares you better for when you're shooting for real. Personally, I feel that I do better in color, whether in 35mm or larger, but the experience of visualizing in monochrome periodically has helped improve the color pictures. Hauling a 4x5 out into the field, and working with that as well has also helped sharpen my visualization, as well as strengthen my back. In the end, it's the need to continually practice in order to remain sharp and on top of your craft.

As for the obligatory film recommendation, Ilford FP4 in large format, and HP5+ in 35mm, rated at approximately 2/3 rated speed. Agfa100 in sheets is also nice, though a bit soft, at least with my preferred developers. It took to N-1 nicely, but had to be beaten to get a good N+1, at least with my choice of developer and processing.

-- [Fred Arnold](#), December 16, 1999

Black-and-white is the industry standard for actors headshots, so it makes sense to shoot in black and white.

-- [Dave McCrea](#), December 16, 1999

I hate Kodak Konsumers'films. I meen Kodak Gold.

The Kodak produces a wide range of quality professional films, like Extapress (Royal Gold), Portra, some other films. They also produce low-end film for folks!!! This is Monkey's Kodak Gold !!! Push a button we will do the rest. Kodak advirtises Gold agressively and keepa high prices. The quility of Gold film is as high as quility of Kodak's POINT-AND-SHOT cameras. Everybody knows that a quality product, like a photo film must to be expencive, so people CHOOSE Kodak!!! Kodak even do not publish specs of the Gold.

The Gold film is done for most of us! The film for casual photographers. Kodak must remember that non-professionals use 90% of negative-films. I am not pro. But I want quality consumers'films also from kodak.

Fuji do not produces as many brands as Kodak does. Fuji even do not break down their their Superia films for amateur and professional. Fuji does just quality films for photographers. Is in it funny that Fuji's NEW Superia is cheaper than Kodak's Gold????????? Superia is much better. Just try it!!! ISO 400 is superior.

In Japan market share of Kodak films is not considerable. Japanese use Fuji and they happy with it. Of course it pushes KODAK to new trade-wars against Fuji, but I think the first thing they have to do is improve quality of own products, not lobbying quotas in US market at governmental level.

Agfa makes nice HDC+ films (Actually it is their consumer's version of Professional OptimaII). I guess both are good quality films with mostly the same emulsion. I think charachteristik of HDC+ can vary a bit more than Optimas, but it is the good film. It is much better than KODAK Gold and it is a half of the Kodak's Price. HDC+100 is especially nice.

I will try new Konika Centura in near future. It will be funny if the Centura will be better than Gold.

Shame on Kodak!!!

Mark

-- [Mark N](#), December 29, 1999

120 Agfa Ultra 50. Turn up the colors! -When this is the desired effect. I took some fall foliage pictures of my daughter. I overexposed the face 1 stop and underexposed the background 1 stop. The fall colors rained in with extreme saturation/intensity (intended) and the facial colors are natural looking. If you know how to use this film, it looks great.

120 Velvia 50. Great scenic shots with vivid colors. More detail than the Agfa Ultra, but less saturation.

120 Astia. Good for protraits.

120 Kodak Portra 160 NC. For portraits, I like this one the best. It show very natural skin tones with great detail. I shoot this 5 to 1 over all other film.

120 Kodak Portra 160 VC. More saturation, not as sharp, but good if you are taking the photo and want to include more color (like grass) I still think that Fuji has a better green, but overall the Kodak VC is exceptional.

Konica 50. Not recommended at all.

-- [M Canavan](#), January 5, 2000

Having read all of the interesting recommendations and points of view about film I'm surprised that Kodak Plus X B&W was not mentioned. I am NOT a professional and others may disagree, but I've had good luck with this very nice film. Tonal qualities, grain and the like are pleasing (to my eye). I have not processed this film, or any other, for more quite a few years, but I recall that it was a relatively forgiving product.

-- [Paul Mills](#), January 9, 2000

Agfa Ulta 50--this is the "Velvia" of print films. Outrageous greens and twilight blues, although too much for really strong reds. Grain is slightly higher than expected for a slow film but the gorgeous color is worth the price. Shoot it in med. format, you will produce prints that surpass Velvia on Ilfochrome paper. An eye-popper! See my results at Perspectivesphoto.com. P.S. Don't trust the local lab to give decent results from this film if they do not have a specific channel for Ultra 50! Better off with 120 format and a pro lab.

-- [alan hoelzle](#), January 15, 2000

I've just tried Kodak Ektapress 100 (Pro), which was hardly mentioned in the former comments. I can tell only good things about it. Pictures are sharp, contrast is good, and the colors are saturated, but rather natural. The pictures were taken in changing sunlight conditions (with cheap Pentax MZ-50 and cheap Sigma 3,5-5,6 24-70), and the film handled them well. I'm interested about other experiences about this film, and also about Royal Gold films (I haven't tried them but they are the favorites of my photo lab assistant).

Nagy Bila

-- [Nagy Bila](#), January 21, 2000

Regarding B&W films, I noticed that nobody has mentioned that they have attempted to calibrate their films exposure (ISO) or developing to match the paper they are printing onto. I think that if you do so, you will find that Tmax films is a finer film than has been posted on here.

If you develop Tmax films with old technology developers such as D-76, D-50, HC-110, or Ilford eqivilants as you would with the Tri-X and Plus-X, you are likely to experinece disappointing results. Tmax films are a different kind of film that needs to be handled differently.

If you use Zone System, you will probably find that you need to rate Tmax films for a full stop slower than rated. I shoot Tmax 100 at 50, Tmax 400 at 200 ISO. For development, I use 1.5 ounces of Tmax Developer (instead of the recommend 2), at 75 degrees, and for 7 minutes, agitating 5 seconds every 30 seconds in distilled water.

Also, you will probably be much more pleased with the Tmax films if you print on Polymax paper instead of Polycontrast. Particularly with Tmax 400. The new films have a strighter line on their density cruves, and PolyContrast is designed for a more gradual slope.

I've found that by using the development and exposure method described above on Polymax paper using Polymax contrast filter #2, that I gain one full zone (or stop) more range on the highlights in both tone and detail, no added tone in the shadows but detail reaching between half an full stop lower while retaining seperation, than when I Zone System through Tri/Plus-X film in D-76 on PolyContrast paper. In effect, I gain a full stop in tonal range, and at least 2 stops in detail range. Also, when using Tmax films, skin tones are

When testing Kodak 400 B&W Select or CN (C-41 B&W film), I was very disapointed. Yes, the grain rivals 100 speed film. But the seperation is very low, with no detail in the highlights above two stops above middle gray. To make matters worse, not only do you not get any detail after 2 stops over, the film curve is so flat there that added exposure alone is usually not enough to get a white on your print.

Further, I do not see the point in 400 B&W select. If you want B&W, traditional B&W films will give you extended tonal range, better seperation, more detail, longer archieval storage, and easier printing in the darkroom.

Additionally, if you MUST shoot C-41 and want a B&W print from it, it is going to be typically better to just shoot your standard color negative. That way, if you want color, you have it. If you want B&W, then you can print on Panalure, which would allow you to use color filters to freely adjust your tonal scale and contrast in the darkroom, something neither 400CN nor traditional silver film will allow.

-- [Clayton Pearson](#), January 25, 2000

After having shot numerous rolls of both in a variety of conditions (perfect to utter crap),

I would like to say that I prefer T400CN to Tri-X. Maybe I'm just a lousy photographer, but I can't get any contrast out of Tri-X, while the 400CN for the most part has had good contrast. One caveat about the 400CN - don't expect the prints from your corner 1hr to come out B&W. I use Walgreens (they have two excellent people that work there...I am VERY specific about using those two people only) down the street for my C41 print film (not Tri-X - that goes to a pro developer), and they can't produce a B&W print from 400CN to save their lives (in which case I take the desired negatives to a pro developer in town).

-- [steve c](#), January 25, 2000

Phillip's opening paragraph in this section really says it all. Slides are really amazing! But, I think many new amateur photographers (I am REALLY new) don't know much about slides since we have been brought up in a consumer-driven "print"world.

One point that I don't think has been made (at least it has not jumped out at me on this site) is the cost comparison of print film versus slide film (for the film itself and the processing). As I said, I am really just starting out and want to practice by taking lots and lots of pictures. So, I am looking for a cheap way to take lots of pictures but keep the quality high. Sure, you can get cheap prints, but everyone is always complaining about the lack of quality. For newbies, we aren't then sure whether the problem is with us or with the printing process. So I suggest to my fellow newbie picture takers to consider slides for your practicing. They are much cheaper than prints and the quality is unbeatable. Sensia II 100 ASA slide film costs 3.09 for 36 exp. add the cost of processing with Fuji mailers and the total is 6.38. (A friend, by the way, recommended that I start with Sensia slide film as a newbie because it "has just about the widest exposure latitude of any slide film").

-- [Paul Trunfio](#), January 26, 2000

Shame you don't mention Fuji Neopan 400 & 1600 in your B/W section. I swear by it, it's brilliant for stage work. Loads of silver in it so you get a good neg to print and loads of latitude. Also I disagree with your stick a colour neg in photoshop and it does the same as a B/W neg. Sorry it ain't necessarily so! Normal stuff maybe, but when one wants to get creative a screwed up neg, with good printing, and toning, and solarisation, and fogging, and negative blurring can't be achieved as well or in the same way as with B/W negs. It's the chemicals that make the difference. Including those on the paper it's printed on. Not that you can't do great things with photoshop you can, and I do, sometimes, but sometimes it's just as easy to print the thing, and know that by bastardising things at all stages of the process, knowingly, will produce pictures that could not be produced in the computer. Somebody mentioned dev-ing neopan earlier. I've always used Agfa Rodinal and it's always given great results. Like Tri-X, neopan has a good grain structure too, which is another thing colour films won't give you most of

the time. Neopan can be pushed a long long way too. I've been doing stage photography for years and Neopan has always served me well.

-- [John-Christian Jacques](#), February 9, 2000

Fuji Press 800 is another great secret. I use it as general purpose consumer grade film. I have enlarged to 8x10 with no grain.

-- [Mike Morgan](#), February 15, 2000

I was wondering if anyone else is having problems with Qualex photo developing labs. In 6 months time, the Allentown, PA, location has given me bad service on 3 occasions. The first time, they didn't give me the right number of reprints, resulting in the whole order needing to be sent back to them and I missed a deadline. The second time, they lost a coupon and stuck me with a full price order. The third (and final, one way or another) time, they again miscounted my reprint order, and it again was sent back with negatives, which were promptly lost. It shipped from them but never made it to its destination. I had to go through several employees before being told it would be traced and I'd have an answer within 48 hours. 24 hours later, I got a message on my answering machine saying they began the search (which I would have started immediately by calling all of the possible locations it could have gone to, then breaking out the rubber hoses on the driver). A day later, no response whatsoever. It's a good thing I have one set of prints. Thanks, Qualex for letting me down, and letting down people who rely on me for pictures. I know this is a page mostly devoted to getting the best quality pictures, but I needed to vent my frustrations about the service I'm not getting.

-- [Eric Shaffer](#), February 15, 2000

B &W as compared to Color.

It is my opinion that a B&W picture need to be more interesting before I see it as a good picture, so it is harder and more learning need to be done before I call myself a good photographer. I have to practice, and I need a good film and a good camera. To keep the focus on the pictures instead of the equipment and to keep the cost and burden to carry it down, I prefer to use only one camerasystem, my choice is 35mm.

I want grain in my resulting picture on a level that is close to prints from a 4x5"negative, so my choice of film is Kodak Tech-pan. Then I will have negatives that I can print in any size.

On Technical Pan E.I. 80 with Tetenal Dokumol

I presoak my films 2-10 minutes (I think I forgot once, and they were there for 1/2 hour), develop 2 film at the time in a Paterson tank for 18 min in 600ml (as compared to 500 stated from Tetenal) with Kodaks recommended agitation, normal stop and normal superfix, rinse, then I dry the films overnight in my kithcen after rinsing with demineralized water.

Excelent results last time. I recommend this to anyone interested instead of going for medium or larger formats. Portraits with flash are intense in their lack of grains.

-- [Øyvind Dahle](#), March 6, 2000



Movie set 1998)Evin Grant 1998

I disagree with you that t400cn is sharper than t-max 100. As a books institute graduate and a professional photographer that uses black and white film for 60% of my work I have done extensive testing with all the kodak BW and c-41 process monochrome films. T-400cn can not be beat for convenience and it does seem to have a nice tonal range. It unfortunately suffers from what all c-41 process films suffer from and that is a lack of any real grain structure because these films are a dye based process so what appears to be grain is actually a smudge of dye. Admittedly this is hard to distinguish but for large blow ups and fine art printing t-max is still the most fine grained sharpest and for my money the best tonal range (most important) If you really want to fall in love with the t-max films all over again start processing all of them in Edwals ultra-black paper developer! This highly active developer gives all the t-max films an extraordinary punch and a visible sharpness increase without sacrificing its extraordinary tonal latitude. Incidentally I have it from a reliable source that Helmut Newton uses a similar process for his T-Max 100 the film he now uses most. The formula is the same for all three t-max films 100, 400, 3200. Dilution 1:9 @ 68 degrees for 2 minutes continuously agitated (reversing motor base recommended). I also only use 2/3 volume of chemical in the tank (20 oz in 32 oz tank) normal stop and fix. Take a look at the results if you want. www.image-in.com

-- [Evin Grant](#), March 27, 2000

Has anyone heard about the new film process that dramatically improves the grain of film by a huge factor? I saw an article in the NY Times a few months ago about it. Apparently, it uses a new manufacturing process that makes that grains much smaller, enabling you to create very fine detailed negatives, with a much lowered ISO requirement. Also, the film development would change.

-- [M Canavan](#), April 3, 2000

I have used a fair number of films during the past four years as a photography student, and here are my opinions.

In 35mm, for color slides, I love Kodachrome 64 and 200, but can't trust the processing. Sometimes it has been VERY bad, i.e. slides cut in the middle, dirt all over the images, etc. I ended up shooting a lot of Fuji Sensia 100, which can be processed locally. I have not used many color print films, but for black and white my personal favorites are Kodak Plus-x, Tri-x, and Ilford HP-5, rated normally and processed in D-76 at 1:1, which is what's usually available at school. I find that HP-5 pushes to 1600 a LOT better than

Kodak T-Max 400.

Medium format has been either Kodak Plus-x or Ilford Pan-f, with T-Max 100 in use when it was all that I could get. I like TMX 100 in the studio, but not so much on location. The negatives usually get enlarged to 8x10, sometimes 11x14. I have a lot of color transparencies in 6x4.5 format, most of them are Kodak EPP or EPN, from a few years ago. I have used Astia, if I was shooting E-6 medium format now I would probably stay with it instead of the Kodak film.

I am just beginning to use 4x5; SO FAR I have only used Plus-x and HP-5, and Fuji Velvia or Astia in the studio. Obviously they enlarge to 11x14 very nicely. Don't have enough experience to really judge this format yet.

-- [Richard Thomas](#), April 20, 2000

I agree with the choice of Fuji Astia slides, it is also my choice for fashion shoots. I, however, strongly disagree that Agfa is bad. You need a printer who KNOWS Agfa's red-heavy (on Fuji paper) quality and uses Agfa's paper to compensate that. It works as a system if you look at the data sheet. Optima is a good film, very fine grain, and if used with Agfa paper the color is spot on.

-- [Leo Lam](#), May 10, 2000

I just read Philip Greenspun's comment regarding that black and white film doesn't make sense to him any more. Maybe he should check out work by James Nachtwey, Sebastio Selgado, Ralph Gibson, Sylvia Plachy, Martine Frank, Mary Ellen Mark, and many, many others working at their top of their crafts making a difference with black and white film. It makes a lot of sense.

-- [Ralph DeMatthews](#), May 15, 2000

Here's a tip for slide film users: Kodachrome looks unbelievable in fluorescent lights... it's this wonderful off-white color balance that beats the yucky green found in E-6 films. Kodachrome in indoor situations especially with skin tones looks stunning.

-- [Jeff Sheng](#), May 22, 2000

has anyone read the film reviews that british magazine "Practical photography" is currently conducting?

last month they did all color films up to 100 speed, this month they did 160-200 speed.

their results are sometimes puzzling.

for instance, they hate kodachrome! they rate it very poorly, all emulsions. i suspect that the european kodachrome processing facilities are lacking.

they confirm what most people say about agfa ultra50: the reds get oversaturated and you lose detail.

-- [james bailey](#), July 7, 2000

Dear readers,

I don't think anyone else has mentioned this. Kodak's T400CN is a truly wonderful film, with amazing sharpness and freedom from grain. One way to add 'permanance'in a unique way is to shoot subjects that lend themselves to antiquity.

There is a 19th-century working agricultural farm about 45 minutes from my home. All the employees dress in the costume of that era, they use oxen for the work on the land, and you don't see electrical power cords or power saws. They work very hard, living off the land. This makes for *fantastic* photo opportunities, especially when you shoot T400CN and have it printed in sepia.

The lab I frequent uses a Fuji processor and printer, and, of course, long-life Fuji paper. Whe I shoot T400CN and have them make sepiatone prints, it looks like we're back in the 1800's; the 8x12's I have on my office will last the rest of my life. I have the sepiatone prints on a dark green matt inside a black frame. They look fabulous; if anyone wants to see some of my work, e-mail me at: rjsmith@mby.auracom.com

Image: [Roy at Ross Farm \(sepia\) 1.JPG](#)

-- [Ronald Smith](#), August 7, 2000

I just got my first set Kodachrome 64 slides back today. By closely examination, found that the film is very sharp and has "3 dimensional"look. It is different from other E6 positives and for those who haven't try one, please do try.

-- [oscar ling](#), August 8, 2000

Philip once said: *"I'm not sure why Black and White film makes sense any more. When I want black and white, I can just choose "desaturate" in PhotoShop and it is done"*
How can he say such a stupid thing? How can he ignore endless hours of darkroom work? And, above all, it seems that he's not taking into consideration the immense struggle of the pioneers! It's a very superficial and banal statement; change it, please!

-- [Marco Maria Colombo](#), September 25, 2000

wowowowowow,

How, on earth, could you say that about 400CN: it's cheap, idiotic trashbin material (but convenient I suppose). And perhaps remember that some of us "still" use darkrooms and not only computers (I still have to see a good digital print--I mean excellent: fiber is king)!!!!

No you deceive me there, CN is just not good enough.

-- [firas zenie](#), September 30, 2000

I fully agree with Phil on the merits of T400CN. It is amazing material and I think partially responsible for the renewed interest in black and white portraiture and wedding/event photography. I was amazed at the fine grain and smooth details that can be produced from a 35mm TCN negative. Personally, I think T400CN enlargements exhibit less apparent grain than a T-Max 400 negative without the headaches of choosing the proper developer and dilution to process the film yourself. Instead, any competent lab running a C-41 line can process TCN.

-- [Larry Zaks](#), October 2, 2000

Well, reading this thread seems a variation on an old joke - ask ten photographers what the "best" film is and you'll get 23 answers.

I have a few favorites, too, but film choices are often less important than experience in handling them under varied lighting conditions and the like, as well as having a firm idea of the results desired. But I have made a few interesting discoveries of late that will change my usual emulsion lineup:

Fuji Provia 400F - photographers whom I work with recently got some pre-production rolls of this film and I got first look at their edits. Amazing...this may be the first 400 slide film I'll actually WANT to shoot. Grain is much finer than before, and skin tones,

along with general color saturation, are just on the subtle side of rich, neither wimpy nor with bombast, and it takes a +1 stop push gracefully, with just a slight increase in grain. It's supposed to be shipping right about now or in the next week or so. (Note: as per usual with Fuji's stuff, tweak your EI rating, in this case, 320)

Iford XP2 Super - I've tried Kodak T400CN a few times and thought it was "okay", but felt it was lacking a bit in tonal scale, especially when scanned. Then I tried XP2...;Caramba! At least as far as scanning goes this has scale out the proverbial yinyang. And since I've been toying with getting a second Epson printer strictly for Quadtone work, this may become my main emulsion for this purpose (with all the caveats about dye versus silver in terms of longevity, of course). Printing out stright black from my Epson 1200 yielded prints with wide yet delicate tonal quality the first time. I'm planning a small darkroom for conventional printing in the future, but for now it's nice to know that I can get good results on the desktop with something besides color with relative ease.

The film envelope continues to be pushed in various and interesting directions.

-- [Barrett Benton](#), October 5, 2000

Ian, Are you saying that we can make 8 X 10 enlargements with Kodak Supra 800 that look just as good as Fuji Reala 100?

-- [Howard Z](#), October 16, 2000

Agfa Ultra 50.

'Never use with portraits or with flesh tones'. Correction. Never use this film for portraits IF YOU WISH TO FLATTER your subject.

For an example of highly successful use of ULTRA 50, (successful in the monetary sense of the word), see Martin Parrs book 'Think of England'. He uses , I think, Olympus 35mm SLR, Macro lens and ring-flash with Agfa Ultra 50 print film. This guy sells container ships full of books all with his trademark 'in yer face'colours and blotchy skin and repulsive textures whether the subject be English Ladies drinking tea / playing bowls or close ups of iced doughnuts or tattooed skinheads the treatment is the same.

Martin Parr has been accused of hating his working class subjects and showing this by use of lurid colour to make them and their world look tacky. Again this is wrong. He shows his loathing of ALL classes, middle, upper, lower and no-class equally and democratically.

Just shows that rules like 'do not use Agfa Ultra 50 for flesh' are only there to be broken if the message demands it or if your photographic vocabulary is fluent enough to skip with it.

-- [Trevor Hare](#), October 31, 2000

"I'm not sure why Black and White film makes sense any more. When I want black and white, I can just choose "desaturate" in PhotoShop and it is done"

Well, I'm not sure how to respond to this statement, but I'll try a few approaches.

First, I happen to be in the same camp as Walker Evans who said, "Color is vulgar." So much of what is posted and printed is simply a color photo anyone could have taken, and the color look will enhance an empty picture. The newsgroups are full of them, as are many web sites.

Secondly, there's a huge difference between Photoshop manipulation of black and white images and traditional darkroom approaches. Photoshop, which I use for color, is simply not designed to produce the kind of results you can in a darkroom. The dodge and burn tools are jokes, for example.

Thirdly, the real problem is that there is simply not a contest between prints on RC or Fiber paper and those via inkjets. Epson has lost all credibility on its claims to archive quality with the shifting of colors within days or weeks of printing. There are inks and such designed to print black and white as opposed to the really bad job all ink jet printers do, but even at their best you are forced back into the limitations of Photoshop in dealing with black and white.

If what you want is flat, glossy eye candy, by all means, shoot digital and print via an ink jet. If you want black and white, then get a darkroom. The economics and sheer numbers have forced digital to concentrate on color for the masses.

For the long tradition of craftsmanship, artistic rendition in black and white (meaning photos with a soul) is simply not an option that one can simply "desaturate" into existence.

-- [Brian Robertson](#), November 11, 2000

In Defense of Agfa:

I have lately been experimenting with Agfa's HDC+ 200 and have found that it has been incredible for its color rendering of sunsets. The pinks, oranges and blues of the sky have

been rendered flawlessly. Skin tones have been a little red, but for shooting dogs, it has generated the perfect tonal range.

I think that it is a little short sighted to discount all films if not made by Fuji or Kodak when Konica and Agfa also make quality film. As the artist behind the lens, it is up to you to choose your color palette by deciding what film is right for your vision.

-- [Michelle Kawka](#), November 20, 2000

After much film experimentation...

Slide Fuji Provia 100F 120:

My new standard for scenics. Excellent color and fine detail. The "practical" resolution is about the same as Velvia 50. If you want to take a one of a kind scenic, this is your film. It is just fast enough to be used for a handheld photo.

Slide Fuji Velvia 120:

Great saturation. This is still great film, but I will shoot more Provia now, because it is faster and too saturated for portrait shots, IMHO. Some people rate this film at ISO 32. I keep it at ISO 50, which give you *more* intensified colors.

Slide Kodak E100VS 120:

I think this has a slightly wider exposure latitude than Velvia/provia. It is very close to Velvia in color saturation, IMHO. A little more expensive.

Print Kodak Portra 160/400 VC 120.

If you want acceptable vivid colors in a portrait, try VC. For weddings, stick with NC 160 for the day, 400 for the night/reception. If you want vivid scenics, try some others. I think the 160VC = 100 Royal Gold. The 400 is very close to the 160, but not quite as good. Also, VC = Vivid Color & NC = Natural Color. VC is not as saturated as the other films. Too much saturation can murder a portrait, though. This is balanced to provide some saturation without ruining the portrait. No color correction needed at print time.

Print Kodak Portra 160/400 NC 120.

Standard for portraits only. Try 400 for kids, 160 is too slow for them.

Print Kodak Supra 100/400/800 35mm.

NOT YET AVAILABLE IN 120. I am still testing this line out in 35mm. The buzz is really positive. This film is also marketed as being designed for scanners. (Portra has this tag line also). I have read in Outdoor Photography (or Shutterbug) that the scan quality in the 100 speed negative category is unequaled.

Print Agfacolor Ultra 50 120:

Very very high saturation. Needed when you want great color, especially blues and greens, to go over the top. Reds are too red and need correction. Be careful when printing, you will need to color correct the photos or tell the lab to analyze each photo by eye. Also, I don't think that the red is very accurate. It does hell to light colored faces. Overexpose the face with your light meter to get better results. If you underexpose, the colors get ruddy. For scenics, expect some grain. I used this film for a waterfall with a timed exposure and got a really nice effect, without fear of grain. Sunsets & fall scenics are good with this one also.

Fujichrome Multi-Speed RMS 120

Keep this around for when you need to travel lightly. You can use it for any speed between 100 and 1000. Pop it in, choose an ISO. When you develop, don't forget to tell them what you shot it at. It is a very flexible film.

Print Agfacolor Optima 200 120:

Terrible film. Very grainy. Not recommended.

Any Digital Camera:

Still a long, far way from medium format. Not even close to 35mm yet. I think when you start seeing the 3ccd 80 megapixel, we may be there for 35 mm. The 1ccd megapixels still fall short with color accuracy. For 120 film? I can't even guess when digital will approach this. Go digital only if you want to save time/money at the expense of good photography. I have both digital, medium format, 4x5 and 35mm.

Medium Format is best when it matters. Digital is best when it doesn't. But digital is really fun.

-Mike Other film notes: [Film Specs](#)

-- [M Canavan](#), December 2, 2000

Infrared Films

Okay, I thought that the info on infrared films needed some updating. Konica IR film is no longer available. I think the deal with that is that they are making only one production run of it per year, so it may be available, but it is hard as hell to get at other times of the year.

There are two other IR films, though. Macrophoto makes an IR film, which is new, and no one seems to have tried a lot of it yet. To find out more, try searching in the Q&A forum. Also, Ilford makes an 'extended red' film, which is a heck of a lot easier to use than true IR films (such as Kodak's HIE), but it gives less of an IR effect.

One other note: all IR films have grain the size of gravel. With 35mm, it is impossible to get a grainless print. Two options: use larger negs, such as MF or LF, or, if you are willing to get a more 'soft-focused' image, diffuse the light coming out of the enlarger when printing. I have gotten good results with that method with up to 11x14 prints from Kodak HIE 35mm.

One last note: Kodak also makes a color infrared slide film, which I have not tried due to the \$20 per roll cost.

-- [Michael Goode](#), December 27, 2000

If you are shooting landscape shots there's only one film...Velvia, Velvia, Velvia. Great Stuff!

-- [John Travassos](#), January 25, 2001

as a photolab manager for more than 7 years with an average of 1500 rolls printed a week i would like to make a comment. if you want good results from a lab, stick with the consumer films made by kodak, fuji and agfa. Anything else you bring in that is not mainstream is printed under a mainstream film channel. if the labs equipment is fuji, use the fuji100 film for this is the master balance channel and this will give you the best overall color. unless you do the developing and printing yourself, don't waste your money on expensive film, stick with mainstream consumer films. The best film on a consistant basis is fuji reala. fuji reala can cover up a lot of density mistakes and still look great

-- [chris yager](#), March 25, 2001

Thanks Chris you just gave me invaluable advice. I have just bought some rolls of Fuji Superia 100/200 135 and Reala 120 for my trip to New Zealand in April this year. You

are right about Film/Lab combination - I've tried the Fuji Film/Kodak Lab and the results were often disappointing. Now I've stuck to Fuji FDI and it always gives me great results.

-- [Paul Yuen](#), March 27, 2001

Avoid Agfa 50...Ok, except for the 25 galleries across the country that show my work and make me enough money to travel at will...and my publisher who puts out posters of my work around the world and make me enough money to...wait, this is getting redundant. Avoid Agfa if you want to avoid creating powerful landscapes with impact...come to think of it, you should all avoid Agfa...

-- [alan hoelzle](#), March 29, 2001

I have had good experience with Agfa Ultra 50 in 35mm for landscapes. I get great color saturation similar to Fuji Velvia. I also had very good experience with Konica 3200 color print film. I just wish they had not discontinued it.

-- [Curt Dawson](#), April 7, 2001

Robert Maxley's comment about Kodachrome is misleading. Kodachrome in the 40s, 50s, and 60s, was a different emulsion than Kodachrome is today. Kodachrome II was a highly saturated, high silver content emulsion which came in only one speed: ISO 25. Today's Kodachrome 25 and K64 have much lower silver content, are not as saturated, and was introduced in the '70s to help Kodak with the higher silver prices. Don't let the branding fool you. K25 and K64 are not like Kodachrome II.

-- *Piaw Na*, May 24, 1998

Do I win a prize for replying to a post three years late? :)

Anyway, on the Kodachrome/silver stuff, I go back as far as Kodachrome 10/16 (daylight/tungsten), and remember private label/third party "clones" of Kodachrome (one that springs to mind was "Mirachrome"). I don't think any were made once Kodak came out with Kodachrome II with the breakneck speed of ASA 25.

There was also Kodachrome X (64) that came out a few years after Kodachrome II, but no one liked it.

As to the silver stuff -- back when the Hunt bros. were jacking silver to the moon, I had a camera shop/studio, and decided to do some small scale silver recovery. With silver pushing 50 bucks an ounce, and a gallon of well-exhausted fixer containing close to an

ounce of silver, it was silly *notto* do recovery, especially if one was able to pick up a used electrolytic machine on the cheap.

When I was researching the topic, I bought a book from Kodak that listed the silver content of each of their sensitized products. At that time, the film with the highest amount of silver in a single roll was 36 exp. High Speed Ektachrome.

Now, in the midst of the silver price mayhem, Kodak made a *dramatic* set of price revisions for all their sensitized products, and everyone assumed their backs were against the wall, and they had no choice. I don't recall the exact prices (it's been 20+ years!) but I *do* recall them rising dramatically -- *very* dramatically.

But, when I dug into the book that listed the actual silver content in the products, I discovered that a roll of High Speed Ektachrome had something like forty *cents* worth of silver, and that was at the *current* (circa 1979/80 or thereabouts) spot price of silver!

In other words, *after* silver spiked up to \$40+ per troy oz, that roll of film went from having a few cents worth of silver to the grand total of 40 cents worth of silver. Hmm...

(And remember, those prices are based on raw purchase price, and didn't take into account the massive quantities of silver that they recovered in their labs, which took the place of an awful lot raw silver purchases.)

My point in all this is not to slam Kodak (although in retrospect it would probably be justified :)), but to show that the cost of silver was a very minor part of the film price, even at the height of the silver madness. How much *less* of a factor it must have been when silver was a fraction of that price, when Kodachrome II was on the drawing boards.

-- [Gone Fishin'](#), April 15, 2001

Kodachrome 25 to be discontinued. Don't believe me? Call Kodak at 1-800-242-2424.

When I pressed a Kodak rep for a place to send a letter, I got the following address:

Kodak Information Center | Department 841, Building 601 | 800 Lee Road, Door C |
Rochester, NY 14650-3109

I don't know if this address leads straight to a circular file or to a real person who can talk some sense to management. If someone has better contact info please let everyone know.

While advances in digital photography will probably make most faster films obsolete, it will take a much longer time for prosumer digital cameras to surpass the sharpness and

proven archival durability of Kodachrome 25.

-- [Robert The](#), April 19, 2001

According to the April 25th newsletter from The Photo Marketing Newslite, Kodak confirmed to them that it is discontinuing Kodachrome 25 (KM-25) this year. The professional version, PKM-25, was already discontinued. I could not find anything yet on Kodak's web site about this. Also of note is the demise of Professional Kodachrome 200 (PKL-200) in July 2001.

Important to remember is KL-200, the consumer version *is* still alive and well. Also still alive and well are the most popular ISO 64 consumer KR-64 and professional PKR-64. I keep reading postings elsewhere (complete with wringing of hands, gnashing of teeth and rending of clothing) that Kodachrome is being completely dropped. Not true.

Kodachrome 64 is my first film of choice for 35mm. IMHO Kodak thinks their Kodachrome users will switch to Kodak's Elitechrome 100 and Ektachrome E100S (pro version of it). The problem is none of Kodak's Ektachromes have the color rendition of Kodachrome, nor do they have the apparent sharpness in printing or projection. The only E-6 I've used that comes anywhere close to Kodachrome is Fuji's Provia 100F (RDP III), and I still prefer Kodachrome for its very accurate, rich color.

-- John

Image: [KC01b.jpg](#)

-- [John Lind](#), April 28, 2001

I like slide film to see the result of my own creation rather than that of processing/print shops, furthermore I love the contrast and saturation of a film like Velvia. The quality you get from the prints, I recognise, greatly depends on what shop you go to and in that respect I don't have a good choice at the place I live now. I'm also into portraits and for that I still haven't found my slide film. Skin tones are the most important for me: I don't mind a higher contrast so much. Could anyone do a suggestion?

-- [Remco den Boer](#), June 5, 2001

I recently tried Agfa Portrait 160 for a wedding because I thought the lower contrast would be suitable for the event, but I have been quite disappointed by the results: the contrast is really low (sometimes too low...) and some pictures seem underexposed without any reason. Has someone else ever tried this film?

-- [Sebastien Le Duc](#), June 13, 2001

I love the constrast and saturation of a film like Velvia...I'm also into portraits and for that I still haven't found my slide film. Skin tones are the most important for me: I don't mind a higher contrast so much. Could anyone do a suggestion? -- Remco den Boer, June 5, 2001

Skin tones are rendered nicely by Fuji Astia and Ektachrome E200. If price is an issue, try Eltechrome 200 (ED), the consumer version of E200. They are all very good films. But I understand you don't mind a higher contrast. If so, **Kodachrome 64** is hard to beat. Great contrast and acutance (apparent sharpness) and rich colours without the violent Velvia saturation.

Ektachrome E100SW would be another excellent alternative.

But consider that many potraits have to be printed sooner or later and that you cannot avoid negative films if you need perfect prints. So, find first a good pro lab and adapt your print film selection on the process and paper they use.

-- [George D. Gianni](#), August 11, 2001

"With prints, expose for the shadows; with slides, expose for the highlights." Print films, esp B&W, can be a stop or more slower than the box speed; experiment to see what works best. With print film, overexpose for hard/direct lighting (open sun or tungsten bulbs), and underexpose for soft/diffuse lighting (overcast sky or fluorescent bulbs). This lets you control the contrast and capture the full range of values in the scene. With B&W, you should "over-expose and under-develop".

For best results with slide film, use an incident meter. Anything else is a guessing game. While holding the meter in the same light as the subject, aim the head at an angle BETWEEN the camera and the main light source. For example, if the sun is behind you, meter towards the camera; if the sun is above, meter at a 45° angle; if the sun is ahead of you, meter straight up. This takes into account the light source, as well as the camera's orientation.

Don't rely too much on what others say about a particular film (or camera, or lens). See For Yourself. Everyone has different preferences and standards. What one person calls "bad film" may have more to do with bad equipment, bad technique, bad developing/printing, or just bad luck.

Don't limit yourself to color or black & white, slides or prints, Kodak or Fuji, etc. They all have different strengths and applications. Films keep getting better all the time: faster, sharper, more accurate, finer-grained. Keep an open mind and be prepared to change.

-- [Ian Cruikshank](#), September 14, 2001

I started reading this article with an open mind, but within a few paragraphs you slammed the door on my open mind. Your statements about color print film seem especially misguided. You said that there is much slop built into the color printing process, and while this may be true at the little one hour lab at the local Wal-mart, it definitely is not true at a custom lab or even a large commercial lab. I have worked photographic Quality control for several years, and I can tell you that in all labs the greatest pains are taken to keep the printers in balance by running "ring-a-rounds" and color balance tests on a daily basis. Also The machines used to process these prints are strictly controlled by using industry standards such as standard deviation, and thrice daily control strips. We monitor the pH of the solution and the specific gravity of the solutions. lab techs are constantly adjusting the replenishment rates of the solutions to keep the process "in control". In custom labs each print that is produced is usually pre-analyzed for the beginning filter pack, then the initial test print is judged using Color print viewing filters and adjusted by hand and by experience, and sometimes even by committee, to determine the best overall appearance. We had an old saying in the Navy "if it isn't on the film it won't be on the print" So your statement that you can be off on your exposure by as much as 2 or 3 stops is simply silly. To achieve the highest possible quality print you have to have the highest possible quality negative. As far as your statement about the usefulness of black and white film in today's society, I must adamantly disagree. Not all photographs should be manipulated with photo-"chop" to achieve black and white. Black and white photographs IMHO are much more akin to fine art than color. I feel it takes a better photographer to capture an audience's attention with B&W than with color. Certain images just don't look right in color. A great example of this would be a stand of trees in winter in the snow with frost all over their branches, B&W would be the obvious choice here. The comments about refrigeration also need some clarification. It is important to refrigerate your film. It preserves the latent image keeping properties of the film for one thing, and it also keeps the film from suffering from heat damage. I recall shooting a 400' roll of 16mm Ektachrome motion picture film that was dated 1962 and was stored in a freezer until 1980. That film came out looking like it had just been purchased the day before. I guarantee you had it not been stored in the freezer it would not have survived the heat in the Florida Keys for all of those years. Not all photographers buy film in lots of 20 rolls. many photographers buy film in bulk rolls of 100', both 35mm and 120, and "roll their own". This does two things; 1. it assures consistency 2. it saves a lot of money. For example I can buy a 100' roll of T-max 400 for \$25.00 and get approximately 33 rolls of 36 exposures from that 25 bucks. This works out to around 75 cents a roll, compare that to 2.95 a roll if you buy it pre-packaged. Just remember that each film type has its specific purpose, it is not some scheme by Kodak or any other manufacturer to bilk you out of your money by selling many different types of film, or different grades such as professional vs. consumer. professional films are manufactured to tighter batch and color tolerances, and generally, since they are shot and processed sooner than

consumer films, they don't need the tighter latent image keeping properties. Also films are referred to as C-41, or E-6 for a reason. This came from the workers in a lab. You can imagine the mess you would have if you ran a batch of C-41 in a processor holding E-6 chemistry. You would have little clumps of the emulsion coming off in the chemical tanks and end up with contaminated chemistry. It doesn't take a genius to figure out how much money you would lose in terms of lost chemistry, down-time, and re-imburement of your customers money for lost film and images. So pros don't refer to this nomenclature to sound elitist or snobbish, it is done for a reason, as pros often need to relate specific info to the lab or other pros. Don't just assume that your experiences are the do all and end all of the photographic world, the more I learn about photography the more I discover I need to learn.

-- [Jerry Sparrow](#), November 27, 2001

I'm writing this from the perspective of an amateur who usually buys his film at Target and gets prints processed at the nearest 1-hour lab.

I used my last trip to Disney World to play with several different types of film. I had never used Velvia before, but occasionally heard it referred to as "DisneyChrome", so I shot a roll at the Magic Kingdom. I also shot some Fuji Sensia II 100, Fuji Superia 400 and 800, and Kodak TMAX-400CN. All of the shots were made on a Canon Rebel XS, using either a 50mm f/1.8, 28mm f/2.8, or 80-200 mm f/4-f/5.6 zoom (all Canon lenses).

Velvia lived up to its nickname. Lurid, but in a good way, and perfect for a place as garishly colorful as the Magic Kingdom. Projected images were incredibly sharp (that is, where the Rebel managed to focus correctly -- grr). As noted by Philip and others, flesh tones were a bit off. The real limitation was the speed. All of the shots at 200 mm show some camera shake, even in what I considered bright sunlight.

The Sensia II produced much more "natural" tones, but still rich and also very sharp. Perfect for Animal Kingdom. I *think* it captures shadow details better than Kodak Elite 100, but I'll need to do a controlled, side-by-side test of that to say for sure.

Fuji Superia is what I usually use for color negative film. It seems to yield slightly sharper and richer prints than the Kodak equivalent. That's entirely subjective though.

I tried the TMAX-400CN a couple of years ago and hated the result. I figured maybe the passage of time would have improved the film or my opinion of it, but nope, I still hate it. Yes, it's sharp, but the prints just look *wrong*. There seems to be a sharp break between light and middle tones, and the middle tones never seem to come out a true gray; to my eyes, they always lean towards green. One time I was able to make a print with real B&W paper, which helped a little but not enough. I think I'll stick with Tri-X for

moderately fast B&W.

-- [John Bode](#), December 10, 2001

Hey, Man. Why didn't you mention Kodak's SUPRA Films. Supra 400 Is one of my favorite films of all time. I used it in a lot of different environments, and it turned up great. Good low light nature-shooting film. I don't see why slides are great for anyone but pros. For an Am, like me, There too sensitive to incorrect exposure and just a pain in the butt to show off to your friends. And I used some Kodak Black and White + 400, and it was pretty good. Hint: See what happens when this gets printed on Black and white paper. You'll love it. Go try some Supra today, you'll love it, too.

-- [Rockne Roll](#), February 23, 2002

I have learned that in digital photography with the Sony, B&W does not work due to the when using a yellow filter in monochrome you get a neutral density filter. So back to by old trusty 35 SLR and trying out the C-41 B&W. The comment on 200 films as to why? My first scans several years ago using the Kodak Photo Disk, I enlarged the image to beyond its limits, no problems. Also at that time the local Denver papers used Kodak 200. A pro lab in town also recommended it. I have used both the Kodak and Fuji versions in both 35 SLR's and 35 PS. For those who do not like change, my first camera was a Canon TL, 1971. 2 years ago I used my wives PS for a evening picture of a building I helped build, in poor light, using Fuji 200 neg film. Perfect, I now use her camera more than the SLR. The Sony is used more due to the fact there is no film cost.

-- [Nark Holsinger](#), February 28, 2002

While, admittedly I haven't read every last one of the previously posted comments/reviews, I can say with relative certainty that I did not come across one with the word "Kodalith" in it. Very sad to me, as it has been one of the most dramatically manipulable(?) films I've ever used. Yes, yes, I DO realize that it is no longer in production, at least not under that name, I was informed by a reputable local distributor that it is still made with a more technical name, which escapes me at the moment, as all I have ever shot has been actual, outdated Kodalith. This leads to my question, how long can one expect to achieve reliable results after its exp. date? Given that this film has an extremely low ASA of 25(I shoot it at about 12, or as low as my camera settings will allow) and that it is orthochromatic is it thereby less susceptible to degradation? I've fridged the stuff, including a sealed box of 4x5. My work with this film involves serious overexposure and (under)development in Dektol, yes I know its for prints. If anyone know where I might obtain this amazing stuff, I'd be extremely grateful for the tip(finders fee?) Anyone have anything to say about using 'Lith for purposes other than its copying intent?

-- [Isaiah Estell](#), March 29, 2002

My Experiences:

Fuji Astia 100: Great for studio useage (only with strobes). Virtually no grain found at 10x magnification. Excellent skin tones. Better used with subtle colors (earth tones, black and white, greys, medium toned objects). Ideal for fashion and modeling photography.

Fuji Provia 100F: Great for landscapes & nature shooting. Very little if no grain found at 10x magnification. Excellent for birds/animals if exposed properly. Ideal for a wide range of colors/tones.

Fuji Sensia 100: Consumer film. You pay for what you get... an ok/good film, but far below Provia F/Astia/Velvia.

Fuji MS 100/1000 (Push processed 2 F-stops to 320): High saturation of colors. Great color/tonal range. Used best for sunsets/sunrises, silhouiting, etc... (Out of production).

Iford Pan F Plus 50: Extremely fine grain! I can't fine grain in any of my negatives of Pan F. Great for wide open shots (subject in tact sharp focus, background blurs out), background doesnt show any grain. Good for hot light studio use. **DO NOT USE KODAK DEVELOPERS ON THIS FILM (ESPECIALLY NOT T-MAX)**. Iford developers do this film great.

Iford FP4 125: Only used a couple of times but very happy with lack of grain. Great for nature shooting.

Iford HP5 Plus: Very noticable grain on 8 x 10 prints everytime if I have used. Mind I am a photo student, but all HP5 prints I have seen have been a little to grainy for my likings.

NOTE: Follow all instructions on developer if developing b+w, the directions are crucial in the development of these films. Also find a good lab and stick with it. Once you get to know the people they treat your work with better care + they know how you want your work done.

-- [Behn Williams](#), April 12, 2002

Based upon advice somewhere on the Photo.net Site, I recently tried shooting 12 rolls of the Kodak "professional" film, E200 at 320 ASA, developed pushing one stop. Results were superlative.

I sometimes take photographs for slide shows on multi-day bicycling and hiking trips, where a good tripod and Velvia are not possible. I project the slides to a discerning audience on a 7 x 7 foot screen (10-15 foot viewing distance), so sharpness is very important. So is "contrast", resolution, and pleasing color.

All previous attempts over many years to obtain outstanding technical quality without a tripod, and with slide films, were failures: The relatively lighter Canon image stabilization lens (non-professional) I tried with ASA 100 film was not sufficiently punchy or sharp for my use. With slower films and prime lenses, I could never hold my camera still enough for outstanding technical results, except in bright daylight. Faster slide films gave unsatisfactory resolution and color balance.

With Canon primes, and with the E200 at ASA 320 pushed 1 stop, as has been suggested elsewhere on Photo.net, my results are pin sharp, high resolution, lively, and well saturated (but not overly so). I will be using this film at these settings for all my hand-held, slide film shooting.

-- [David May](#), April 26, 2002

Not all photographers buy film in lots of 20 rolls. many photographers buy film in bulk rolls of 100', both 35mm and 120, and "roll their own".

Where can I buy some of those 100' bulk rolls of 120 film?

(Does the backing paper come in a handy sack or is it skotch taped to the film?)

-- [Angus Bromide](#), May 13, 2002

We would recomend Fuji Velvia, or Sensia-II for slide film. Excelent for sharpness and detail crispness, and very accurate colour reproduction.

For 35mm print film, we would recomend Fuji REALA (100asa)(pro or consumer verions). Excelent film for just about all conditions except for fill or flood flashes from your standard point and shoot cameras or fixed flash SLR's . A 45+ degree adjustable angle flash (bounce flash)works great. With SLR cameras an fstop of F11 is recomend as this film is very fast and sensitive for 100 asa. Infact in our tests REALA is nearly 300% faster than Kodak Royal Gold 400. Go figure...

We do not recomend the normal every day Fuji Superia and Xtra modeles of fuji film. Though the colour the colour reprodcion is good, the rest leaves much to be desired.

Kodak Royal Gold 100 (now going be the name of Kodak gold 200). Excelent sharpness

and colour accuracy. On the down side royal gold 100 as with royal gold 400 is somewhat slow and can be prone to underexposing.

Agfa Vista 200 ASA. Impressive film. Nearly rivals that of fuji REALA. However we've only seen 200 or 400 asa versions. We've had some impressive results with Agfa vista. Vista does have some good improvements over HDC adn HDC+.

Fuji Superia & Xtra Superia seems to cover the 100,200 and a little of the 400 ASA range. Xtra covers for the most part the 400, 800+ ASA range.

We've never had good results with fuji Xtra. Xtra is incredibly grainy, and from our own experinece not all that easy to develop properly.

Fuji Superia 100, 200, e.t.c. In our opinion in not much more than the common supermarket no name brand film.

In the all around good film category. We would say that "Kodak Gold Max 200 asa" film fits the bill.

However we are growning rather faund of Agfa Vista 200 asa.

Thanks for the chat.

yt

Drake.

-- [Drake Drake](#), July 15, 2002

Most newspapers (Australia) that haven't switched to digital use Fujicolor Press 800. I cannot live without it. You can make excellent enlargements of 20x30" without noticable grain and also, it scans beautifully. As a note for using motion picture film for stills: the processing is similar to CN41 but not identical. It is called ECNII and is performed in specialised labs for motion picture processing. It has different characteristics and is OPTIMISED for a totally different environement. Some motion picture emulsions have a much wider latitude that the consumer print film, and in many respects, they have a much more advanced and sophisticated emulsion than many available stocks from the retail world.

-- [Valeriu Campan](#), July 23, 2002

I have to say that i am a bit dissappointed in your reviews of Kodak's TMAX 100 and 400

films. In my experience i have found these films to be very versital and they have an exelent image quality. Experiment with you developing processes. Change your temp/time, use a different dilution, try other solutions. TMAX is the most versital film i have found. If used properly you will be impresed with the results. If you arent impressed, try some different thinks because you arent using it right.

Sorry about the rant. But, i gotta stand up for my film.

-- [Jeremy Fleming](#), November 9, 2002

As on the 200ASA films, if you are a Kodak user, you will be bad luck cause they have discontinued their 100ASA films (color negs) so either you have to start using 200ASA or step to an other brand. That saying, the Konica 100ASA films are very nice and can compete with the fuji, and kodak. For the B&W, it still is very much alive, as it has a lot more impact than many color pics. And the XP2 from ilford, I use it alot, and get good results with printing. Yes the contrast acn be tricky, but isn't that the part of the art to get it right in the print???

-- [Mocca G](#), December 8, 2002

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Related Links

- [Taking pictures with Fujichrome Velvia](#)- A short review on using Fujichrome Velvia incl. some pictures. (contributed by [Bo Stahlbrandt](#))
- [These are a few of my favorite films...\(A film review\)](#)- Reviews of color reversal and color negative films with examples. (contributed by [Edward C. Nemergut](#))

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Corkscrew Swamp Sanctuary, SW Florida

Canon EOS-3, 600/4 IS lens, Fuji Provia F

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Gorilla head and
shoulders portrait.

Portrait Photography

an exhibit/tutorial by [Philip Greenspun](#)

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A face devoid of love or grace,
A hateful, hard, successful face,
A face with which a stone
Would feel as thoroughly at ease
As were they old acquaintances,--
First time together thrown.

-- "A Portrait" by Emily Dickinson

I share a studio with a world-famous portrait photographer: [Elsa Dorfman](#). We have access to the same location, background, lights, and equipment. But I'm not a portrait photographer and Elsa is. What's the difference? Elsa cares about people. She is genuinely curious about people she has never met and can connect with them in just a few minutes. After a one-hour session, she knows more about her average subject's life than I do about my sister's.

Elsa uses a 20x24" Polaroid camera. Film costs about \$50/exposure, so she limits herself to two exposures per subject. Yet her photo of me and Alex (at right) is one of the only pictures of myself that I like. I'm sometimes able to capture the essence of a friend's expression, but I give myself 36 tries with a 35mm camera or at least 12 tries with a medium format camera.

Studying Elsa's artistic success has made me believe that the most important thing about portrait photography is an interest in your subject. If you are so busy working that you can't care about strangers then don't take their photos! Or at rate, don't expect those photos to be good. I'm reasonably happy with some of the portraits I took on my [trip to Alaska and back](#) because I had 3.5 months in which to be alone and learn to appreciate the value of a stranger's company and conversation.

Location

If you don't have or can't create a photo studio then you'll have to concentrate on *environmental portraiture*.

Show the subject and also his surroundings. These tend to work best if you can enlarge them to at least 11x14 inches. Otherwise, the subject's face is simply too small. Taking photos that will enlarge well is a whole art by itself. Your allies in this endeavor will be



slow film, prime (rather than zoom) lenses, a tripod, and a larger-than-35mm camera format.

There are two elements to a photo studio for portrait photography. One is a controlled background. You want to focus attention on your subject and avoid distracting elements in the frame. Probably the best portraits aren't taken against a gray seamless paper roll. On the other hand, you are unlikely to screw up and leave something distracting in the frame if you confine yourself to using seamless paper or other monochromatic backgrounds. You don't have to build a special room to have a controlled background. There are all kinds of clever portable backdrops and backdrop supports that you can buy or



build (call 1-800-CALUMET and ask for a catalog). If you absolutely cannot control the background, the standard way to cheat is to use a long fast lens, e.g., 300/2.8. Fast telephoto lenses have very little depth of field. Your subject's eyes and nose will be sharp. Everything else that might have been distracting will be blurred into blobs of color.

The second element of a portrait studio is controlled lighting. With lights on stands or hanging from the ceiling, you get to pick the angle at which light will strike your subject. With umbrellas and other diffusion equipment, you get to pick the harshness of the shadows on your subject (see [my studio photography article for more detail](#)). There are some pretty reasonable portable flash kits consisting of a couple of lights, light stands, and umbrellas. These cost \$500-1000 and take 20 minutes or so to set up on location. If you don't have the money, time, or muscles to bring a light package to a project then the standard way to cheat is to park your subject next to a large window and put a white reflecting card on the other side. Make sure that you bring a tripod because you'll probably be forced to use slow shutter speeds.

Lighting

The most flattering light for most portraits is soft and off-camera. A large north-facing window works, as does the electronic equivalent, the softbox (light bank). The Elsa Dorfman photo of me and Alex was taken with two large light banks, one on either side of the camera. Note that there are essentially no shadows.

If your subject is outdoors, an overcast day is best. If the day is sunny, make sure to use a reflector or electronic flash to fill in shadows underneath the eyes.

At right: In a New York loft, light coming from a bank of windows at left. Canon 70-200/2.8 lens on tripod. Possibly some fill-flash but I don't think so. Fuji ISO 400 color negative film.



Want more? See [my tutorial about photographic lighting](#).

Lens

If you want to flatter your subject, you'll probably want to deemphasize his nose. That means you want to stand at 10 or 15 feet away from him so that his nose isn't significantly closer to you than the rest of his face. However, at such a large distance from the camera, if you want to fill the frame with just your subject's face, then you need a high magnification (i.e., telephoto) lens. Typical "portrait" lenses are therefore between 90 and 135 millimeters long (for 35mm cameras). Many professional fashion photographers use 300mm or 600mm lenses, resorting to using a walkie-talkie or bullhorn to communicate with the model!

At right: South Beach, Miami. Fashion photography capital of the world. Here a yuppie photographer (note Reef Runners) sneers from the back of his 600/4. He's unhappy with me for walking by with my [Rollei 6008](#) and 50mm lens. The model is way down the beachfront and he's using a radio to communicate with an assistant holding a reflector by the model (in yellow).



With a Canon or Nikon, most professionals end up using their 70-200/2.8 or 80-200/2.8 zooms as portrait lenses. These 3 lb. monsters aren't very pleasant to handhold, though, and if you

know that you're only going to do portraits, you're better off with a prime lens. Prime lenses are lighter and give better image quality. Unfortunately, the prime lens in this range that a serious photographer is most likely to own is the 100 or 105 macro. These are very high quality optically but difficult to focus precisely since most of the focusing helical precision is reserved for the macro range. Here are some great portrait lenses: Nikon 105/1.8 (MF only), Canon 100/2 USM, Canon 135/2 USM.

There are folks who argue that a portrait should not be clinically sharp. I'm not one of them. If I could conveniently use a 4x5 view camera and the latest high-contrast Schneider lens for every picture, I would. Then I could get wall-size enlargements with good detail. Conventional wisdom, though, holds that even a standard Nikon 105 macro lens is "too sharp" and that you should fuzz up the picture at exposure time with either a lower tech lens, a filter (e.g., Zeiss Softar or Tiffen SoftFX), or a stocking stretched over the lens. My attitude towards this has always been that if I wanted to fuzz up the photo, I could do it post-exposure under the enlarger or in PhotoShop. In any case, true connoisseurs of soft focus insist that you must have a lens with uncorrected spherical aberration. You can get spherical aberration either by using a very old camera/lens or by buying a purpose-built modern soft focus lens. I own a Canon 135/2.8 SF lens (example at right). With the twist of the ring, you can vary the softness from none (normal high-grade telephoto lens) to rather soft. I don't use this lens too much but the photo at right is luminous in a way that is tough to explain and would be difficult to reproduce in PhotoShop. It saddens me that Canon has not updated this lens with an ultrasonic motor, which would allow simultaneous manual and auto focus. That's why I have to recommend the 100/2 USM or 135/2L USM instead.



As far as doing soft focus in other formats, Rodenstock makes an Imagon lens for 4x5 view cameras. It has perforated disks that you shove into the middle of the lens. Unfortunately, different softness and aperture settings affect the focus so you have to focus with the lens stopped down. In medium format, people like the old Zeiss 150 lens for Hasselblad because it simply isn't all that sharp.

Film

Most people probably look better in black and white. If you want the sharpest results, you'll get them with Agfapan 25, Kodak TMAX-100, and Kodak TMAX 400 CN. Kodak's ancient Tri-X emulsion has enough grain that it may flatter certain subjects. I don't really like Tri-X in the 35mm format; the grain is simply too obtrusive. Tri-X works for me in 120 or 4x5 size, though.

If you're doing color, you'll want subtle tones, low color saturation, and low-ish contrast. My favorite films are Fuji Astia, Kodak 100SW (ISO 100 slide) and Fuji NPS (ISO 160 color negative).

See [my film article](#) for more on this subject.

At right: my grandmother Shirley on Tri-X.



Camera

Any 35mm single-lens-reflex will work fine. The snob 35mm rangefinders are probably great, e.g., the Contax G2 or Leica M6 with a 90mm lens. The standard medium format approach would be a Hasselblad and a 150mm lens. If you have a flotilla of assistants like Annie Liebowitz, you could use the camera she uses: Mamiya RZ67. If you have a lot of patience, a 4x5 view camera with 270mm lens isn't a bad option.

The worst possible camera is a zoom point and shoot. Their lenses are far too slow at the telephoto end. So you get f/10 instead of f/2.8 and your background is sharp instead of blurry. Or you have to use the on-camera flash instead of natural light. It really is a waste of film. See [my point and shoot article](#) for more on these otherwise remarkable cameras.

Among [the digital cameras](#), it is tough to do good work unless you have a true single-lens-reflex. The photo at right was taken with a [Nikon D1](#). As of April 2001, an excellent digital choice for portraiture is [Olympus E-10](#).



[If you're in the market for a new camera, check [the photo.net recommended retailers](#).]

Environmental Portrait

Here's a photo I took in [Costa Rica](#). That's Diane Ewing, consummate horsewoman and proprietress of Hacienda Barú. Her face would be completely black if I hadn't used the built-in flash of my Canon EOS-5 body to fill in the shadow under her hat. I hope you'll excuse any technical errors in the photo. I was sitting on a horse myself. Canon 20-35/2.8L zoom lens. Fuji Sensia film.



Note that with environmental portraits, you don't necessarily use a "portrait-length" lens. In fact, usually a wide angle lens of some kind is used, though probably closer to 35mm than 20mm.

Here are some more examples of photos that might reasonably be called environmental portraits:



Note: these are from [my New York pages](#) and [Travels with Samantha](#).



Do you really need the wide aperture?



Well, you can tell me. The photo at left (Dieter) was taken with a Canon 35-350L zoom lens. I was traveling light in Costa Rica and didn't have room for a supertelephoto. The 35-350L slows down to around f/5.6 at longer focal lengths. The photo at right (Emma) was taken in Alaska's Katmai National Park. I was there to take [photos of bears](#) so I had my 300/2.8 with me. For my taste, the portrait of Emma is vastly better due to the shallower depth of field and consequently less distracting background. Too bad I was using Fuji Velvia film, which is not the best for skin tone.



Is the 80-200/2.8 zoom useful?

Though the big professional zooms are heavy and not as sharp as primes, I find that they encourage me to experiment. At right is a standard portrait that I took for [my New York section](#). If I'd had a fixed 180 I probably wouldn't have been able to back up far enough to get in this much of Tal's body. On the other hand, if I hadn't been able to rack my Canon 70-200/2.8L lens out to 200, I might not have gotten the photo below (sadly the negative was damaged by the Duggal lab in New York).



6x6: Give your subjects some room

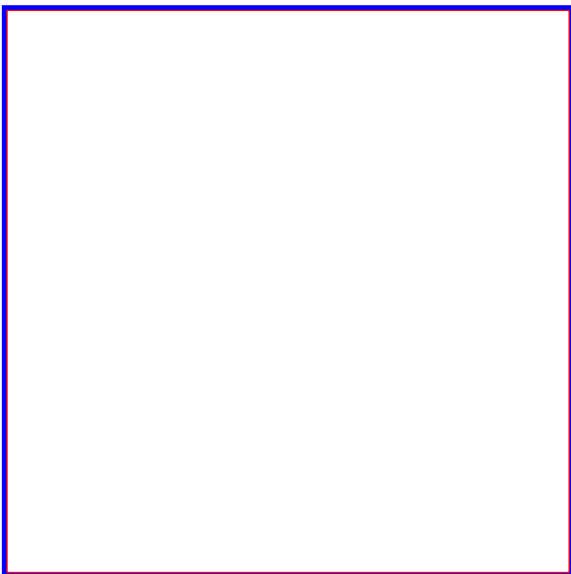
The rectangular format of most cameras encourages photographers to crop rather tightly around a subject's face or torso. The 6x6 cm square format encourages you to give subjects a little bit of space.



[George](#), my old companion. This was hand-held with some Tri-X on the carpeted floor of an office building. I was using Adobe PhotoShop to crop this image for the Web when an art director from Hearst walked by. He grabbed me by the shoulders and shook me until I realized that it was the space in front of the dog that made the photo work.



Roommates. The MIT nerd perfectionist in me can't avoid seeing the horrible technical flaw in this photo: the reflector edge in the lower left corner of the frame.



Reading. From [my Cape Cod](#) series. This was taken with the 80mm lens, a normal focal length for 6x6. If you're not trying to fill the frame with the subject's face, you don't actually need a telephoto lens to avoid an unflattering perspective. In medium format, this can have economic implications. A telephoto lens for a 'Blad or Rollei 6008 is about \$2000!



Generation Gap.

More pictures of my family



My grandfather Nick Gittes



Cousin Douglas and wife Leslie at Harry and Katerina's wedding. Fuji NPH low-contrast wedding film, Canon EOS-3, 28-70/2.8L lens

Pictures that I'm too lazy to write about

(but that might give you a good idea)



philg@mit.edu

Reader's Comments

I just finished reading your portrait section and have to take exception with you about equipment. Not everyone can afford a Blad, I know if I brought one home it and I would be sleeping under the stars, or an EOS 1, N90, etc., these are really great cameras, but beyond most peoples means. Something I learned a very long time ago was how perfectly suited a TLR is to portraiture. Here is camera that allows you to constanly view your subject, avoiding closed eye shots, relatively comfortable on a neckstrap, easy to handle, and for flash a 500th sync speed is hard to beat. Unfortunatley those that are still produced are priced well beyond the means of mere working folk, but fortunatley their are alot in good to mint condtion used. Just browsing some ads, I've seen YashicaMat 124G for \$200-\$300, MamiyaFlex with 80mm lens \$175. These are just the tip of the TLR market, Minolta, Ricoh, Zeiss, Aires (with Nikkor lenses), are other companies whose TLRs are still available and repairable for under \$300. So lets start a revolt and tell camera companies we're not going to spend 1K for a new camera. We'll go to the photo flea market, buy a used TLR, handheld meter, "L" bracket & strobe all for under \$400, load it with FP5 or PlusX and go out and shoot portraits.

Regards

Rich Jacobs

-- [Rich Jacobs](#), February 11, 1998

I sometimes use a Yashica-Mat 124G with the normal 80mm lens. Properly used, it can give superb results. The challenge for portraits is that the lens perspective is too close. And you're on your own for filters if you want a warm or soft effect. So, get creative, back up and crop the big square negative later. And speaking of film, because of the higher cost, you'll be enticed to slow down and shoot more efficiently.

-- [Albert E. Anderson](#), March 22, 1998

Great article.

I have a couple of points though. You mentioned in the article about film selection: "If you're doing color, you'll want subtle tones, low color saturation, and low-ish contrast. My favorite films are Fuji Astia, Kodak

100SW".

Those choices of films kind of contradicts your statement though. Astia is considered by many to be almost "Velvia Light". Great color saturation but accurate skin tones. And of course, Kodak 100SW has high saturation too. That's what the "S" in SW means...the W means toward the warm tones.

Fuji NPS is a great one though for low contrast/ saturation...which is why it's such a great wedding film.

-- [Scott Gant](#), June 28, 1998

Scott's right of course about the ISO 100 slide films being pretty saturated. Still, that's sort of all that you can get these days in slide film.

-- [Philip Greenspun](#), June 28, 1998

On the subject of using fast primes for portraiture, I'd like to offer a lens that is: Inexpensive, Sharp, and handy to use. That is the Nikon 100mm/2.8 E (AIS) lens that has been around for years. This lens is available (used) in the neighborhood of about \$100 or so. Several lens raters have noted that this is a good lens for optical quality, but seem to downcheck it somewhat for mechanical quality because of the plastic build. That's not a problem for studio work though, and for the field -- just don't use it to pound nails. Any comments by others?

Bill Briggs - unklbil@csonline.net

-- [Bill Briggs](#), February 24, 1999

As a professional photographer specialising on location fashion and potrait shoots, I can vouch for the countless times an 80-200 f2.8 has saved me from many a tight corner. Shiv Saran

-- [shiv s](#), February 26, 1999

I can only agree with Shiv S. Though a 2.8/80-200 zoom is indeed huge and heavy, it gives the freedom of getting closer to and getting further away from your subject without moving from the spot you're standing. Apart from the thus gained advantage of speed when trying to catch spontaneous moment in just the right frame, I find it a huge advantage that, e.g. when working with a inexperienced model, you don't have to run around the place to get a close up or a medium or three-quarter shot, and thus avoid unsettling the model with the unrest otherwise created.

-- [Paul Koster](#), March 23, 1999

I agree with Paul Koster. I recently purchased the Nikon 80-200 f2.8 D (non S), and it as sharp as my 135 f2. This is an amazing lens and it provides for great flexibility. Although heavy, it's well worth it. Portraits have a great look. Give it a try, you will be amazed.

Mark Tuccillo

-- [Mark Tuccillo](#), March 29, 1999

Hi,

Before I got my Canon, I was using a Nikkormat with a 50mm lens. Check out my photographs at <http://www.tanchung.com>.

All my recent shots are done on a Canon EOS 28-105mm at the longer end. Tell me whether you can see the difference in quality. Except for the fact that the photos on my website are a little small, you can't really spot any difference.

I agree with Philip that I want my original shots to be sharp and if I want some parts to be blurred, etc, I can always touch them up in Photoshop later.

My point in showing you the comparison: it is not the lens/camera/film that counts but the eye.

-- [Tan Chung](#), April 8, 1999

I do "environmental" portraits, where the subject is in their natural environment. After all, the point of a portrait is to reveal something about the subject. That's why I find most plain background studio shots sterile. It's always a struggle deciding how much of the background to include. Usually the old rule applies: less is more. The face usually says it all.

<http://www.accesshub.net/naturalight/PEOPLE/People.htm>

-- [George Struk](#), May 18, 1999

Pretty informative user friendly site. You know, one of the things that has always both fascinated me and irritated me is what I call the "expensive camera mystique" or ECM. I swore that ONLY a Nikon 90s or Canon EOSn1 could take the great pictures. An impressive photo exhibit held by a woman armed with only a measly Canon AE-1 changed all that. The way I figure, some of my most favorite photos were shot on cameras many times inferior to the so called pro gear. I still however would like to own the 90s for its high ratings, lens availability and versatility. It's a great camera to hold and prices on the model have dropped in recent years. I must add that portrait photography is my favorite category next to still life and I prefer b/w to color about 75% of the time. Nikon prime lenses are expensive but the only ones I want are the 20mm, 24mm, 85mm and 105mm macro. Hopefully I can find some used ones! Favorite shutterbugs: annie l. richard
avedon linda mccartney (r.i.p.) mapplethorpe

shutterbugs i disl

-- [greg b.](#), May 30, 1999

For the longest time, my main portrait lens was a nikon 75-150 3.5 Series-E. This lens was very sharp, and great in the studio due to the constant maximum aperture. When I got my F4s, I decided to get an 85 1.8 af, and have sworn by this lens ever since. The wide aperture REALLY makes the subject pop! I like this lens so much, that I sold the 75-150!

-- [Robert Mossack](#), October 20, 1999

Hi Philip,

Just visited your portrait photo page. Thanks for the infos, really helpful. However, you seem to concentrate in using expensive equips. For a lowly cheap (and poor) student like me, it's kinda hard to get them. Personally, I found out that using Canon 50mm/1.8 Mk. II is enough for my need. As I like to get up close

and personal to my subjects. For candid portrait (capturing expression), it seems to me that people notice you less when you're close to them. They thought you were focusing on something else. I'm just an amateur, however, so my opinion might not be correct. Thanks again for the website, really helpful.

Regards, fajar

-- [Fajar Reksoprodjo](#), October 22, 1999

Here is what I did for buying portrait lens. First I bought cheap so called universal zoom lens. I think those lens really give some idea of characteristic focal length and give a chance novice like me to explore the different focal length. Eventhough quality of those lens was not great, To me It was acceptable. and later I can use as a preview lens for medium format camera that doesn't have camera meter. After analyze the picture I took, I can break down portrait into couple of the situation.

1)Standard portrait: 2)Telephoto portrait:candid, natural unposed, long enough to be subjects aren't aware of them being photographed 3)Environmental portrait:The subject and surroundings are equally important 4)Detailed Body part:Macro works on portrait 5)Exaggerated body portion portrait:So called wide angle close up portrait, for thsoe fun special effect, Using a distortion a minimizing hadicaped body portion for example making short leg looks longer. 6)Group portrait:Family photo, wedding photo something like that kind of gathering. Then think each case what kind of the lens will be useful. For the case 1), Something like 85mm/1.8 or 100mm/2 will be useful. For2), 300mm focal length is minimum. For3), lens like 24mm 28mm 35mm will be ideal For4), Dedicated macro lens, or medium telephoto lens with extension tube For5), 24mm or at least 28mm will be ideal. this one should be single focal prime For6),35mm or 50mm will be ideal.

next set the budget.and study the which brand is ideal for me

My choice for portrait lens was -->

24mm/2.8 Eos USM(35mm format) 34mm/2.8 Sekkor manual(medium format)(this is 35mm equivalent focal length) 50mm/1.4EOS USM(35mm format) 93mm/3.5 Sekkor manual(medium format)(this is 35mm equivalent focal length) 135/2 EOS USM(35mm format)+Et-25 300/4IS EOS USM(35mm format)+1.4X

I think this is minimum for the portrait. My point is this is almost every kind of the lens. I can shoot with this lens almost any kind of situation not just portrait nature, concert, indoor or outdoor event,sport, action etc.

-- [joon um](#), October 24, 1999

I think it's a good idea to use a medium format camera for people pictures. I use a Pentax 645 with a 150 lens often. I do 100% black and white because I do it myself. I like having proof sheets that are viewable and 15 shots is economical but still greatly superior to 35 mm for portraits. I have a square "clunker" camera which is a Bronica S2A and a 75 mm Nikkor-Q lens, both 30 years old. That's nice for group shots or full-body shots. Like I said, the quality is superior to 35 mm and the proof sheets are easy to view. I like to use a medium-speed film like Plus-X or my all-time favorite is Agfa APX 100 which is sharper and gives a lovelier image than Plus-X, and it's generally cheaper.

Another thing about people shots, I like to do the old-fashioned type of portrait that is mainly window light. One-hundred years ago, portraits were made with a soft north light from a window and I love that look in black and white. I generally make my pictures sharp too, or I'll use a very minor diffusion filter that barely

alters the image.

-- [Paula Swaim](#), April 27, 2000



Colin Hastings

Actually, I started doing portraits with Tri-X and a Nikon FM2N and a Vivitar Series-1 28-105 lens. This portrait is an example. It's good quality, but it would be better in 645 format. The proof sheets were hard to

view. This image is on Ilford MG RC warmtone paper, toned in selenium 1:8 for a chocolate look. The subject loved it.

-- [Paula Swaim](#), April 27, 2000

There seems to be too much concentration on equipment and too little on the core subject which is people. I have noticed that the older I get, the less likely I am to approach people and take portraits in the street. I used to enjoy it so much, but now don't do it as much. How do most street photographers do it? Do you just click away? Do you try to engage the person in some conversation? Any pointers? Thanks.

-- [Marcelo Salup](#), December 22, 2000

Good article, but a lot of the comments confirm the belief that most photographers are just equipment buffs. When I used to shoot professionally, I was appalled that when you get a group of photographers together in a room, invariably they are talking about equipment, not how to get the shot, marketing, composition, rapport, etc. Can someone please tell me what difference it makes whether an Nikon FM, FE, F2, or F5 are used to make an image? A camera body should be viewed as something to hold the film and lens and be good at that. I love it when I see great images being made on what some would call "inferior" equipment.

-- [Mark McCombs](#), January 9, 2001

i liked the portrait article. but i also understand the other comments. it seems to me that about 80% of creative portraits is the photographer. Knowing how to use your equipment and its limits. I've seen some great portraits with equipment most people would have given to the kids. When in doubt shoot the picture. then analyze the results and learn from them. when you reach the limits of your equipment then move up.

-- [steve wall](#), January 28, 2001

I have two lenses that I prefer to use for portrait: my Canon EF 50mm f/1.8 and my Sigma AF 70-200 f/2.8 HSM APO. Both of these lense are fast and allow shallow dept of field.

I love the 50mm for getting "up close and personnal" with my subjects, where I can have that special interaction wich make for great candid portrait. It will ofthen gives a very intimate look to your portrait that is difficult to get with telephoto lenses. It is also quite fun to play around and improvise the shots with such a small tool (I use a Rebell 2000). Better yet, the 50mm cost 1/10 of the 70-200!!!

I usually use the 70-200mm with kids or when getting too close would intimidate the subject. It is also great for environmental portrait for its ability to compress perspective at the same time.

For some examples take a look at:

http://www.photo.net/photodb/folder?folder_id=107614

http://www.photo.net/photodb/folder?folder_id=49319

-- [Ans Beaulieu](#), March 13, 2001

I shoot with a Nikon N90 and a Yashica D. The Nikon is more for the action/fast moving pictures, and the

Yashica is for my portraits and still lifes. I would like to scrap them both and purchase a Mamiya but the price is a little to high. I will say that despite the ugly appearance and technical limitations(by today's standards), my Yashica is a workhorse and for quality the 6X6 destroys 35mm. I shoot portraits of friends and coworkers using Ektachrome 100S and have never been happier. You'll never see them on the cover of Cosmo and Cindy Crawford isn't beatng down my door to have her picture taken, but I still get excited every time I see a roll of my pictures. At the end of the day I'm happy(for the most part) with the pictures I took, enjoyed the time working with the models, and look forward to critiquing(?) my own work. To me that's what the art of photography is about. However I wouldn't mind being in the business of photography either!

-- [John Kahmann](#), May 26, 2001

The 8x10 camera is one of the most luxurious portrait tools available. I use this format for portraits taken in my home. If you can afford it - by all means..... Nothing beats the flattering presence of camera offered by an 8x10. Except maybe the 20x24 Polaroid.

-- [Bruce MacNeil](#), June 1, 2001



Very good artical.Do agree that you bring up alot of highly priced equipment not everyone can afford.i've found that all of my pentax cameras are comfortably priced and do a wonderful job no matter what i'm shooting.On the comment made about street photography,its all about human contact.talk to people,make them feel comfortable with you and the sometimes scary to some people piece of equipment your carrying.I have been in the lower side of east philly and got wonderful shots of the people who live there and had great conversation too.Its a nice way to spend your sunday afternoon and it reacquaints you with you "people skills".

-- [margaret martin](#), June 2, 2001

For portraits, technically, I have to say for the majority of the time I use my Nikon bodies (F100 and FM2n) and an 80-200mm 2.8 nikkor zoom and the cheap 50mm 1.8 made in china nikkor that costs around \$100. Occasionally I might shoot with a 24mm 2.8 nikkor that is quite sharp and gives me distortions that for some reason I find pleasing and humorous. All three lenses give me what I want in doing portraits for people either posed or candid. I have a 105mm 2.8 micro nikkor lens but I never use it. People always stressed how this is

a great portrait lens but I've found it to be a little limiting due to its picky focusing and awkward focal length for me personally. I much like the results with my 50mm or my 80-200mm lenses. Anyone want to take this macro lens off my hands for a price??

When I shoot portraits I always try to have conversations with my subjects about things like what they like, what I like, the news, weather, etc. I don't shoot and say "oh thats great," or "beautiful", I'd rather ask them "so where are we going for lunch?" or "did you see that guy on the news that attacked his dog?" I want let my subject relax and just be themselves. That's why I like shooting people who are actors or just have a knack for it. But of course it isn't as easy as that. I think the main thing is, is just getting people to become comfortable even if it takes a few tries to get it right. But one thing I always like to do when I meet a subject for the first time, leave the camera at home.

-- [William Cordray](#), June 22, 2001



Zeiss Sonnar 180 f2.8, shot

I do a lot of "available light" environmental portraiture work, both indoors and outdoors using highly saturated (albeit "slow" 50 -100 ASA) films. My absolutely favorite lens is the Zeiss Sonnar 180 f2.8 multicoated lens (adapted to fit my trusty manual Minolta system) that allows me to take both indoor and outdoor shots when the subjects are comfortable in a natural form and setting. Also with the big glass wide open, it allows me to take pictures in fairly ugly backgrounds without disturbing the composition [Here](#) is an example (also see the picture submitted). I dislike the tension of "posed" portraits, especially with younger people and children. When the subject is willing to go through some film and spend some time, I usually use the Minolta Rokkor 85/f2.8 Varisoft lens, probably one of the best lenses made that would allow you to create photoshop-like (but much more natural) effects on your slide or negative.

-- [Emmanouil Skoufos](#), June 29, 2001



Yashica T5, Kodak 400CN

"The worst possible camera is a zoom point and shoot."

I've to disagree with this statement. P&S camera can take good portrait too! The T5 has a f3.5 aperture. If u are close enough and light level is low, you too can have a nice background blur.

-- [Wee Keng Hor](#), June 30, 2001

To address Wee Keng Hor's comment:

The Yashica T5 is not a zoom point and shoot. Heck, I have an XA, and I love it. Not all point and shoots are bad, just the zoom point and shoots where the F-stop at the long end falls below about f5.6. Even those are GOOD cameras, they just aren't ideally suited to portraiture.

-- [William Baguhn](#), July 9, 2001

A portrait is a broadly defined term. Though my favourite head and shoulders portraits were and are taken with an old 1.4/85mm lens, a skilled photographer does definitely not **need** one to take good portraits. I do use 35 and 50mm primes for people and my 28-70mm zoom is also used frequently, while my 135mm prime sits on the shelf.

"Portrait" may even be considered the subject which requires the least specialised equipment in photography.

-- [George D. Gianni](#), August 11, 2001

Ah, the vexed issue of street photography (see above). I'm generally pretty shy and have a hard time approaching interesting subjects. I have the best success when I wear a big grin and have a neat appearance (this depends, if you're in, say the East Village of Manhattan, you can dress arty and you'll probably have better luck). Always, always ask before snapping away, unless you see a decisive moment, in which case have a chat with your subject afterwards. Be sensitive, too: during the recent nightmare here in NYC, I saw thousands of shutterbugs shooting away with what seemed to be little regard for the people around them. Personally, I feel this is intrusive and slightly unethical. But then, it's up to you to decide whether the art you create in these situations will transcend the exploitative quality inherent in photographing people at the limits of despair. On a happier note, many of the photos I've seen of the rescuers and survivors of the terrorist attack have been exceedingly moving. I salute everyone for their bravery.

-- [R Murray](#), September 22, 2001

Regarding p&s zooms - I have a Samsung Maxima Zoom (38-145), and although it has gotten some great shots for me, I must say that in general - for portraits as well as general photog - the f/11 maximum aperture at 145 can be EXTREMELY frustrating. It'll take great pics on a bright sunny day, but even on overcast days it'll sometimes "get ya". I'm poor, and a beginner, so I just have a Rebel 2000 w/the kit 28-80, (f/3.5-5.6), and even this is far better for portraiture than the p&s. It would be very cool to have a f/2.8 lens for portraits but frankly I just can't afford them. So that basically just means I have to control my background more. A bit more of a hassle, but it works.

2 of my favorite portraits taken w/the cheapo 28-80:

<http://www.photo.net/photodb/photo?photo_id=298364><http://www.photo.net/photodb/photo?photo_id=251884>

-- [Elaine Robbins](#), October 15, 2001

I'm not certain that a fast lens is required for portraits. Particularly not if we are shooting for a crisp image and softening it in Photoshop. It is just another step to blur the background, not too much trouble.

-- [Patryk Soika](#), November 14, 2001

One comment I think others may find useful: If you're taking a portrait of a difficult subject, like a child who doesn't want to hold still or anyone who isn't comfortable in front of the camera, I've found that handing my camera over and letting them burn a couple of frames on me or anything else they'd like to photograph has fixed this problem 100% of the time. My son used to run from me when I said I wanted to take his picture. I had my tripod and the subject stool all set up and suggested he snap a couple of pictures of his stuffed animals with it. After he did that, I got a whole roll of portraits that he would never have allowed me to take of him before.

-- [Tony Samples](#), November 23, 2001

You ask for a different perspective. This one may sound self indulgent but its factual. I know nothing about techtalk or f stops or even how to read light meter. But I take beautiful portraits so much so that I am asked by friends to take a couple of master frameable ones at weddings even when pros are there for the general photoshoots. I am an interior designer. Having taken some pics of my own work clients have asked me to do photo work for them. Portraits. I look through the lens moving it and the subject till I find that expression which in 2D is the same as I would see it in 3D. When I get the subject in his most natural element, specially laughing, which essentially means the showing of teeth, that makes a good pic. This is because frozen

laughter is better than a frozen smile which starts out frozen and unnatural. Teeth are natural elements that add ivory or white color to a colored photos thus showing a kind of hot spot with the eyes. I use little background as I crop close. Always black. I shoot fast in a series with a Nikon F5 and Tamron zoom 28 to 210 on full auto. I pick the best out of postcard prints, design the cropping with a white bracket as I give the large 10 by 12s a thick 1" border of the white photopaper. I am lucky enough to be friends with the owner of the city's best studio where I frame the image on the enlarging plate. THIS PART IS VERY IMPORTANT. I could never tell the actual correct scale of the faces on paper until I saw this on the paper. I Ok this then the technician does his job. Sometimes a tilt to the face breathes unbelievable life to the portrait. But really, go for the laughter. It comes alive. Also I would never take a pic without studying the subject as others ordinarily see him. Ordinarily, with his gestures or expressions or tilt or aggression and t shirt or tux . Ordinarily. Now I have just bought an F5 and must learn the sophisticated language of cameras. All my pics are easy daylight but with a handheld background. Amateurish. But they like the prototype results. Keki Unwalla.

-- [keki unwalla](#), March 1, 2002

Portraits are a subject where one can get away with pretty little in the way of equipment. Autofocus is a convenience but not a necessity. Lighting outdoors is as nice as lighting indoors, if you try for the same combination of lighting effect on the subject (the ratio business and the big light source business meaning naturally soft without soft focus lenses courtesy old "Sol". Late in the day or early in the morning I like. Even after sunset. I started this comment because I keep on thinking about the eyes, seen by some as the center of the soul thing and the place to focus critically. Because I don't want the eyes to be deadish looking I try to use a small flash to put a sparkle in them. Its formulaic true, but the formula is one that most subjects come to expect. Some people have really dark eyes that need it more than others. But the psychology of getting someone to relax is tough. You might need to waste some film doing that. Anybody that can do it with one or two frames, (as in big Polaroids) whoah my deepest admiration. That's a portrait photographer. I like to use an 85mm which is not as sharp as the the sharpest lenses out there. Wide open it gives some softness to the edges and an out of focus background. Environmental work is the kind that is the supreme example of the art. These are the portraits that never get forgotten. Show some of the subjects life, and they relax more. And love the result more. A pretty face is a pretty face, but a person in their home or on their tractor. That is ageless.

-- [Gerry Siegel \(Honolulu\)](#), March 17, 2002

Hi Everyone, please checkout an article I wrote on the subject of Portrait Photography for ePhotozine.com. Let me know what you think, good or bad. Here is the link:

[ePhotozine.com](http://www.ePhotozine.com)

Thanks, Alex - Softlite Photo, San Francisco

-- [Alex Lee](#), March 31, 2002

As always, an item on photo.net talking too much about cameras, lenses and films, and not enough about photography.

I don't care whether you used an SLR, TLR, P&S, rangefinder, 35mm, 6x6 or even flippin'APS. I care what pictures you take.

You don't meet up with other writers and talk about typewriters and pens. You don't meet up with other

artists and talk about paintbrushes. So why do photographers always seem to spend hours talking about flipping cameras!

-- [Tom Morris](#), May 14, 2002

Here is an portrait of Camille, using natural light, no reflector, Agfapan 100 black and white film, Minolta 9, 50 mm f1.4 lens, and toned in Photoshop. It really does not matter what equipment one uses. It is more important for the photographer to make the subject feel at ease and create a distinctive photo of the subject. The 50mm lens is one of the best portrait lens around.



Camille

-- [Alex Lee](#), June 11, 2002

Check out this Portrait of my 5 months old son



-- [Kalpesh Sheth](#), June 13, 2002

Alex Lee's picture of Camille (two above at this writing) is a perfect example of the need for short-telephoto portrait lenses. If I were shooting her in a tightly cropped frame as he did, I would have used a 135mm, because beautiful as she is, I'll bet she goes on and on about her ski-jump nose. That's what a girl friend of mine called hers, but I loved it, too. Mr. Lee's objectivity has been clouded by his appreciation of her beauty, and the use of a short-tele would have made her nose less prominent, instead of exaggerating it, even beyond how she appears to the corporeal eye-brain connection that cancels out the phenomenon of optical physics, perspective.

If Mr. Lee's intent was to lend emphasis to the subject's nose because he likes it, then his choice of a 50mm lens in a tight shot is appropriate. A subject with a broad, flat nose would be better served by use of a 50mm, the closer perspective narrowing the nose and bringing it out. The perspective shaping power of lenses is the first and most effective tool a photographer has to emphasize or de-emphasize a subject's features, for good or bad, or different.

And to Gerry Siegel, I envy you your 20/20 vision, but when it begins to fail you so that you can't clearly see the image in the viewfinder as quickly as you used to, you'll think that AF is a Godsend and realize that it IS a necessity, because without it you'll lose shots. In portraiture or candid people photography, time taken to

frame and focus, if more than an instant, is the killer of the first, honest expression, the natural smile and the subject's patience. After you've learned to see your AF's focus-lock indicators (depending on mode and lens) as quickly as you see a flash-ready light come on, then you can trust the camera and go with the shot you know you want, even if your eyes haven't caught up with the camera's yet.

-- [Malcolm Kantzler](#), July 14, 2002

A 50mm lens is good lens to have especially with the new dSLRs. A 50mm becomes about an 80mm on my d60. Here's a portrait experimenting with colored gels:



Model: Jules
[More of my photos](#)

-- [Paul Andre](#), July 22, 2002



Chestnut Hill Street Fair Mime

I am in agreement with Alex Lee. Too many people view photos and one of the first things they check is the photo equipment. Professional equipment does not make for a professional photographer. Whatever equipment a pro is using, instead, becomes pro equipment. Any decent camera and lens will give great results, when used properly.

-- [Jeff Bishop](#), December 8, 2002

[Add a comment](#)

Related Links

- [William McEwen - Portrait Photographer](#)- Black and white portraits taken with an 8x10 view camera. Includes a portrait gallery and technical information. (contributed by [William McEwen](#))
- [tanchung.com](#)- Portfolio of a freelance photographer in Singapore. (contributed by [Tan Chung](#))
- [Leslie's Photo Gallery](#)- A fun portfolio of some of my favorite photographs. (contributed by [Leslie Dickson](#))
- [The Golden Magazine](#)- One of the Best in Denmark (contributed by [Kenneth Villadsen](#))
- [Beanboxers Photography](#)- The Casual Portrait. Fashion/Portfolio. Indoors & Out. On location too. (contributed by [Mitch Sprowl](#))
- [Softlite Photo - San Francisco](#)- Portraits in color and black & white. Cyberspace portfolio of my images, please give me your feedback and comments. (contributed by [Alex Lee](#))
- [Jane Bown](#)- Excellent celebrity portraits by reknowned British photgrapher Jane Brown at PicassoMio.com. (contributed by [Nicholas Marchalleck](#))
- [Dali](#)- Striking Salvador Dali portrait by [Xavier Miserachs](#) at [PicassoMio.com](#). (contributed by [Nicholas Marchalleck](#))
- [Contemporary Potrait, Celebrity, and Nude Photographs](#)- Discover works by some of the top artists in Europe and elsewhere at PicassoMio.com (contributed by [Allan Majotra](#))
- [Paul Andre : Experimental Fashion & Fine Art Photographer](#)- Many experimental portrait photos with beautiful models! (contributed by [Paul Andre](#))
- [The Ultimate Photo Shoot](#)- how group photo of 189 World's Leaders was made. Example of how to handle large group pictures properly. (contributed by [Vadim Makarov](#))
- [Edwards Fine Art Nude and Portrait Photography](#)- Edwards Photography specializes in portrait, fine art nude and glamour photography. Please visit our site to view our portrait gallery. (contributed by [Tommy Edwards](#))
- [Portrait Photography Tips](#)- Concise listing of invaluable portrait photography tips. (contributed by [Sean Noonan](#))
- [Art Photography Gallery by Nick Chaldakov](#)- Fine Art and Stock Photography Gallery - abstract impressionism, and realism in black and white, portraits, travel, landscape and digital photography. Stock, links, rings, add URL. (contributed by [Nick Chaldakov](#))
- [Mark van den Hoven - Visual Art](#)- Official site of Dutch painter and photographer Mark van den Hoven. NEW photos added recently (contributed by [Mark van den Hoven](#))
- [Menegatos Portraits](#)- Color and Hand printed black and white portraits and other infromation. (contributed by [Tom Menegatos](#))
- [Portraits from 5 Continents](#)- Striking images capturing the moment from Asia, Europe, Africa, Australia, and North America (contributed by [Todd Brown](#))

- [Glamour Portrait Photographer in California](#)- Glamour Photography in the eyes of my Nikon Lens (contributed by [Rick Photographer](#))
- [LIGHTNING----- NATURES FIREWORKS](#)- Lightning images for sale. John Olexa (contributed by [John Olexa](#))
- [Candid Children's Photographer](#)- Jennifer Fox-Armour is an Atlanta based photographer who specializes in capturing the ever changing and fleeting, moments and moods associated with childhood. (contributed by [Jennifer Fox-Armour](#))
- [Anthony Jones | Portraits](#)- Black and white corporate and editorial portraits by UK based photographer. Commi





Available as [a 1000x1500 pixel JPEG](#).

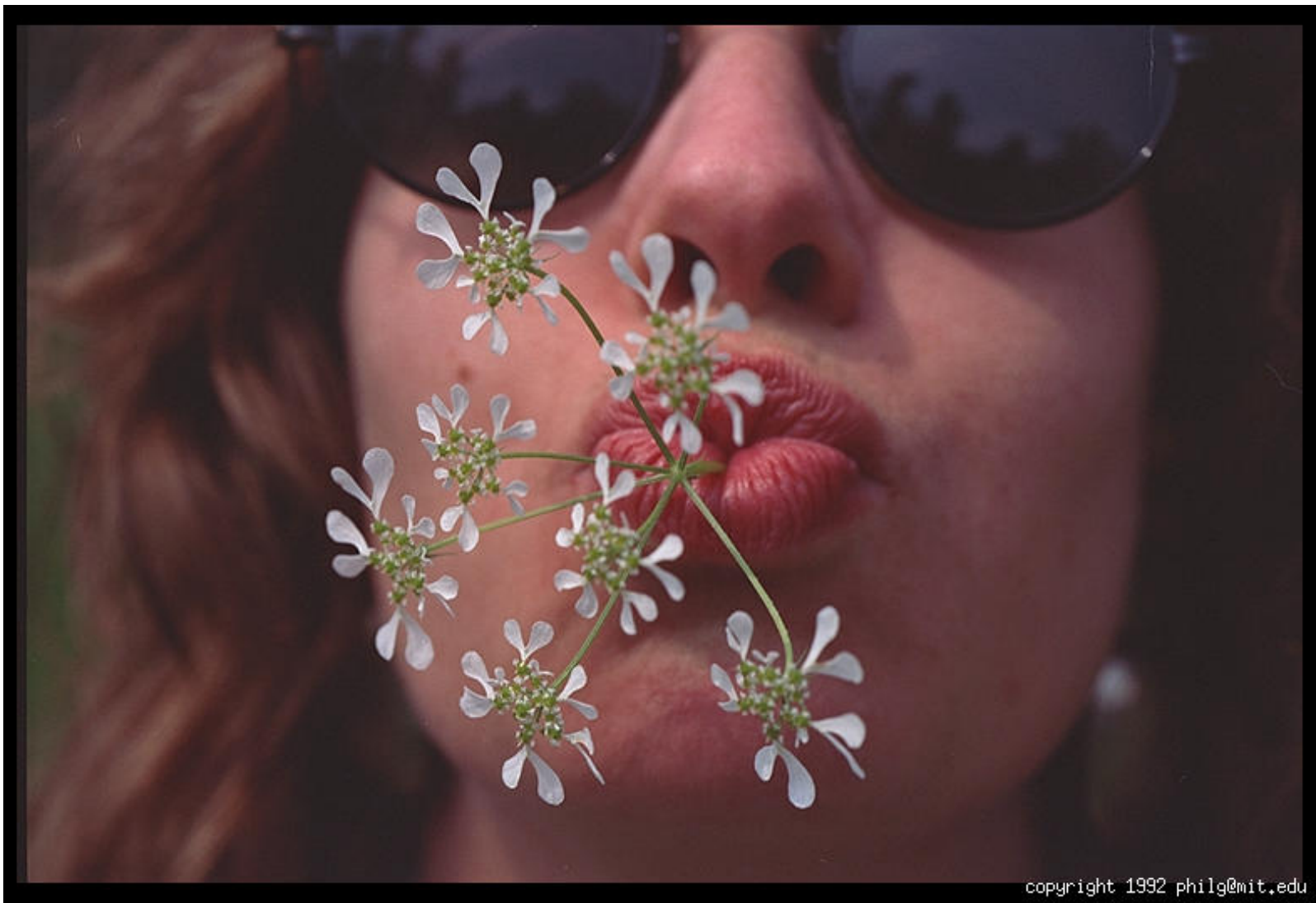
Gorilla head and shoulders portrait.

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[philg@mit.edu](#)







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Soft Portrait

Canon EOS-5, 135 Soft Focus lens, ISO 400 color negative film

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Shirley Greenspun. Manhattan 1995.

Kodak Tri-X film

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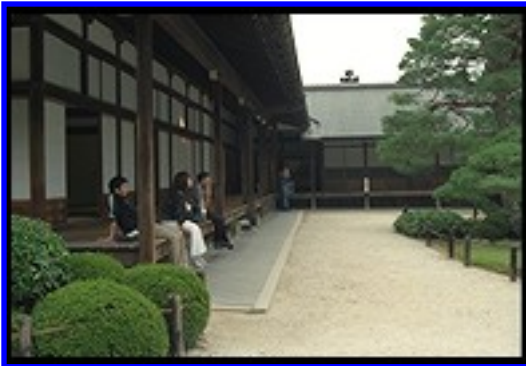
[philg@mit.edu](#)

How to Photograph Gardens

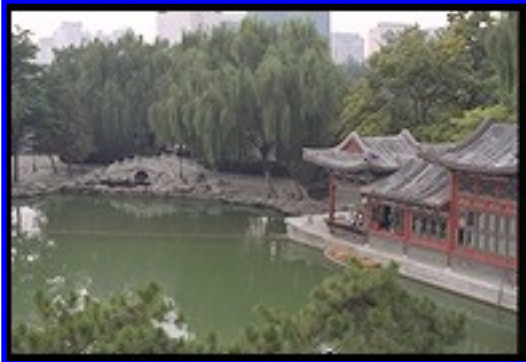
by [Philip Greenspun](#)

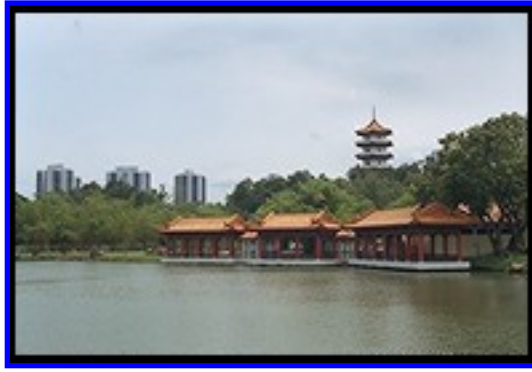
[Home](#) : [Learn](#) : One Article

Make sure that you have an image showing the garden and its context, i.e., the surrounding buildings and landscape.



Ginkaku-ji. Kyoto





Cactus Garden
overlooking the city.
Getty Center. Los
Angeles, California.



Include people in the garden for scale:



Wherever possible, show views framed by objects or structures within the garden:



A general view of the garden works best if the image has a distinct foreground, middle ground, and background:

Japanese Garden. Powerscourt. South of
Dublin, Ireland.

Botaniska Tradgarden. Visby, Gotland.

Here is an example of two "flat" images. The one on the left seems to be a failure photographically. The one on the right comparatively successful. How to explain the difference between the two images below? Perhaps the designer of the garden intended the right-hand view to be dwelt upon whereas the left-hand view is seen only from a path.



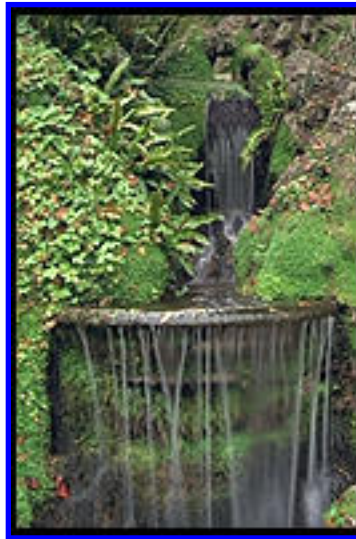
Here are a few more foreground-middle ground-background images that seem to work reasonably well...



Chinese Garden. Singapore

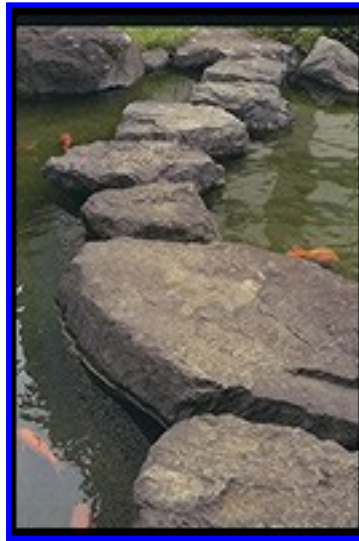


If there is flowing water in the garden, a tripod and a slow shutter speed (1/4 second or longer) are best for capturing the spirit of the water:



If there are bridges in the garden, either capture the reflection or the path over the bridge:





Check for underwater life... (some of these images would have been improved if taken with a polarizing filter to remove surface reflections)

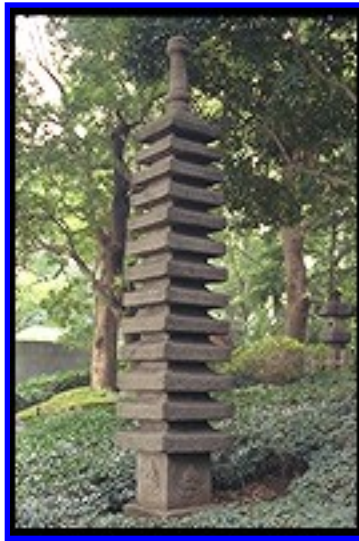


Koi. Singapore Zoo

Get some images of single plants or flowers but remember that even a comprehensive inventory of these won't capture the design of a particular garden.



When photographing sculpture in the garden, try to capture as much of the context as possible. Your images shouldn't look the same as if you'd brought the sculpture into [a photo studio](#).



Don't neglect interesting architectural details within the garden. Iron gates and stonework are particularly photogenic.



Doors. Nishi Hongan-ji. Kyoto

Try for color balance, remembering that red and yellow are two or three times visually more powerful than green or white. In the images below, note how easily red can overwhelm your eyes.



Practical Details

Whenever possible, use a [tripod](#). Unless it is very windy, elements of a garden won't be moving around much and you'll get higher quality images as well as have the freedom to employ smaller apertures. The small apertures will give images a wider depth of field, i.e., more objects will be in focus from foreground to background.

If you can't use a tripod, make sure to pack relatively fast lenses (f/2.8 or faster) and ISO 400 film. Among the ISO 400 films, my favorites are professional color negative films, intended for weddings. These have less color saturation and contrast than consumer films and therefore will render distinct green tones more distinctly. Check [the photo.net film page](#) for our latest recommendations in professional ISO 400 negative film. Most of the images on this page were taken with Fuji NPH or Kodak Portra 400NC film; click on the thumbnails for technical details.



If you are using a tripod, you can indulge in the luxury of slide film. Again, pick one with a painterly palette and good separation among green tones.

A 50mm lens on a 35mm SLR camera can be ideal for garden photography. It can focus close enough to isolate a plant. The normal perspective gives a viewer an accurate idea of what the garden will feel like. A [50/1.4 lens](#) is fast enough to permit good photography without a tripod, assuming extensive depth of field is not required.

You *can* do some fun things with a wide angle lens. It is useful for exaggerating the structure of a formal European garden or getting a frame-filling picture of a sculpture while still including a lot of background. Here are a couple of examples taken with [a 20-35mm zoom lens](#):



A telephoto lens is good for compressing perspective and is particularly good in European gardens with their lanes of trees. Here are a couple of snapshots from Giardino Giusti in [Verona](#) (sadly they are miscaptioned as being from the Boboli garden in Florence):



[Text and pictures Copyright 1990-2000 Philip Greenspun](#). Most of the pictures are from [the photo.net Japan guide](#), the public Chinese Garden in Singapore, Powerscourt (south of Dublin, Ireland), [the photo.net Sweden guide](#), [the photo.net California guide](#), and [the photo.net guide to Italy](#). If you click on a thumbnail image you'll get a larger photo with a caption underneath.

[PhotoCD scans](#) by [Advanced Digital Imaging](#).

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Reader's Comments

A few things I would like to add concerning photographing gardens. As a professional photographer who shoots gardens for a living a really important aspect of gardening photography is getting colour into your shots, which could be from plants, flowers, painted walls or sculptures. Also eliminating unwanted background material, ie: if you are shooting a Formal English style garden and there is a giant palm tree growing next door, avoid it at all costs. Also try shooting from different perspectives, on the ground, from the top storey of the house or from the top of a fence. Also try and be sensitive to the overall aesthetic of the design, if it is a Japanese garden be aware of the way the garden is designed and why. Cheers Brent.

-- [Brent Wilson 'The Shallow DOF Man'](#), January 12, 2002

[Add a comment](#)

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- [In a Japanese Zen Garden](#)- Text and images for those planning to photograph Japanese gardens. (contributed by [Frantisek Staud](#))
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([Canon Elph Shades Sunshines](#) shown)

How to Photograph Architecture (Exterior)

by [Philip Greenspun](#)

[Home](#) : [Learn](#) : One Article

This is an example-based tutorial on photographing buildings.

Your pictures need not be pretty

Architectural photography at its best will convey the experience of being in and around a built environment. In the case of [the Dachau Concentration Camp](#), this won't result in comforting attractive images.



Below is a parking garage in [Kyoto](#). The colors and industrial appearance of the structure are remarkable in the middle of a city known for its ancient temples and gardens. The purpose of the image is to capture the feeling of walking by the structure, not to delight or decorate.



A supermarket exterior is a subject that will probably never make a wall-worthy image by itself. However, the image below (from [the Hawaii flowers collection](#)) captures the spirit of being in the parking lot at night:



Give old buildings some space

In general, the older the structure, the more environmental context is required.



Canyon de Chelly. Arizona.

Using your hands or your mind, crop the preceding images to include just the structures and see if they would still work. Also, compare them to a few modern buildings where hardly any context is required:



The original Bob's Big Boy. A historical landmark. Toluca Lake, California.

The original Bob's Big Boy, built 1949. A historical landmark. Toluca Lake, California.

(The Big Boy pictures are also a good example of coming back repeatedly to a building in order to capture it in different lights and weather.)

Farms are a good example of where the structures don't make any sense removed from their context:



Even a bit of space helps

If you're not capturing an entire village or farm, it still makes sense to think about the space around your subject. Even a little bit of context helps anchor the image. For example, the image at right, from the sunset district of [San Francisco](#), shows us a house clearly enough to serve as a real estate advertisement. The fragment of the house to the left, however, isn't wasted space. It tells us how tightly packed the neighborhood is.

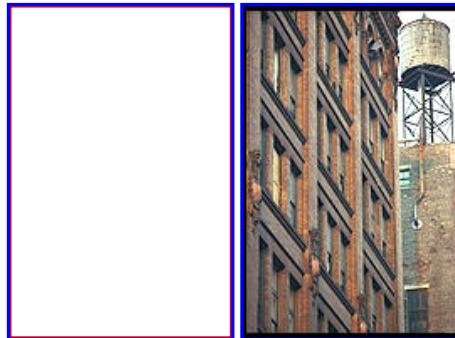


In the image below, the sidewalk, the fragment of street, the pedestrian, and the little open market to the left of the shop help establish the Guatemalan context:



Step back and use a telephoto lens

Back up from an work of architecture and use a telephoto lens to compress the perspective. This often brings out an interesting pattern.



The images below, from [Provincetown, Cape Cod](#), show the increased abstraction of a telephoto perspective. The picture on the right was taken with a much longer lens than the one on the left.



Include the Fence

A fence can be an important image element. In the left-hand photo below (from [Gotland, Sweden](#)), the fence works with the trees to frame the barn. It helps that the fence is not brightly lit and is a bit out of focus. The viewer's eye will therefore naturally be drawn to the main subject of the photo, i.e., the barn. In the right-hand photo, from [Cape Cod](#), the fence immediately clues a viewer into the exclusive nature of the beach club.



Straight on Till Morning

Sometimes a direct approach is all that you need:



Watch the Shadows

Before color, Hollywood directors and cinematographers worked carefully to cast interesting shadows into scenes. Here are some examples of images where shadows set the mood.

Side porch, 470 Shore Road,
Chatham



Jefferson Memorial,
Washington, D.C.



Watch the weather



What's the best weather for photographing buildings? Consider the following photo, from [Travels with Samantha](#):



The sunlight adds punch to the fire hydrant and makes urban life seem more appealing. However, if you were trying to show people details in the buildings, a high overcast day would have been much better. For example, here is an image from Visby, [Sweden](#):



The Drama of the Staircase

It would seem that staircases are inherently dramatic.



Lead the eye by leading the person

If your composition includes a visible footpath into the scene, it should naturally draw the viewer.



Natural Frames

It is a contrived and hackneyed idea, but it does work to use natural frames. If you're working without a tripod, you probably won't be able to stop down the aperture enough to get everything into focus. But it is okay to have a soft frame and a sharp subject.



Private Courtyards



Public Squares

The left-hand image, from [Rome](#), has a classical composition leading the eye into the center of the frame. But the overview image to its right conveys a truer feeling for the Spanish Steps.



Michelangelo designed [the Campidoglio](#) (left) to be viewed from above. The photo at right is from [Burano](#).



Here is a Soviet-built memorial to the Second World War in [Berlin](#):



People

Include people in an architecture photo if they give unexpected information about how a building is being used.



Don't forget the sculpture



Swimming Pools

Occasionally, a swimming pool is a work of art by itself, as in the image at left (Hearst Castle, from [the photo.net California guide](#)). But most of the time, a pool is best used as an abstract element in a composition from above, as at right ([Israel](#)).



Fountains





Narrow Streets

The narrow streets of Europe are always interesting to American eyes. We're accustomed to structures built on an inhuman scale (cf. the Mall in Washington, D.C.). To get a better-than-average picture of a narrow European street, start by looking for an arch:



Both of the above images could have been better. In the left-hand image, the subject (woman on moped) could be more interesting and more engaged either with the camera or another subject. In the right-hand image, some of the black shadow should be cropped out.

If you can't find an arch, try filling the foreground with an interesting subject of some sort, e.g., this old Citroen:



Another effective technique is to use a long lens to compress the perspective:



"Streets flooded. Please advise."

-- Robert Benchley (telegram to his editor upon arrival in Venice)



Bridges

The three pictures below show increasingly less literal views of the Golden Gate Bridge in [San Francisco](#). My favorite is the one on the right. It isn't a very good view of the bridge--one can hardly see that there are two towers--but it shows tourists gawking at the bridge's construction and an avid cyclist using the bridge.



For the next bridge, the story behind it is more important than the structure. This is the Dike Bridge on Chappaquiddick, a subisland of Martha's Vineyard, Massachusetts (almost part of [Cape Cod](#)). In 1969, Ted Kennedy drove off the side of this bridge into the water. He abandoned his passenger, Mary Jo Kopechne, to her death by drowning. Kennedy did not report the incident to the police until the following morning and was found guilty of leaving the scene of an accident. The bridge fell into disrepair and was subsequently rebuilt to absurdly heavy duty standards. The photographs below therefore concentrate on the super-strong guard rails and the heavy metal gate that is used to close the bridge every night.



The next example is that most tired of photographic subjects: the covered bridge. For starters, here is the Chamber of Commerce view:



One approach is to get inside the bridge:



Another is to wait for darkness or gloomy weather:



Here are a couple of early morning Brooklyn Bridge photographs. This is one of the best bridges because of the unusual cabling pattern and also the backdrop of the Manhattan skyline.



San Francisco's Bay Bridge is a poor stepchild to the Golden Gate in terms of photographic coverage. However, if you get off in the middle of the bridge, at Treasure Island, and are willing to do a little bit of creative parking, you can get a good picture of the bridge as it is used:



Below we return at different times of day and from different vantage points to capture the multiple moods of the Ponte Vecchio, in [Florence](#):



The stone bridges of Europe are spectacular:



Doors and windows



Doors. Nishi Hongan-ji. Kyoto



Details

Photography of Architecture (Exterior)

A good architect is a fanatic for detail and some of the most beautiful parts of a structure are best captured in isolation.



Night

A lot of buildings become more interesting at night:



Modern 35mm single-lens reflex cameras have such good metering systems that the suggested exposure for a picture like the ones above is almost always within 1 f-stop of the best exposure. With slide film, it is probably best to take 5 bracketed exposures at 1/2 f-stop intervals. With color negative film, take four pictures: one at 1 f-stop less exposure than recommended, one at the camera's recommended exposure, one 1 f-

Photography of Architecture (Exterior)
stop over, and one 2 f-stops over.

Industrial

The world of industrial architectural is the world of the large but simultaneously extremely detailed. If you're using a 35mm camera, use a tripod, sharp lenses, and slow fine-grained film, as with these photos of the Glen Canyon Dam on ISO 32 Kodak Panatomic-X film:





Here is an image from Vallejo, [California](#) taken with [the Fuji 617 panoramic camera](#):

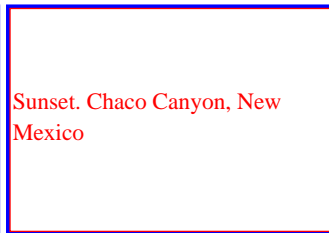


Ruins

A good perspective on a ruin is some rubble in the foreground and the standing structure in the background:



For ruins in the American Southwest, the best images almost always show quite a bit of context (these are from [New Mexico](#)):



Perspective Correction

Photography of Architecture (Exterior)

The average building is taller than the average photographer. This is the source of 99% of the distortion in the world's architectural photos. Distortion isn't always bad. Note the converging vertical lines in the following image, the Cathedral of San Giovanni in Laterno in [Rome](#):



This is an extreme example and it comes from cozying up to the facade of the building, mounting a wide-angle lens (14mm) to the camera and tilting the camera body back so that the entire facade fits in the frame. This has the effect of projecting a flat surface (the front of the building) onto an angled surface (the film). Hence the distortion. Is it bad? The photo isn't very descriptive or accurate. It won't be bought by any guidebook publishers. However, it expresses the idea of the enormous cathedral looming over mankind better than a perspective-corrected image.

Suppose we have a humbler building, like this wood-framed house in Cambridge that contains a few <http://philip.greenspun.com/materialism>



Macro Photography

"how to take close-up pictures of small things"

by [Philip Greenspun](#)

[Home](#) : [Learn](#) : One Article

macro \ˈmak-(.)ro-ˌaj [macr-] 1: excessively developed : LARGE, THICK 2: of or involving large quantities 3: GROSS

Taking close-up pictures of small things is called "macro photography." I have no idea why. Perhaps because the small things in macro photography are generally larger than the things you are taking pictures of when doing "micro photography". If you really want to be pedantic then you should say you are doing "photomacrography".



What Kind of Camera

You probably want a standard 35mm single-lens reflex camera. You will see in the viewfinder what the film sees. If you have a lot of money, you can get a 6x6 single-lens reflex such as the [Rollei 6008](#).

That's more or less the same idea. If you have a lot of patience, you can do macro photography with a 4x5 inch view camera.

In the digital world, true macro photography is possible only with single-lens reflex cameras that take interchangeable lenses, such as [the Canon D30](#), the Fuji S1, [the Nikon D1](#), and the various Kodak professional bodies. One nice thing about these cameras is that their small CCDs effectively magnify the image captured by whatever macro lens you've purchased. Thus a 100mm macro lens mounted on a Canon D30 effectively becomes a 160mm lens. And if the lens gives 1:1 magnification on 35mm film, you get 1.6:1 on the D30's sensor.

Doing it all with a 50mm Normal Lens

In the good old days a 35mm single-lens reflex camera came with a 50mm "normal" lens. These lenses were extremely light, rugged, and high quality so naturally the consuming public abandoned them for heavy, fragile, low quality zooms. But that's another story... Anyway, suppose that you are out in the woods with your Nikon and a 50mm normal lens and you want to take a picture of the tip of a pine needle.



First, though, you want to take a picture of the moon. That's pretty far away, so you feel comfortable setting the lens focusing helical to "infinity". The "nodal point" of the optics will now be 50 millimeters from the plane of the film. [Note: exposure for the moon should be roughly f/11 and 1/film-speed.]

The effort of setting up your tripod is so great that you become tired and fall asleep. When you wake up in the morning, there is a bear standing 10 feet away. You refocus your 50mm lens to get a picture of the grizzly. As you turn the helical from "infinity" to "10 feet", notice that the optics are racked out away from the film. The nodal point is a bit farther than 50 millimeters from the film plane. The lens is casting an image circle somewhat larger than the 24x36mm frame. Some of the light gathered by the lens is therefore being lost but it isn't significant.

After snapping that photo of the bear, you notice that his fangs are glistening. These aren't going to appear very large in your last shot, so you move up until you are about 1.5 feet from the bear. That's about as close as the Nikon lens helical will let you focus. The nodal point is now pretty far from the lens. Extra light is spilling off to the edges of the frame, but still not far enough to require an exposure correction. The bear's face is 1.5 feet high. You've oriented the camera vertically so that the face fills the 36mm dimension. 36mm is about 1.5 inches. So that means you are working at "1:12". The subject is 12 times the size of the subject's image on film.

You're losing some light, but also you notice that you don't have too much depth of field. A 50mm lens focussed down to a foot from the subject only has a depth of field of 1/16th of an inch at f/4. No problem. You haul out a big electronic flash and stop down to f/11. Now your depth of field is a whopping ... 1/2 inch.

Looking down, you become fascinated by some pattern's in the bear's claws. Each one is about 1.5 inches long. You'd like to fill the 35mm frame's long dimension with a claw, which means that the subject and its image will be the same size. You want to work at "1:1". But those scumbags at Nikon skimped on the helical. You can't rack your optics out far enough to focus at 1:1. It looks like that pine needle tip photo is completely out of the question.

Why did Nikon limit your ability to focus close? For starters, at 1:1 your lens would be so far away from the film that it would cast a huge image circle. The standard 35mm frame would only be a tiny fraction. So only about 1/4 of the light gathered by the lens would reach the film. A scene that required a lens setting of f/16 at infinity would require a lens setting of about f/8 at 1:1. All this other light would be bouncing around inside your camera and lens, reducing contrast. Finally, a fixed stack of optical elements can't be designed to form sharp images at so many different focussed distances.

Close-Up Lenses

Your eyes don't focus so great on really small things either. Do you try to pull your cornea a foot away from your retina? No. You stick a magnifying glass in front of your cornea. You can do the same thing for your 50mm lens. Unlike your cornea, it even has convenient threads for attaching a magnifying glass.

A photo shop could never sell you a "magnifying glass" for \$50 so they call these things "supplementary lenses" or "close-up lenses". Good things about close-up lenses:



- they don't require any exposure corrections
- you can throw a couple in your pocket in case you need them

Bad things about close-up lenses:

- they aren't very high quality though they might be good enough if you stop down to f/16 and if you can find two-element close-up lenses (e.g., Nikon-brand) instead of the cheapo one-element ones.
- you have to take them on and off constantly if you are taking pictures of things at different distances.

I never use close-up lenses but they are described fairly thoroughly in the [Kodak Professional Photoguide](#).

At right: a model of Sacre Coeur, captured with a Minolta 50mm lens and single-element Minolta-brand close-up lens. The image has lots of problems but I think I was 11 years old when I took it.

Macro Zoom Lenses

Macro zoom lenses are not macro lenses. They don't allow significantly greater magnification than a 50mm normal lens and they deliver low quality.

Macro Lenses

What you want is a macro lens. Fortunately, it is difficult to buy a bad macro lens. This is kind of odd in a world where 90% of the lenses sold are bad. Here's my theory: Every day at least one man wakes up and says to himself "I have a 1.5 inch long penis; I think I will buy a big SLR like a pro. But I don't want to spend money on frills like lenses so I'll get a Tokina zoom." However, no man ever wakes up and says to himself "I have a 1.5 inch long penis. I think I will buy a macro lens so that I can make a 1:1 photograph of my penis and distribute this photo from my Web server. But I don't want to spend too much on this lens so I'll try to find a cheap Sigma."



In short, anyone in the market for a macro lens is already fairly sophisticated and quality conscious. If you read USENET then you know that the world is full of people asking "is this \$150 Tamron 75-300 zoom as good as a \$900 Nikon 300 prime?" Can you blame Tamron/Tokina/Sigma for trying to separate people like this from their \$150? But there isn't apparently a big enough collection of fools in the market for macro lenses to support a junky macro lens subcategory.

In my humble opinion, the best macro lenses are the latest autofocus mount models made by Nikon (my primary 35mm system is Canon EOS, by the way). Nikon makes 60mm, 105mm and 200mm focal lengths. Each lens will focus continuously from infinity to 1:1. You can shoot the moon and capture the bear claw without stopping to change lenses or screw in filters. How do these lenses work? Do they just have a much longer helical than the 50mm normal lens? Yes and no.

Yes a macro lens helical has much more travel than a normal lens helical. You can watch the front element move an inch or two. However, these helicals aren't just pushing a stack of glass back and forth like the 50mm's helical. Inside one of the elements is moving ("floating") so that the optical design changes to a more appropriate one for close-up photography. Thus you get sharp images at all focussed distances.

How do you choose a focal length? The same way you do with a non-macro lens. If you can't get very close to your subject at a soccer game, you don't pull out a 50mm lens; you get a 300. If you can't get close to an insect without it getting scared and flying away, then you want the 200mm lens and not the 50. If you want to compress features in a woman's face, you don't get a 28mm lens; you get a 105mm lens. It is the same with macro work; longer lenses give you a flatter perspective.

What about other companies? Canon makes 50, 100, and 180mm macro lenses. All three incorporate floating elements. The 50 is cheap but it only goes to 1:2 without a "life size converter" (sort of like a telextender) that you stick between the lens and the camera. The 50 is also annoying because it has the ancient non-USM Canon motor. So it can't do simultaneous AF and MF like the ring-USM lenses. The 100 goes to 1:1 but also has the old-style motor. The 180/3.5 is a new design with three low dispersion elements, a tripod mount, and USM for full-time manual focus. It is also compatible with the Canon telextenders. At right, you can see about as close as one can get with the Canon 50 (from my [Christina page](#); part of the reason that photo.net is banned by most of the Net censorship services).



Tamron makes a newish 90/2.8 macro lens that goes to 1:1. It is probably pretty good.



If you feel like spending a lot of money then what you want is a 6x6 cm [Rollei 6008](#). The 120/4 Zeiss Makro-Planar (same lens as for a Hasselblad) will set you back about \$3400. That's right, you could buy a Nikon 105/2.8 macro lens and three N90 bodies for the price of the Rollei lens alone.

Rollei probably has the most intelligently designed macro system in the world.

I photographed these orchids at left in Hawaii with the 120 Zeiss macro lens, Kodak Gold 100 film (120 size naturally), tripod, f/16 and 1/15th of a second.

Exposure

Unless you are using close-up lenses, when doing any kind of macro work, you always have to consider the effective f-stop. Even if you are using the SLR body's built-in meter, which will correct automatically for light loss, you can't turn off your brain. Why not? Because the effective aperture affects picture quality.

Taking pictures through a pinhole results in tremendous depth of field but very low sharpness due to diffraction. This is why lenses for your 35mm camera stop at f/22 and don't go to f/45 or f/64.

View camera lenses provide these smaller apertures for two reasons: (1) the lenses are longer (f/64 on a



210mm lens is not all that small a hole); (2) the negative won't be enlarged very much.

If you're at 1:1 and have selected f/22 on the macro lens barrel, you need to look at the lens markings and/or the close-up exposure dial in [the Kodak Professional Photoguide](#) to learn that your effective aperture is f/45.

If you're using a handheld meter, then you absolutely must use these corrections (e.g., meter says f/22 but you're focussed down to 1:1 so you set f/11 on the lens barrel).

[Note: the modern Nikons, e.g., 6006, 8008, N90, show you the effective aperture in the viewfinder; the F4 does not; Canon EOS cameras do not. Another reason to go with the Nikon system if you are into macro photography.]

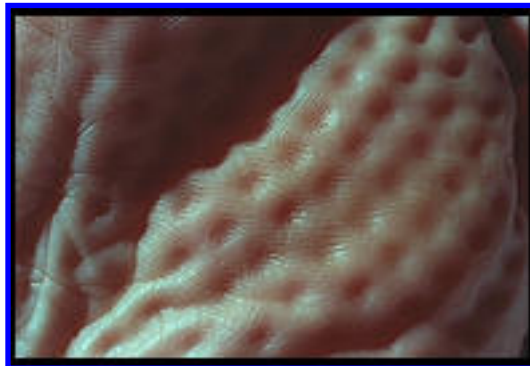
Lighting

A good quick and dirty lighting technique is to use a through-the-lens (TTL) metered flash with a dedicated extension cord (SC-17 in the Nikon system). A modern handheld flash is extremely powerful when used a few inches from a macro subject. That lets you stop down to f/16 and smaller for good depth of field. I sometimes just hold the flash to one side of the subject and have an assistant hold a white piece of paper on the other side to serve as a reflector. Anyway, you have enough power in the flash to pretty much use all the diffusion material that you can find. Let the camera turn the flash off when enough light has reached the film.



Lighting is the most important and creative part of any kind of photography. I've written [an entire book chapter on the subject](#) so I'm not going to try covering it here.

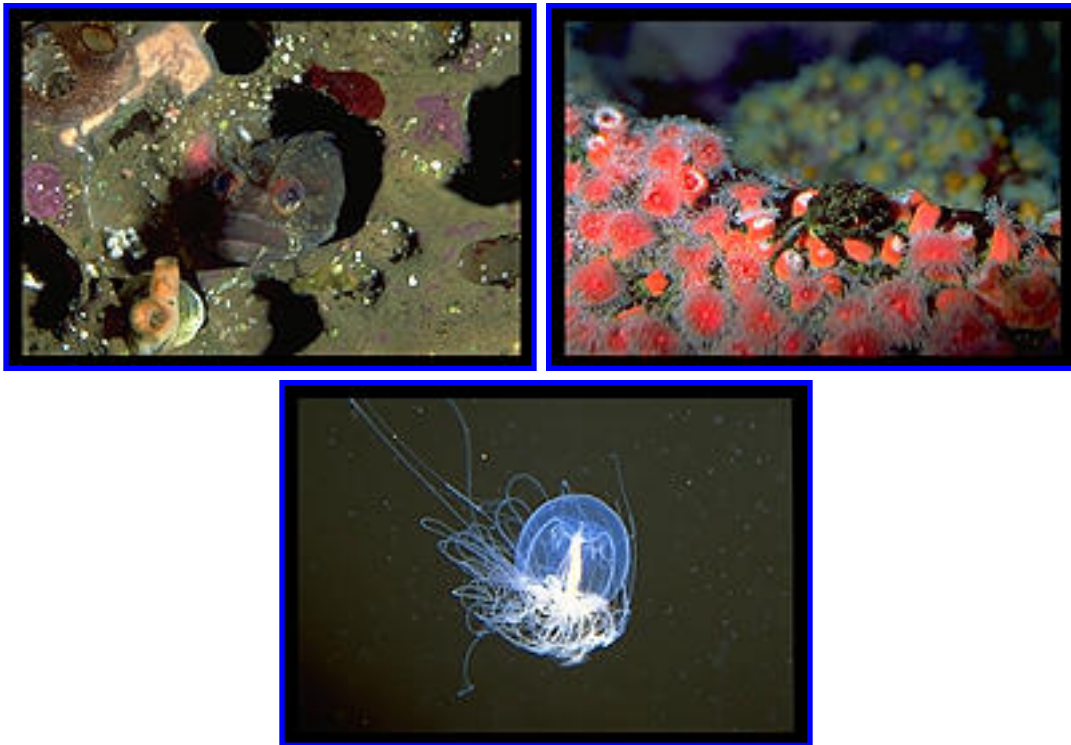
The Samoyed nose at right belongs to [Alex](#). I captured it with a Canon EOS-5, 180/2.8 macro lens, and TTL-metered Canon flash. Below: a foot recently pulled out of one of those weird sandals with all the bumps. Nikon 8008, 60/2.8 lens, SB-24 lens with SC-17 cord



Let's combine what we've learned until now: the aquarium

Combining everything we've learned up to this point, let's look at a case study: the aquarium. The items inside are pretty close, so you need a macro lens. If you put a rubber lens hood on the front of the lens, then you can mush it up against the glass and avoid reflections. Now you need light. Well, you can just get a flash on an extension cord and point it into the aquarium from just about anywhere.

Here are some examples from the public aquarium in Monterey, taken with a Nikon 8008, 60mm AF macro lens (set for manual focus), SB-24 flash, SC-17 extension cord. I wiped the glass with a handkerchief, asked my friend to hold the flash, and pushed the lens hood up against the glass:



I'm still trying to figure out how I managed to get a lawyer in that last frame...

Focus

With a depth of field of around one millimeter for precise macro work, camera positioning and focus become critical. If you have a good tripod and head, you'll find that you have at least 10 controls to adjust. Each of them will move the camera. None of them will move the camera along the axis that you care about.

That's why people buy macro focusing rails. These are little rack and pinions capable of moving the entire camera/lens assembly forward and back. You use the tripod to roughly position the camera/lens and then the macro rail to do fine positioning.

I snapped the photos below in the garden of [the Getty Center](#) and, though I had a fancy Canon 180 macro lens, I didn't have a tripod. So I couldn't focus precisely and couldn't stop down enough to get sufficient depth of field. The results are rather disappointing...



Beyond 1:1 the Canon Way

In the Canon EOS system, going beyond 1:1 is as simple as calling up [one of the photo.net recommended retailers](#) and ordering [a Canon MP-E 65 1X-5X macro lens](#). Mount lens on tripod, mount camera on lens, twist ring on lens, release shutter:



(Flower interior at above left was captured with a traditional EOS film body; the jelly bean image at above right was taken with [a D30 digital body](#).)

Beyond 1:1 with Nikon, et al

Going beyond 1:1 requires more than buying a Micro-Nikkor and turning the focusing helical. In fact, you probably should read a real book by a real macro photographer. [Bob Atkins likes [John Shaw's](#)

[Close-ups in Nature .\]](#)

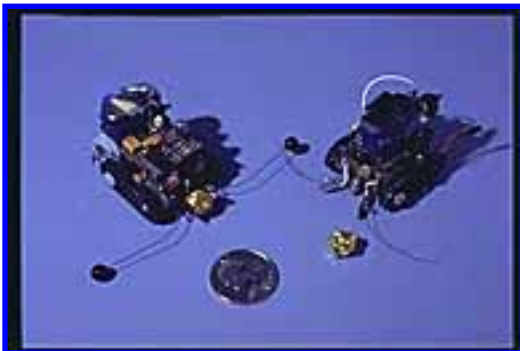
Here's a basic introduction to the tools, though...

First, you can get a bellows (flexible accordion) and/or some extension tubes. These will let you push the lens farther away from the camera body. Extension tubes are rigid and tough; they only let you separate your body and lens in fixed increments. Bellows are delicate but they let you continuously control the lens distance from the body. How much magnification this extra extension will get you depends on the focal length of the lens. If you have a 1000mm lens that already needs its nodal point 1000mm from the film plane to focus at infinity, then a 50mm extension tube isn't going to be worth much. However, if you have a 50mm lens, then that same 50mm extension will take you all the way to 1:1.

Second, you probably want a "reversing ring" for your lenses so that you can turn the back element of the lens toward your subject. Why? Think about the normal way you use a lens. You are taking a picture of the Statue of Liberty. The Statue of Liberty is larger than 24x36mm. So you point the front element of the lens at the statue and the back element at the (smaller) film. Your lens is designed to work like this, taking the large and compressing it into the small. However, if you are working at 10:1, where the tip of a pine needle is going to take up a big portion of the frame, you want the lens to take the small and expand it into the large. So you want to just flip the lens around.

Third, once you've reversed the lens, you probably want some way to retain the automatic diaphragm. You want the aperture to remain fully open until just before your exposure and then close down to the selected shooting aperture. My old Rollei 6008 had all-electric lenses so you could do this with a clean and reliable electric contacts. Nikon has mechanically stopped-down diaphragms for backward compatibility so they can't do this; you end up with a strange dual cable release contraption. Canon EOS has all-electric lenses but in 10 years they haven't figure out how to engineer a bellows or reversing ring so don't hold your breath (instead they make a kludge to adapt their ancient Canon FD macro system to the EOS).

Beyond 1:1 the Lazy Way



At left are a couple of Ant Robots built at the [MIT AI Lab](#) by James McLurkin. Photographed with Canon EOS-5 and Canon 50/2.8 macro lens (lit by off-camera 430 EZ flash). This lens only goes to 1:2.



At right is a detail of the ant claws, which was taken with the Raynox MicroExplorer. The Raynox is a set of close-up lenses available for about \$150. I mounted the

6X lens on a Canon 35-350L zoom lens (the kit also comes with 12X and 24X lenses). Yes, in the end I stuck a magnifying glass in front of my lens.



Here is the original ant claw picture. You can see that vignetting was severe at f/16. Fortunately, I could see this in the viewfinder to a large extent with the DOF preview and Adobe PhotoShop papers over a lot of photographic sins. Vignetting is the principal drawback of the MicroExplorer and it is apparently worse at small apertures.



A couple more example MicroExplorer shots (at left is an Ant robot detail; at right is a quarter on a \$20 bill, full frame at f/8 (I think)). Note that vignetting is not as severe as it was at f/16 (above left).



More

- [Macro threads in the Q&A forum](#)
- [review of Canon MP-E 65 1X-5X macro lens](#)

Macro photography is an equipment-intensive endeavor. If you need to add to your armamentarium, check out [the photo.net recommended retailers](#).

Top photo: Salmon roe. [Nikon 60/2.8](#), Fuji Velvia, SB-24 flash, SC-17 extension cord, from [Travels with Samantha, Chapter XII](#).

Frog: Canon EOS 50 macro. 430EZ with Off Camera Cord 2. From [my Costa Rica story](#).

Orchids: Canon EOS 50 macro. Tripod and natural light. Fuji Velvia. From [Hacienda Baru in Costa Rica](#).

Text and pictures [copyright 1991-1997 Philip Greenspun](#).

philg@mit.edu

Reader's Comments

This article talks about lighting for macro. I have found that the LumiQuest BigBounce works very well for macro work. I mount it on my SB-24 flash and just hold it right over the subject (using the SC-17 cord, of course). It has a large enough area that the shadows are quite soft. It does not have a hot spot in the center like some other diffusers.

-- [David Jacobson](#), April 2, 1997

I saw a reversing ring for the EOS system in an ad the other day. I think it was from Calumet because that is the only catalog that has shown up in the past week or so.

The "ring" actually involved two rings. There was the first ring which screwed into the lens' filter thread and duplicated the EOS mount at the back end of the lens. This ring interfaces with the EOS mount on the camera body. There was a coiled and wrapped wire bundle that went from this first ring to the second ring. The second ring was like the EOS mount on the camera body, and it attached to the mount end of the lens.

Because they are only shifting the electrical contacts for the EOS mount from one end of the lens to the other, this contraption should have a decent chance of "working." It doesn't require the same level of reverse engineering that is required to duplicate the EOS mount completely. There is no need for any microprocessor, or communications capability in this "adapter." I have not personally tried it, so I can't give it an endorsement.

The price tag was \$269.95, so it is cheaper than an EOS macro lens, but not as cheap as the EOS extension tubes, which will also allow close focusing..

-- [Glen Johnson](#), April 7, 1997

In addition to the extension tube approach, which I alluded to above in my comment on the reversing ring, you can also get a greater than 1:1 on the film plane by using teleconverters. Canon's 180mm f/3.5L usm macro lens will accept the tc's, and with the 1.4x you get 1.4x life size, and with the 2x you get 2x life size at closest focus.

You can also use the tc's with the other Canon macro lenses, but you need to mount an

extension tube between the lens and the tc to make the tc "fit." Canon doesn't recommend this, but George Lepp has reportedly achieved acceptable results using this strategy. You can actually mount the tc's on any of the EOS lenses if you premount the tube - and this allows you to turn your 24mm TS-E into a 48mm TS-E, for example.

-- [Glen Johnson](#), April 9, 1997

Here's a cheap way to try high magnification photography - B&H sells something called a macro coupling ring for around \$8. The ring has two male filter threads, one on each end. You basically screw it into the filter end of an 85mm or 100mm lens, and then mount your 50mm or 35mm lens in reverse on the front.

I have not tried this, but it is incredibly cheap. TTL metering is maintained because one lens is mounted with a fully functional diaphragm. It looks like it would be tempting to mount the 50 f/1.4 or the 35 f/2 in front of the 85 f/1.8 or the 100 f/2, or maybe even the 100 f/2.8 macro.

-- [Glen Johnson](#), April 16, 1997

If you're using EOS gear, you should consider picking up the book entitled Canon Workshop Series: Close-Up & Macro Photography. B&H sells it under the name "Canon Macro Book," and they get retail (\$17.95). I have also seen it in local camera stores.

This book has a 1996 copyright. The fellow who wrote it has worked closely with George Lepp. It begins with very basic information, and includes a series of "projects." I found the book to be very informative and interesting. There are chapters that are suitable for folks with a Rebel G and 35-80 zoom. And there are chapters for folks who have a 1N, ML-3 ringlight, macro lens, tilt shift lens, tele converters, extension tubes, etc. Literally, there is something for people working at every level.

There were a number of tips in the book that explain more about how the EOS flash algorithm works. The book covers unusual topics, like cross polarization. They present sources for special non-Canon gear. This book is the first Canon sanctioned reference that I have found that explains what to expect in terms of displays and camera behavior when you mount a TC on a tilt shift lens, or when you mount a TC via an extension tube on an EOS EF lens that wasn't designed to accept a TC.

A major focus of the book is on lighting via the EOS Speedlites. Although they tend to focus on the use of the 540 EZ, there are also several examples where the low end flash (I think its the 220?) is used. One interesting point on the 540EZ is that they recommend that you use the strobe feature (on low power and for limited consecutive flashes so that you don't overheat it) as a modeling light. I hadn't thought of this myself and I don't

remember seeing the idea in the 540EZ manual.

I would rate this book as "better than a workshop," and certainly cheaper. It is worth a look, especially for folks who are using EOS gear. Others might find it less useful.

-- [Glen Johnson](#), April 18, 1997

As a long time very satisfied Nikon micro/macro user, I would like to plug an even better macro lens: The SMC Pentax-A 645 120 mm Macro lens.

-- [M. Huber](#), August 24, 1998

I was surprised to read a general article about 35mm macro photography that doesn't mention the Olympus OM system. Olympus still makes by far the most comprehensive macro system in 35mm. A total of 7 macro lenses - including 2 optimized for magnifications greater than 1:1 (20mm, 38mm), two 50mm's, an 80mm optimized for 1:1 (ideal for slide copying), a 90mm, and a 135mm). There is also a bellows, telescopic auto extension tube (unique, I believe), and 3 special purpose macro flashes (the T8 reverse-reflection ring flash, T10 ring flash, and T28 dual-head macro flash). I believe essentially all of these products are still in production. If someone is serious about macro photography they should give the OM system a close look.

-- [Paul Schings](#), October 9, 1998

Having tried lots of ways for more practical macro photography, I can advise you using a reversed zoom lens with a bellows unit. This method provides you with adjustable magnification by changing the focal length of the zoom, without changing the length of the bellows. I used sigma 70-210 APO with bellows on a Nikon, and I can say I was satisfied.

-- [ilker sahin](#), November 8, 1998

Great site! Well, there is actually a reverse- ring-system for Canon from the German company NOVOFLEX (I do not know if there is a distributor for the US (maybe Bogen?)). This system even supports autofocus. In Germany it costs about 700,-DM (~400 US\$ incl. tax)

-- [Michael Engelen](#), November 27, 1998

Novoflex's EOS accessories and their other products as well, are distributed by Calumet. In addition to the EOS lens reversing ring which retains all EOS functions, Novoflex also makes a very compact auto bellows for the EOS system which likewise retains all EOS functions.

It may be of interest to note that when using a floating element lens on a bellows or other extension accessory, it is optically preferable to extend the lens to it's fullest extension (nearest focus setting) before extending the bellows. At the lower magnification range this may not always yield the magnification desired so it may be necessary to retract the lens the necessary amount in combination with bellows extension to achieve the desired magnification. The point is to leave the lens extended the maximum amount permissible because the floating element(s) corrects for close-up images when the lens extends.

pepe@mcn.org

-- [Pepe Alvarez](#), February 14, 1999

I use an 70-300 Apo Macro Zoom with an achromatic attachment lens and 60 cm extension ring. The subject can be illuminated with a camera mounted Speedlite. It gives reasonable images at aperture 22.

-- [balazs horvath](#), April 21, 1999

My favorite gear for macro photography on land is my underwater gear. Pause for head scratching. Huh?

For macro work underwater, I use a Nikonos with twin strobes. I use the 35mm lense and the 28mm lense with extension tubes and with a close-up lense. This enables me to shoot 2:1, 1:1, 1:2, 1:3, 1:6, and 1:8 very simply. Twin strobes only inches from the subject allow me to shoot consistently at F16 (with Velvia). I use this rig on land and get brilliant macro shots of flowers and insects.

Because it's a viewfinder camera and not an SLR, focusing and parallax are a major issue. This is solved by using framers. A framer is bent coat hanger wire ;-) attached to the lense that precisely indicates the point of focus and the edge of the picture. You don't look through the viewfinder, you look over the camera at the subject.

What I have is a self contained rig that takes serious macro shots with twin strobes with a minimum of fuss.

However, since I wouldn't recommend anyone buy this unless they were also going to use it for underwater work, this is offered simply as a divertissement.

Cheers, Neil.

-- [Neil Robertson](#), June 9, 1999

Hi,

I intend to take photos in very high magnifications (up to 20x). The only way to reach such magnifications is to reverse a standard or a wide-angle lens. I didn't buy the automatic reversing ring of the german company Novoflex, I made one by myself instead (it has only 8 electronic contacts but it's enough). It was a hard work but it was worth it. I used a 12 mm Soligor extension tube for this conversion. It has two long spiral cables (usually used in phones). It works very well. I need it because I hate awkward double cable releases. (It's quite a hard task to take hand held shots in such a great magnifications, even if the aperture closes automatically.) Novoflex claims one can get brilliant images with a reversed 28 mm lens. I asked Leica but they said "we don't suggest you using a reversing ring because it gives miserable images. Use our Macrophoto lenses (Photar Lupenobjektive)". I know they have right but I can't afford it. (By the way: Nikon's solution to this problem is to reverse a 20 mm lens) I want the second-best way to get high magnification images: the reversing ring. Somebody could maybe tell me which one of the following lenses would be the best for the work with a reversing ring:

the new Sigma 17-35mm / F2,8-4 EX ASPH. or the Tokina 17 mm / F3,5 with asph. lens and floating elements or the Canon EF 20 mm / 2,8 with floating elements or the Sigma 28 mm / F1,8 ASPH.? (or something else?)

Somebody on the net wrote that wide angle lenses with floating elements perform not very well when reversed. I disagree (I'm not sure however)

There are only a few centimeters between the subject and the front of the lens (in fact the back of the lens). Does someone an idea how to illuminate the subject?

Horvath Balazs

-- [balazs horvath](#), July 2, 1999

For magnifications up to 5 times, here's what I do. 100mm macro with 2x converter, stacked with a standard 50mm. The Vivitar macro only goes up to 1:2 and when set there, I am able to reach 5x. Working space between back element of the 50mm (now facing forward) and subject is only 4cm. The extreme but unavoidable shallow DOF wide open can in a way be an advantage. Focus on certain parts of a subject (bug's eyes for example) can be easily confirmed because at the correct distance, that specific part and everything else in its plane will be the only thing sharp. With the subject so close, a ringlight seems to be the only option, but can be replaced with a TTL flash on dedicated cord positioned just beside the front of your lens. Put a diffuser on that and a reflector on the other side.

-- [Kevin Han](#), October 1, 1999

Hello! On the extreme magnification end of things: the late lamented Modern Photography published a wonderful article about 30 yrs ago on using an inexpensive movie camera lens (avail. in junk boxes at equipment shows these days) in reverse mode as a super macro. The shots they posted were incredible! It needed a bellows and a bit of do-it-yourself skill to set up, but the resolution blew away some expensive Zeiss macro they tested it against. Les

-- [Les Berkley](#), October 8, 1999

You do not need an expensive adapting ring to reverse a lense, handhold it. I just reverse my 50mm (haveing set the aperture wide open), and hold it onto my Contax 167mt body. OK, it is not the easiest or reliable way to do things, but it is geat fun, you get good results about half the time, and people who think they are 'real'photograpers look at you as though your mad. If you want to get even closer use a 28mm. The results are often bizarre, abstract, but nearly always beautiful.

Infact this way, you have a macro shift and tilt lense! Just give it a go, leave the camera's meter to do it's own thing, and enjoy.

ed

-- [edward Everett](#), January 14, 2000

There is no question about that Nikon and Canon produce excellent lenses and cameras for 35 mm photography...but if anybody out there is looking for a 35 mm macro lens that satisfies even the most demanding Pro or Amateur photographers,then Leica 100/2.8 APO is the way to go...This lens is very expensive but delivers superior image quality over the entire focusing range from infinity to 18 inches.. also for greater magnification Elpro 1:2-1:1 is available at a reasonable price..... Sincerelly,Jan

-- [Jan Senko](#), February 5, 2000

I would like to add to the above comments by Glen Johnson and Les Berkley on the subject of stacking lenses. First, this is the cheapest way to obtain high magnification, since you can use lenses that you already own; the stacking ring can be purchased for very little, or you can even fabricate your own. Second, it yields superior results because many many lenses can be used as the reversed lens (the one in front), and even a really cheap lens is usually quite well corrected in its center. The center of the reversed lens is all you're concerned about when shooting at apertures of f11 and smaller. People have

even used enlarger and cine lenses, etc., with great results, and of course the reversed lens can be of any brand. Finally, in order to simply reverse one lens directly onto the camera body it is possible to make a reversing ring by epoxying a cut-out body cap to a junk filter ring.

-- [Lan Tu](#), March 14, 2000

Macro is a great way to generate visually impressive and interesting shots. It's eye-catching, and you find yourself drawn into the shot asking "what's that?". You can spend a day shooting in the back yard. You can take a macro hike in the hills, shooting rolls of film within 1/4 mile of the car. It's fun. I've been using an FD bellows with a medium zoom and a lightweight tripod for general work. For critical work and copying slides I use an EL-Nikkor 50mm/f2.8 enlarger lens in a lens adapter, bolted onto the bellows. The zoom is nice because I don't have to get in really tight and I can adapt the magnification to match the shot. Great for shooting flowers, bugs, etc. The enlarger lens is optimized for flat field work, so shooting coins or duplicating slides is this lens'job. It is, however, a lot more work to use the enlarger lens but the results are worth the hassle. My suggestion would be to begin with a medium close up lens, something like a +2, and see how you like it. You can always keep the lens in the camera bag, and it's light and easy to carry. The next step is an extension tube. These are a lot of work to use, but at 1:3 or 1:2 they're Ok. I wouldn't advise high magnifications with tubes, though. Use a bellows with a tripod mount so that you're not supporting a heavy lens way out there, solidly mounted to your camera body's lens mount. It's easy to distort the mount and then your body is junk. The integral tripod mount on the bellows provides support, as well as flexibility.

Dan

-- [Dan Carey](#), May 31, 2000

This relates to medical photography which is a blend of portrait photography and macro closeup work. After reading reviews and comments on this site and others I decided to buy a Canon Elan IIE with the new USM 100mm macro lens. However I broke the tradition in the surgical field of using a ring flash. I am so happy I did. I bought the 380ex flash unit and installed a bouncer-diffuser. It extends the flash out over the barrel of the lens and has no detectable shadow at the ranges I am using. The contrast is incredible-it blows away the quality of my mentor's Nikon F4 outfit. For anyone considering surgical medical photography-don't get a ring flash-it washes out the depth of the subject too much. Also the TTL system works so well at creating the right exposure I can't tell the difference between the ones I took at 2.8, 8, 11, or 16 F-stops-it was perfect everytime. The new USM macro lens has the best focus system I have tried-I demo'd the old AF system from Canon and spent some time using a Nikon macro system. It is fast and accurate without hunting around all the time trying to find its focus.

- Ivan

-- [ivan wayne](#), August 8, 2000

MACRO DENTAL PHOTO.

Joel Alves from Rio de Janeiro - BRAZIL.

I agree with the comment of Dr Ivan Wayne about medical photography and macro closeup work. I don't like to use ring flash for portrait or view of patient's smile. I prefer to use my Speedlite 420EX bounced. For macro dental photo, the use of ring flash is very important. The mouth has many shadows and obscure areas between the teeth and the oral mucosa. I'm a very blessed dentist to work with my Canon EOS A2 (Canon EOS 500 for backup), New macro 100mm f2.8 USM and Canon ML-3 ringflash. The results of my slides are superb in f11 to f19 my most usable settings. The use of mirrors are very easy by the TTL presence. If I want more perspective and a different effect I simply work with half ring flash. The Canon 100mm macro lens is amazing. The colors are neutral and the contrast superb. Without doubts the best macro lens I have worked. There is no differences between the slides shot with EOS A2 or EOS 500. It's sharper than my Canon 70-210 f2.8 L USM (a super pro lens) @ 100mm.

Incredible...

-- [Joel Alves](#), May 31, 2001

The article says:

This is why lenses for your 35mm camera stop at f/22 and don't go to f/45 or f/64. View camera lenses provide these smaller apertures for two reasons: (1) the lenses are longer (f/64 on a 210mm lens is not all that small a hole); (2) the negative won't be enlarged very much.

This doesn't appear to be entirely correct. Namely, the first reason isn't valid. Independently of the actual diameter of the aperture, diffraction limitations are determined by the f-number. E.g., on p.96 (old edition), *Photographic materials and Processes* says:

With a lens stopped down to f/64, the maximum resolving power that can be obtained--no matter how good the lens or accurate the focusing--is approximately 28 lines/mm.

Additionally, a table that maps f-numbers into maximum resolution numbers (for diffraction-limited case) can be found in a [Usenet reproduction of a Zeiss article from 1997](#)(it's supposedly reprinted from *Camera Lens News*, No 2, fall 1997).

So, only reason number 2 (negative enlargement) is valid. For large format cameras 28l/mm seems to be plenty.

-- [Stanislav Shalunov](#), June 2, 2001

Aquarium photography: I have photographed fish in aquariums on many occasions and have found through trial and error that to get the best possible results you need 2 flash head set at 45 degrees to the surface you are trying to illuminate. That is to say, you can have 1 head at the left hand and 1 at the top or 1 on the left and 1 on the right. It depends on how much space you have and what is in the tanks, rocks, plants etc. these can cast nasty shadows so be aware of them. Find the 'sweet'spot in the tank where the light and background is pleasing and take your flash meter readings there. Please note * you can lose up to 25% of your light through the glass and another 25% from the water * these are only guesstimates as glass thickness varies and so does the volume of water through which the light passes. I usually get f:16 at 125th using my 2 Profoto Heads. Next get a large sheet of black card cut a hole in the middle then stick your lens through. This does 2 things, it eliminates unwanted reflections and the fish can't see you. Light the tank for the type of fish to show off there scales to the best advantage. Remember don't feed the fish as this cause a LOT of unwanted particles floating in the water. And finally get your self a chair and get comfortable as this is not a game for the hurried person.... think like a fish! Observe them before you start shooting and you will see that they have a fairly predictable and mundane life inside a tank! which is good for you. Cheers and good luck Brent.

-- [Brent Wilson ' The Shallow DOF Man'](#), January 12, 2002

I have had good luck with a Nikon 50mm reverse mounted on a 4x5. Because of the extension it more that covers the film. I have shot a few of my best macros this way and it is actually my favorite way of doing macros of objects that I can take to my house to photography. It is about useless for use in the field though. Be warned that there will be some long exposure requirements. One time I shot at about 20x magnification, and the exposure at f/8 was 4 minutes with powerful halogen lights.

Darrell Harmon.

-- [Darrell Harmon](#), April 5, 2002

Recently I started taking maro pictures with a Rollei 3003 and other Rollei 35mm SLR

Cameras. I use the Rollei bellows with the 39mm screw mount lens adapter. I have been testing many different enlarging lenses with with the 39mm screw mount. I have taken some wonderful pictures with superb results using a Kodak Ektar 100mm lens, Nikon EL 50 and 80mm lenses, Wilonar Wetzlar 75mm lenes, and an Acura 105mm lens. I would like to know if anyone else has used this set-up with Zeiss luminar macro lenses and if so how do they compare???? I have not used these lenses yet because of the prices they currently sell for. (On Ebay) Please tell me about your results. David Silverman
Tokyo, Japan

-- [David Silverman](#), June 16, 2002

Novoflex makes a reversing ring for the Canon EOS system (as mentioned above). The only U.S. retailer is B&H photo and with no discount off of retail. All of the Novoflex products I have are great, but quite expensive.

-- [robert barzilla](#), November 1, 2002

[Add a comment](#)

Related Links

- [Paul Wilson's Macro Photography site](#).- More in depth with various formulas and discussion of equipment and techniques. Includes photo galleries. (contributed by [Paul Wilson](#))
- [Macro World](#)- Nature and Macrophotography shots. Send your pictures! (contributed by [Alexandre Silva](#))
- [Dee Ross Photography](#)- Macro photography, handcolored images, black and white and dog stock photos (contributed by [Dee Ross](#))
- [Macro Photo](#)- Jan Van Bodegraven's mostly macro photos, lot's of insects and fungus, but no nudes...pity...Has mirror site in Portuguese. (contributed by [Robert Schambach](#))
- [Steve Hoffmann's Photography](#)- Beautiful and inspiring close-up photographs of bugs. Includes descriptions of his techniques. (contributed by [Kevin Han](#))
- [Louie Photography](#)- Louie's personal photography page with a small MACRO gallery. (contributed by [Louie Tai](#))
- [Marco Stefanetti Home Page](#)- Photos of flowers and butterflies from Italy (contributed by [Marco](#))

[Stefanetti](#))

- [Photo gallery Alberto Rot](#)- Nature, macro wildlife photo (contributed by [Alberto Rot Albarc](#))
- [na](#)- as my very basic amature knowledge i suggest to visit this site . (contributed by [dipak shah](#))
- [Randy Emmitt nature photography](#)- Web site that focuses mainly on macro photography specializing in butterflies, dragonflies and flowers. (contributed by [Randy Emmitt](#))
- [Photo galleries of roses, Niagara Falls, nature, scenery, pets, and more](#)- High-quality photos from my site are great for desktop wallpaper. They are free for personal and non-commercial use. Enjoy! (contributed by [Shu Rosephotosetc](#))
- [Nature Photography by Paul Butler](#)- This site features a gallery of nature photographer Paul M. Butler. Paul mostly likes photographing insects but enjoys all things great and small in the natural world. (contributed by [Paul Butler](#))
- [Bellows and reversing ring for Canon EOS](#)- Novoflex in Germany manufacture an automatic bellows and a reversing ring that allow to retain all the automatic exposure features of Canon EOS. (contributed by [Claude Rouleau](#))
- [iMAGiNABiLiS](#)- Imaginabilis is a media company. The website is one way to introduce on the market the evolution of the brazilian advertising professionals images. Photographers, illustrators, designers are growing up all the time. Enjoy their portfolios! (contributed by [Ligia Duarte](#))
- [Le foto di Luciano Giombini](#)- foto di conchiglie, riflessi, foto di viaggi, elaborazioni fotografiche. shells' photos, reflections, travels' photos, photo painting. (contributed by [Luciano Giombini](#))
- [Le foto di Luciano Giombini in photosig](#)- macro - shells' collection - shells' reflections -shells' radiography trips - photo painting - buggying - landscapes - etcetera etcetera.... (contributed by [Luciano Giombini](#))
- [Macro Photography](#)- non-profit community-driven web site for Macro Photography enthusiasts! (contributed by [Michael Lazarev](#))
- [Anna's World Of Images on Photo Sig by Anna Pagnacco](#))- Macros, landscapes, flowers,digital art,travel. (contributed by [Anna Pagnacco](#))

- [Photomacrography by Robert Piwko](#)- The very best macro-photos from Poland, made by Robert Piwko. Check flowers inside and amazing insects..but there are a lot more... (contributed by [Robert Piwko](#))

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Studio Photography

by [Philip Greenspun](#)

A 14mm perspective
on a photo studio

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Why go into the studio?



Studio photography is easy because you can get exactly what you want. Studio photography is hard because you can get exactly what you want.

Soft light, hard light, hair light, background. Everything is under your control. If you are a tremendously creative person who knows how to use studio equipment, you'll get wonderful results. If you are uncreative, you'll have very flat and boring results. If anything is wrong with the lighting balance or exposure, you'll have nobody to blame but yourself.

Rent or buy?

Most big cities have good rental studios that come complete with lights, backgrounds, and often

assistants. This is the way to go if you have a big budget and know exactly when you want to shoot. Having your own studio, especially at home, is great for spontaneous work and also because you can take some of your equipment on location.

Ceiling or floor?

Decide whether you want your studio to be floor-based or ceiling-based. A floor-based studio means that you have lightstands for the lights and background supports for the background. All of these supports are very lightweight because they are designed to be portable. You'll be treading very carefully and/or you'll be knocking things over.

In a ceiling-based studio, you mount background rollers on the ceiling and a rail system that allow flexible positioning of lights anywhere within a rectangular area. A ceiling-based studio costs about \$1000 more than a floor-based one but is a much nicer place to work in my opinion (remember that I'm 6' tall, 200 lbs, and move with the grace of... an MIT student). Also, you'll still need at least some of the floor-based stuff for location work.



I personally bought a Bogen rail system for my house when I had to give up my 3000 sq. ft. studio in Cambridge. It cost about \$1200 and really made studio photography much more enjoyable for me. The coolest part of any rail system is the pantograph light support. These pull down from the ceiling and are cleverly counterbalanced so that they just stay wherever you leave them. You just grab a light and move it up or down an inch and it stays there. Pure mechanical design magic. As far as I know, the Bogen system (extensive brochure available from them), a FOBA system (imported by SinarBron), and the Calumet system (1-800-CALUMET) are the only rail systems available in the US.

The Lights

Decide what format camera you'll be using. Bigger cameras require smaller apertures to get adequate depth of field and hence more light. Decide how big your subjects are going to be. Head-and-shoulders portraits require much less light than automobiles.

I don't have enough experience with hot lights to tell you how much light you need, but there are many good books for cinematographers on the subject. With flashes, 500 watt-seconds is sufficient for 35mm photography of people at full-length or 4x5 photography of tabletop subjects. Most serious studio photographers start with about 2000 watts-seconds, which is adequate for 4x5 photography of large subjects, and will rent another pack if they have to light something huge.

Sunlight

If you have any windows in your studio, you might be able to use the sunlight coming in. The color temperature of sunlight varies from about 2000K at sunrise to 4300K in the early morning to 5800K at high noon in midsummer. [Note: the sun streaming into a window is different from what you get if you take your subject out into the open. "Daylight" is a combination of sunlight (around 5500K) and skylight (approx 9500K), averaging to around 6500K in the summer. Clouds or shade push the color temperature much bluer, up towards 9000K, though an overall overcast is usually 6000K.]

Hot Lights

Once you know how much light you need, decide whether to go hot or cold. "Hot lights" are tungsten or Metal Halide Iodide (HMI) lights that burn continuously. The big advantages of hot lights are

- you can always see what you're going to get, even if you mix with ambient light. You don't need Polaroid tests, fancy meters, and a good imagination.
- you can use hot lights with movie, video, and scanning digital cameras

Not too many still photographers use hot lights, though, because they have the following disadvantages:

- heat. Thousands of watts of heat that make the photographer sweat, the models sweat, and the props melt.
- tungsten color balance. Kodak makes some nice tungsten color slide film but if you don't like it, you'll have to filter your lights and lens like crazy to use your favorite color films.
- limited accessories. It is much easier to control a light source that isn't hot enough to light paper on fire. You can experiment with electronic flash without burning your house down. With hot lights, you must make sure that your diffusers, soft boxes, umbrellas, etc. can handle the heat.

HMI lights are mercury medium-arc iodide lights that burn at a color temperature of between 5600K and 6000K. They produce about 4X the light of a tungsten bulb with the same wattage because less energy is wasted as heat. Also, you don't have to waste energy and light filtering to daylight color balance. That said, if you get yourself a 36,000 watt Ultra Dino, you won't exactly be shivering in the studio. The smallest HMI lights seem to be about 200 watts.

Cold Lights

"Cold lights" are electronic flashes, much more powerful than the ones on your camera but basically the same idea. Studio strobes come in two flavors: monolights and powerpack/head systems. The business end of both is the same, a flash tube surrounding an incandescent bulb. The incandescent bulb, usually around 100 watts, is the "modeling light," used by the photographer to judge lighting effects and ratios. These aren't very effective if the ambient light in the studio, e.g., from windows, is high. Most photographers burn a few Polaroids to make sure that the lights are properly set.



A monolight has a wall outlet on one end, a flash tube on the other, and a big block of capacitors in between. These are nice for location work because you don't have have a lot of cables running around.

Using several monolights together isn't as much of a problem as you'd think because (1) good monolights have a 4 or 5 f-stop output adjustment control, and (2) most monolights have a built-in slave so that when one fires, they will all fire.

In a powerpack/head system, you have one big heavy capacitor-filled power pack and a bunch of relatively lightweight heads connected by high-voltage cables to the powerpack. You can adjust the lighting power among the heads and also the overall light output. These are the most flexible and most commonly used studio flash systems. Flash power is specified in watt-seconds (joules), somewhat confusingly abbreviated as "w/s".

Choosing a brand of studio strobes is a similar process to choosing an SLR camera system. If you buy the wrong brand, you may have to scrap your entire investment as your ambitions grow. I don't have enough experience with monolights to suggest a brand, but Sunpaks are cheap (around \$350 each for 400 w/s) and have been around for a long time. I certainly wouldn't buy anything cheaper or more obscure than those. Calumet sells some 750 w/s monolights (around \$500) with a 5-stop output adjustment and I would think they would be easier to work with, especially because they take all the light-control accessories made for standard Calumet flash heads.



In powerpack/head systems, Novatron should be the cheapest system you consider. Anything cheaper probably won't work in the long run and won't fit any of the standard light control accessories. Novatron sells kits that include cheap umbrellas and light stands in a big plastic case. You can use these to go on location as long as you're not worried about some big-time professional walking by and calling you a girlie-man because you don't have Speedotron. The kits range in price from about \$500 (240 w/s, two heads) to \$1000 (500 w/s, three heads). The main problems with Novatron are that (1) the packs only have adjustable power output over a 2 or 3 f-stop

range, and (2) the heads won't take more than 500 or 1000 w/s of power.

If you feel like spending twice as much money, you will no doubt be very happy with Speedotron Black Line, Norman, Dyna-Lite, or Calumet systems. These allow you to pump 2000 or 3000 w/s into a single head, adjust over a 5 or 6 f-stop range, have more powerful modeling lights, and are presumably more reliable in heavy use. Many of these systems offer interesting zoom heads that allow adjustment of the light cone angle. I share a studio with [Elsa Dorfman](#) and use her Broncolor strobes. These are another factor of two more expensive than other "professional-grade" systems and yet I don't really notice any difference using them day-to-day versus Novatrons.

Warning: there is a brand of mail-order flash called White Lightning (Paul Buff) that is sold as X watt-seconds for N dollars. These supposedly aren't such horrible flashes but the watt-seconds figures are absurd. The true output is something like X/2 in which case the monolights aren't any cheaper than other cheap brands.

Note for high speed photography: Studio flash systems generally take between 1/200th and 1/1500th of a second to dump out their light. This is fast enough to freeze much motion but won't stop a bullet or give you a perfectly sharp splash. Studio strobes are designed for relatively long illumination times because color film actually suffers some reciprocity failure at the very short exposure times of on-camera flashes that aren't working hard. In other words, Kodak and Fuji don't guarantee that you'll get correct color balance at 1/50,000 of a second because the red, green, and blue layers of the film respond differently to being illuminated for so short a time. If you want to do high-speed photography, your options are (1) use an on-camera flash set for 1/32nd power, or (2) get a studio strobe system specifically designed for stop-motion capability.

Note: Call 1-800-CALUMET to get a catalog with a good selection of studio flashes with illustrations. [Kapture Group](#) sells equipment for high-speed photography.

Light Control

Whatever lighting system you get, make sure that it is reasonably popular. Otherwise, you won't be able to get any accessories to fit. You need to be able to control whether the light is hard or soft. Hard light is generated by a small and/or far-away light and results in strong shadows. Examples of hard lights are the sun (not small but quite far away) and bare bulbs. Soft light is generated by a large diffuse light and results in shadow-free images because there are many paths from the light source to the object. Examples of soft light are an overcast sky, a north-facing window *close to the subject*, a bulb reflected off an umbrella placed *close to the subject*.

Another dimension to control is diffuse/specular. A diffuse source contains light on many different angles whereas specular light is organized in parallel rays. Specular light doesn't bounce around the studio filling in shadows and lowering contrast, spilling onto the background, etc.

Old-time photographers relied on silver umbrellas to get a somewhat softer light source. With white translucent umbrellas, you can use them like a silver umbrella and bounce off them (losing about 1/2 the light, which will go through and away from your subject) or shoot through them, which results in slightly harder light with the same 1-stop loss. However you use an umbrella, you'll generally get a diffuse light source.

The modern religion is the softbox, a reflector-lined cavity covered with a white diffusion fabric. The best of these, e.g., the PhotoFlex MultiDome, allow you to remove the front fabric to get a "sort of hard" light, to place or remove an interior baffle to get a "slightly less soft" light, and to warm up the color of the light with a gold reflector. Because softboxes surround the light head, you lose much less light than you would using white umbrellas. Note: the M&M's image at the top of this page was done with a softbox.

Some photographers put a big grid over the softbox to create a large specular source. Louvers create the same effect but only on one axis. An inexpensive honeycomb grid will turn a strobe head into a specular light source, albeit not a very large one. Photographers who use these tend to use many, "painting a scene" precisely with pools of light. Strobe head grids are \$50-75 each or sold in sets with different light angles for about \$200.

Snoots sit over a light head and turn it into a very small light source. These are usually used for hair lights. You can stick a small honeycomb grid over the snoot to tighten up the cone of light thrown by the snoot and also make the light more specular.

Barn Doors are black metal flaps that sit around a strobe head and keep the light from going where you don't want it to go. This is Hollywood technology from the 1920's. If you really want to control the angle of the light cone thrown by your head, you should probably get a zoom head or a bunch of grids.

Reflectors are really too general purpose to be called "studio equipment" but they are essential studio

items and, if cleverly used, can eliminate the need for additional strobe heads. A favorite of mine is the PhotoFlex Litepanel, which is a huge sheet of gold/silver reflector, white diffusion fabric, or black light absorber in a plastic frame. You can light through this and turn it into a huge softbox, bounce off of it to bring the contrast ratio closer to that magic Kodak 3:1, or take it outside and have an assistant hold it to filter the sun. Another essential item is the disk reflector (e.g., Photoflex Lightdisc) which stores compactly but springs open to a large round reflector with a steel frame. I usually buy them white on one side, gold on the other.

The most important word in studio light control is "gobo". Hardly anyone knows what it means, but you can't beat the mysterious sound. It actually is short for "go between" and refers to anything that you stick in between the light and the subject to cast a shadow, diffuse the light, or whatever.

More: see the [Photoflex Web site](#) for a wide range of standard professional products and/or the Calumet catalog. If you really want to understand the art of lighting, read books written for film makers and also look at old black & white movies (before they had color, they used lots of interesting gobos to add shadow patterns on white walls and other boring surfaces).

Flash Triggering

If you have hot lights, you don't have to worry about this; they're on all the time. If you have strobes, the camera has to tell the strobes when to fire. This is traditionally done with a sync cord. Sync cords come in many lengths and are available coiled or uncoiled. The one thing in common that they all share is that they suck and you will trip over them and probably break something very expensive. It is much better to use a wireless trigger of some kind. Personally, I use a Wein Infrared SSR kit (about \$200), which consists of a small on-camera hotshoe-connected flash with a filter over the front that only passes IR light. The other half of the kit plugs into your strobe powerpack and waits for the IR pulse from the on-camera unit, then triggers the flash. There are various radio slaves (e.g., Quantum) that also perform this function, possibly better in a large studio or outdoors.

I'm so high on a fully wireless studio that I also bought a Wein slave trigger for my flashmeter (see below).

Flash Metering

Unless you have a very unusual camera (e.g., certain Rolleis and Contaxes), you will not be able to meter flash exposure with a through-the-lens in-camera meter. Virtually every professional carries a handheld flashmeter. This is a \$500 device that measures ambient light, light ratios, how many pops of a studio strobe system you'll need to shoot at f/64 with your view camera.

Almost everyone uses a flash meter in incident mode. You stick a white diffusion dome over the meter and hold the meter in front of the subject's face, with the dome pointing back at the camera. Then you push a button on the meter and it triggers the flash (assuming you have it connected via a sync cord or

Wein system). The meter then reports the appropriate f-stop to use. This gives you a reading that is independent of the subject's reflectance. In other words, if the subject is white the meter doesn't get fooled into thinking that it is a brighter light and if the subject is black the meter doesn't recommend opening up two more f-stops until the subject is rendered as though it were 18% gray.

Though nobody was ever able to figure out how to use it, the standard professional meter for many years was the Minolta Flashmeter IV. I own one. I think I know what half of the buttons and switches do. I have two owner's manuals for it. Minolta came out with a completely rewritten one because nobody could understand the first one. The new Minolta Flashmeter V is better/simpler.

The nicest meter I've used is the Gossen Luna-Star F2. It takes one standard 9V battery that you can buy anywhere. It only has six buttons and their functions are obvious. I was able to use all but one of the meter's modes within 60 seconds of putting in the battery without reading the manual. 99% of what you'd need to know from the manual is printed in four sections on the back of the meter. The meter is great for computing lighting ratios. You press the measurement button once to take a snapshot reading. You press and hold it while sweeping the meter around a scene and the Luna-Star F2 draws you a graph at the bottom of the display of the contrast range (e.g., f8-f16). Every time take a flash reading, the meter also shows you the ambient reading with an unobtrusive little bar on the same graph. Unlike the Minolta meters, you don't need a "reflected attachment" and an "incident attachment." The naked meter works to measure reflected light. Add a plastic incident piece and you can measure incident light. Add a little viewfinder and you've got a 5 degree spot meter. It is a great design and smaller than competing products. Nit: It only meters down to EV -2.5. That's a couple of stops less light than most pro SLRs but not as good as some other handheld meters.

The Background

The basic professional background is seamless paper. This comes in rolls 53", 107", and 140" wide. I find the 53" size is too confining and leads to stiff poses and nasty little slipups where a corner of the frame is not covered by the background. On the other hand, the 140" size is not really necessary most of the time, which is why it is only available in a handful of colors. The 107" width is about 9 feet and that's a good size for most people. A roll costs about \$30 and you should have white, "studio gray", and black for starters. Every time I try to use colored seamless, I end up with a Sears portrait studio look so I've stopped trying. Bogen makes a nice "Auto Pole" system that lets you mount several rolls of seamless conveniently (a few hundred dollars; can even be motorized).



For location work, Photek's Background-in-a-Bag system is kind of nice. These are big sheets of what looks like crushed velvet that you just duct tape up against a wall. They cost about \$130 and fit into a included gym-bag.

Calumet makes a really slick "Tote-a-Round Muslin" system that leans up against any wall and gives you that classic studio muslin look. They are around \$300 each but I haven't tried them.

Camera Support

This is where most readers would say "duh, use a [tripod](#)." First of all, if you're doing 35mm or medium format work with strobes, you don't need a camera support because the flash freezes motion. But if you're using hot lights or big cameras or doing something creative, you probably need some kind of camera support. A tripod is in fact usually the wrong tool for the job.

A tripod is inconvenient. Since using the center column to adjust height is the sure mark of a fool, you have to adjust all three legs to raise or lower the camera. You can't usually get really low or really high or really hanging out over your subject with a tripod because the legs get in the way.

Part of the reasons that tripods have such shortcomings is that they are engineered to weigh less than 250 lbs. If you want the most stable support for a fixed weight, a tripod is the right design. Once you accept the idea that a camera support can weigh more than the photographer, then there is more freedom of design and you'd probably come up with a *Studio Stand*. This is basically a very heavy rigid single column off which you hang crossbar arms off of which you hang tripod heads off of which you hang cameras. There are wheels on the bottom that you can lock. The columns come between 6 and 12 feet in height and prices range from \$350 to \$3500 depending upon features and stability.

Cool Stuff

You went into the studio to have fun. Now it is time to stock up on mylar, strange oils, dead flowers, interesting vegetables, and play. If you want to spend more money, there are lots of interesting ways to do it. Rosco makes a huge range of colored filters to stick in front of lights plus fog machines (\$350-700) to add mystery. A wind machine (around \$500) will give human subjects that active look. Trengrove artificial ice cubes and related products will help you do that Chivas Regal ad.

If you really want to be mod, though, what you need to do is get hosed. The Hosemaster is a \$5000 machine that lets you paint with a fiber optic wand of light. Since you are lighting each part of the subject individually, you can do just about anything you want. Infinite depth of field? Just keep refocusing the camera. Make one part of the subject diffuse? Put a stocking over the lens while you're hosing that part. A nice highlight on the pen tip? Leave the hose on the tip for awhile.

I've personally never used a Hosemaster, but it was all the rage when it came out in the early 1990's. You couldn't open Photo District News without seeing some beautiful Hosemaster work. Personally, though, I don't like the idea of spending fifteen minutes painting a scene on a Polaroid and then doing it all over again for the final chrome and then discovering that I screwed up somehow.

More

- [photo.net guide to body painting](#)
- [nudes](#)

- [*Creative Lighting Techniques for Studio Photographers*](#)
- [*Studio & Commercial Photography*](#)

Studio photography is an equipment-intensive endeavor. Check out [the photo.net recommended retailers](#) for the full-line professional camera shops that stock studio gear.

Credits

I'm grateful to John Tice (jontic@vt.edu) for educating me about specular/diffuse light.

Text and pictures [copyright 1982-1995 Philip Greenspun](#)

philg@mit.edu

Reader's Comments

Putting a honeycomb grid over a softbox does not necessarily turn that diffuse light into a specular light, but it does head it in that direction. It all depends on the size of the holes in the honeycomb and the thickness of the honeycomb material. I've used largish diameter honeycomb hole material that maintained a pretty diffuse lighting pattern in terms of the subject, but still gave me a fairly quick cutoff outside the lit area. The Degree of Specularity depends solely on the angle subtended by the light in relation to the subject. In other words, if you're standing in the middle of the desert and being lit by the entire sky (and no sun), your light subtends an angle of almost 180 degrees relative to you, the subject. That's seriously diffuse light. On the other hand, if you're being lit ONLY by the sun, which is, relative to you, a very tiny one or two degrees of angle, the sun is rapidly approaching being a point source, and the shadows are very hard-edged indeed, and that's seriously specular light. The sun could actually be a very diffuse source if you were only a few miles from its surface. At that point, the sun, which is HUGE relative to you, would be taking up nearly half of your available vision, as does the sky in the desert, and it would be diffuse. And, of course, you'd be fried. The interesting point, here, is that for any given size of light source and any given size of subject smaller than the source, the closer you move the light, the more diffuse it will be. Most light sources are actually combinations of specular and diffuse light. If you take a piece of translucent fabric and put it between the light and the subject, you usually get that combination. The closer you bring the fabric to the light, the less fabric area you're lighting, the narrower the angle subtended by the light as seen from the subject, and the harder the shadow edges. The closer you bring the fabric to your subject, the softer the shadows will appear.

-- [anonymous anonymous](#), June 25, 1997

Photogenic Machine Co. in Youngstown, Ohio also manufactures and sells an overhead rail system for supporting your lighting in the studio.

-- [Scott Rogers](#), April 6, 1999

One should bear in mind that strobe selection is as religious an issue (at least to some of us) as camera selection. I own several white lightning strobes and really like them. The market is flooded with monolights at the moment so I am not pushing a particular brand. But I think that on a limited budget one will get more value for the money using monolights over powerpacks/light modules.

-- [Dick Damian](#), May 19, 1999

White Lightnings are nice equipment - a good value, reliable and powerful (f16.4 @ 10'w. umbrella). In some location situations, they can have advantages over powerpack

lights (placing an accent light 30 to 50 feet away from the power packs).

Your website is terrific.

-- [Mike Matcho](#), May 31, 1999

I just want to say that I am new to the photography business, but I also have a wealth of knowledge when it comes to theatrical lighting. If you find anyone else who does or learn about theatrical lighting, it will do wonders for your studio. I am a strong believer in ferns and ellisodal reflectors. Experiment with gels, play with focus. They do get hot but if you have a high ceiling studio a portable dimmer pack, you can have a LOT of fun playing around with different lights and colors. I really recommend Rosco colors. They also have gel finders you can get so you can sample and find which colors you want. The one thing I really have to say when it comes to photography and all other arts.. DARE TO BE DIFFERENT! People forget this. The greats are great because they shocked and surprised the world. Just give it some thought..... Great site love it.

-- [Chris Leher](#), June 20, 1999

Chimera, the softbox people, publish a chart in their catalog comparing the effective output of a wide variety of studio flash equipment, both power pack/head and monolight systems. Provides useful, objective information in contrast to manufacturers' hype.

-- [Steve Singleton](#), July 2, 1999

Watt second / Joule ratings can be very misleading as they relate to the supplied electrical power and not the actual light output. Guide numbers are often not much better because they depend on conditions and reflectors defined by each manufacturer. A specific example of this are semi-pro monolights of similar price from two popular UK manufacturers:

The Courtenay Solapro 300 has a 300 Joule rating and a guide number of 52m @ ISO100

The Prolinca 400 has a 400 Joule rating and a guide number of 51m @ ISO100

On the face of it there's not much to choose between the two and the Prolinca is more popular because of its (irrelevant) higher Joule rating and the fact that it sits at the bottom of the much larger Elinchrom professional range. However, further investigation reveals that the Courtenay is even more efficient than it already appears and has a 1 to 1.5 stop light output advantage when measured under the same conditions. This is because the Courtenay spec. is based on a 65 degree reflector and the Prolinca on a special 52 degree

reflector that concentrates the light more to improve the paper specification.

I don't know where else these models are available, but I'm sure the moral of this tale applies to manufacturers around the world. Sadly, reviewers don't often pick up on this fine, but important, detail and it's up to the individual photographer to test the products under the specific conditions that they will be used.

-- [Sean Sedwards](#), August 23, 1999

Hi guys.. I seem to always run into this nagging delinquent conversations about brand "X" being better than brand "Y" and "Z" put together. Forgive the interjection (and the wet blanket statements to follow), but I've always been under the impression that the photographer will do whatever is necessary to achieve the effect intended. And, regardless of the tools used, is considered to have succeeded when that given initial intended effect is achieved.

That being said, I've often challenged students of mine to outshoot me with their expensive cameras while I use the cheapest cameras of all time... the China made "Seagull". Costing no more than US\$60, I can make the fixed focal length, twin lens beast (el cheapo) perform most of my commands.

Bare basics come to mind:

Composition, exposure, timing, color balance, tonality, subject matter, just to name a few.

While I find it simply tickling when I stroll into a camera store, to hear the ever unceasing Nikon vs. Canon Wars, or the Mamiya Vs. 'Blad rampages, I cannot but feel sorry that we, have all fallen prey to the "prestigious snob elite" bug.

"WOW! look at that BIG 600mm lens""My Leica M6 has a custom ostrich skin leather replacement"

catch my drift?

Equipment discussions are more targeted towards the less informed, while techniques are continually learned.

Let's have a ball discussing techniques instead. Anytime...

Michael Chick

-- [Chick Michael](#), January 7, 2000

Thanks Michael!

Being new to photography, I'm trying to gain ideas and techniques from anywhere I can. I'm excellent with buying the latest and greatest, I learned this well from other hobbies, however photography is the first hobby that lets me express a more creative side, it is currently the unused one.

I am really tired of hearing this equipment that equipment and I tend to get caught up in it. I am just now starting to learn that I can change light with simple and inexpensive props in the studio. One would be surprised as how well a flash with a pocket bouncer bounced into some white poster board (hanging from a ceiling fan) will do. I was amazed! I would really like to hear more stories like this!

While I know practice is what really helps I know we could discuss some more basic techniques. As a beginning photographer do you know how hard it was for me to find someone to explain how strobes worked, setting the ratios, etc. I would think this would be at the beginning of the book!

J.R. Farrar

-- <A HREF="/shared/community-member?



Body Painting

by [Philip Greenspun](#)



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The Steps

1. Buy paints from Mehron, Inc., 45 E. Route 303, Valley Cottage, NY 10989, (914) 268-4106. They have a semi-reasonable brochure and provide some technical support. They can also direct you to dealers.
2. Mehron's "liquid makeup" is water-based and comes off easily, although red stains skin a bit. Plan on using three 4oz. bottles to completely cover a 5'7" tall, 120 lb woman. This stuff tends to be streaky and cracks a bit when it dries. It is also not good if your model sweats. However, if you want a "non-slick" look, it can be pretty effective. Best of all, you can shower it off.
3. The most convenient grease-based makeup from Mehron comes in 0.75oz sticks in dozens of colors (mostly slightly varied flesh tones unfortunately, but also plenty of colors). To use this you first apply it, smooth with a damp sponge, then put on translucent powder with a powder puff, then brush the excess powder off with a powder brush.



Mehron sells sponges, powder, and powder puffs. Also, many women use grease-based makeup on their faces and understand this procedure.

Although the powder is supposed to "set" the makeup, I've found that the stuff still tends to rub off. So be careful if the model touches bare skin with painted skin -- you'll get a smudge.

You can take off grease-based makeup with baby oil rubbed into the skin then paper-toweled off (plan on using 1/2 bottle of cheap baby oil plus a whole roll of towels to do an entire body). This is the cheapest method. Also, Mehron sells makeup remover lotion that works a little more easily (use this if you just want to wipe off a smudge or work on the model's face). Finally, you can use some cold cream-type cleanser then regular soap and water. Once again, red stains just a bit. The stain should fade in time, however.

Allegedly, a person will die if his skin is completely unable to breathe. However, a spot the size of a quarter left unpainted in the small of his back is allegedly enough to prevent this undesirable event in the photo studio. Caveat painter.

4. If there is a lot of unpainted Caucasian flesh in the picture, stay away from Fujichrome Velvia. I've had good results with EPX (Ektachrome 64X "warmer"). As far as negative film goes, Reala is pretty nice, although Gold 100 and Ektar 25 are probably better (punchier). I've had bad luck scanning Reala onto PhotoCD.

Happy painting.



Examples



Republican Platform. Rather badly scanned from a Fuji Reala negative. This was a test for a poster that would have sold big if Bill Clinton hadn't won the election.



Date Rape. This would have been a great *TIME* cover if the public's appetite for date rape stories hadn't faded.

Links

- Steven Bradford has a lot more patience than I do when it comes to this. You should check out his [elaborate creations](#).

Miscellaneous net.wisdom

gathered by Goldlover@aol.com

Q. Can anyone suggest a makeup to use to give the skin a metallic gold or silver look? Any lighting tips would be appreciated as well.

Well, I haven't specifically covered a lot of the skin with metallic paint, but I've been experimenting with body paint a bit. It doesn't seem to be something many people do, as I received little help or suggestions.

The first thing I discovered was: Use grease paint, not water based, if you want a smooth surface, the water based makeup dries quickly, which is nice, but cracks up, and doesn't appear even. The grease paint, oth goes on smoothly, needs much smaller quantities, etc...

The grease paint (at least where I live) is readily available in large jars of white, and in pencils, crayons, and small pats in almost every colour you could want. There's a number of blues, a brilliant yellow, several shades of red, and of browns. There is also a silver, gold, and bronze. The Bronze looks quite metallic, although I've just used it on lips. I think you need to put a fairly substantial layer on with some good contrast (black?) to have it stand out.

The only thing you want to watch for, though, is that metallics and yellow and red (I think that's it) are often toxic. At least, you shouldn't get them near someone's eyes or inside their nose.

As chance would have it I just got back My first Photo CD with body painting. I have three main projects, two of them very successful. In the latest we painted up a guy like stone for a gargoyle effect. In the other one we did "robot" imagery on a woman. I have to figure out how to do GIF uploads and file transfers so I can send some of these along. I've also discovered a new paint that works much better than makeup, is cheap and completely safe. It is airbrush fabric paint. It dries to the touch, is not messy, and scrubs off with soap and water. It goes on very fast with either brush or airbrush. It can be worn for hours very comfortably.

Read your post some time ago concerning metallic gold body painting and photography. How did it turn out? Any recommendations for others?

They turned out very well, thanks. I don't know which post you might have read, but the safety information I got was basically "if it's a makeup, then it should be passed by the FDA and have a contents list." Since what I used was, in fact, makeup, it was considered safe.

I used Zauder's brand bodypaint. It is a water based liquid, not an oil based cream. It cleans up much, much easier than the creams. It didn't have quite as smooth a quality as I was looking for, but it was interesting nonetheless.

I got it from Pearl Paint, an art supply store based in New York.

If you have a material you are considering using as a paint, and aren't sure as to the safety, I suggest calling the Arts Crafts and Theater Safety (ACTS) people at (212) 777-0062. They are dedicated to the use of safe materials in the arts, and they are lead by Monona Rosso, who is possibly the world's leading authority on such matters. (She often answers the phone herself, so you might get advice direct from the source.)

As for other technical considerations when photographing a painted subject: I used strobes (tungsten lights just get too hot for modeling work). I would avoid the use of colored gels on the lights. I tried

using a red gel for a paritcular effect, and it washed out the gold of the paint. Also consider the fact that the paint will rub off onto just about everything, so put down drop cloths if neccesary, and keep an eye on what your model touches. the last thing I can think of is to make sure your model shaves a few days beforehand.

The paint doesn't work too well in hair, and freshly (even one day old) shaved skin is still sensitive, and caused my model to itch furiously (not fun).

[this answer is from Kevin Graeme, (kgraeme@facstaff.wisc.edu)]

philg@mit.edu

Reader's Comments

If you're in the Bay Area, Kryolan Cosmetics, a theatrical makeup company, has a store in their headquarters on 9th St. south of Market. Kryolan sells a massive range of water-based colors, most in cake and some bottled, which go on and come off easily. Like most water bases, it tends to dry and flake easily (especially some of the metallics). Also, when doing whole bodies, applying it with too much water can cause water spots to appear.

I've also had excellent luck with Zauder's Gold. However, their bottled colors go on very poorly, and the bottle of silver I got burned like rubbing alcohol-- I don't know if it was a bad batch or it's always like that.

-- [Mike Woolson](#), March 10, 1997

I've found a metallic effect appears by magic if you coat skin with oil (mineral or organic) and then sprinkle on powdered watercolor (in the UK, Rowneys sell big boxes for school use. As the oil soaks into the powder a liquid gold (or silver) appears.

-- [Malcolm Mellon](#), September 28, 1997

Temptu, a New York-based makeup specialty manufacturer, offers alcohol-based airbrush and paint-on body paints to which fine metallic glitter can be added. Either a "sparkly" or snakeskin effect can be achieved. We can be e-mailed or called at 212 675-4000

-- [Roy Zuckerman](#), December 19, 1997

At Michael Davy Film & T.V. Make Up we manufacture two types of airbrush make up.

The first, called Fashion Aire is like a "powder through the airbrush". It's great for straight, fashion and glamour make ups. Our second is called Airbrush Grade Prosthetic Cosmetic. It is like a PAX through the airbrush and is meant for durable (waterproof) body make ups or prosthetics. It removes with SOAP and water and was used in the movie "Powder". We also make an additive that will make your brand of airbrush make up waterproof. E-Mail us at mdftv@bitstorm.com or call 1-888-2245-7026 for more info and a catalog. You can also visit our website at www.classichippie.com/davy

-- [Michael Davy](#), May 6, 1998

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-- [Michael Davy](#), May 6, 1998

Mettalic Effect... Have you tried Kryolan Liquid Brighness. This is highly effective and water based. Not cheap but will do the job , requires several layers to build color depth. Finish with Gold or Silver kryolan Glitter Spray.

-- [Les --](#), November 24, 1998

try simple opaque water colors. If you get lucky on the brand their vibrance will surprise you and, as far as I can tell from my limited bit of experience, do not agrivate the models and cause only a slight bit of itching. Incidentally, metallic paint can kill a model because of it's capacity to smuther the skin. So take care.

-- [enrique vasquez](#), December 25, 1998

I highly recommend Caran d'Ache water color sticks for body painting (someone previously suggested water colors, but wasn't sure of a brand) - I've been using them for face and body painting for 7 years - you can either melt down in the oven in tins and make a palette or use the sticks straight (use a fine brush for highly detailed areas). They are hypo-allergenic, non-toxic, dry quickly but don't crack and create a very vibrant color. They wash off easily with soap and water. They don't work as metallics (I use zauder's liquid makeup for metallics and have never experienced any burning, etc. - but you generally need to put it on very thickly or use several applications to achieve good solid cover). You can achieve a nice metallic/glitter effect, though, by using iridescent

glitter (always use the superfine glitter, chunky glitter can cut eyes) over the water colors - it's a really nice effect! Liquid latex is also fun to play with - try black latex (I find three coats optimum) with iridescent glitter sprinkled all over the top coat while it's still slightly wet - looks like snake skin, really really cool! But make sure to leave breathing room if you're totally covering the body with latex, and make sure any areas covered have been shaved first (unless the model is into pain . . .)

-- [Andrea Garland](#), May 14, 2000

I'm puzzled by the frequent comments about always leaving some skin uncovered so it can breathe ... is this somehow for real or just another urban legend? I mean, scuba divers don't suffocate because they're underwater -- presumably, their skin isn't breathing there -- yet I continue to hear about "The Goldfinger Effect," as a friend of mine refers to it. What gives?

-- [Jeffrey Goggin](#), November 13, 2000

We are getting further from photography here... In fact the skin does not really "breathe". Oxygen is brought to the blood via diffusion through a thin membrane. It supposes huge thin surfaces, as well as large volume of blood pumped around this surface. This is basically what is going on in your lungs for the air, in your intestins for the food. Lungs area is the same order of magnitude as a soccer game field area, and there is only a very thin barrier between numerous blood vessels and air. Problem about "skin breathing" is a problem of heat. Indeed some substances can clog heat elimination and block sweat glands. In this case body temperature can increase quickly. And then will breathing rythm increase, making the victim look like suffocating.

-- [Jean-Francois Amadei](#), January 11, 2001

Re: "Does the Skin really Breathe"

Not really, but it is not an urban myth either. If the body is unable to sweat enough to keep cool it can very rapidly lead to dangerous overheating, even unto death.

It is this effect that that is being referred to and this is why you have to be careful what type of "paint" you use if you're going to be painting large areas of body.

-- [Neil Taylor](#), May 19, 2001

Another good place to find all kinds of theater-quality makeup (oil based and otherwise) is Alcone in NYC. They also have liquid latex, theatrical "blood," and how-to manuals

on transforming your model into anything or anybody you want. (It's quite a toy store for people who love looking like anything but themselves.) It's also not all that expensive- it fits a student budget rather well. It's on W.19th St. in between 7th & 8th. (I'm pretty sure.) No, I don't have the phone number. Call information. It's worth it.

-- [ashley mortenson](#), July 26, 2001

I have read through the comments here and am concerned at some of the content. As a Make-up Artist and Bodypainter I feel it is important that you think of the Health and Safety Aspect of what you are doing. Some of the comments are recommending non-cosmetic art supplies and products for use on the skin. This is an extremely unadvisable thing to do. I have approached many art supplies manufacturers and been told in no uncertain terms that the products are NOT safe for use on human skin! Cosmetic products (such as Mehron, Kryolan, Fardel and Grimas Body and Facepaints) have conformed to US and EC regulations for cosmetic products.

Using art products on a model which have not been tested and OK'd could result in a hefty law suit landing on your lap if the model develops contact dermatitis as a result or misses a modelling assignment due to an allergic reaction. More importantly you could do real damage to someone by simply not thinking. There are hundreds of fantastic safe products available on the net and from Theatrical and Professional Make-Up retailers. So please think before you paint!

Oh and the thing about not covering the whole body is not true. It is perfectly safe to do so... someone has been watching too much James Bond (Goldfinger!) In the world of fetish some people clad themselves entirely in rubber with nothing but a small straw sticking out of their mouths to breathe, all that happens is they sweat a lot. Most make-up is breathable to a certain extent, although if it is very thick a model may sweat. Dri Clor or a really powerful anti-perspirant applied first will do the trick, followed by a good dose of spray sealant once you are finished.

If anyone needs any advice about products give me a shout. Emma

-- [Emma-Jane Cammack](#), February 11, 2002

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Related Links

- [The Body Art Web](#)- Tons of Body Art Information under one website! Come take a look! (contributed by [Gen Gen](#))

- [Rainbow Creations Body Art](#)- Examples of the work of Ria Clauss, body artist. (contributed by [Ria Clauss](#))
- [the human canvas](#)- 24 time International Award winning makeup artist,stylist, bodypainter, and photographer Joe Platia Jr. Online Gallery, Online Academy, Portfolio. (contributed by [joe Platia](#))
- [Ivy Supersonic and The Groovy Gals](#)- Photos By Andrew Richard. Published in Body Paint Magazine Australia, and in other places. We do big body paint shows. I am always seeking models who can move, and artists who can paint. Would love to feature new artists all the time. Models Wanted, Artisits Wanted for Collaboration. Andrew Richard (contributed by [Andrew Richard](#))
- [huayu](#)- ●●●● (contributed by [miao xianzhong](#))
- [Natural Expressions - BODY ART SUPPLIER!!](#)- Worldwide online provider of Body Art Supplies such as: HENNA, MEHNDI, BODY PAINT, BODY JEWELRY and much much more!! (contributed by [Robert Richards](#))
- [Emma-Jane Cammack's Bodypainting Portfolio](#)- Bodypainting images by UK Bodypainter Emma-Jane Cammack. Different styles of bodypainting including Trompe L'oeil (Blenidng models into backgrounds or painting realistic clothing.) (contributed by [Emma-Jane Cammack](#))
- [Amit Bar Fine Art Photography](#)- Artistic body-paintings, painted portraits and photo-collages of bodypaintings. (contributed by [Amit Bar](#))

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The Body Painting Page

Welcome to the Art of Body Painting!

This site is intended to entertain, amuse, inspire and inform.

These pages contain images I've created in collaboration with other artists and models.

All images began as photographs of models painted with body paints. Some digital photo manipulation and retouching has been performed on a few; but all the painting was done using real pigment on real skin.

I found it very difficult to find useful and practical information about body painting techniques, when I first started out. So in the [Tips and Techniques pages](#) are collected what I and others have learned through trial and error. I've also added product links to many of the products described, making it possible to buy these often hard to find paints online.

This page is a resource for anyone creating bodypaintings, whether professionally or just for fun. I'm always looking for techniques and tips to share, stories and experiences!

[More of my Pictures](#)

[The Stonegarden Pictures](#)

[Body Painting Events](#)

[Techniques and Bodypaints](#)

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Body Painting Index :

Very complete listing of Books, Articles, Films and Videos:

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Last Updated 7/15/98.

(I do not maintain this list, if anyone has added to it recently, or knows of a better version, please let me know.)

Also, new Body Painting books from [Amazon](#)

Check out the Bodypainting newsgroup:

[alt.art.bodypainting](#)

You may have to ask your ISP to add this newsgroup, if your newsreader can't access it. Google Groups at Google.com also carries it now.



It doesn't receive a huge amount of traffic, usually only a post or two a day, and some spam. So you may have to wait a while after subscribing to see some on topic posts. The group is for asking questions, posting experiences, telling about new links, and alerting others to interesting uses of bodypainting in the mass media.

Feedback, criticism, pointers, recipes, etc, to: bradford@seanet.com .

My [Home Page](#) with useful info about film/video techniques.

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Page update 8/7/02

Body Painting Tips and Techniques

New! [Online Body Paints Store](#) is up!

Vers. 8.02



Anyone who attempts body painting quickly discovers the lack of useful information and dearth of practical materials to accomplish successful body paintings. This situation has improved in recent years. It is becoming easier to find good paints to work with.

Most traditional makeup techniques are incredibly messy and time consuming. It's not unusual to hear of a full body painting taking 10 to 12 hours. Eventually I learned of some better techniques that get the job done with a minimum of mess and time.

- [Markers](#): Cheap, Safe, but slow.
- [Airbrush Make Up](#): Excellence, Speed and Safety -- For a price.
- [MagicColor and Mehron Face Paints](#), moderate price, good quality, safe.
- [Textile Acrylics](#): Very Practical, inexpensive, good looking, and probably safe.
- [Liquid Latex](#): Fascinating material with many possibilities.
- [PAX Makeup](#) Adhesive based paint with great staying power.
- [Tempera](#): Cheap and terrible!

- [Where to Buy](#)
- [Safety!](#)
- [Finding & working with Models](#)
- [Comments and Feedback from you and other readers!](#)

Markers

Crayola, along with other companies, makes special markers for kids. These are completely safe, as

they are formulated under the assumption that kids will be marking themselves, and moms will need to wash it off. These actually work well at making a translucent effect, similar to tattooing. Once it dries, it stays on till washed off. The biggest drawback is the size of the point. Even the bold markers take an excessive amount of time if a lot of body coverage is needed. I've been told that the human body averages 1.8 square meters of skin. That's a lot to cover with markers.

I have seen wide tip Crayola markers. These could make a stripe a third of an inch wide (8 mm). This is more useful for bodypainting. Also I have seen some markers that are labeled as non-toxic, with tips 12 mm wide. But I have only seen these in Red and Black.



As for utility in Bodypainting, these markers have okay staying power. Primary advantage is that they can't peel off as paints can, and also won't pull or wrinkle when the skin stretches. They wash off very easy, but also will smear if they get to moist from water or sweat and are rubbed.

Sakura makes some interesting 1" wide tip markers. These are watercolor, non-toxic markers. They stay on the skin fairly well until washed off. The most interesting colors are a metallic silver and a gold. These look good, and might be very useful for creating stripes and large areas metallic, but probably not practical for total coverage.

[|Click here to buy Crayola and other markers|](#)

Airbrush Make Up

This is probably the best, for safety, flexibility, and speed. Although more expensive than the [airbrush acrylics](#) mentioned below, this is a better way to go as airbrush textile acrylics, tend to crack and peel at high flexion points. If you are working for a commercial client, doing a photo shoot, then these are what

you want to use.

A long time manufacturer is **Kryolan**. Kryolan's American office is in San Francisco. Their # is (415) 863-9684.

[Dinair](#) is another popular brand of Airbrush Makeup. They specialize in it, and also make standard skin colors Their focus seems to be more traditional glamour makeup, using airbrush technique. They do have .

[Mehron](#) has announced a new line of airbrush color. (6/98) When last I checked the website, I could not find this new product. Judging from the picture I've seen of the bottles, it may be the same as their existing [Liquid Makeup](#). I've not had great success with Mehron in the past. The price is good, but I find it flakes and powders off easily when dry.



You may also want to experiment with **Kryolan's Brandel** color sprays in small cans. Unlike other hair colors, these lay down a solid opaque layer, just like real spray paint. It dries quickly to the touch and is fairly difficult to rub off. But in soap and water it dissolves quickly. It appears to be traditional hair spray loaded up with pigment. It has the same obnoxious fumes as old fashioned air sprays. I really like their gold and silver sprays, because it is possible to lay down a solid shiny layer. Black is incredibly messy though. Over spray is a real problem because of the fine aerosol mist these produce. Use a face mask! Seems to run US\$4 to US\$5 for a small can. It requires at least 5 cans for total body coverage.

MagicColor and Mehron Face/Body Paints

MagicColor is from **Ben Nye**, a Hollywood makeup company. These are opaque, but apply thin with a brush, and dry quick. (The main ingredient is alcohol.) They work well with airbrush. 4 ozs. can do whole body coverage. Price is around US\$10 for a 4 oz bottle. Most primary colors are available, along with glitter metallic. Warnings are on the label against using red, pink or orange in eye areas. These are good all around makeup grade paints, not cost prohibitive, and with fairly good staying power. The red stains a little on skin, but cleans off easy. It does stay tacky for awhile, so you may want to apply setting powder.

[Mehron's](#) line of *Liquid Makeup* is a little cheaper, and available in larger pint sizes for about US\$13. So far I've only used the yellow, which seems to go on thin, and the red. It doesn't seem as flexible as the *MagicColor*. But I need to try more colors.

Airbrush Textile Acrylics

These are a great balance between low cost and utility. I learned about them from a model, who had used them before. I was nervous about using something that wasn't specifically formulated for application on skin. Yet she said she had used them with no ill effects and they are marked as non-toxic. They are actually designed for airbrushing on Fabrics. They dry quickly and don't rub off easy. Because they are made for textiles their flexibility is superior to other paints. Yet they still wash off easily in soap and water. They also work well when applied by regular bristle brush.

The two brands I've used are Createx and Jurex([photo](#)). Both work well and run about \$5 for a 4 oz bottle. Larger bottles are available, but usually only black and white in most retail outlets. Createx has an iridescent line of colors that come out quite nice, with a shiny look, as opposed to a matte flat finish. The Jurex colors seem to work better than the Createx when using a bristle brush. They are available at any good art store that stocks airbrush supplies.

I use a Pasche airbrush for fine work and a larger production airbrush for large areas. The [large sprayer](#) I bought at a hardware store for \$20. It works well enough, but I found a smaller one at Sears called a touch up gun, which uses a pint size canister. These larger sprayers are the only way to go when you have to paint a lot of people or lay down an overall basecoat.



The key to good airbrush make up is to lay down the thinnest opaque coat you can. Thicker or multiple coats peel and flake more readily. Thin your paint, the concentration in the bottle is usually too thick and will get used up too soon. There are good books at the art stores on air brush techniques for obtaining different effects.

[Click here to buy Airbrush Acrylics](#)

AGPC Makeup

I have discovered an airbrush makeup that is safe on skin and that comes off with soap and water...yet has fantastic staying power. You just set it with a talc powder and use a damp sponge afterwards to remove the powder. It's called Airbrush Grade Prosthetic Cosmetic or AGPC.

It's from [Michael Davy Film & TV Make Up](#), in Orlando FL. The only drawback is it's expense. Even a four oz bottle is \$35. But if you are painting for a long event, or other profesional job or commercial film or video shoot, this is the best. And prices drop if you

order large containers. Many colors are available. I was particularly impressed with the white. When sprayed on, the AGPC2 (A more opaque version than the standard AGPC) is opaque with one coat.

The color selection is large, not as large as Createx though, with it's cool iridescent and pearlescent colors that look slick and shiny after drying. But you may be able to get the same effect by mixing silver or gold makeup powders into the paint. They also have UltraViolet reactive Day Glo colors.



It's possible that this makeup could last one to two days, making it ideal for events such as [Burning Man](#). This stuff doesn't sweat or rinse off, both water and soap are required to remove it. So it's perfect for large events or parties.

Liquid Latex

Liquid Latex has become quite popular in the last couple of years. It has been available as a make-up material for a long time, but now some companies are making it available in several colors, including black and clear, beyond the traditional flesh tone.

Initially it has been promoted as a way of making instant latex clothing. But it has real potential as body paint. Once it sets, it is much less messy than any other paint. And the setting time is quite quick, ten minutes or so. It also cleans off well, if applied to shaved skin! There is even the possibility of creating a reusable painting, but this requires multiple coats and some experimentation. I have not tried this yet.

I have been exploring the use of latex as a base for other materials and paints. Some very interesting effects, textures and colors may be achieved. For example, you can mix in metallic powder or sprinkles, such as in this [costume](#) seen at Key West in '96. Or you can create dimensional textures with beads or sand. A reptilian texture can be achieved this way, and is quite convincing! Or one can try embedding larger objects, or fabrics. I painted a [model](#) at [Burning Man 97](#) with a single coat of latex, and it lasted into the next day! It was finally removed when it started to itch. It is actually easier to remove multiple coats than single coats. Multiple coats form a strong layer, which peels off easily.

Another advantage to latex is that it can serve as a protective barrier between the skin and paints or materials that are not as safe as make-up.

REMEMBER! It is possible for someone to have a latex allergy! Test the individual model first before covering large areas!!

I have had success creating very shiny metallic [looks](#) using latex and metallic powders. This differs slightly from the technique of mixing the powder into the latex. Instead, wait till the latex is almost set, but still tacky. Then gently brush on the powder.

A company on the web that sells Liquid Latex in all colors, including UltraViolet is [Deviant](#). Deviant sells the ORIGINAL, tried-and-true quality-tested FANTASY LIQUID LATEX. As Jerry Pena describes it, "We have been quality tested and on the market for over 4 years. We have been active with the Burning Man organization (including the Climate Theater/Anon Salon, S.F.), we actively promote the arts communities (including sponsorships in music, theater, movie, video and stills, and we were featured on E! Entertainment), the sexual communities (including straight, gay, fetish, BDSM, swinger, etc., as indicated on our "demos" webpage), and we actively support and promote our product on both a retail and wholesale level. "

All in all, Liquid Latex is tricky. It both requires and rewards experimentation. Another company that used to sell it has created a [Liquid Latex web page](#) explaining it thoroughly with lots of photos!

Tempera

Tempera has long been popular as a body paint, because it is very cheap, and very safe. Unfortunately, it looks great wet, but as soon as it dries, it becomes powdery, and flakes off rapidly. Makes a terrible mess. Not Recommended.

Models

(and how to find them!)

All the paint in the world doesn't help much if you don't have a canvas. So how do you find people who will let you do this to them?

The easiest way is to just ask them. A good place to start is friends and relatives, people who (we hope) trust you. Girl/Boyfriends, spouses, best friends and so on. You'd be surprised at who will say yes. Show them some pictures of other body paintings to give them an idea of what you want to paint on them. Also, engage and involve them in the design and process.

A model source that has worked well for me is the personals in the local alternative/entertainment

weekly. These are usually named something like "YourCity Weekly" or "AnyTown Reader". Usually there is a general category for people seeking hiking partners, music jams, and yes, models.

If you're not paying them, which you probably aren't, then they are doing it because they think it might be fun. Make sure it is fun for them. Try not to do a design that takes 12 hours. Have lots of snacks. Play music. Keep it warm for them! I find that many of the people who model, and are amateurs, like the fact that they can pose nude anonymously when you are also painting their faces. It is very hard to recognize people when fully painted.

If you are a male painting a female you don't already know, it is good to have another woman on hand, either a friend of yours or the model's to put her at ease. Usually this isn't necessary for female artists, or a man painting a man, but, if they seem nervous, don't hesitate to offer a "chaperone".

Don't forget to give the model copies of the photographs you make. Also, if you ever think you might do something else with the pictures, exhibit or publish them, get a Model Release. (Most pro photography stores have model releases.)

Processing those pictures is another matter. I have found that my local one hour photo will print just about anything. But if you think you might have trouble, go to a professional photo lab. They are familiar with art photography, and have probably seen much more exotic pictures than the ones you are giving them. If you're unsure, ask if they process nude art photos.

Others report that the big automated labs are best, because the pictures just go through the machines with no one looking at them. Employees at one hour labs and custom labs report that you can almost count on employees making their own pictures for themselves.

For models who are young, under 21, but look younger, under 18, be prepared to document their age. You may want to see the model's ID. I would not do any nude work with anyone under 18, the current social climate (in America) is too repressed. Even your own children might be risky as subjects.

Where to Buy

In very large cities, it is possible to find stores that specialize in Theatrical Makeup. Otherwise, costume shops are a good place to start, as are theatre supply stores.

Airbrush acrylics and airbrushes are sold at art supply stores. There are also airbrush magazines, which are packed with how to articles, and ads for mail order supplies.

Of Course there's also the online ordering page that I've set up for some of the products I've mentioned!

[\[The Body Paint Store\]](#)

For the moment it has art supplies from Misterart.com . I hope soon to be able to provide online buying

links to the makeup brands.

On the web, there is now an [excellent site](#) which sells all the major makeup brands directly. Operated by Steve Biggs, it has a wide selection including Kryolan, and lists some of the larger sizes, not just the little 1.5 oz bottles. Prices seem to be quite reasonable.

Safety First!

I want to stress that before you start a painting with a new model, you should **always** test the product you are using first on that model. Try a small area, and wait several minutes, to see if there is any type of reaction. This is true even for supposedly safe make-up products. Every person is different, with varying sensitivities. You are covering a lot, if not all of a person's skin with the makeup -- so a small reaction could be very severe. I also make sure I am near a shower or hose to quickly wash someone off if they start to have a reaction.

I've never had a problem, but I would love to hear from anyone who has. (*No anecdotal third person reports please!*)

Finally, I want to address the "Goldfinger" myth, for those people who get their medical information from the movies.

People breathe through their lungs, not their skin. Total coverage of a person's body with paint will not suffocate them. I'm speaking from personal experience here, so anyone who disagrees should send me some medical references or citations that demonstrate otherwise.

Experiment! Have Fun!

*And let me know how your
paintings turn out!*

Feedback!

Add a [Comment or Suggestion](#) based on your experiences; or, [read the comments](#) posted by others.

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Hand Coloring Photos in PhotoShop

By [Philip Greenspun](#)

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I always wanted to hand color photos but decided it was too much of a headache because my fine motor skills aren't so wonderful and I hate getting my hands dirty. Apparently, I was "born to program." Adobe PhotoShop, however, enables even the klutziest to hand color.

Here are the 12 steps: 1. Load picture off PhotoCD

2. In PhotoShop 3.0, use the "Desaturate" command to remove all the color. In PhotoShop 2.5.1, convert the image to greyscale mode and then back to RGB. Either way, you now have a B&W image in a file that can take color.

3. Pull down Make Snapshot.

4. Double click on the Rubberstamp icon and choose "From Saved" and then pick a nice wide brush. Drag the mouse to restore color from the original image to any part of the current B&W image.

5. Double click on the Rubberstamp icon again and choose "From Snapshot". Now choose a fine brush and go over any boo-boo areas where you restored color inadvertently. (You are restoring the image from the snapshot you made of the B&W image.)

6. Print to Fujix 3000 photographic quality printer and sell as one of those "I spent 8 hours hand coloring this" art prints.

[Before](#) | [After](#) (I burned the sky in a bit also and reduced the color saturation slightly.)

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Reader's Comments

Hand coloring would be a misnomer considering that the computer did most of the work and all you did was a few mouse clicks. Sure it takes a certain visual ability to create your final results, but "hand coloring" it is not. Perhaps if you took out your box of Marshall oils and used the "old fashioned" way of hand coloring, then you could claim it as a true description of what you did. Is there any one who agrees with this? Perhaps there should be a separate heading for "computer enhanced" images.

-- [John Ballard](#), January 4, 1997

I can't agree with John Ballard where he maintains the traditionalists view that recent contributions to photography should be excluded from the art form simply because a computer has assisted the author with the eventual outcome - maybe he doesn't use filters to enhance his images as they can be viewed in the same light as the computer in assisting the photographer.

-- [Barry Fairclough](#), February 1, 1997

I believe there exists an easier way to produce the same effect as what being called "hand-coloring". First, use the lasso with 12 feather to select the girl and then invert the selection. Second de-saturate it. All the process takes less than 2 minutes. I don't see what's the purpose of taking a slap shot or using the rubber stamp to restore from the saved version of the RGB file.

-- [Bennette](#) --, February 12, 1997

In response to Bennette's answer: I don't know what lasso with 12 feather is, but I am sure you can be arrested for using it on a girl, here in Utah. Seriously, I suspect you mean FEATHER the lasso tool. I don't find the lasso tool to be effective in outlining complex shapes such as the girl in the photograph. It is almost impossible to achieve the degree of sensitivity you need to outline accurately, even with the feather value set at 12 or higher. Phillip's method works very well, and is less time consuming for me than trying to outline something with the lasso tool.

-- [Phillip Ringwood](#), February 26, 1997

Rather than using the lasso or clone tool, how about cutting a path around the woman? Paths are the most precise way to outline something in Photoshop. Minor problem areas

can be fixed with a clone from saved/snapshot, whichever applies.

I really like hand coloring. This image is not, IMHO, hand coloring. Try desaturating the entire image and then recreate the flesh tones with Photoshop's tools.

Nice image though, I love the coast.

-- [Mitchell Leben](#), May 20, 1997

I tried your method and it worked just fine. I use a graphics tablet and that makes it much easier to do fine work like this. Also, since you have the feeling that you are actually PAINTING with the computer, it is rather like hand colouring a B/W image. On the subject of selection, why not use the 'quickmask' in paintshop 4 (don't know if it's in V3) to paint in a selection. That way you don't have to use the awkward lasso with or without leather. Thanks for the tip. I'll use it in future.

-- [Donald Campbell](#), January 9, 1998

There are at least three ways, probably more, of "handpainting" a photo. That does not detract from the creative process. Neither does the use of the computer detract from it. The true water-colorist allows the watercolor to do most of the work. The true photographer allows the lens and the film to do it. Why then is it not "OK" in computer art to allow the computer do do the work? Keep on blazing on, push the medium to its max, learn everything you can about the process and don't let the critics get you down.

-- [Tim Hess](#), February 4, 1998

There's an even better way to "hand tint" a B&W photo with Photoshop...and it's very similar to the traditional way of doing it.

Take your grayscale image and convert it back to RGB or CMYK. Then using your Brush tool in "color" mode in your Brush Options. Pick a color up and start tinting away!

If you use your opacity for the brush set up to say 40 or 50% and have a nice feathered brush, the paint strokes should build up on top of one another...similar to traditional tinting.

An even better way would be to add another Layer and do your tinting on that layer, not touching the real image below. That way, when your done with your tinting, you can adjust the overall opacity of the tint...making it nice and subtle. Also the benefit of doing it on another layer is so if you screw up, it's easy to go back without having to revert to saved. You can also turn the layer on and off...seeing a before and after effect.

After hand tinting the image, how about a nice soft-focus effect? Soft focus is so easy to do. Just flatten the tinted image (if you were doing it on a layer like I suggested). Then make a duplicate layer of the image. On the duplicate layer, Gaussian blur the hell out of it. The amount depends on the overall size and DPI of the image. A bigger image needs more blur. But for a reference say an image that's 1024x768 needs a blur radius of around 5 or 6. Don't blur it so much that it's just a mess....but enough to where you can still just make out the overall image if you sit back a ways. (this is all very subjective and your milage may vary...experiment a bit).

Ok..now with that blurred layer simply turn back the opacity of the layer to around 25-40%. The original, un-blurred image will come through and the blurred image will be ghosted over it. The effect is one that looks like a true soft-focus lens was used to take the picture! The lower the opacity, the less blurred effect.

Give it a try and have fun.

-- [Scott Gant](#), June 25, 1998

I don't know if this is a correct place to put this, but I need directions on simple, at-home hand tinting I can do on existing photos. What paints to use, techniques, and precautions. Is this possible without fancy equipments or chemicals?

-- [Annaliese Thro](#), November 9, 1998

Like the author, I was fearfull of hand coloring my black and white prints because of my lack of dexterity and ageing eyes. I began working with photoshop but was constrained by my conscience (it felt like cheating) and by the absolute "perfection" of the end result. For \$14.95, I bought a Marshall's oils starter kit. After a few trials, I was able to wow some clients and suprise myself with the results.

If I had a better sense of the commercial and a more secure sense of self, I would persue the photoshop method. Working with photo stock agencies day in and day out has hardened my "pallet" to the absolutely perfect images that computer correction brings.

-- [Timothy P. Dingman](#), January 2, 1999

Hand colouring is using the wrong words for the technique described. Better is saying it was hand decolouring, but that doesn't sound good.

It's so much easier to get colour out of a digital picture, but when you try to realy 'hand colour'originally b&w pictures, you easily end up with pix looking like old hand coloured b&w movies. Which are bad, imo.

-- [Mike Johnson](#), March 8, 1999

Regarding the terminology for this kind of digital manipulation: there is already an accepted term for the re-coloring of B&W images - it is called "colorizing", from the movie industry.

Frank

-- [Frank Kolwicz](#), March 14, 1999

I do photo manipulation for a living and all of these comments are helpful. The best way I find to colorize is to start with a GOOD b/w scan of 300 dpi or more. Change to RGB or CMYK. Use various selection tools and layer them. Use the color palate to select colors and paint or fill using the multiply command to maintain the tones below. Use the percent slider to lighten or darken the color. Using the path tool or the magnetic lasso tool are the best ways to select. Also the magic wand and selective color tool are also effective ways to make a selection. Hope these help. Update to V5.

-- [sharon conley](#), July 23, 1999

I tend to use the quickmask to outline people. It is fast and extremely precise. If you want to hand color a photo, use photoshop 5.0.2. It is excellent for hand coloring. Make the pic, black and white. then use the quick mask, with a feathered brush, cover the entire pic with the quick mask, leaving the section open that is to be colored. click off the quick mask and inverse the pic, color the section that is highlighted, and then use the layer option to lighten the area colored.

-- [add pfeiffer](#), August 29, 1999

I have just bought Photoshop 5.0 and am learning to use it. I tried the "rubberstamping" from the orig. color image to the b&w copy and had some success, however I had a problem with positioning of the "rubberstamp from"....I kept getting the wrong portions of the orig. on top of the copy...any sugestions on how to do this properly would be appreciated. What I ended up with was great for Picaso (cool eye on her ear)....but NOT what I had in mind!! <grin>Thanks in advance... JB

-- [Jack Blake](#), September 23, 1999

jack,

if you're having trouble with the rubber-stamp tool try this (i'm using 5.5 but i think this

should work in 5.0 also):

- Take a color picture and desaturate it (Image -> Adjust ->Desaturate)
- Create a snapshot (from the history pane in 5.5)
- Use the magic wand to make a selection (use the tolerance parameter in the options window to fine tune your selection)
- Now pick the History Brush tool and a wide brush (say 300 point) and then click and drag the mouse over the selected area.

What you should have now is the color restored back to the selected area of the black and white picture.

-- [Shourya Ray](#), February 11, 2000

My method of colorizing digital photographs is to copy the color photograph, desaturate the copy and convert to b/w, then back to color, then paste it on top of the original photograph as a new layer. I then use the eraser tool to "remove"the parts of the copied photograph that I want to be colored, i.e., exposing the color photograph underneath.

-- [Willa Cline](#), March 4, 2000

I find it amusing that the, "Hand Coloring"term seems to generate so much controversy. I believe we all know what it means, regardless of the degree of actual hand involvement. For all those purists out there, how about, Color &Tone Manipulation? We do a lot of it at our studio (mostly the old fashioned way) and in our brochures we refer to it as, Portrait Colorizing Enhancement, but we still call it Hand coloring. We find we can get more money for "Hand"Coloring than for "Computerized"Coloring. So, why not?

Bruce Mc

-- [Bruce McElhaney](#), April 10, 2000

You've still got to use your hand whether colouring analogue or digital, so both are "hand-colouring"! However, there is no way that any current digital output will last the centuries that a well-processed sepia-toned fibre-based gelatin-silver hand-coloured print will. So if you want your work to last the distance, go conventional. Learn the techniques and processes, develop the skills. Produce individual, unique, results. Charge accordingly. I have many people seeking me out because my hand-coloured conventional prints look so much more "natural" than colour photos. Go figure!

-- [Alan Lesheim](#), June 2, 2000

Technique and equipment are irrelevant. All that matters is that you have created something unique and beautiful.

-- [Joe England](#), November 10, 2000



Hand Colored for that old movie look.

The following images were made in photoshop from Black and White prints. Another layer was added and hand colored with an input stylus on a Wacom tablet. The coloring was done with large areas of a single color, and the layer was set to "color," "soft light," "hard light," or "multiply" at varying densities to get the wanted effect.

-- [22](#), May 14, 2001

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Related Links

- [Norma Walton Photography, Tulips](#)- portfolio of still life images, mainly flowers and food. The image on my home page is a black and white neg.... "hand coloured" in PhotoShop using brushes and colours. (contributed by [Norma Walton](#))
- [Handcoloring](#) -- You can find out how to hand color digitally and traditionally at <http://www.handcolor.com> (contributed by [Ana Brandt](#))

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Canon EOS-5, 28-70/2.8L lens at f/16, TMAX 100 film, two big softboxes


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Three Graces

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Chinese Takeout

Canon EOS-5, 28-70/2.8L lens at f/16, TMAX 100 film, two big softboxes

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Infrared Photography Handbook

Reviewed by [Philip Greenspun](#)

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Infrared Photography Handbook by Laurie White, 1996 Amherst Media. ISBN 0-936262-38-9. 108 pages. You can order this book from amazon.com .

This book might more properly be titled "Photography with Kodak High Speed (B&W) Infrared Film". The first 60 pages are devoted to clear tutorial with some excellent graphs of spectral response. Laurie White explains clearly the difference between Kodak and Konica IR film. The Kodak is fast, grainy, and responds along a continuum of wavelengths. The Konica has two spectral humps of response and tends to result in much higher contrast. It is much finer grained but at the cost of four stops of speed. White makes it clear that she prefers the Kodak product and uses it almost exclusively. Certainly her results, presented and explained in the last 30 pages of the book, are inspiring.

The one glaring weakness in the book is the lack of tips for using infrared film with electronic flash.

I've burned through a few rolls of the Konica IR film and yet learned much more about it from reading White's book than from my experience. I can highly recommend this book to anyone who is beginning to experiment with B&W infrared film.

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Reader's Comments

Laurie White's book discusses exclusively B&W infrared photography. For readers interested in COLOR infrared photography (using Kodak Ektachrome EIR), "The Art of Infrared Photography" (4th Ed) by Joseph Paduano will be of much help. I personally found his tables of suggested exposure very useful for a beginner.

-- [Jeng-ming Yu](#), May 10, 1998

I read the book, took notes, then shot a roll of film. Fantastic. The clear writing in the book made it easy. As she said, no bracketing of exposures was needed. This is the only book needed on the subject.

-- [Les Cunliffe](#), March 1, 2000

I shoot IR film on a regular basis- Laurie's book was informative enough to get me started. I had to make a few adjustments along the way. But, overall it is a well written book. As far as Konica vs. Kodak IR film is concerned- Konica has been discontinued. I have shot both films- each has strengths and weaknesses for different subjects and conditions. My Photo.net portfolio has shots using both types of film.

-- [Michael VaughAn](#), November 1, 2002

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John Hedgecoe's Workbook of Nudes & Glamour

Reviewed by [Philip Greenspun](#)

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John Hedgecoe's Workbook of Nudes & Glamour by John Hedgecoe, 1985 Mitchell Beazley. ISBN 0-85533-943-8. 192 pages. Out of print, but you can order Hedgecoe's latest nudes book from [amazon.com](#).

The first 65 pages of this book contain general photographic advice with nudes as examples. If you are an experienced photographer, you won't find too much new here. The rest of the book has a bit of a tough time deciding whether or not to be about glamour photography, a very commercial form, or nudes, a very noncommercial form.

For example, there are a lot of pages devoted to the benefits of over-the-shoulder poses and such. This can be very useful if you've been hired to make someone look good but isn't very on point if you are trying to create abstract art. Two pages devoted to makeup aren't worth much if you've decided to suppress the face and focus on the body as structure. Still, you have to admire the literally hundreds of how-to drawings and example photos crammed into this vest-pocket size book.



As far as I'm concerned, the meat of the book is about 60 pages of instructions and ideas for nude and

glamour photography in a variety of setting. Advice is sensible, e.g., beginners should use daylight, with reflectors, and fast film rather than struggling with artificial light. Examples range from illustrative to inspiring.

In the end, the book is probably worth the price and weight (if you are going to keep it in your camera bag, which is clearly what the designers had in mind).

[Note: I have some capsule reviews of books of nude photography in my [Nudes tutorial](#).]

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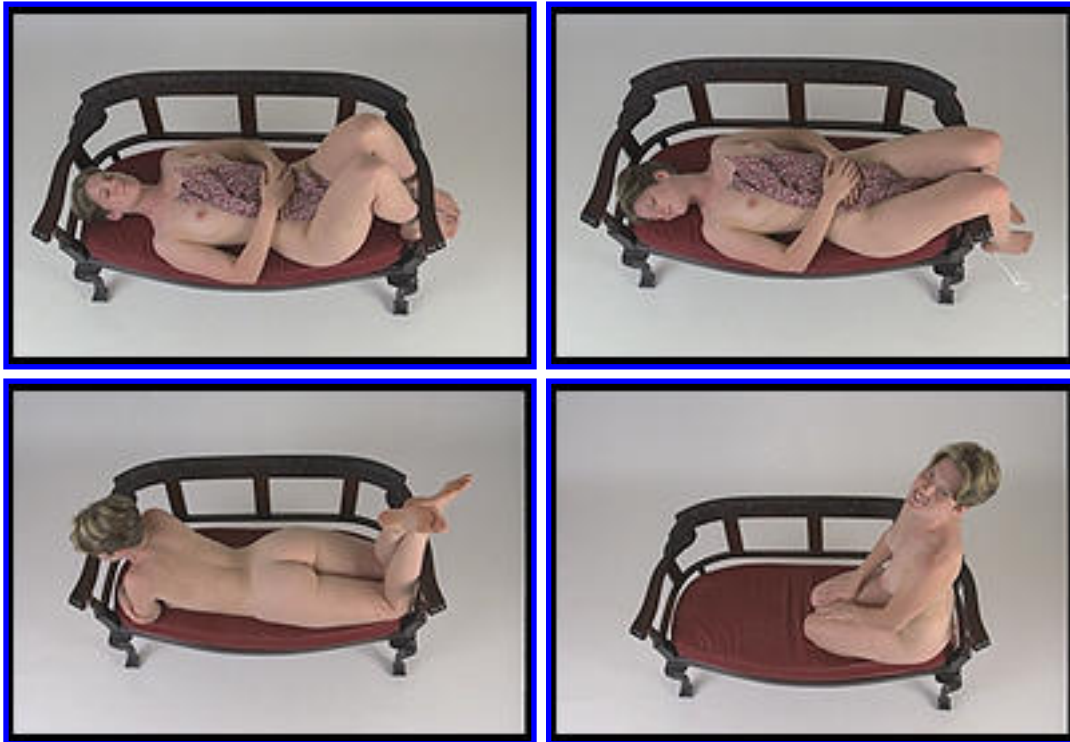
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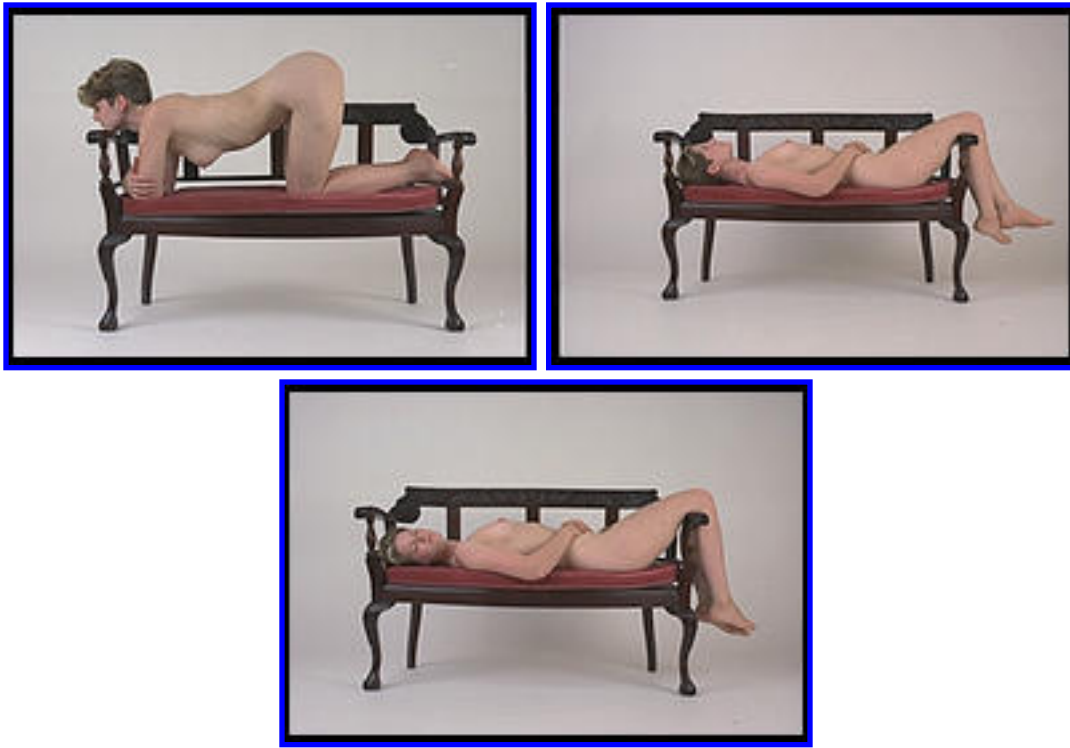
([Bronica 80 F3.5 G](#) shown)

FlashPix Nudes

sort of part of [nudes](#) by [Philip Greenspun](#)

This page was an experiment to see how people would like in-line [FlashPix](#). HP changed the IIP standard and it became too much work to keep this page up to date with all of their changes. So after I upgraded my FlashPix server to IIP 2.0, I converted this page to plain old in-line JPEGs with FlashPix options after you click through.





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[Perfect your photographic technique with hands-on learning from a top National Geographic photographer. Led by David Alan Harvey, this photography expedition has received the access that makes experiencing Cuba possible.](#)



A Quick and Dirty Guide to Photographing Comet Hale-Bopp

by Russ Arcuri

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This is a guide for people who want to take photos of the comet, but don't have a lot of specialized equipment for astrophotography. All photo.net regular readers will likely have an SLR, a tripod, and one or two fast prime lenses, right? That's all that's necessary for reasonably good pics of the comet.

Equipment

The camera: Any SLR camera with shutter speeds up to 30 seconds and/or "bulb" mode will suffice. If you have a modern SLR that uses battery power to keep the shutter open, pack an extra battery or two. You'll also want a remote shutter release or cable release. You can do without the remote release if your camera has a self-timer.

The lens: My favorite lens for photographing comets is an 85/1.8. This focal length is long enough that the comet won't be a tiny blur on your pics, but short enough that the stars won't trail too noticeably in the exposures we'll be using. (I'll explain star-trailing below.) If you don't have an 85/1.8, don't worry - you can get reasonably good pics with a fast 50, like a 50/1.4 or /1.8. Oh, if you have an autofocus camera, you have to be able to turn it (autofocus) off.

The tripod: Any tripod will suffice, but the heavier, the better. If you don't have a tripod, forget it. Beg, borrow, or steal one if need be.

Other equipment: I'd also recommend bringing along a small flashlight, a stopwatch, and a pair of binoculars.

[Editor's note: Where to buy all of this stuff? Check out [the photo.net recommended retailers](#). Adorama has particularly good selection and prices for binoculars.]

Film

You can pretty much forget about slide film. Anything faster than ISO 100 suffers from terrible grain, and you'll need very fast film for good comet photos. High-speed negative film is the film-du-jour for astrophotography.

I like Fuji Super G 800 and Kodak Ektapress Multispeed 640 (PJM) for photographing the comet. Others have had good luck with Kodak Pro 400 (PPF) and Kodak Royal Gold 1000. For simplicity's sake, take my advice and get the Super G 800. It's probably the easiest to find other than Royal Gold 1000, which I think is too grainy and has a color cast I don't like. Faster (ISO 1600-3200) films are much too grainy, IMO.

Procedure

- 1.) While still at home, load your film into your camera, and take one picture in daylight or with flash of anything you want. (If you have a gray card, take a picture of that.) This "regular" picture will help the lab when you bring your film in to be processed.
- 2.) Pack your stuff into a car. If you don't have a car, borrow one. Plan your trip so you'll arrive where you're going about an hour after sunset. If you live in a cold area, dress warm.
- 3.) Get out of the city. This is extremely important. Find a spot at least 5 miles outside the city (suburbs don't count -- get at least 5 miles outside of the suburbs, to avoid the glow of the city lights.) 5 miles is about the minimum. The sky won't be pitch black, but it will be dark enough for the pics. Be sure you drive out of the city in the direction of the comet - northwest. You don't want to have city lights between you and the comet. If you've got the time and the inclination, go further - 10 or 15 miles is even better. The first couple weeks of April are especially good because there is no moon in the evening/night sky. The moon's glow will drown out the fainter parts of the comet's tail when it is visible.
- 4.) Find an out-of-the-way location, without much traffic, and a good view of the comet. Look at the comet through your binoculars -- this is absolutely the best view of the comet and tail you will get.
- 5.) Put the camera on the tripod, and attach the remote release.
- 6.) Focus the lens on the infinity mark. Be sure the autofocus feature is turned OFF.
- 7.) Point the camera at the comet. It is bright enough that you should be able to frame it in your camera's viewfinder. You may want to include the branches of a tree, or other natural objects in the frame too.

8.) Set the lens at its widest aperture, and do a series of exposures as described below. If you don't have a remote release, set the self timer on the camera to trip the shutter. The exposure times are: 4 seconds, 8 seconds, 10 seconds, 15 seconds, 20 seconds, 30 seconds.

If your camera does not support these shutter speeds, set it on "bulb" and use the stopwatch to time the exposures. Be sure to shield your flashlight from the lens. (I should have mentioned that a lens hood is quite valuable here.) Be careful not to shake the camera during the exposures.

Every once in a while (between exposures) make sure the framing is still good. The rotation of the earth will slowly move the comet out of the frame if you're not careful.

9.) Now stop the lens down one stop from its widest aperture. Again, do exposures of 4 seconds, 8 seconds, 10 seconds, 15 seconds, 20 seconds, and 30 seconds.

The rotation of the Earth will cause the stars (and the comet) to trail across the film in these long exposures, turning round star images into ovals or lines. However, it probably won't be very noticeable under 20 seconds. It will be noticeable in the 30 second exposures, but you may decide you like the effect. You can, of course, do longer exposures than 30 seconds, but the trailing is much more pronounced over 30 seconds.

10.) If you have other focal length lenses, you can try them as well. Try to keep the apertures at $f/2.8$ or faster. Slower ($f/4$) lenses will work too, but you won't pick up as much of the tail. The longer the focal length in use, the more obvious the trailing will be. With a 135mm lens, the stars and comet will noticeably trail in a 15 second exposure or less. With a 35mm lens, you can do 30 or 45 second exposures without much trailing, but the comet will be smaller in the picture.

11.) When you get the film developed, warn the lab that they are comet photos. Tell them that if they have difficulty finding the frame edges, they shouldn't cut the negatives. Explain to them that the sky should be fairly dark, but it doesn't have to be pitch black. If they print the pics for a completely black sky, not much of the comet's tail will be visible. If they let the printing machine "autocorrect" the exposures, it will badly overexpose them, producing a medium gray sky -- yuck. You might also explain to them that the comet exhibits two tails - a bright yellow dust tail, and a dimmer blue ion tail going off at an angle to the dust tail.

12.) If the lab is incapable of producing a reasonably dark sky, try a different lab. A good lab may be able to enhance the dimmer blue tail a bit to make it more visible.

How'd they turn out?

The pics should be good enough to impress your family and friends, especially if any of them tried taking pics of the comet with a point and shoot camera. Even more so if they used the built-in flash.

(Don't laugh! One of your relatives did this just last night!)

If you want better pictures than this, you need one or more of the following things:

Have your film push-processed

Fuji Super G 800 pushes well to 1600. Contrast and grain increase slightly, but higher contrast is good in comet photos and Fuji 800's grain is fine enough that it can afford to be pushed.

A darker location

On top of a mountain, hours away from a city would be ideal.

A tracking mount for your camera

These counteract the rotation of the Earth, allowing you to leave the shutter open for minutes at a time without star trails.

If you'd like info about tracking (barndoor) mounts, or if you want to be really envious of some terrific comet photos, see Brian Rachford's excellent [Wide-Field Astrophotography Page](#).

Good luck!

Links

- [Bill Hutchinson's comet images](#), an extensive collection from someone who lives on [Alaska's Kenai Peninsula](#)

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Reader's Comments

Hey- I took pictures of the lunar eclipse a while back with my Rebel XS and my 35-80 with a minimum aperture of about 4. Jupiter was barely visible below the moon, but I didn't think that that would be a problem. I made most of the exposures at 20-30 seconds. When I got the pics back from the lab, the first thing I noticed was the large white blotch

over the moon! I guess it was jupiter, but I am sure that it was just barely visible. Can you help explain this? --ben yaffe

-- [Ben Yaffe](#), April 6, 1997

I've gotten a couple questions via e-mail about photographing the moon and the comet in the same frame later this week (Thursday). Since this relates to the above question, and might be of general interest, I'm posting my answer here.

Here's the problem: the moon is really, really bright -- thousands of times brighter than the comet. So the simple answer is that there is no single proper exposure for both the moon and the comet. The moon is an object brightly lit by the sun - the approximate exposure for it when it's full or nearly full is 1/film ISO at f/11. When it's a crescent the proper exposure is 1/film ISO at f/8. As you already know, the proper exposure for the comet is around 20 seconds at f/2 with an 80mm lens (or longer, if you have a tracking mount for your camera).

The complex answer is this: you can do a double exposure. It won't be technically correct, but it will look cool. Here's how:

First, using the longest lens you have, expose the crescent moon at 1/film ISO at f/8. For example, if you're using Fuji 800, the proper exposure would be 1/800 at f/8. Since most cameras won't do 1/800, you'd pick the closest thing, which might be 1/750 at f/8, or 1/500 at f/11 if your camera can't do 1/750. Place the moon on one side of the frame - be sure that your camera is set for a double exposure.

For the second exposure, change lenses, put the comet on the other side of the frame, and expose for 15 or 20 seconds at approx. f/2. Now you have a picture with both the moon and the comet properly exposed in the same frame.

If you really want to do a single exposure which shows the moon and the comet on the same frame, you have to simply let the moon overexpose.

-- [Russ Arcuri](#), April 7, 1997

I also should have noted that the ECLIPSED moon calls for a longer exposure than the normal, uneclipsed moon. I'm not sure of the proper exposure, but it would probably be along the lines of 2-3 seconds at f/5.6. Perhaps someone who knows the correct answer to this question could comment? I'm really just guessing here.

-- [Russ Arcuri](#), April 7, 1997

I think that comet shots are a great opportunity to "go digital". When I developed my Hale-Bopp shots, I found that I had a reasonable set of photos, but with one common flaw: grain. This was particularly in the sky and in the silhouette of the treeline against the sky. I've seen the same in a lot of other peoples' Hale-Bopp shots, which is why I'm bothering to post this.

Here are two ways to fix such grain in an image-editor, once you have a scan of your image: 1. Slam all of the grainy stuff to black. This is easy to do (by adjusting the input range in the Image:Adjust:Levels dialog in PhotoShop, for example), but very heavy-handed. For example, it would obliterated the treeline mentioned above. 2. Use an aggressive noise-reducing filter. I like median filters for this purpose. The problem is that if applied to the whole image, any filter aggressive enough to suppress grain would also act upon the stars. The trick here it to create a mask including only the stuff you want filtered (should be everything but stars), and use that mask to control which pixels the filter can touch. The photoshop "Select Color Range" dialog is a good place to start for creating such a mask, though there are a vast number of other approaches. I hope this helps someone!

-- Patrick

-- [Patrick Chase](#), July 7, 1997

Two excellent photoshop ways of killing grain are as follows

A. Either in the scanning software(Nikonscan) or in the Adjust curves, use the set black point tool on a dark area of the image. This will make it a smooth black instead of the grainy black.

B. Convert to CMYK, change to the black channel by hitting CTRL+4. On this channel, use the dust and scratches tool, usually with a 4 to 5 pixel radius, and a threshold of 0 levels. If you find you lose too much image sharpness, hit CTRL+`, to get back to all 4 layers, and unsharp mask.

Hope this helps

Ben

-- [Ben Woodruff](#), November 16, 1999

This article talks about only simple astrophotos, if you are taking pictures of Orion through a 12 inch telescope, you'll have more problems to worry about. A typical photo of deep space objects are going to last about 30 minutes or sometimes even longer. To

eliminate the star circles you'll need a clock drive on the telescope set at the same speed the Earth is spinning at. Because you are not using a lens, you don't have to worry about expensive fast telephoto lenses, but you do need a fast telescope, f4 - f5 (f5 on a camera lens is slow, but it's very fast for a telescope), a f10 telescope will take forever. Also, you should use a camera that has a mirror locking feature, a mirror slap can cause an object in space to move thousands of miles. You'll probably want to use a manual camera, since some auto SLRs can't hold the shutter open for 40 minutes, or if it can, the battery will get drained quickly on a cold night.

-- [Roy J](#), December 10, 2000

Capturing images of beautiful yet elusive celestial objects is a thrilling experience for me. Like no other form of art, astrophotography empowers its participants to look back in history by taking pictures from photons that take millions of years to travel through the vast universe. Like other form of photography though, it requires both technical skills and aesthetic visions. My passion with astrophotography focuses mainly on capturing dazzling images of galaxies, nebulae or comets etc. on film. There are other areas of astrophotography (CCD-based or scientific-oriented) which I'm not going to discuss here.

Most astrophotos we see on magazines or posters (except those featuring images taken by professional observatories or the famed Hubble Space Telescope) require a camera coupled with a telescope or a long focal-length telephoto lens mounted on an equatorial mount. In general, the focal-length of the telescope/lens depends on the size of the object. The exposure time depends on the brightness of the object and focal-ratio of the optics. A good way to start taking astrophoto is to buy a used Schmidt Cassegrain type telescope (about \$400- \$800) with 8" aperture (such as the CeleXXon or the MeaXX brand). These telescopes are well suited for basic astrophotography of galaxies, star clusters, comets, moon, some planets and nebulae. They usually come complete with tripod, electronics (guiding system) and accessories (eyepieces). Exposure is usually long (from minutes to hours) and the guiding procedure can be tedious but the results are rewarding. Use fast films (ASA 400 - 800) or better yet, use hypersensitized films. Movements (wind, vibration etc) must be avoided and the atmosphere should be steady and the sky as dark as possible. A good source of reference is the "Sky and TelesXXpe" magazine or the "AstrXXomy" magazine. Have fun star-hopping and picture-taking!!!

The author uses a PXXtax LX body, PXXtax SDHF 100 ED refractor with f/3.6 adaptor and PXXtax MS-4 mount.

-- [Tak-Ming Leung](#), March 9, 2001

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Related Links

- [Wide-Field Astrophotography Page](#)- If you'd like info about tracking (barndoor) mounts, or if you want to be really envious of some terrific comet photos, see Brian Rachford's excellent Wide-Field Astrophotography Page. -- An updated link with a little help from google.com (contributed by [David H. Hartman](#))
- [Astrophotographer Jason Ware Featured at PixiPort](#)- Jason Ware's AstroPhotography prints have been featured in several major magazines and catalogs. Here is a partial list: Nov.1993, Sky & Telescope Magazine, page 46. -Lagoon and Trifid Nebula. Jan. 1994, Astronomy Magazine, page 103. -Andromeda Galaxy. May.1994, Sky & Telescope Magazine, page 113. - Orion Nebula Jul. 1994, Astronomy Magazine, page 82. -Pelican Nebula. 1994-1995, Meade Instruments, Inc. Catalog Orion Nebula Region, page 27. Veil Nebula, page 29. Andromeda Galaxy, page 30. Jan. 1995, Astronomy Magazine, page 66/67. -Rosette Nebula. About the Photographs ALL of the photographs were taken using Meade Instruments telescopes. The photographs of nebulae and galaxies were taken using auto-guided time-exposure photography on Fuji HG400 film(120 format). The original exposures, lasting between 2 and 3 hours, were then copied onto Kodak Vericolor Transparency film, from which an internegative was made for the final print. Each step increases contrast and color saturation. The moon photo was a short exposure on Kodak Technical Pan film. (contributed by [Helyn Davenport](#))
- [Tripod Astrophotography](#)- For anyone interested in building a "tangent arm drive", there are plenty of links to whet most appetites. (contributed by [Mike Nicholson](#))

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Spectral Selectivity

by Ed Scott dotted.dog@worldnet.att.net

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Spectral Selectivity

Spectral selectivity is a technique for creating images which uses intentionally limited ranges of radiation in the ultraviolet, visible or infrared portions of the spectrum. It has uses in artistic and scientific photography.

Early day photographers often needed to work around the inherent spectral sensitivity limitations of the photographic materials available to them. Their photographic materials were sensitive primarily to blue light. Rich blue skies photographed much too light while vegetation and skin photographed too dark. Look closely at the actors and actresses in early motion pictures. Often the white powder makeup they used did not get applied too close to their eyes and the result can be quite comical in close-ups. Fortunately, current photographic materials extend well past the approximately 500 nanometer upper limit of early day imaging.

Modern photographic materials are available with sensitive to a wide portion of the spectrum, ranging from 250 nanometers (ultraviolet) to 925 nanometers (infrared). There are many applications for the selective use of this spectrum. Specific characteristics of a subject can be emphasized or selected out by limiting the range of spectrum used to create an image. Colored filters are the primary tool for selective use of spectrum with conventional photography. Digital image editors open up some new possibilities for the creative use of spectral selectivity.

The topics linked below provide an introduction to spectral selectivity, some technical information for making use of it and a few typical applications.

Contents

Color Vision

- [Color Vision](#) - Human perception of different wavelengths of light
- [Color Space](#) - The color space defined by three color sensors

Reproduction of Color

- [Tri-Color Photography](#) - Spectral response of tri-color filters
- [Color CRTs](#) - Spectral response of Cathode Ray Tubes
- [Color Slide Film](#) - Spectral sensitivity of Kodachrome 25
- [Web Browser Color](#) - Down coloring an RGB image to 8-bit video

Photographic Spectral Sensitivity

- [B&W Films](#) - Spectral sensitivity range of B&W photographic materials
- [Exposure Meter](#) - Spectral sensitivity range of exposure meters
- [Panchromatic Film Ad](#) - Photos from an early ad for panchromatic film

Filtering Spectrum

- [Color Filter Absorption](#) - Absorption curves for some typical color filters
- [Filter Factors](#) - Exposure adjustment for B&W photography
- [Light Source Color Temperatures](#) - Color temperatures for some common light sources

Masking Spectrum

- [Combining Images](#) - Masking off a range of spectrum by combining images
- [Raster Ops](#) - Useful Adobe Photoshop raster ops for masking spectrum
- [A Notation For Spectral Selectivity](#) - A tool to plan and record complex operations
- [A Spectral Selectivity Metric](#) - The digital image as a spectral selectivity data set
- [Image Color and Tone Mapping](#) - Altering images in an imaging editor.

Infrared Photography

- [Infrared Characteristics](#) - Infrared conditions and recommendations
- [B&W Infrared](#) - Spectral sensitivity of Kodak HS Infrared film
- [Color Infrared](#) - Spectral sensitivity of Kodak Color Infrared film
- [Infrared Exposure](#) - Determining exposure for infrared film

Ultraviolet Photography

- [Ultraviolet](#) Characteristics and techniques of ultraviolet photography
- [Ultraviolet Photographic Materials](#) Spectral sensitivity plots for UV films and filters

Applications

- [Camouflage Detection](#) - A WW-II Kodak ad for infrared film
- [Forest Vitality](#) - Measuring the health of conifers with infrared

Links

- [Infrared FAQ](#) - Some useful information on infrared photography
- [IR & UV Photo Info](#) - A page of technical information on UV and IR photography
- [Infrared Gallery](#) - An infrared photo gallery with some nice IR images
- [Joseph Paduano's Web Page](#) - Author of *The Art of Infrared Photography*
- [Invisible Light](#) - A nice infrared photography site with a many links
- [The Ghostly Gallery](#) - A nice collection of B&W infrared photos
- [Color Infrared](#) - A small collection of color infrared photos with filter examples
- [Beyond Photographic Infrared](#) Georg Dittie's Thermal Infrared & Thermography site
- [Satellite Imagery](#) - A collection of interesting satellite images
- [Kodak Aero Infrared](#) - Kodak pages on Aero Infrared film for aerial photography
- [Digital Infrared Cameras](#) - Product information on Kodak digital infrared cameras
- [B&H Photo](#) - Mail order photo dealer that stocks infrared films and filters
- [Freestyle](#) - Mail order photo dealer that stocks some infrared films and filters

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([Olympus 70-210 4.5-5.6](#) shown)

Infrared Characteristics

Infrared radiation has a longer wavelength (lower frequency) and lower energy than light from the visual spectrum. The spectral range from 700 to 1350 nanometers can be photographed but conventional cameras are limited to the range of approximately 700 to 925 nanometers. Infrared beyond the 1350 nanometer range can be imaged but only with special non-photographic equipment. Georg Dittie's [Thermal Infrared & Thermography](#) web page is a useful introduction to imaging in the infrared region beyond the grasp of conventional photography. The infrared region between 1000 to 1350 nanometers requires special photographic equipment and special order film. Infrared spectrum in the range from 700 to 925 is the region that is most accessible to conventional photography.

Most 35mm, 120 (6cm) and sheet film cameras can be used for infrared photography in the range of spectrum from 700 to 925 nanometers. A few of the newer plastic body cameras may not be completely opaque to infrared.

You can easily test your equipment to see if it is completely suitable for infrared photography. Load a roll of infrared film into the camera and fire off several exposures at high shutter speed and small f-stop, with lens cap in place and indoors. If you open the fresh film container and load the film into the camera in total darkness you will have a completely unfogged roll making the test results easier to interpret. This will leave blank, unfogged film in the exposure chamber of the camera. Now place the camera in full 10 am to 2 pm April to September sunlight in several orientations for about 20 minutes in each (lens cap on if it is a rangefinder!). Process the film to normal or slightly greater than normal gamma. If the film is fogged, the equipment is leaking infrared radiation. Inexpensive, older model 35mm cameras usually make good infrared cameras if your plastic camera body leaks infrared.

The same test works for sheet film cameras and film holders. Sheet film holders are particularly troublesome with infrared photography and should be kept in the dark as much as possible. Some film holder bodies and dark slides may not be opaque to infrared. The dark slide, light trap may also leak infrared. Some view camera bellows may leak infrared. The safest solution is to keep direct sun off of the camera and film holders.

Since the range of infrared spectrum beyond 1350 nanometers is thermal radiation and imaging here involves recording heat patterns, infrared film tends to be especially sensitive to heat and age fogging. The further the film's sensitivity extends into the infrared region, the more apt it is to fog easily. Store infrared film in a cool place and shoot fresh film whenever possible. Process infrared film as soon after it

is exposed as possible to minimize subsequent fogging.

Most photographic lenses are designed so that they have the same focal length for all colors of the visual spectrum. They are not usually designed to correct focus for infrared light. On many lenses there will be a red line or dot near the focus index. This is the correction factor for infrared. You focus visually, then move whatever is opposite the focus index to the infrared mark. This adjusts the lens away from the film by about 1/400th of the focal length (1/4 percent) and brings the infrared image into sharp focus at the film plane.

Most infrared films are sensitive to light from the visual spectrum in addition to infrared radiation. Various sharp cutting color filters can be used to limit imaging radiation to the infrared region. The following table gives mid and maximum usefully recordable wavelengths for several commonly available infrared films.

FILM	Mid IR Wavelength	Max IR Wavelength	Max Useful IR Filter
Kodak HS IR	810	925	Wratten #87C
Konica 750	750	820	Wratten #87
Ilford SFX 200	740	800	Wratten #87
Agfa APX 200S	725	775	Wratten #88A
Ektachrome IR	810	925	Not Applicable

Kodak Highspeed Infrared (50 daylight ISO with red filter) and Kodak Ektachrome Infrared (100 daylight ISO with Wratten #12) extend the furthest into the infrared region of the films listed here. Kodak HS Infrared is available in 35mm and sheet film formats. Konica 750 (15 ISO with red filter) represents a compromise between infrared range and fine grain with easier handling requirements. It is available in 35mm and 120 formats. Konica 750 has an anti-halation coating. The Ilford and Agfa films (125 ISO with red filter) offer faster film speeds but do not extend as far into the infrared region. The available films offer very good opportunities for using the digital imaging methods of spectral selectivity in the infrared region.

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Spectral Sensitivity of B&W Infrared Film



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Pinhole Photography - History, Images, Cameras, Formulas

By [Jon Grepstad](#)

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Introduction

Pinhole photography is lensless photography. A tiny hole replaces the lens. Light passes through the hole; an image is formed in the camera.

Pinhole cameras are small or large, improvised or designed with great care. Cameras have been made of sea shells, many have been made of oatmeal boxes, coke cans or cookie boxes, at least one has been made of a discarded refrigerator. Cameras have been cast in plaster like a face mask, constructed from beautiful hardwoods, built of metal with bellows and a range of multiple pinholes. Station wagons have been used as pinhole cameras - and rooms in large buildings. Basically a pinhole camera is a box, with a tiny hole in one end and film or photographic paper in the other.



Pinhole cameras are used for fun, for art and for science.

Designing and building the cameras are great fun. Making images with cameras you have made yourself is a great pleasure, too. But in serious photography the pinhole camera is just an imaging

device with its advantages and limitations, special characteristics and potentials. By making the best of the camera's potential great images can be produced. Some of the images could not have been produced with a lens.

Characteristics

Pinhole images are softer - less sharp - than pictures made with a lens. The images have nearly infinite depth of field. Wide angle images remain absolutely rectilinear. On the other hand, pinhole images suffer from greater chromatic aberration than pictures made with a simple lens, and they tolerate little enlargement.

Exposures are long, ranging from half a second to several hours. Images are exposed on film or paper - negative or positive; black and white, or color.

Pinhole optics, by the way, are not only used in photography. There is one animal in nature which uses a pinhole for seeing - the mollusk Nautilus. Each eye has an accommodating aperture - the aperture can enlarge or shrink. In this [drawing](#), originally taken from a book published by Arthur Willey in 1900, the eye is the oval opening to the upper right.

History

Early Observations and Experiments

The basic optical principles of the pinhole are commented on in Chinese texts from the fifth century BC. Chinese writers had discovered by experiments that light travels in straight lines. The philosopher Mo Ti was the first - to our knowledge - to record the formation of an inverted image with a pinhole or screen. Mo Ti was aware that objects reflect light in all directions, and that rays from the top of an object, when passing through a hole, will produce the lower part of an image (Hammond 1981:1). According to Hammond, there is no further reference to the camera obscura in Chinese texts until the ninth century AD, when Tuan Chheng Shih refers to an image in a pagoda. Shen Kua later corrected his explanation of the image. Yu Chao-Lung in the tenth century used model pagodas to make pinhole images on a screen. However, no geometric theory on image formation resulted from these experiments and observations (Hammond 1981:2).

In the western hemisphere Aristotle (fourth century BC) comments on pinhole image formation in his work *Problems*. In Book XV, 6, he asks: "Why is it that when the sun passes through quadri-laterals, as for instance in wickerwork, it does not produce a figure rectangular in shape but circular? [...]" In Book XV, 11, he asks further: "Why is it that an eclipse of the sun, if one looks at it through a sieve or through leaves, such as a plane-tree or other broadleaved tree, or if one joins the fingers of one hand over the fingers of the other, the rays are crescent-shaped where they reach the earth? Is it for the same reason as that when light shines through a rectangular peep-hole, it appears circular in the form of a cone? [...]" (Aristotle 1936:333,341). Aristotle found no satisfactory explanation to his observation; the

problem remained unresolved until the 16th century (Hammond 1981:5).

The Arabian physicist and mathematician [Ibn Al-Haitam](#), also known as Alhazen, experimented with image formation in the tenth century AD. He arranged three candles in a row and put a screen with a small hole between the candles and the wall. He noted that images were formed only by means of small holes and that the candle to the right made an image to the left on the wall. From his observations he deduced the linearity of light. (Hammond 1981:5).

In the following centuries the pinhole technique was used by optical scientists in various experiments to study sunlight projected from a small aperture.

The Renaissance and Post-Renaissance

In the Renaissance and later centuries the pinhole was mainly used for scientific purposes in astronomy and, fitted with a lens, as a drawing aid for artists and amateur painters.

Leonardo da Vinci (1452-1519) describes pinhole image formation in his *Codex atlanticus*. The following translation, in German, is from Eder (1905:27): "Wenn die Fassade eines Gebäudes, oder ein Platz, oder eine Landschaft von der Sonne beleuchtet wird and man bringt auf der gegenüberliegenden Seite in der Wand einer nicht von der Sonne getroffenen Wohnung ein kleines Löchlein an, so werden alle erleuchteten Gegenstände ihr Bild durch diese Öffnung senden und werden umgekehrt erscheinen".

In 1475 the Renaissance mathematician and astronomer Paolo Toscanelli placed a bronze ring with an aperture in a window in the Cathedral of Florence, still in use today. On sunny days a solar image is projected through the hole onto the cathedral's floor. At noon, the solar image bisects a "noon-mark" on the floor. The image and noon-mark were used for telling time (Renner 1995:6).

In 1580 papal astronomers used a pinhole and a similar noon-mark in the Vatican Observatory in Rome to prove to Pope Gregory XIII that the spring equinox fell incorrectly on 11 March rather than on 21 March. Two years later, after careful consideration, Pope Gregory XIII corrected the Julian calendar by 10 days, thus creating the Gregorian calendar (Renner 1995:7).

Giovanni Battista della Porta (1538-1615), a scientist from Naples, was long regarded as the inventor of the camera obscura because of his description of the pinhole (lensless) camera obscura in the first edition of his *Magia naturalis* (1558). His description has received much publicity, as did his camera obscura shows, but he was by no means the inventor.

The first [picture of a pinhole camera obscura](#) is apparently a drawing in Gemma Frisius' *De Radio Astronomica et Geometrica* (1545). Gemma Frisius, an astronomer, had used the pinhole in his darkened room to study the solar eclipse of 1544. The very term *camera obscura* ("dark room") was coined by Johannes Kepler (1571-1630). At his time, the term had come to mean a room, tent or box with a lens aperture used by artists to draw a landscape. The lens made the image brighter and focused

at a certain distance. Thus this type of camera differed from the pinhole camera obscura used by Frisius in 1544. In the 1620s Johannes Kepler invented a portable camera obscura. Camera obscuras as drawing aids were soon found in many shapes and sizes. They were used by both artists and amateur painters.

During the 19th century several large scale camera obscuras were built as places of education and entertainment. The meniscus lens, superior to the bi-convex lens, improved the quality of the the projected images. Several buildings or towers with camera obscuras remain today: The Camera Obscura at Royal Mile, [Edinburgh](#); the Great Union Camera at Douglas, Isle of Man; the Clifton Observatory at Bristol, England; the camera obscura at Portmeirion, North Wales; the [Giant Camera](#) at Cliff House (in danger of being closed down), San Francisco; the camera obscura at Santa Monica, California, and [others](#). A few large scale camera obscuras have been built in the 20th century.

The First Pinhole Photographs

[Sir David Brewster](#), a Scottish scientist, was one of the first to make pinhole photographs, in the 1850s. He also coined the very word "pinhole", or "pin-hole" with a hyphen, which he used in his book *The Stereoscope*, published in 1856. Joseph Petzval used the term "natural camera" in 1859, whereas Dehors and Deslandres, in the late 1880s, proposed the term "stenopaic photography". In French today "sténopé" is used for the English "pinhole". In Italian a pinhole camera is called "una fotocamera con foro stenopeico". In German "Lochkamera" and "Camera obscura" are used. The Scandinavian languages tend to use the English "pinhole" as a model - "hullkamera"/"holkamera"/"hålkamera", though "camera obscura" is also found, and is the term preferred by myself in Norwegian.

Sir William Crookes, John Spiller and William de Wiveleslie Abney, all in England, were other early photographers to try the pinhole technique. The oldest extant pinhole photographs were probably made by the English archeologist Flinders Petrie (1853-1942) during his excavations in Egypt in the 1880s. Two of his photographs are reproduced in Renner (1995:39,40). It should be noted that Petrie's camera had a simple lens in front of the pinhole.

Pictorialism and Popular Pinhole Photography

By the late 1880s the Impressionist movement in painting exerted a certain influence on photography. Different schools or tendencies developed in photography. The "old school" believed in sharp focus and good lenses; the "new school", the ["pictorialists"](#), tried to achieve the atmospheric qualities of paintings. Some of the pictorialists experimented with pinhole photography. In 1890, George Davison's pinhole photograph *An Old Farmstead* (later called *The Onion Field*) won the first award at the Annual Exhibition of the Photographic Society of London. The award was controversial and led to a schism in the Photographic Society of London (soon to become the Royal Photographic Society) which resulted in the formation of the well-known pictorialist group, the ["Linked Ring"](#). George Davison's picture is reproduced in Renner (1995:42), and in some histories of photography, e.g. Michael Langford's *The Story of Photography* (Oxford: Focal Press 1992. p. 106), *The Magic Image. The Genius of Photography*, edited by Cecil Beaton and Gail Buckland (London: Pavilion Books Ltd. 1989. p. 79),

and Naomi Rosenblum's *A World History of Photography* (New York: Abbeville Press, p. 310).

In 1892 the Swedish dramatist August Strindberg started experimenting with pinhole photography. About 100 of Strindberg's photographs are preserved, of these three or four are pinhole images.

Pinhole photography became popular in the 1890s. Commercial pinhole cameras were sold in Europe, the United States and in Japan. 4000 pinhole cameras ("Photomnibuses") were sold in London alone in 1892. The cameras seem to have had the same status as disposable cameras today - none of the "Photomnibuses" have been preserved for posterity in camera collections. Some years earlier, an American company had actually invented a disposable pinhole camera, the "Ready Photographer", consisting of a dry glass plate, a pinhole in tinfoil and a folding bellows. Another American company sold "the Glen Pinhole Camera", which included six dry plates, chemicals, trays, a print frame and ruby paper for a safelight. The very first commercial pinhole camera was designed by Dehors and Deslandres in France in 1887. Their camera had a rotating disc with six pinholes, three pairs of similar sizes. Pictures of these cameras are found in Renner (1995:43).

Mass production of cameras and "new realism" in the 20th century soon left little space for pinhole photography. By the 1930s the technique was hardly remembered, or only used in teaching. Frederick Brehm, at what was later to become the Rochester Institute of Technology, was possibly the first college professor to stress the educational value of the pinhole technique. He also designed the Kodak Pinhole Camera around 1940.

The Revival of Pinhole Photography

In the mid-1960s several artists, unaware of each other, began experimenting with the pinhole technique - Paolo Gioli in Italy, Gottfried Jäger in Germany, David Lebe, Franco Salmoiraghi, Wiley Sanderson and Eric Renner in the USA. Coincidentally, many of these artists were working with multiple pinholes. Wiley Sanderson was a professor of photography at the University of Georgia and taught pinhole photography from 1953 to 1988. During that period his students built 4356 pinhole cameras (Renner 1995:53).

Two scientists were also working with pinhole photography, Kenneth A. Connors in the USA and Maurice Pirenne in Great Britain. Connors did research on pinhole definition and resolution. His findings were printed in his self-published periodical *Interest*. Pirenne used the pinhole to study perspective in his book *Optics, Peiting and Photography* (1970).

In 1971 The Time-Life Books published *The Art of Photography* in the well-known Life Library of Photography and included one of Eric Renner's panoramic pinhole images. The June 1975 issue of *Popular Photography* published the article "Pinholes for the People", based on Phil Simkin's month-long project with 15,000 hand-assembled and preloaded pinhole cameras in the Philadelphia Museum of Art. (People came into the museum, picked up a camera, made an exposure. The images, developed in a public darkroom in the museum, were continually displayed in the museum.)

In the 1970s pinhole photography gained increasing popularity. Multiple pinholes became rare. Many pinhole photographers experimented with alternative processes. A number of articles and some books were published, among them Jim Shull's *The Hole Thing: A Manual of Pinhole Photography*. Stan Page of Utah, a leading historian of pinhole photography, collected 450 articles on pinhole photography published after 1850. In the USA, however, critics tended to ignore pinhole photography in art, whereas Paolo Gioli and Dominique Stroobant received more attention in Europe. In Japan Nobuo Yamanaki started making pinhole camera obscuras in the early 1970s. Although pinhole photography gained popularity, few of the artists knew of the others' images. A diversity of approaches and cameras developed.

In 1985 Lauren Smith published *The Visionary Pinhole*, the first broad documentation of the diversity of pinhole photography. The first national exhibition of pinhole photography in the USA was organised by Willie Anne Wright, at the The Institute of Contemporary Art of the Virginia Museum in 1982. In 1988 the first international exhibition, "Through a Pinhole Darkly", was organised by the Fine Arts Museum of Long Island. Cameras and images from forty-five artists were exhibited. A second international exhibition was organised in Spain the same year, at The Museum of Contemporary Art of Seville, comprising the work of nine photographers. A third international exhibition followed at the Center for Contemporary Arts of Santa Fe in New Mexico, also in 1988. According to Renner (1995:94), James Hugunin's essay "Notes Toward a Stenopaesthetic", in the catalogue of the Santa Fe exhibition, represents the most thorough analysis of pinhole photography in the 1980s. Eric Renner's book *Pinhole Photography - Rediscovering a Historic Technique*, published in 1995, mentions a large number of pinhole artists active in the 1980s and gives samples of their work. References to some contemporary German pinhole artists who are not included in Renner's book, are found in the list of literature below. A contemporary Norwegian photographer who has experimented with pinhole photography is Morten Haug.

According to Renner (1995:90) at least six commercial pinhole cameras were manufactured in the 1980s.

The Pinhole Resource, an international information center and archive for pinhole photography, was founded by Eric Renner in 1984. The first issue of the *Pinhole Journal* appeared in December 1975. The archives contain more than 2000 images. The journal has published work by over 200 pinhole artists from a number of countries.

With the advent of the World Wide Web pinhole photography went online. One of the first artists to publish his work on the Internet was [Harlan Wallach](#). By January 1995 Richard Vallon of Louisiana had established the [Pinhole Resource](#) on the net. Only two years ago little pinhole information and few images were available on the net. Today a search on the [Alta Vista](#) server will return a large number of URLs.

Pinhole Photography in Science

In the late Middle Ages the pinhole was used to study the projection of light through a small aperture. In the 16th century and later it was used in astronomy to study solar eclipses. In the 1940s pinhole cameras found their way into nuclear physics. It was discovered that pinhole cameras could be used to photograph high-energy X-rays and gamma rays. Pinhole cameras were deployed in space craft by the end of the 1950s and beginning of the 60s to photograph X-rays and gamma rays from the sun. The first soft X-ray pinhole of the sun was made on 19 April 1960. The photograph is reproduced in Renner (1995:18). In the 1970s scatter-hole X-ray pinhole cameras were made. Today's pinhole cameras on space vehicles use multiple pinhole optics. The last 20 years the pinhole has also been used widely by nuclear physicists to photograph high energy in laser plasma (Renner 1995:21).

A few links to the use of pinhole cameras in science:

- [Ariel V: October 1974 - March 1980](#)
- [The MOnitoring X-ray Experiment \(MOXE\)](#)
- [Indiana University Astronomy Department: Solar eclipse 10 June 1994](#)

Cameras

Basically a pinhole camera is a light-tight box with a tiny hole in one end and film or photographic paper in the other.

A few commercial cameras are available - e.g. the 4 x 5 Rigby camera, the 4 x 5 and 8 x 10 Santa Barbara cameras, the 4 x 5 and 8 x 10 Leonardo Cameras, and the Mottweiler 120 camera. There is at least one cardboard kit on the market - The John Adams Pinhole kit. Most pinhole photographers, however, make their cameras themselves. The construction is simple. Commercial cameras in hardwood or metal tend to be expensive - some are *very* expensive - and they do not produce better images than a homebrew camera.

Pinhole cameras may differ with regard to (a) focal length, (b) pinhole diameter, (c) number of pinholes, (d) image format, (e) flat or curved film plane, (f) type of light-sensitive material, and (g) other characteristics.

(a) Strictly speaking pinhole cameras have no *focal length*. They have infinite depth of field. But for practical reasons the term "focal length" is used here to refer to the distance between the pinhole and the film or paper. Pinhole cameras may have short, normal or long "focal lengths"; they may be anything from ultra wide-angle cameras to long telephoto cameras. It should be noted that as the focal length increases, the apertures decreases. In other words, exposure times get longer (see Formulas below). (The formula for calculating the f-stop is $f = v/d$, where f = aperture, v = distance from pinhole to film or paper, and d = pinhole diameter) Pinhole cameras produce fascinating wide-angle and ultra-wide angle images. Unlike lens photographs, ultra wide-angle images remain rectilinear. Straight lines are not curved at the periphery of the image. Beginners should start by making a wide-angle camera.

(b) For any focal length there is an optimal *pinhole diameter* for image sharpness. A number of formulas and charts have been produced. Generally a smaller pinhole will produce a sharper image than a larger one. If the pinhole gets too small, the image becomes less sharp because of diffraction. See Formulas below.

(c) Pinhole cameras may have *one pinhole or several*. Multiple pinhole cameras produce overlapping images or, with certain designs, panoramic images. Beautiful images made with a multiple pinhole camera are found in Knuchel (1991: cover, p. 35). The beginner should start with a camera with a single pinhole. My own experience is from single pinhole photography exclusively. Some advanced pinhole photographers sometimes use a slit instead of a pinhole. For a beautiful picture made with a single slit camera, see Knuchel (1991:53).

(d) Pinhole cameras have widely differing *image formats*. Cameras are made from match boxes, 35 mm film canisters, baking soda containers, oatmeal boxes, cookie tins, bags or suitcases, big wooden cases etc. Vans or station wagons have been used as pinhole cameras, and rooms in large buildings.

Some cameras are made to take a 126 film cartridge. There are pinhole photographers who use 35 mm film (e.g. by removing the lens of a 35 mm SRL, taping or gluing a pinhole plate to a lenscap, and replacing the lens with the modified lenscap). A cheap 120 twin-lens reflex camera (e.g. a Russian-made Lubitel), an old 120 (non-collectible!) folding camera, a 120 box or a Polaroid camera may fairly easily be turned into a pinhole camera. Some pinhole photographers use a large format camera, 4 x 5 in., 5 x 7 in. or 8 x 10 in., and replace the ordinary lensboard with a lensboard with a pinhole plate. Some make a lensboard with a pinhole turret, i.e. a disc with a circular configuration of pinholes in various sizes.

Most pinhole cameras, however, are made from an ordinary box or container, with a pinhole plate in one end and a simple mechanism for holding the paper or film in the other. Often the film or paper is just taped to the inside of the box. Many pinhole photographers start out with an "oatmeal box camera", a camera made from a cylindrical container in cardboard or metal.

In my view, best results are achieved with medium or large format film or with photographic paper in similar sizes or larger. In many areas 120 roll film is more easily available than sheet film.

(e) A pinhole camera may have a *flat or curved film or image plane*. If the film plane is flat, there will be some light fall-off or vignetting at the corners in a wide-angle or ultra wide-angle pinhole camera, especially with large film formats. The image may be overexposed at the center and underexposed at the corners. This vignetting, however, may be exploited consciously as an esthetic effect. If one wants to avoid the light fall-off, the film plane should be curved so that the film at any point is roughly at the same distance from the pinhole. A pinhole camera may be made from a round ("cookie") container cut in two to form [a semi-circular box](#). Film or paper is taped to the circular wall of the box. Many pinhole photographers also make ["oatmeal" box cameras](#) with curved film planes. In my own pinhole photography I use [flat film planes](#).

With flat film planes a pinhole has a usable circular image of approx. 125 degrees. The image diameter is about 3 1/2 times of any focal length. The image will fade towards the edges because of the increasing focal distance.

With curved film planes a pinhole camera may have a circle of coverage of almost 180 degrees if the pinhole is made in very thin material.

Some photographers experiment with complex film planes. Examples are found in Knuchel 1991, which is an interesting source for studying the relationship between image and camera, and also one of the most interesting European portfolios I am aware of. The book has parallel text in German and English.

(f) Pinhole cameras may take *film or photographic paper*. Black and white film and color film for prints have more exposure latitude than chrome film. XP-2 for black and white (available in 35 mm, 120 format and 4 x 5 in.) has extraordinarily wide exposure latitude and may be exposed as anything between ISO 50 and 800. The latitude makes it ideal for pinhole photography. Photographic paper for black and white has a low ISO rating. In my own pinhole photography I have used mainly Fujichrome 50 and Fujichrome Velvia, XP-2 and Ilford Multigrade III RC. Some photographers recommend mat-surfaced RC paper for curved image planes (paper curved in an "oatmeal box camera") to avoid a reflected fogged strip. Glossy paper may be used in cameras with flat image planes, where light will not be reflected. Some photographers use Ilfochrome paper with great success. An 85B filter (sometimes in combination with an 81 or 82 series filter) may be used to change tungsten light to daylight. Because of long exposures reciprocity failure will often have to be taken into account when calculating exposure both for film and paper.

(g) Pinhole cameras may also differ with regard to *other characteristics*.

Cameras are made from different *types of material*: cardboard, wood, metal or other. For the beginner a camera made of cardboard may be the best choice. Cardboard is easy to work with.

Some photographers use a grey *filter* (neutral density filter) to increase exposure times when using film where exposure times are short. Filters may also be used to control contrast in multigrade papers, or to control color when using color film or Ilfochrome paper.

Many homebrew cameras have only a plastic flap or a piece of cardboard for "*shutter*". This is my own choice for most of my cameras. Hardwood cameras may have a simple moveable shutter. With short exposure times it is important that the shutter open easily without vibrations.

Some photographers make a *viewing frame*, e.g. by cutting a window the same size as the pinhole image in a piece of cardboard. A wire frame attached to the camera is another solution. The viewing frame is held at the same distance from the eye as the distance between the pinhole and the film in the camera. Pinhole photographers who use a large format camera sometimes use a larger *viewing pinhole*

when composing the image. In my own pinhole photography I never use viewing frames. I tend to work for longer periods with the same camera and find I get a pretty good feeling of the image field.

Some pinhole cameras are *beautiful objects in themselves*. The Swiss pinhole photographers Peter Olpe makes cameras from cardboard in the shape of small castles and buildings (Olpe 1992). The cameras are themselves objects of art and have been exhibited as such.

I suggest the beginner starts by making an "oatmeal box camera" or a cardboard camera.

Making a Pinhole Camera

The Pinhole

The most important part of a pinhole camera is the pinhole itself. Precision made pinholes in brass shim may be bought, e.g. from the [Pinhole Resource](#) or the Swedish photo magazine *Fotografi*. Precision made pinholes in silver foil are available from images@airtime.co.uk. You will find a list of sources for pinhole sheets [here](#). But for most purposes there is no reason why you should not make the pinhole yourself.

The hole is made in a thin piece of metal, brass shim (available in some car supply stores) or metal from the lid of small box or glass container (bought at a supermarket). Some use aluminium foil from a disposable baking pan. Ordinary aluminium foil is too thin. My own experience is with brass shim and thin metal from container lids.

If the metal is taken from a container lid, it should be sanded carefully with ultra-fine emery paper (e.g. # 600) to remove any paint or varnish and to make it thinner. The hole is made with a needle. The edge of the hole should be sharp. The optimal diameter depends on the focal length of the camera, i.e. the distance from the pinhole to the film or photographic paper. Some formulas and charts are reproduced below. In general: the smaller the hole, the sharper the image. If the hole is too small, however, the image get less sharp because of diffraction effects (light is bent around the edge of the pinhole).

Place the piece of metal on top of some hard cardboard. Carefully poke a hole with a needle taking care that the hole is as round as possible. The needle may be put through a cork to make it easier to handle. Or you may put masking tape on the head of the needle. Hold the needle steadily in a 90 degree angle to the surface. Turn the piece of metal and sand the back side carefully with fine-grained emery paper to remove the burr or debris where the needle point has penetrated. (The edges of the pinhole should be sharp). Then place the metal on the cardboard back side up and cautiously spin the needle in the hole to make sure the hole is round. The hole can be checked with a magnifier or an enlarger. You can also use an enlarger or slide projector to check the diameter of the pinhole.

- [Gord Holtslander's instructions in a file compiled by Bruce Barrett \(#9\)](#).

Can Cameras

Pinhole cameras can be made of many kinds of light-tight containers. A cylindrical cardboard container, e.g. an oatmeal box or a herb tea container, is easily converted into a pinhole camera for pieces of 120 roll film or photographic paper.

1. Start by making a cardboard film holder. The film holder is made of two pieces of cardboard which fit the internal dimensions of the cylindrical box ([Sketch](#)). One piece (A) serves as the back of the film holder. The other piece is cut in two, one small piece (B) which is glued to A and a larger piece (C) with a cut-out window (D) for the film or paper. Use some good tape (electrical tape or other) to attach piece C to B. The film holder will be loaded in a darkroom by placing a piece of 120 roll film or photographic paper between A and C.
2. The film holder fits into a groove on either side of the box. The groove is made by gluing cardboard strips to the insides of the box ([Sketch](#)). You may make a supporting back (E) for the film holder by gluing a piece of cardboard in the groove. This will make it easier to slide the loaded filmholder into the groove.
3. Spray the insides of the box (including the lid), and the outsides of the cardboard film holder, with flat black spray paint. Make sure the lid is not translucent. If necessary glue some black plastic lining or cardboard to the lid to make it opaque.
4. Make a hole in the front of the box. The "optical axis" should extend to the center of the window in the film holder - provided you are not looking for special off-center effects.
5. Then make the pinhole plate. See above.
6. Tape the pinhole plate to the front of the cylindrical box.
7. Make a simple shutter by taping a flap of black plastic over the pinhole, e.g. plastic from a photographic paper package. The flap may be held in place by a rubber string. When you take a picture you remove the string, open the flap for the necessary exposure and close it.
8. If you want a tripod bush or socket for your camera, use some araldite to glue a 1/4" or 3/8" nut to the bottom of the box.
9. Since this camera has to be loaded in the darkroom, it will be practical to make several cameras. The cameras are easily carried in a bag.
10. If you want a [curved film plane](#) for your camera, the cardboard film holder is left out. Film or paper is taped to the inside of the camera.

A polaroid picture of some "oatmeal box" pinhole cameras which I made in 1990, [my first pinhole cameras](#), and a [portrait](#) made with one of the cameras on Ilford Multigrade III RC paper. The negative was scanned and then reversed by a photo editing program on my computer.

Some descriptions or pictures of "oatmeal box" or "cookie tin" cameras on the net:

- [Wendy Mukluk's description of an oatmeal camera.](#)
- [Summary of Justin Quinell's description of a coke can camera \(#6\).](#)
- [Susan Addington's Venetian biscotti tin camera.](#)

4 x5 in. Film Holder Cameras

Some commercial cameras are manufactured for 4 x 5 in. or 8 x 10 in. sheet film. In my view, these cameras tend to be somewhat overpriced.

Making a camera yourself is easy. The camera can be made of wood or cardboard. I build my own cameras from hardwood, mainly because I like woodworking and enjoy making beautiful objects in wood. Plywood or other materials may be used as well and require less effort. Cardboard is probably the easiest material to work with.

A *cardboard camera* may be made from scratch from sheets of cardboard cut to the right dimensions and assembled to form a box which will take a 4 x 5 in. film holder. It may also be made from an already existing cardboard box. The basic component - apart from the pinhole plate - is the film holder. The back of the camera is designed to accommodate a standard film holder. The inserted film holder may be held in place by a rubber string. Make sure the camera back is light-tight. Near the top the film holder has a locating ridge which is to fit in a groove in the camera back. The groove may be made by gluing strips of cardboard to the back. Some simple sketches of a 4 x 5 inch film holder camera made of cardboard:

- [Sketch a - Side view](#)
- [Sketch b - End view](#)
- [Sketch c - Front view](#)
- [Sketch d - Top view of camera with back flap](#)

I usually use 6 x 30 mm oak strip (1/4" x 1 1/4") as the basic material for *wooden cameras* for 4 x 5 in. film holders. The strips are glued together to form 6 mm sheets. The sheets are sanded carefully, cut to the right measurements and glued together to form a box with a simple spring back for the film holder. The following is a general description of the construction of a wooden 4 x 5 in. camera.

1. Get a 4 x 5 in. film holder.

2. Make a box of wood (Sketch 1). The internal width should be about 20 mm wider than the film holder. The bottom piece (A) and the side pieces (B) should be about 40 mm longer than the top piece (C). Sand the wood carefully before assembling the pieces.
3. Square moulding is glued to the internal angles in the camera to make the construction stronger. Sketch x.
4. The back panel (D) is made of plywood. A window (E) is cut in the back panel, the same size as the film holder's window (dimensions ...).
5. A groove (F) is made in the back piece for the film holder's locating ridge.
6. Two strips of wood (G), approximately 6 mm thick, are glued to the back panel, one on the left side, the other on the right side of the film holder.
7. Two leaf springs (H) are made of a flexible sink drain (available at a reasonable price in some hardware stores).
8. Each leaf spring is kept in place by a small piece of wood (I) screwed on to the side pieces.
9. A hole (J) is made for the pinhole in the front panel.
10. The pinhole plate (P) is attached to the inside of the front panel. A piece of wood (K) with a hole covers the pinhole plate; the piece of wood is screwed on to the front piece from the inside.
11. A pressure panel (L) for the film holder is made of wood.
12. Two strips of 1 ½ or 2 mm brass strip (M), to go under the leaf springs, are screwed on to the pressure panel.
13. A handle (N) may be attached to the side panel of the camera.

A piece of cardboard is used for shutter, or a moveable shutter is added (O). For short exposures a cardboard is most practical as removing the cardboard creates no vibrations.

The same design may be used for a 5 x 7 in. camera or an 8 x 10 in. camera. For an 8 x 10 in. camera 8 - 10 mm board or plywood may be used as the basic material.

Sketches:

- [Sketch 1 - Three dimensional view](#)
- [Sketch 2 - Side view](#)
- [Sketch 3 - End view \(pressure panel removed\)](#)
- [Sketch 4 - Pressure panel](#)
- [Sketch 5 - Top view \(with pressure panel\)](#)
- [Sketch 6 - Top view \(pressure panel removed\)](#)
- [Sketch 7 - Moveable shutter](#)

Polaroid pictures of some of my hardwood cameras for sheet film holders:

- [A 4 x 5 in. pinhole camera](#)
- [A 5 x 7 in. pinhole camera](#)

- [An 8 x 10 in. pinhole camera](#)
- [A 4 x 5 in. camera in its case](#)
- [A 5 x 7 in. camera and its case](#)

Box Cameras for Photographic Paper

A box camera for photographic paper can be made of a light-tight cardboard box, from sheets of cardboard or from wood. Peter Olpe (1993) has plans for a nicely constructed cardboard camera.

I usually use wood for box cameras for photographic paper. Most of my cameras are constructed for the format 18 x 24 cm (approx. 8 x 10 in.). The focal lengths differ but all are wide-angle cameras. My preferred 18 x 24 cm camera has a focal length of 87 mm. Some of my "[Oslo pinhole photographs](#)" were made with this camera.

Although it is easy to make a simple moveable shutter for these cameras most of the cameras have just piece of cardboard which is taped to the camera and opened or removed during exposure. For some of my box cameras I have made a reducing back for 4 x 5 in. sheet film.

A [sketch](#) of a wooden box camera for paper 18 x 24 cm. Polaroid pictures of some of my cameras:

- [An 87 mm 8 x 10 in. camera](#)
- [8 x 10 in. camera with 4 x 5 film holder](#)
- [Ultra wide-angle camera](#)
- [Ultra wide-angle camera with 4 x 5 film holder](#)
- [Collapsable 20 x 24 in. camera](#)
- [Folded up collapsable 20 x 24 in. camera](#)

Camera for 120 Roll Film

Cameras for photographic paper have to be loaded in the dark or under a safelight. They usually take only one sheet of paper at a time. This somewhat laborious process makes photography slow. The slowness may be an advantage - the photographer tends to plan his images carefully. But if you want to take more than one picture you will have to bring several cameras. Sheet film cameras and cameras for 120 roll film are practical for photographic tours.

Some pinhole photographers modify an existing 120 roll film camera by removing the lens and replacing it with a pinhole plate. Others make their own cameras. Peter Olpe (1993) has plans for a cardboard camera for 120 roll film. The text is in German.

In 1991 I constructed a 120 roll film camera made of hardwood. I used oak bought at a local lumber yard. The camera has a flat film plane. The negative format is approximately 60 x 70 mm, and the focal

length 45 mm. I usually use the camera for XP-2 black and white film or Fujichrome Velvia. Many of my ["Oslo pinhole photographs"](#) were made with this camera, as were my ["New Pinhole Photographs 1997- 98"](#).

A basic [sketch](#) of the camera. A polaroid photograph of [my 120 roll film camera](#) and of the camera [opened](#).

A 126 Catridge Camera

A pinhole camera may be made of a 126 film cassette and some cardboard. Descriptions and plans are found in Olpe (1993:16, 28-29).

- [The Exploratorium's description of a 126 cassette camera](#)

Other Cameras

A few links to descriptions and photographs of various types of cameras:

- [Guillermo Penate's descriptions of various cameras](#).
- [Caroline Knight's Polaroid zoom pinhole camera \(#7\)](#).
- [Uwe Schmidt's egg camera, walnut camera and brick camera \(sample images\)](#).
- [Warren Padula's press camera](#).
- [35 mm Film Can Camera](#)
- [Doug Bardell's pinhole cameras](#)
- [Fabio Quadarella's pinhole cameras](#)

Formulas

According to Eric Renner at least 50 charts suggesting optimal pinhole diameters have been devised in the last 125 years (Renner 1995:118). In my own reading the last six years I have come across about fifteen charts or formulas, a few of which may be derived from the same basic formulas. It should be noted that the diameter of the pinhole is not really critical. But for every focal length there is an "optimal" diameter, i.e. a diameter which produces the sharpest possible image. The word *optimal* actually is not a felicitous term, since the pinhole photographer or artist may not be striving for the greatest possible sharpness. There are beautiful pinhole images which are intentionally softer than what is technically possible. A good pinhole image is something else than a blurred, out of focus, lens image.

Up to a certain point a small pinhole will produce a sharper image than a larger one. If the pinhole is too small, the image gets less sharp because of diffraction. The hole should be perfectly round, without ragged edges. It may be checked with a magnifier or an enlarger.

Joseph Petzval of Vienna apparently was the first, in 1857, to attempt to find a mathematical formula of the optimal pinhole diameter for the sharpest definition in a pinhole image. The British Nobel Prize winner Lord Rayleigh (John William Strutt, 1842-1919) worked on pinhole diameter formulas for ten years and published his work in Nature (1891). Lord Rayleigh's formula is still one of the formulas used to today. A number of others have been published since the 1880s.

Lord Rayleigh's formula for subject distances above 1 meter may be written as follows:

$$d = 1.9 * \sqrt{l * f},$$

where d = pinhole diameter, l = wavelength of light and f = focal length or distance from pinhole to light-sensitive material.

For the wavelength of light different average values may be substituted. Often the value of the yellow-green spectrum is used, i.e. 0.00055 mm.

According to Renner (1995: 117) most formulas used today are of the following general form:

$$r = \sqrt{l * c * f}$$

r = pinhole radius

l = wavelength of light

c = a constant, usually a decimal fraction between 0.5 and 1

f = focal length

Platt (1989:73) provides the following optimal pinhole formula:

$$d \times d = f/k, \text{ where } k \text{ is a constant of approx. } 1300$$

Dobson (1991) provides this formula:

$$d = \sqrt{f/25}$$

Lord Rayleigh's formula and those published by Platt and Dobson all give somewhat different results. Andrew Davidhazy of the Rochester Institute of Technology lists several [other formulas](#) in a posting on the net.

Four, slightly different, charts of optimal pinhole diameters are reproduced below. Some of the charts have been simplified by leaving out references to needle numbers. Holter's chart, published in Norwegian, has been translated by me. Platt's chart differs from the others by consistently giving smaller apertures.

Bogre (1988)

Focal length Best aperture diameter Equivalent f-stop Exposure factor for f/22

50 Mm	0.29 mm	f/174	63 x
75 mm	0.35 mm	f/213	94 x
100 mm	0.41 mm	f/246	125 x
125 mm	0.45 mm	f/275	157 x
150 mm	0.50 mm	f/203	188 x
200 mm	0.57 mm	f/348	250 x
250 mm	0.64 mm	f/389	313 x
300 mm	0.70 mm	f/426	376 x

Platt (1989)

Focal length (mm) Pinhole diameter (mm) f-stop

130	0.33	380
210	0.40	500
260	0.46	550
320	0.50	650
420	0.58	690
550	0.66	800
650	0.74	930
750	0.79	960
1000	0.91	1120

Holter (1990)

Focal length (mm) Pinhole diameter (mm) f-stop Exposure factor for f/16

10	0.14	70	20
20	0.20	100	40
30	0.24	125	60
40	0.28	140	80
50	0.31	160	100
60	0.34	180	125
70	0.37	190	140
80	0.40	200	160
90	0.42	214	180
100	0.45	220	190

150	0.54	280	300
200	0.63	318	400
250	0.70	360	500
300	0.78	380	560
350	0.84	418	700
400	0.89	450	800

Fuller (1992)

Focal length (mm)	Pinhole diameter (mm)	Approx. f-stop
50	0.26	200
75	0.32	220
100	0.45	240
150	0.55	270
200	0.63	320
250	0.71	350
300	0.77	390
350	0.83	420
400	0.89	450
500	1.00	500

It should be borne in mind that for most purposes the diameter is not really critical, as the different values in the charts above may demonstrate.

Postscript

Photographers photograph in varying degree for (a) the experience or for (b) the images. When you photograph for the experience, the emphasis is on the *process* itself - the pleasure of the making a pinhole camera, the pleasure of planning pictures, and the pleasure of making pictures with a simple device. When you photograph for the images, the emphasis is mainly on the *result*. The pinhole camera is basically an imaging device with potentials which other cameras or techniques do not possess, e.g. softness of definition, infinite depth of field, rectilinearity.

In photography certain subjects may be better suited for a particular technique than others. Photojournalists, for example, normally use 35 mm SLRs in their work. Portrait photographers often use medium format cameras. Architecture is best rendered by large format cameras. Also in pinhole photography some subjects are better suited than others. Long exposures exclude certain subjects,

softness of definition exclude others. Infinite depth of field and rectilinear ultra wide-angle images represent a special potential.

Beginners should start with subjects with clear graphic shapes or bright colors in sunlight. Cityscapes tend to make better pictures than rural landscapes with their soft lines and softer shades of color or grey tones - at least for the beginning pinhole photographer. Portraits may prove slightly more difficult than still lifes, objects, structures, buildings and cityscapes.

Resources

The Pinhole Resource, Star Route 15, Box 1355, San Lorenzo, NM 88041, USA. Phone (505) 536-9942 (Pinhole journal, cameras, pinholes, zone plates.)

Jay Bender, 19619 Highway 209, Leavenworth, WA 98826, USA. (Pinholes and pinhole cameras.)

Bob Rigby Photographic Ltd., Store Street, Bollington, Macclesfield, Cheshire SK10 5PN, England. (The Rigby pinhole camera.)

John Adams Trading Company Ltd., 32 Milton Park, Milton, Abingdon, Oxfordshire, OX14 4RT, England. (The John Adams Pinhole kit, a cardboard camera kit.)

Fotografi, Box 1097, 251 01 Helsingborg, Sweden. (Set of pinholes, SEK 99 plus postage. Also available from the Pinhole Resource.)

H. Lindemanns Buchhandlung, P.O. Box 10 30 51, D-70026 Stuttgart, Germany. (German language books on pinhole photography, see Literature below.)

Literature

1 History

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Some Pinhole Photography Links

- [The Pinhole Resource](#)

- [The Penultimate Pinhole Photography Site](#)
- [Pinhole Visions](#)
- [Galeria Pinhole Fotografias](#)
- [Pinhole Astrophotography](#)
- [D. Ambrosini and G. Schirripa Spagnolo](#)
- [Bruce Barrett](#)
- [Bernice Halpern Cutler](#)
- [Moulay A. El Ouazzani](#)
- [Jon Grepstad](#)
- [Penny Harris](#)
- [Trond Kjetil Holst](#)
- [Bob Karhof](#)
- [Jurek Karwowski](#)
- [Daniel Kazimierski](#)
- [David Keenen](#)
- [James Kellar](#)
- [Beate Knappe](#)
- [Edward Levinson](#)
- [Edgard Lissel](#)
- [John Malcolm](#)
- [Fernando Martínez](#)
- [Philippe Moroux](#)
- [Guillermo Penate](#)
- [James Provenzano](#)
- [Justin Quinnell](#)
- [Kenneth G. Ransom](#)
- [Stéphane Rengeval](#)
- [Tony Shelley](#)
- [George L. Smyth](#)
- [Barnabas Strickland](#)
- [Michael Thomas](#)
- [Harlan Wallach](#)
- [J. Phillip White](#)
- [Willie Anne Wright](#)

Last updated 1 April 2000

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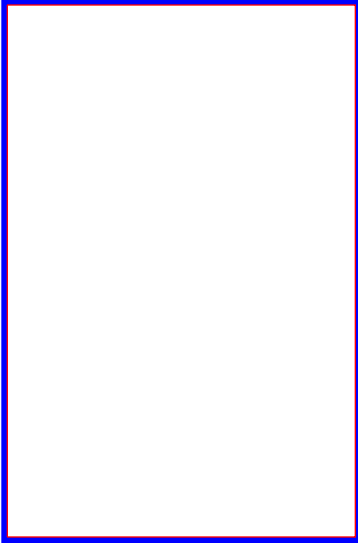
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Street Photography

a tutorial and exhibit from [Philip Greenspun](#)



[Home](#) : [Learn](#) : One Article

"Stare. It is the way to educate your eye, and more. Stare, pry, listen eavesdrop. Die knowing something. You are not here long."

[Walker Evans](#) (in a draft text to accompany the hidden camera subway photographs)

My favorite thing about street photography

What I like best about street photography is that it is possible to look in more than one place at once.

In this photo inside Greenwich Village's French Roast, I was trying to get a picture of the tuned-out New Media exec with the women conversing in the background. I guess I got the photo that I wanted, but there is also a dog fight going on outside. I'm pretty sure that I didn't see that in the viewfinder or in real life.

[Note the careful use of on-camera flash and ambient exposure so that the lighting is evenly balanced on subjects both inside and outside the restaurant.]





note the black dog in the corner



note the photographer in the upper right corner



I'm not even sure what to say about this, but I can guarantee you that the scene (Venice Beach, from [my California series](#)) didn't seem quite this varied in real life.

Volume, Volume, Volume

[Garry Winogrand](#) is famous for having exposed three rolls of Tri-X on the streets of New York City every day for his entire adult life. That's 100 pictures a day, 36,500 a year, a million every 30 years. Winogrand died in 1984 leaving more than 2500 rolls of film exposed but undeveloped, 6500 rolls developed but not proofed, and 3000 rolls proofed but not examined (a total of a third of a million unedited exposures).

This is the kind of dedication that you need to bring to a street photography project if you hope to achieve greatness.

Technique

The classic technique for street photography consists of fitting a wide (20mm) or moderately wide-angle (35mm) lens to a camera, loading high-speed film (ISO 400), and pre-focusing the lens. Pre-

focusing? How do you know how far away your subject will be. It turns out that it doesn't really matter. Wide angle lenses have good depth of field. If your subject is 10 feet away and the lens is set for 12 feet, you'd probably need to enlarge to 20x30" before noticing the error (assuming a typical aperture). This is why the high-speed film is important. Given a fixed shutter speed, the faster the film the smaller the aperture. The smaller the aperture, the less critical it is to focus precisely. The extreme case of this is [a pinhole camera](#), for which there is no need to focus at all.

Street photographers traditionally will set the lens at its *hyperfocal* distance. This distance depends on the lens focal length and the aperture but the basic idea is that it is the closest distance setting for which subjects at infinity are still acceptably sharp. With fast film and a sunny day, you will probably be able to expose at f/16. With a 35mm lens focussed to, say, 9 feet, subjects between 4.5 feet and infinity will be acceptably sharp (where "acceptable" means "if the person viewing the final photograph doesn't stick his eyes right up against it").

A modern alternative is to use a camera with a very high-performance autofocus system and a zoom lens. The Canon EOS bodies coupled with the [instant-focusing ring ultrasonic motor Canon lenses](#) (about half of the EOS lenses use these motors) are an example of what can work. Paradoxically I find that I was able to work as quickly and get as high a yield of good images (these are from Guatemala) with [the Mamiya 7 rangefinder camera](#):





Whether you go modern or traditional, many of your pictures will be ruined due to poor focus, subject motion, hasty composition, etc. So don't feel bad if you only get one great picture out of 1000. If you're using a digital camera, you won't even have to lose sleep over how much film and processing you're wasting.

Gallery



Miami, 1995, part of [my Costa Rica story](#)

Canon EOS-5, [35-350 lens](#), program autoexposure, Fuji Super G + ISO 400 neg film

This photo illustrates the advantages of the [Canon 35-350L lens](#) (a \$2000 photojournalist's toy). I took it from the passenger seat of a car stopped at a red light. The rain led to highly saturated colors. Canon EOS AF



a few from Sweden...



and Germany...



and Ireland..



and [Israel](#) (Ireland's neighbor in the UN, separating Israel from Iraq)..

Talking on the cell phone.
Jerusalem

China is one of the world's best places for street photography because (a) there are so many people, (b) so much happens out in the open. Here are a few images from [the photo.net guide to China](#):





Japan is a good place to see extremes, either people practicing ancient ways or people overwhelmed by modernity. Here are some images from [the photo.net guide to Japan](#):



More

- [Street photography in New York City](#)

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Reader's Comments

It would have been nice if some black and white street pictures had been included as well. B&W has been the aesthetic (and practical) choice of many street (as opposed to reportage) photographers, because especially in a street setting with random colors everywhere, B&W clarifies the intent of the image. This is not to say powerful color street photography is not possible. There are many who practice it-but the novice reading these pages might do well to give B&W a try as well.

-- [Mani Sitaraman](#), November 23, 2000

"careful use of on-camera flash"? Excuse me, but the flash is extremely visible in the photograph.

-- [Jan Mattsson](#), November 24, 2000

The flash light is reflected in two of the windows - the upper window of the door in the left, and the one above the [right hand side] girl's head. It is also reflected in the man's spectacle frames, in his watch's strap and bracelet, and on his shoe. The man in the foreground is significantly more exposed than the two women, and is rather flat due to the shadow less nature of on-camera flash. There is considerable glare on both the doorframe and the post supporting the rear window. I don't think flash was appropriate here; it was certainly not used carefully.

When I saw "Street Photography" I jumped for the link immediately. I was rather disappointed, like others, that there are no black and white photographs. B&W, to me, epitomizes street photography. I could only spot one photograph (the first one, girl on steps) in which the subject was actually the person for that person's own intrinsic worth - a street portrait, if you know what I mean. Preferably candid. The one of the girl on the steps is good, although the sunglasses detract from it. Eyes always hold expression. Of course, asking the girl to take the glasses off may not have went down well. Posed street photographs can be good, but I have yet to see one that doesn't appear obviously posed. Pics of many different people, in different countries, all chatting on phones, are interesting for documentation, but to list them as teaching examples on "street photography"? The Venice Beach photo is interesting, in a different way. There is nothing candid about it - six people are staring directly at the camera lens. Nevertheless, it has got tremendous detail, and showcases a wide variety of human beings, young and old, male and female, black and white, fit and fat, introspective and out-going, and even a good ole dog (looking rather bored with it all). Colour was appropriate here. Well done with this one!

-- [Samuel Dilworth](#), November 25, 2000

If flash had not been used in that photo, the interior of the coffee shop would probably have been underexposed. Maybe a bounce flash should have been used.

-- [Andrew Grant](#), November 26, 2000

Actually, myself I like the way the flash is visible in that photograph: the flash reflection makes you aware of the photographer's existence there (then you have the media exec, two women, the dogfight and the photographer taking the picture). IMHO it makes the photograph a little more interesting.

-- [George Bielinski](#), November 26, 2000

Hey, if you want B&W, can't you just use the "Desaturate" command in Photoshop? It's a digital image at this point....

-- [Michael Yacavone](#), November 28, 2000

My dear friend Michael, those photographs were *taken* in colour. The photographer knew this, and composed accordingly. You cannot simply desaturate a colour image in Photoshop and get a decent B&W image. The *style* of your photography, at camera level, must change in B&W. Try using "Desaturate" in Photoshop, with the images on this page, to see what I mean. A good colour image will nearly always be poor in B&W (and vice-versa, if you go to the bother of colouring it).

-- [Samuel Dilworth](#), November 28, 2000

Sorry but I do not feel this page demonstrates street photography. The images mostly look as if taken with telephoto lenses. (Shyness or cowardice?)

Where are the stories? All the best 'street' photographs I can think of tell some sort of story. This was 'tourist photography'. Not bad pictures but not exactly crammed with expression of the human condition. For an object lesson in Street Photography try Bill Brandt's images from the East end of London. All taken with Normal lenses so the photographer had to interact with his fellow humans rather than 'grab' sneak shots out of car windows. Making pictures rather than Taking pictures. Gaining a bit of empathy before 'shooting' your victims. Some of these pictures are hit and run. Also when photographing poverty try and preserve the subjects dignity because otherwise it is an unequal relationship. After all, you (and others) are getting good mileage out of the 'quaint' depravation you picture with your 2000 dollar 'photojournalists' 35 - 300mm lens so try and give something back to them.

Maybe this is why Bill Brandt is a legend and Phil isn't.

-- [Trevor Hare](#), November 29, 2000

If you're ten feet away from your "victim" while carrying an 80-200 2.8 lens, would you characterize that as "shyness" or "cowardice?" One can make a lot of successful arguments against PhilG's photography, but he's certainly not timid. Telephoto lenses serve very well to isolate subjects, and to preserve candidness - which many people feel (differently from you) is the essence of "street photography." I use all focal lengths in its pursuit.

For what it's worth, I also agree that traditional street photography is done with B&W film, and that "desaturating" a color shot doesn't really substitute. All of the really good ultra-high speed films best suited for stealthy shooting are B&W anyhow.

Image: [RockCenter03b.jpg](#)

-- [Colin James](#), November 29, 2000

The 'shyness or cowardice' was prompted by Phil's own comment about taking a shot whilst in a car with a telephoto.

The essence of street photography is not to isolate the subject from the surroundings. We are not dealing with biological 'samples' here but People operating within their environment within their lives.

Ask yourself how you and your family would like to be treated by a street photographer? Shot from a distance anonymously, detached from any context, your images used to entertain a rich American.

Or would you prefer the photographer to have the courage to attempt some sort of rapport and some understanding and enter into your space with you rather than put you under his lens like some bug for inspection? In other words to treat you with some respect as another human rather than just image fodder.

Greater photographers than us have tussled with this subject. Try getting hold of 'Perspectives' by Don McCullin. It contains an excellent essay on the morality of photographing poverty, squalor, misery and war and even just ordinary folk going about their normal lives.

Phil has elected himself to be a tutor on the subject of street photography but doesn't deal with any questions beyond the technical ones. I feel strongly about people being having their images, unwittingly, 'mugged' from them.

-- [Trevor Hare](#), November 30, 2000

Street photography? I am certainly not a specialist in classifying photography but I can hardly imagine that most of the above pictures would fall into this category. Whether they are taken with a 24, 35, 50 or 85 mm lens on a colour or B+W film with or without flash is irrelevant, as long as they express something about the subject. And street photography tells a lot about the photographer and his interaction with the subjects.

What I can see in most of these pictures is a mocking attitude of a selfish photographer who was very very remote from his victims (not only physically) and sometimes felt uneasy. The Tsukiji Market picture could have been taken by a vegetarian who hates fish. The fruit lady in Costa Rica would possibly not like her picture taken like this from behind. And the young lady on the steps has no more expression than the plurality of dogs in most of the pictures. Strangely enough, sometimes I felt these photos demonstrate "Dogs in Street Photography" instead of individuals in daily life.

BUT: I do like three of the pictures, actually Phil at his best. The nuns and monks along with that American (?) tourist with a funny hat behind the lady with a cell phone in Jerusalem, the twin newspapers in Tokyo subway and, best of all, the man reading newspaper in Dublin. If this one were in black and white, we would have missed the colour of his tie!

-- [George D. Gianni](#), November 30, 2000

I'd like to add that I too take a lot of random photos on a daily basis. I started with Canon EOS cameras then switched to the Canon Digital Powershot 20 and now also use the Canon G1 with telephoto lens. Digital makes it so much cheaper and incites me to more experimentation. I mount the G1 on my car window mount from Bogen and use the remote to shoot while I'm driving. The car in essence is the viewfinder and I find myself circling the block or making uturns for better light or shooting angles. (No accidents or near misses yet!) The remote allows me to zoom and shift shooting modes and the G1 accepts the EOS external flashes! Give it a try! It also works in a daypack or briefcase.

-- [t. bomba](#), December 2, 2000

This is turning into an interesting discussion. I can see both sides. I remember before I got into photography a young lady "mugged" me with her camera. I was fishing for musky, and looked the part. She was trying to be a street photographer, trying to take a candid shot, and I caught her. I scolded her, too, and when she defended herself with, "well, you're in a public place", I really scolded her. But now that I have picked up an

interest in photography, and have looked at images, I like seeing candid shots of people. And I like it when the people don't seem to notice the camera (hence the word candid, I guess). Not that a candid shot requires anonymity, but many of the best street shots I have seen appeared to be taken candidly and anonymously. Just my opinion, which has changed over the years. Getting to know your subject first sometimes helps, but sometimes random shots of strangers yeilds good results, too.

-- [Mike Morgan](#), December 3, 2000

For another perspective on street photography (actually subway photog.) see <http://www.davebeckerman.com/> and click on the article "Photography on the subway." I like his writing and love his photos.

In addition, Jeff Spirer, a regular of this phot.net community, has some excellent stuff at www.spirer.com.

No offense to Phil, but the work of those guys is what I think of when I think of street photography. As mentioned by others, I favor the B&W aesthetic for this type of photography.

-- [Efrain Sain](#), December 4, 2000

This is not a perfect fix for color pictures...but if you change it to grayscale or desaturate it then go to brightness and contrast you can make the shadows and what not more prominet so it looks more like a B&W.

-- [joe bob](#), December 29, 2000

There is a great deal more to 'street photography' than merely photographing in the street. These images miss the mark for me I am afraid.

-- [Gerry Walden](#), December 31, 2000

While I respect Trevor Hare's opinion, I could not disagree more with him. Cartier-Bresson was known to have covered up his Leica when on the street to hide his intentions from his subjects. Andres Kertesz, whom Cartier-Bresson said that we all indebted to for pioneering street photography, sought to capture life at its most candid on the streets and cafes of Paris. Garry Winnograd also had the ability to take someone's picture without them noticing though he was more or less right on top of them. Read the intro to his book if you don't believe me.

I would have loved to have befriended and talked to all the people that I have taken

pictures of or wanted to take pictures of. But all of my photos would have turned into snapshots: people conscious of the camera and probably smiling into the lens.

The potential for street photography to be rude and exploitative is monstrous and this is something that I struggle with everytime I step outside. This is where I agree with Trevor. But every situation is different and there are times where I have refused to expose any film because it did not feel right and I have subsequently missed incredible opportunities. There cannot be any edict dictating what is right or wrong. These decisions are up to each photographer to make according to their own system of values.

And I am thankful that Phil has created this page for us though in the end, it is very disappointing. Are there no street photographers on staff at photo.net?

-- [doug kim](#), February 19, 2001

Ah, the essence of Street Photography:

"This photo illustrates the advantages of the Canon 35-350L lens (a \$2000 photojournalist's toy). I took it from the passenger seat of a car stopped at a red light."

Using only the equipment you can find on the street... ;)

-- [Jeff Warner](#), March 8, 2001

Trevor Hare talks about "gaining a bit of empathy before shooting your victims", and accuses Phil of "hit-and-run" photography. I wonder if he would consider Cartier-Bresson a hit-and-run photographer. HCB never tried to interact with his subjects or "get to know them". He didn't bother considering whether they would "like" the way he chose to photograph them. Based on the historical record, I'd say he pretty much INVENTED Street Photography. HCB devoted most of his effort to blending in, like a "fly on the wall", so he could get pictures of people WITHOUT DISTURBING THEM. I think being inconspicuous and unobtrusive is the most important thing in street photography. You must travel fast and light: no photo vest, no camera bag, one small camera and a small prime lens or two, no flash. If you really want to emulate the greats (Cartier-Bresson, Robert Frank, Winogrand, Evans), use a meterless camera and learn to evaluate the light yourself.

-- [Ian Cruikshank](#), April 5, 2001

I moderate a **STREET PHOTOGRAPHY** discussion group where we share photos and ideas with each other...

<http://www.geocities.com/photomoderator>

Take a look if interested

-- [Dave Ramirez](#), April 13, 2001

After having HCB recommended to me so many times (I have 2 books of his work alongside books of numerous others so I am familiar with him) i found this article interesting to read. Yes HCB, himself, does NOT like having his picture published and is taking legal action against it happening!! What was good for his 'subjects'is unacceptable to him....

<http://www.guardian.co.uk/Archive/Article/0,4273,4135295,00.html>

I am not going to take too rigid a stance on this but it does point back to my comments, above, about putting yourself in your 'subjects'shoes and how would you react in their place.

-- [Trevor Hare](#), April 28, 2001

Why exactly street photography must be black-and-white, taken with wide-angle lens close to the subject? What a religious approach. This page contains great pictures and I specifically like that they are in color and are DIFFERENT from what I've seen. I am glad that it is not yet another traditional BW street photo gallery.

-- [Mikhail Arkhipov](#), April 30, 2001

FWIW, the reason Henri Cartier-Bresson doesn't want his image widely published is because he wants to be able to photograph people anonymously. If everyone knew what he looked like it would give new meaning to the phrase "celebrity photographer."You may think he's being overly sensitive, but imagine if Henri's face was as familiar as Ansel Adams'. He'd be constantly distracted by people wanting to shoot the breeze or asking for autographs. Henri just wants to shoot a few frames and continue on his way -- the same opportunity he affords his subjects.

-- [Gordon Lewis](#), May 8, 2001

>>This photo illustrates the advantages of the Canon 35-350L lens (a \$2000 photojournalist's toy). I took it from the passenger seat of a car stopped at a red light. The rain lead to highly saturated colors. Canon EOS AF

I had to buy my 35-350 lens. Some people get all the luck. What did the driver think?

Very well done article, but I too would have liked B&W.

-- [Leslie Koller](#), May 28, 2001

I live in New York City, and do street photography. I have nothing against colour but it can distract the viewer from the "decisive moment" that the photographer wanted to capture. Besides for me B&W is an advantage since I do my own printing and can make disturbing objects in the background less obstrusive.

The choice of lens does not signify anything except for the fact that it is only an instrument to capture the moment, if using a tele lens has better chance of capturing the moment isolated from the background and if it improves the chance of being unnoticed then so be it...I use a 70-300 and a 17-35 and shoot from a distance or from close range...but it is true that a street photographer cannot afford to be shy or be afraid to confront or pacify his subject in situations. In one situation a man in New York city in a fit of rage asked me for the roll of film...I told him to get lost and so he did while making threats of calling the police.

I like to capture fleeting moments, candid portraits and this does not give me an option to introduce myself to my subjects with my visiting card before I take the shot...I believe that empathy for the subject - if important to the photographer - should show in his/her work...morality is a subjective issue, not an absolute one...I am not the one who can figure out whats on a person's mind if and as he knows that he is being photographed...did he like being photographed? Did he dislike but was too polite or shy to tell me that he didn't want to be photographed? Well...as long as I do not know, I assume implicit permission from my subject. If I wanted to find out explicitly I would be talking and not capturing the moments that I wanted to capture. I wonder what would Elliot Erwit do if he was required to obtain permission before he took the wonderful pictures showing the moods and moments of dogs.[this is not no imply that dogs are same or differnt from human beings as photographic subjects ;-)]. As Elli Wallach said in the movie 'The Good Bad and the Ugly'- "When you shoot, you shoot, dont talk"...it was shooting of a different kind though but its principle applies to street photography as well.

But it is also true that the photographer can introduce himself to his subjects and win their trust and take pictures over weeks and months...this improves the chances of better framing, lighting and yet capturing the candid mood and the moment since the photographer is not viewed as an alien any more and can work at close range without worried about being spotted.Often I visit a place where I am familiar face now, at least to quite a few, and returning with gift prints helps to build a friendship. I can take pictures with the candid mood working at close range...sometimes point blank with a wide lens But that is fundamentally different from the pictures you take as you walk down the

street while trying to keep yourself inconspicuous.

Many beginner photographers think that people don't like to be photographed and this may be true in many places but from my experience in taking people shots in streets of Tokyo, New York and Calcutta, I can say that it is not generally true...many do like to be photographed, many don't even know if they are being photographed and most apparently don't care even if they know. There are a few who are paranoid about being photographed and certainly I am not going to let the moment pass by making such an assumption. If someone finds out - as sometime someone always does since not everybody can blend in like a fly on the wall - and expresses dissent, I shall respect that. Although, in some situations I have also asked permission before shooting.

The street is a public place and the photographer has as much right as the artist with a sketch book making sketches of people. The problem is that the barrel of the lens pointing at someone could have a different psychological effect than the brief glances of the sketch artist.

Street photography is not about photographing poverty, squalor or misery, it is not about photographing homeless people on the streets, it can show humorous, funny, sad, joyful etc moments.

If the street photographer is a "mugger" as is suggested in one of the previous comments then HCB is the greatest "mugger" known so far and I would dream about being a "mugger" like him and of course never be able to achieve that dream. A true street photographer's natural instinct is to shoot first and to worry later.

-- [Ananda Chaudhuri](#), June 27, 2001

"Whether you go modern or traditional, many of your pictures will be ruined due to poor focus, subject motion, hasty composition, etc. So don't feel bad if you only get one great picture out of 1000"

Just wanted to comment on the above. I rather believe that in street photography, one could also say that your picture may be SAVED by blurred (and interesting) focus, subject motion (which helps convey a sense of action and the life of the street), hasty composition (which indicates that you are composing out of instinct and a feeling of being in tune with the rhythm of the street life you are trying to capture in a 1/125 of a second), so don't feel bad if seeing things this way helps increase your yield of visually stimulating, interesting and fun street photos above the expected 1 in 1000. And keep shooting!! It's fun!!

-- [saul zelan](#), July 21, 2001

- > FWIW, the reason Henri Cartier-Bresson doesn't want his image widely
- > published is because he wants to be able to photograph people
- > anonymously. If everyone knew what he looked like it would give new
- > meaning to the phrase "celebrity photographer."

Cartier Bresson is 92 years old. AFAIK, he hasn't been taking pictures for quite a few years, dedicated instead to painting.

As for street photography, I'm no expert, but none of the images in this page do much for me. An image doesn't just work because it is a candid picture of a stranger in the street. It needs interesting expressions, or action, or striking composition. [Here](#) is how I feel about this issue, with some examples of pictures that didn't make it into my galleries.

I'm a beginner at this, and suffer horribly when trying to get close to people and photograph them. But that's part of what makes it interesting. A long telephoto would take the fun out of it.

-- [Juan Buhler](#), July 25, 2001

This is my first visit to photo.net and so far I like it. Everyone will see a picture or body of work differently, and have various interpretations of said work, and it is good that we can express our comments openly. However, I believe comments of Amanda Chadheri were to the point and exactly on target. I agree 100%. All this about getting to know the subject, etc., cannot apply at all times, as many great photographs would be missed. If you fully believe that you have to get to know the person, try street photography in the arab world, where they still believe the lens on a camera is the evil eye and will capture/steal their soul. I broke into street photography in Morocco, and it wasn't easy. Also, why is it called street photography? Why not just people photography, or moment photography, because that is what it truly is.

Richard Dean Williams August 4 2001

-- [Richard Dean Williams](#), August 4, 2001

I doubt that HCB had to worry about getting a model release for his photos. I like the shot of the lady on the stairs. It makes me wonder what she's waiting for. Who is she going to share that quart with? Did you have to approach her for a release? All of these questions make it an interesting photo to me. I've taken quite a few similar shots but never approached the subject so are they doomed to the albums I keep them in?

-- [Joe Photo](#), August 12, 2001

I don't know if you would consider this the same as 'street photography', but there's some excellent [what I would call] 'urban' photography at <http://www.urban75.org/photos/>, ranging from New York to Birmingham, England. They're mostly devoid of people but are still very evocative - almost as if the absent commuters, pedestrians, workers and residents leave a mark on the street even when they're not there.

-- [James Gleeson](#), August 20, 2001

An interesting discussion. Its all subjective - either you like the work or you don't. I've photographed both candid and interactive shots of people from Brazil to India to China. Sometimes candid is appropriate, sometimes its not. But if you don't shoot, you won't have a photo. It looks like what everyone is discussing is the definition of street photography - my question is, is there one and does it matter?

The links that other comments recommended are great!

-- [Eric Riutort](#), December 2, 2001

A comment on Trevor Hare's November 29, 2000 entry: He says: "Sorry but I do not feel this page demonstrates street photography. The images mostly look as if taken with telephoto lenses. (Shyness or cowardice?)..."He prefers to use "a Normal lenses so the photographer had to interact with his fellow humans..."

On the contrary, interacting with the subject can often disrupt the candidness of the shot. Real life changes abruptly when the subject is acutely aware that he is being photographed.

Trevor adds: "Also when photographing poverty try and preserve the subjects dignity...". I agree totally, and to do just that, a distant shot often seems more appropriate to me. How can a down and out person's dignity be preserved when a photographer is in his face saying, in effect, "let me take your picture because you are so deprived."? Cowardice to take a shot from a distance? I think it can be a sign of true respect. ---B

-- [Brian Sharkey](#), January 11, 2002

Some of the best street/candid photography shots can be seen from "Life" magazine.. Here, I like the shot "Canal Street Manhattan 1995".

-- [Belinda Tan](#), January 16, 2002

I find it very interesting that more hasn't been said about people and their right not to be photographed. I consider myself a very serious amateur. I enjoy photographing just about everything and have had a considerable amount of formal art training at the University of South Florida as well as technical photography training at the Art Institute of Fort Lauderdale. The moral and legal issues of photographing people against their wishes intrigues me.

It is my personal opinion that everyone (excluding people who knowingly place themselves in the public eye) has the right to determine how and when their image is used. The justification that an image is art or that the image could not have been captured in any other way should not be the justification for a photographer to use another person's image. It is a matter of integrity and I feel that anyone who violates this rule affects the integrity of every photographer.

-- [Ray Cerx](#), April 11, 2002

Hmm. I have come to the conclusion that street photography is my favorite outlet for my lust for photography. When I first came to photo.net this was the first post I read as the "street photography" title caught my eye. I believe that the idea of street photography is simple in that you are out to capture fleeting moments that describe an environment or people interacting and the medium in which you do this I think matters not. I first started my street photography using a 28-135mm IS lense on a Canon A2(eos5) body. This was fine as I was free and clear to frame almost anything that I wanted to at almost any distance(that 135mm would allow). I also had my hassleblad camera out on sunny days shooting street stuff and that was actually twice as much fun though I would sometimes become the subject rather than what was in front of my lense (hehe) I then picked up a nikon f3 and a 24 mm lense. Ahhhhhh. I found myself getting much closer(sometimes 3 feet) to my subjects but the outcome is amazing. I like both colour and blackwhite film but I do feel that B&W film allows more focus on composition as to not have the colours govern the images. I have colour and black and white images in my folders here on photo.net if anyone is interested. http://www.photo.net/photodb/folder?folder_id=170873 http://www.photo.net/photodb/folder?folder_id=171338 feel free to contact me or tell me of more street photography sites too , I would love to see more !

Image: [BabatundeMartins.jpg](#)

-- [Babatunde Martins](#), May 18, 2002

This article and the one on Winogrand prompts me to put down a question that has been at the back of mind which I find relevant. Perhaps others have a view to contribute.

At the most basic level the question is "So I love taking pictures. Walking around I often find I see things as a sequence of pictures. If you capture all these images, what do you do with them?"

I feel Winogrand must have had similar feelings. Hence, a million pictures later and a third of them unedited. There must be something psychological about capturing the image. But what do you do with them afterwards?

Does anyone have the same feelings or have some other insight into this matter?

-- [Simon Shapiro](#), July 23, 2002

For Brian Sharkey.

A Bill Brandt picture (photojournalistic for Picture Post magazine) of a socially and economically deprived person living amongst the squallor of a post war , East London slum , taken with a Normal lens at close quarters , with the subjects full knowledge and (I would judge) the subjects dignity is totally preserved!.....

<http://www.orst.edu/dept/humanities/newsletter/2000-spring/images/lambeth-walk.jpg>

-- [Trevor Hare](#), August 1, 2002

As to what I do with all my street photos. I just have lots of negatives archived in folders. I dont print everything. Much of what I have on photo.net is scanned negatives. I sometimes will see someone I have taken a photo of in passing and give them a card to contact me, I give them a print as my own payment back to them (thats nothing for I have taken there image and If I show anyone and its anygood, thats promotion leading to more money for me so why not?) I have heard street photography described as "the stolen art" This is why I tend not to take pictures of the deprived for I see little point in exploiting. And when I have, I give them money, a lunch or a dinner for the guy laying in the street drooling/ starving /drunk, that someone photographs then posts here for self agrandisement gets none of that glory if hes half smiling or not.

-- [Babatunde Martins](#), August 2, 2002

It seems a more apropos name for this subsection would be "guerilla photography" since the nature of the subject matter is almost a mystery until it's encountered. Furthermore, I understand the other readers who note that the flash is present in the picture. My concern is based on this. How can you truly catch people unawares using a flash in public? Don't they notice things like that? And do you have to get releases from them if you decide to exhibit or sell their likenesses?

-- [thomas scott](#), November 24, 2002

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Related Links

- [folio's photo page](#)- Dedicated to street photography in and around Tokyo, Japan, especially in Shinjuku, Harajuku, Daikanyama and Odaiba. (contributed by [Akira Sudoh](#))
- [Vintage European Street Scenes](#)- Vintage European Street Scenes by Spanish photographer [Xavier Miserachs](#) at [Picassomio.com](#) (contributed by [Nicholas Marchalleck](#))
- [World wide street photography](#)- Street Photography by an ex-university professor turned commercial photographer. Street Photography between assignments around the world. Very people oriented. (contributed by [kirk tuck](#))
- [STREET PHOTOGRAPHY Discussion Group](#)- Share ideas and images about street photography. (contributed by [Dave Ramirez](#))
- [Full Frame Images](#)- Unique black & white (street) - decisive moment/documentary photographs of life in Worcester, Massachusetts. (1969-1981) Hometown of Robert Goddard, Abbie Hoffman and Denis Leary. Included are classic images from various locations throughout the United States... Also showing a small sample of color street images... By Robert M Johnson (contributed by [Robert M Johnson](#))
- [Black & White Street Photography in Tokyo, Japan](#)- Tokyo scenes taken--mostly in Black & White--by Billy Woolfolk. (contributed by [Billy Woolfolk](#))
- [Black And White Street Photography Of Peter Thoshinsky](#)- Black and white street photography from the perspective of a street cop. (contributed by [Peter T](#))
- [Enrico Galligani Photography](#)- Street Photography and Urban Abstraction (contributed by [Enrico Galligani](#))
- [Striking Images from 5 different Continents](#)- Images that capture the moment in 40 different countries. (contributed by [Todd Brown](#))
- [Digitalstockart.com](#)- Come check out the raw photographic ability of professional kodak digital cameras. COmbined with high tech digital editing. (contributed by [Michael Maddaloni](#))
- [Side-ways](#)- This site may not fall under the regular definition of street photography, but it

defenitely is literally street photography that is shown. (contributed by [Beer Clement](#))

- [Colour Sydney candid people photography](#)- Like the title says. In-close people photographs taken in and around Sydney Australia. (contributed by [Andrew Nemeth](#))
- [no rules. street photography](#)- can you live without the rules? (contributed by [fiveam T](#))

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