

Epson P900 Review – Introduction

The best expression of a photograph that humans have yet invented is as a print, and the best print is likely to be one made by the photographer, the artist who knows their own image and their vision for it. This article will first examine the reasons and methods for making our own prints and then review the Epson SureColor P900, (from now on, simply the P900) a truly versatile tool for high quality photographic printing that is likely to fit into many photographers' lives and budgets. A few months from now, we'll be looking at the P900's big brother, the Epson SureColor P9570, which uses very similar inks and papers on a massive scale. A later article will compare prints from the three Epson printers (ET-8550, P900, P9570), along with the Durst Lambda and whatever other printing technologies I can find. While most photographs made today end up as digital-only images, sent by e-mail, viewed on computers and shared to social media, the finest expression of a photograph is still as a print. A print can show massively more detail than even the highest-end digital display, and making a good print allows much more creative control than any other way of displaying your work. The highest resolution monitor listed on B&H Photo's website (what's listed at B&H is a reasonable proxy for what's actually on the market and of interest to photographers) as of December 21, 2021 is the Apple Pro Display XDR, which will almost, but not quite, display the full resolution of a 24 MP camera. There is no 8K monitor meant for photography available today, and even an 8K monitor would show almost the full width, but not the full height of an image from a 45 MP camera. Realistically, digital display doesn't mean 6K and the semi-mythical 8K monitors with excellent contrast and dynamic range – the Pro Display XDR is a \$5000 monitor that is found in a limited number of creative studios. Even a good 4K monitor that covers Adobe RGB is far more than a photographer can assume when sharing their images. Many serious photographers own a good 4K or better monitor with a DCI-P3 or Adobe RGB gamut, and if you don't, you probably should. I have used EIZO ColorEdge displays for the past four years, and a reference display is an invaluable tool. Unless you are sharing your work only with other serious photographers (or art directors), though, your recipient is very unlikely to be using a reference-grade monitor.

Digital display generally means social media, e-mail or occasionally projection. Facebook and Instagram won't take any image more than 1200 pixels wide, they squish it with very aggressive JPEG compression, and they use sRGB, a tiny color space invented to deal with the limitations of low-end CRT monitors in 1996. That's about a 1-megapixel image with a couple of other quality hits! You can e-mail a picture far better than Facebook or Instagram will accept – easily 3000 pixels on the long axis, and if you know your recipient uses a Mac (or a much less common PC with a wide-gamut screen), you can use DCI-P3 for a more reasonable color space. Projectors range from much less than a megapixel up to 4K, which is around 8 MP, although their very wide aspect ratio means that you'll get about 6 MP on a horizontal image, and only about 3 MP on a vertical image (unless you turn both projector and screen on their side, which some permanent installations in museums and the like do). Good projectors go well beyond sRGB, covering DCI-P3 and coming close to Adobe RGB. The best case – a good 4K projector and screen in a fully dark room – can be impressive, especially on horizontal images, but the worst case (a grungy old SVGA conference room projector) can leave you with a 400×600 pixel vertical image (around 0.25 MP) with a gamut much less than sRGB and a strong green cast.

To show your images better than this, you need to print. If you are a serious enough photographer to subscribe to The Luminous Landscape, printing your work will provide you with a rewarding view that no common digital display can compare to. Well-printed photographs are also far more permanent than any digital media – a good pigment inkjet like the Epson P900 produces images with a fade-resistance measured in centuries, while most of the dominant social media spaces of the early 2000s are already gone (did you lose images to MySpace, Tripod, Geocities or AOL?).

You can either print your images yourself, a very rewarding part of the art and craft of photography, or outsource your printing to an online service, a drugstore lab or a high-end professional printing service. Printing your own can give you an infinite amount of control over the look and feel (yes, feel – many great papers are luscious things to feel in the hand, and they each have their own character) of your prints, and once you learn the craft, your results will be better than even a good lab can give you. The best pro labs will work with you on exactly how you want the image to look, and some will help teach you to print your own images better. A workshop with a master printmaker (many of whom also have printing services) can be very valuable.

Printing Technologies

If you want to print your own images, there are four basic printing technologies available to the average photographer (excluding some hybrid digital/chemical processes that start with an inkjet print and then use a century-old black-and-white process). Two of them are variations on inkjet technology, while the other two use different approaches and only exist in small sizes (generally 4×6” or smaller, although dye-sublimation printers are occasionally found up to 8×12” for a reasonable price and hassle) for individual users, although much larger machines using those technologies are found in commercial labs.



From the small...



To the (very) large – the little Instax printer and the huge Durst Lambda both expose light-sensitive paper

One of the two non-inkjet technologies is very similar to traditional chemical photo printing. A light source, either laser or LED, is used to expose a light-sensitive paper, which is then processed chemically. The only devices available to an individual photographer that use this method are the tiny Fujifilm Instax printers that print on instant film and a couple of devices that use the light from a smartphone screen to expose instant film. Large commercial labs have access to LightJet and Durst Lambda printers that use (non-instant) photographic paper, which then has to be developed in a print processor.

Some clever engineer could make a printer for home and studio use that required a darkroom – the major use would be in making black-and-white silver gelatin or alternative process prints from digital files, which can be developed in trays. While a color version (essentially a smaller LightJet or Lambda) is at least theoretically possible, color developing is a pain, with few if any small-scale print processors left (B&H lists two Jobo models and no roller transport processors at all), and inkjet technology has progressed to the point where it wouldn't make sense. The other theoretical possibility is that 8×10" instant film is still available, and someone could build a "giant Instax printer" that printed 8×10", at a cost of about \$19 per print. There is no reason to build such a machine except for unusual effects – an inkjet can provide objectively better quality for \$0.75 to \$2.50 per 8×10" print. The little Instax printers cost about \$1.00 per print for ~2×3" prints, and are really novelty machines. I may include one in the final roundup (a Durst Lambda certainly will be in there), due to the ultra-portability.

The second non-inkjet process is dye-sublimation, in which dye is transferred to the final print medium by the application of heat. Most small-scale dye-sub printers have the dye on a plastic ribbon, and a variable heating element transfers the dye to a receiving paper inside the printer. These printers print only on their own resin-coated transfer paper, producing a result that looks uncannily like a drugstore print. Some years ago, before really good inkjets became common, dye-sub offered better quality and less unpredictability than early photo inkjets. By about 2010, there was no longer any good reason to consider this type of dye-sublimation printing except for very small printers where the dye-sub mechanism has many fewer moving parts than a typical inkjet, so the portable printer can be made smaller and less susceptible to jarring in transport.



This little Canon Selphy CP1300 uses dye-sub technology in a 2 lb printer that makes drugstore-type 4×6” prints

The second use of dye-sublimation technology is actually a hybrid of inkjet and dye-sub. A modified inkjet printer sprays the dye onto a transfer paper, which is then transferred to any imaginable substrate using a heat press. There is no reason to go through this process to transfer an image onto another sheet of paper, but it will transfer onto almost anything that will fit in the heat press. Most metal prints are made this way, and dye-sublimation will also transfer to fabric, wood, glass and most other surfaces. With an appropriately shaped heat press, the print can transfer to curved surfaces. Most of these printers are very large and expensive, but Epson has recently introduced a couple of models that might find their way into a photographer’s studio (including the \$400 F170) Is this the next generation of alternative processes? I’ve never used one, but am trying to find access to a heat press.



And this 600 lb, 64” wide Epson F7200 is also a dye-sub printer – its prints get heat-transferred onto just about anything.

The two variations on inkjet technology are dye-based and pigment-based. Dye-based printers are the less expensive option, being easier to make since the ink is truly liquid. Dyes are dissolved in water and sprayed onto the paper, where the dye is absorbed into the paper itself, chemically bonding with the paper. There are both advantages and disadvantages to this approach. Dyes tend to be brighter than pigments and offer more color gamut per color of ink. Since the dye is dissolved and the ink is truly liquid, it's very hard to clog a dye-ink printer. Dye-based printers excel on high-gloss paper where pigment inks sitting on top of the paper can show gloss differential. On the other hand, dyes tend to fade faster than pigments, and there's much less choice of paper. A good dye-based inkjet will offer five or six colors (with color gamut similar to an eight-color pigment printer), lightfastness comparable to a good chemical photo print (in the 20-50 year range with proper storage), and be optimized to print on resin-coated photo papers.



Canon's eight-ink Pro-200 probably has the best gamut of any dye-based printer – unfortunately, it uses tiny cartridges.

Canon makes one eight-ink model with a notably large gamut, but it uses tiny ink cartridges. Epson and Canon both make models that use refillable ink tanks instead of cartridges (the Epson ET-8550 was recently reviewed here), and, while they are a little more expensive to buy, they have much lower running costs. Dye-based print longevity has improved quite a bit in recent years, but only certain combinations of printer, ink and paper offer the improved longevity. An ET-8550 will offer 30-50 year longevity or more on Epson Ultra Premium Luster, and Canon's Pixma Pro-200 will offer the same on their best RC papers, but a less photo-oriented dye-based printer on inexpensive paper could produce prints that begin to fade in months.

The professional's choice is a pigment-based photo inkjet. They offer an incredible range of paper compatibility, from rough textured watercolor papers to metallic glossy papers, and from incredibly delicate Japanese Washi to the thickest of canvas and even direct printing on metal (with most Epson printers, which feature a straight paper path). They are the only reasonable choice for printing on Baryta and Platine type papers, beautiful semi-gloss papers that closely resemble the classic fiber-based darkroom papers many of us made our first serious prints on, and that most of the master prints of the 20th Century were made on. With pigment-based inkjets, we can finally print on these papers in color as well as black and white. Every color darkroom paper was resin-coated, comparable to inkjet papers like Epson Premium Glossy or Ultra Premium Luster, or to B+W darkroom papers like Kodak Polycontrast Rapid.



Pigment inkjets suitable for professional photography come in a wide range of sizes and prices – from this little Epson P700 (13” carriage, 27 lbs)



To this 64" wide Epson P20000 using similar inks (nearly 400 lbs, \$12,000)

With the flexibility of pigment inkjet, we can now make color prints on Canson Infinity Platine that looks and feels a lot like silver gelatin Oriental Seagull. We have access to metallic papers and Pictorico Hi-Gloss Film that closely simulate the aggressively contrasty look of Ilfochrome prints. We have a range of matte papers that we never had in the darkroom, whether in black and white or color – from the bright white and smooth finish of Canson Infinity's brand new Baryta Photographique II Matt (not a typo – they don't spell it Matte...) to the distinct grain of Arches BFK Rives or the strong texture of something like Hahnemuhle Torchon, just about any paper type one might want is available for pigment inkjet printers.

Pigment inkjet can also offer the best print longevity of any color digital printing process, and almost the best longevity of any color process ever. The only color process as long-lasting is the rare and expensive carbon-pigment print. Chemically, a pigment inkjet print is closely related to a carbon-pigment print, but it is massively more accessible to produce. Compared to RA4 or Ilfochrome, a pigment inkjet print offers not only the much wider paper selection but significantly greater color gamut, dynamic range and print longevity.

Compared to dye-based inkjets, pigment inkjet printers are somewhat more complex machines. Where dyes are actually dissolved into the water-based carrier like sugar or salt in water, pigment particles are suspended in the carrier – like muddy water, except that the particles are so tiny that they take a very long time to settle out. Instead of bonding into the paper, pigment particles adhere atop the paper just as paint does. While the particles are microscopic, the ink is a suspension rather than a true liquid, and much more capable of clogging nozzles – printers are getting better and better at preventing clogs, but they still aren't perfect. Pigment inks also require more ink colors to produce the same range of colors on the paper. While photo-quality dye-based printers are generally six-color machines (with one eight-color model available), pigment printers use ten to twelve inks (although they also have wider gamuts than six-color dye-based inkjets – it might take eight dye inks to rival a modern pigment inkset).

With exceptional print quality, print longevity and paper selection, a pigment inkjet is the best choice for professional and artistic photography, and for the serious hobbyist. Pigment inkjet printers range from around \$500-\$600 for a lower-end model with a 13" carriage if purchased with good rebates on up to over \$10,000 for a machine that prints 60" wide. A smaller pigment inkjet sits on a desk and looks a lot like a typical dye-based inkjet printer, while larger models are stand-mounted and primarily designed for roll paper. Over the last 20 years, I've used close to ten different pigment inkjets ranging from 13" to 24" wide, of five different generations of ink technology, all extensively. The major manufacturers are Epson and Canon, with HP dipping a toe in from time to time from their perch in the graphic arts market. While I have no experience with pigment-based HPs, I've used and liked both Epson and Canon machines.

Introducing the P900



The P900 is very compact when folded up (as it will be when not actively printing), and it looks like a piece of stereo equipment.



EPSON

Ready
Fine Art Mode
11:25
Power

It gets bigger when its substantial paper supports are out, but it still fits nicely in a small apartment.

I've been printing with an Epson P900 (supplied for testing by Epson America) for several months now, and the striking feature of this mid-sized photo printer is its versatility. It's one of the smallest and lightest pigment inkjets on the market at 35 lbs empty and under 40 lbs fully loaded with ink, but it has decent-sized 50 ml cartridges, a 17" carriage and an excellent 10-color ink set. It can find a niche in even the smallest workspace (you'd really think it was a 13" printer to look at it). The 17" carriage allows 16×20" prints, a very popular size.

It is small and light enough to be used in a vacation home or even in a van on extended photo trips. It would be an easy machine for a college photography student to cart from home to school every year, and even to get home for winter break. About the only way I wouldn't try to move it is that it would be tricky to fly with. Once the ink is in it, Epson tells me that it shouldn't be tipped by more than 45 degrees. It's easy enough to get in and out of the car relatively flat – at 40 lbs, one strong person can easily carry it flat, and two people can move it with no problem at all. As long as you rest it flat on the back seat or the floor of the trunk, it'll be fine. On the other hand, a baggage handler very well might tip it on end, and it's too big for the overhead compartment.

Anyone who's ever moved a big roll printer will marvel at the preceding paragraph – “easy to carry flat and fits in a car with no problem” is not a standard characteristic of such machines. It's actually little enough of a pain that I'd even be tempted to take it on a two-week vacation (by car) if I expected to do a lot of photography – especially if there were relatives or friends around who'd love to be handed a print right off the printer

It is an unusually good printer for experimenting with different papers, because it fixes both of the classic problems with switching papers frequently. The P900 is primarily a sheet-fed printer (there's an optional roll feeder, but it lacks a print cutter), accepting sheets from letter-sized to 17×22" from the top rear. Many printers that feed from the top rear have trouble with excessively thick art papers, especially some of the stiffer watercolor papers. Most thick papers will feed from the top rear – for especially thick papers, there's also a very easy to use front feed. The Arches papers from Canson Infinity are right at the edge of being able to go through the rear feed – anything thinner will (including all gloss and luster papers, and most normal-thickness rag papers), and the four Arches papers sometimes will (but it's easy enough to deal with them by using the front feed).



Canson Infinity Aquarelle Rag is a stiff, heavy paper best fed from the front – but front-fed paper hangs out the back, so be sure you can give the printer some clearance from the wall.

To use the front feed, make sure the printer is on a stand that can roll forward, or on a table where there's about a foot of clearance to the wall behind – a 22" sheet comes out about a foot or a bit more from the back of the printer when fed in from the front. The front feed will also accept entirely rigid materials like poster board and even inkjet-printable metal – give it a little more clearance behind for a fully rigid material, since paper will naturally bend a bit as it exits the rear of the printer, while metal and board won't. There IS a trick to the front feeder – you need to choose a thick paper type (such as Velvet Fine Art) when using it to feed paper. I got ink spots (well outside the print area) on my first couple of attempts, before realizing that the paper type set on the front panel apparently sets the head height, even if ImagePrint (which I was using for these tests) or the driver sets a different type for the print. Choosing a paper type that wasn't thick enough caused ink spotting from near head strikes, while using Velvet Fine Art set a higher head height and fixed the problem.



Rear Paper Feeder

OK

Paper Type

Fine Art Matte

Paper Size

17 x 22 in

Setting the paper type from the control panel is easy – if you’ve ever used a smartphone, the P900 will feel familiar.

Since it’s a sheet-fed printer, you can choose the paper individually for every print, while roll printers involve some effort to load and unload, and tend to discourage frequent paper swaps. Epson’s newer spindleless loading systems are an improvement over older systems that used a long spindle, but a sheet-fed printer will always be easier to swap paper in than a roll-fed model.

The second feature that facilitates paper experimentation is that both matte and photo black inks are installed and active at the same time. Many older Epson printers required physically switching cartridges, and wasted a lot of ink in the process. More recent generations have kept both cartridges installed, and put the switching valve much closer to the printhead, reducing ink waste. The P900 and a few other very recent models are the only Epsons that actually use separate channels in the head, eliminating the switch (and the ink waste that goes with it) entirely. Canons have never needed to switch black inks, one of the many back and forth advantages of the two brands (all Epsons have much better paper feed systems than any Canon, for example). Now that Epson has equaled Canon on black ink switching, Canon may need to respond with an improved paper feed or a more archival inkset, both traditional Epson advantages.

With the combination of no black ink switching and a very easy sheet feeder, it is easy to spend the morning switching from one paper to another, trying the same image on four or five papers to see what looks best. There are only a few printers on the market that are both sheet-fed and have no ink switching (the P900, its little brother the P700 and Canon’s Pro-1000 are the ones of most interest to photographers), and it’s a great combination. I was surprised how much “it’s easy to try that print on a platine, a smooth matte paper, a textured paper and even a metallic” encourages me to experiment.

A related creativity enhancer is that it is just about the first printer profiled for any given paper. Any paper manufacturer who provides profiles for any printer at all will almost certainly have one for a very common, recent Epson like the P900. The one exception, of course, is Canon and HP labeled papers (Epson doesn’t profile Canon printers on their papers, either). There is even a workaround to use Canon papers on an Epson printer, if you have some lying around or get a good deal on it. Canon doesn’t actually make paper (neither does Epson), and if you can figure out who they bought it from, you can often get a profile, either from the original manufacturer or from somebody else who bought the same paper. I have run a lot of Epson Legacy Platine through various Canon printers this way – it’s at least almost the same paper as Canson Infinity Platine, close enough that the same profile works. I actually have both around in 17×22”, and will try making the same print on those two papers.

Most P900 users will be using paper manufacturer profiles. It’s a high enough quality printer that it should always be used with a profile, but most owners won’t own a spectrophotometer that might cost twice as much as the printer to make their own profiles. Epson’s driver, fortunately, encourages the use of ICC profiles – unlike the drivers on lesser printers that don’t make it easy. Many photographers print through Lightroom Classic, and the P900 works very well that way.

Software and Installation

I personally prefer to drive printers through ImagePrint – yes, it’s an expensive piece of software, but it is the most versatile and highest quality way of operating a printer there is, combining resizing, output sharpening, profiling and layout in a single package. ImagePrint Black’s extensive profile library is a real step up over what any manufacturer provides – their profiles are really top-notch, and they’ll profile anything they don’t already have. Right now, they don’t have the Canon papers profiled for Epson printers, but they DO have the better Epson papers profiled for Canon printers – and they’d profile a Canon paper on an Epson printer if asked. ImagePrint also provides automatic print layout, an incredible time saver if you’re trying to print a bunch of smaller prints on a big piece of paper (or, especially, if you have a roll-fed printer).

Another option worth considering, and a great fit for the P900, is QImage. It’s a heck of a lot cheaper than ImagePrint, and it provides some of the same functions. Unlike ImagePrint Black, it’s not a true RIP – it’s feeding optimized data to the printer driver instead of controlling the printer directly (ImagePrint’s answer to QImage is ImagePrint RED). It also doesn’t provide ImagePrint Black’s ultra-high quality profiling or easy profile handling. What it DOES do is provide layout, scaling and output sharpening in a very reasonably priced package.

If you’re using Lightroom Classic, you may not need QImage – Lightroom’s print module does most of that (except automatic layout), and is more than competent. The next step up is really either making your own profiles with a high-quality spectrophotometer or ImagePrint Black. Where QImage will save the day is if you prefer a raw converter other than Lightroom Classic. Both Capture One and DxO are more capable raw converters than Lightroom Classic, but neither one has the excellent integrated print module. QImage provides Lightroom’s print module – and more – to users of raw converters that aren’t integrated suites.

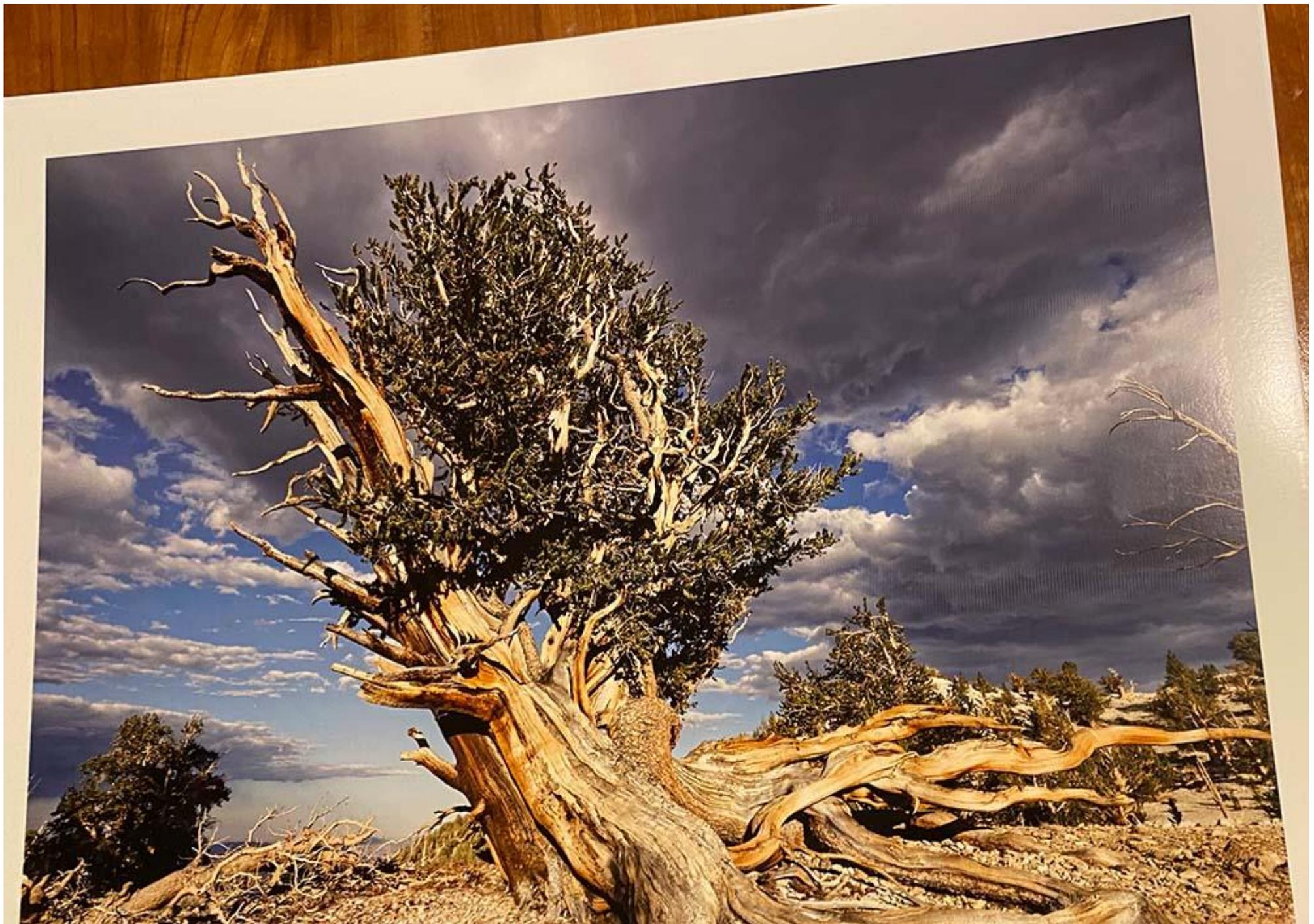
In the recent First Impressions piece, I described in detail just how easy a machine the P900 is to set up and use. For a printer like this, that’s a huge consideration. Most people who buy a midrange printer like this are not dedicating a huge or permanent space to it, and it’s more likely to be their first serious photo printer. I had the P900 up and running in under 45 minutes from opening the box to the first real photo print (I’ve been using photo printers for 20 years, but it would be under an hour for anyone who’s set up standard desktop inkjets). Every task I’ve performed, from loading paper to changing ink and maintenance cartridges, is equally easy. It’s actually a lot easier to set up than the ET-8550, both because there is no tank-filling step (not hard on the ET-8550, but there IS some potential for a mess) and because it ships pre-aligned while the ET-8550 has an annoying alignment step. It benefits enormously from Epson’s experience in the consumer inkjet market in this regard.

In another common concern about pigment printers, especially Epsoms, I simply have not faced a clog on the P900. The only nozzle check I’ve printed was the one I did on the day I set it up in early September. I’ve only had it here for a few months, and I’m following two simple instructions from Epson carefully – keep the printer closed when not in use and keep it turned on. It’s joining the permanent test fleet, and it’ll be

my go-to printer for smaller prints going forward, so I'll keep reporting on any clogging when it's no longer new, but the early results are VERY positive.

Image Quality

In terms of what matters most, image quality, the P900 is an extremely impressive machine. On fiber-gloss papers (barytas and platines), it is right in the same range as other top-end modern pigment inkjets. I can't honestly say I prefer the color from the P900 or from my Canon Pro-2000 – they're close enough that I'll sometimes like a print from the P900 a little bit better, other times I'll prefer the Canon by an equally small amount. On every print, they are very much in the same range. I haven't made a print where I can say "I'm happy with one printer, but not the other". The Pro-2000 uses Canon's current top of the line full inkset, and the P900 equals it. Note that the warm tone in many of the prints pictured is an artifact of photographing the print – it is NOT in the actual print.



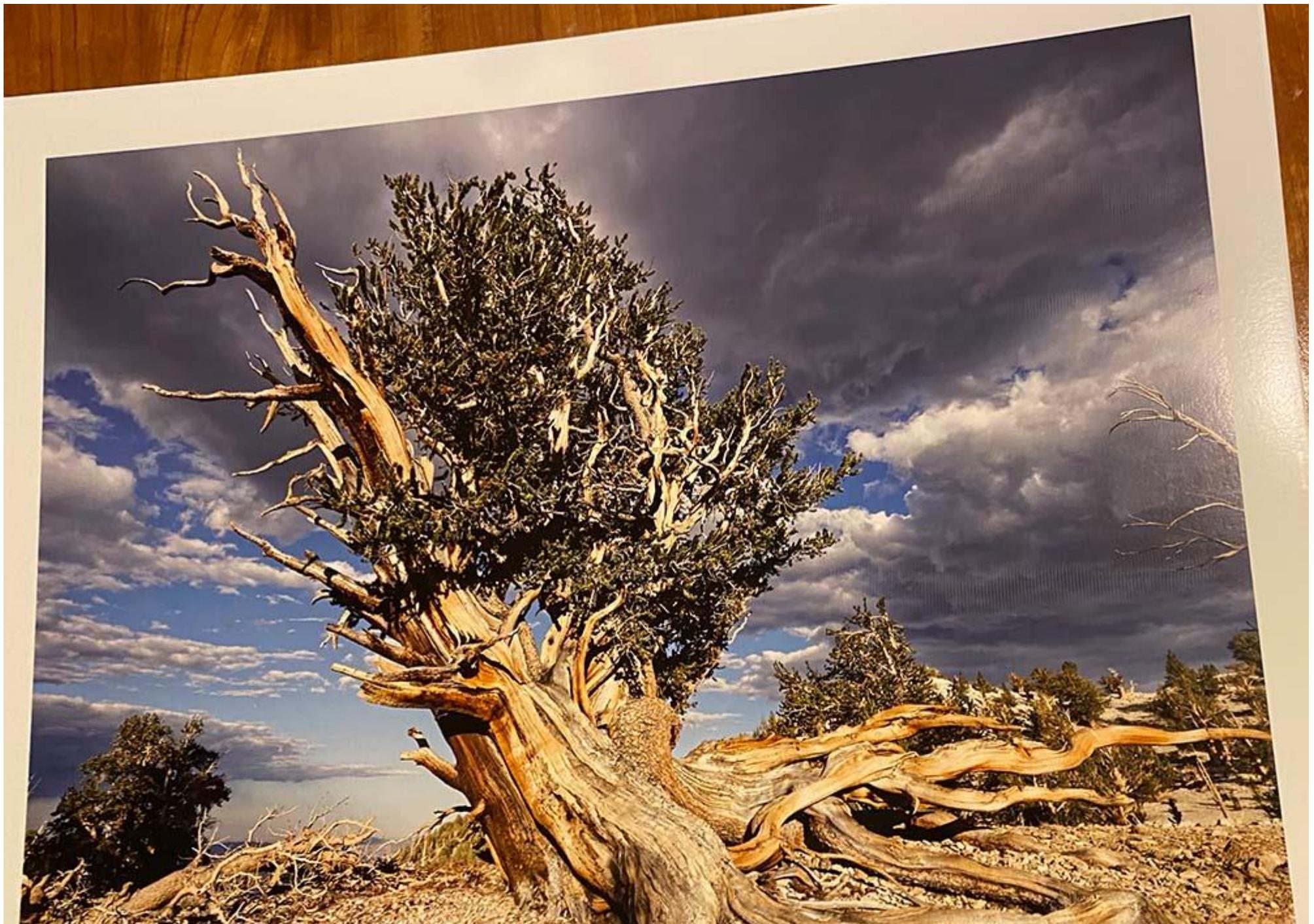
Test image on Canson Infnit Patine- The warmth in the paperwhite is in the picture of the print- The I-phone “scan” didn’t get the white balance right.



And the same image on Epson Legacy Platine – looking at them side by side, you can't tell the difference in the originals. They're almost certainly the same paper (the same profile works) – buy whichever one is cheaper at the moment

The P900 on Epson Legacy Platine (or the very similar, probably identical Canson Infinity Platine) is a formidable machine for fine-art glossy printing. It is BY FAR the best result I have seen on that type of paper from anything resembling a desktop printer. Very few desktop printers will even deign to handle these papers (they essentially require pigment inks, and they often don't look good with the smaller gamut pigment inksets found in some less expensive printers, especially a few years ago). They are also too heavy to feed through many desktop printers, but the P900 handles them without any complaints at all (and they are officially supported, as are even heavier matte art papers). Legacy Platine is one of Epson's recommended papers for the P900, and it is one that every P900 owner should experiment with.

Other barytas and platines should also work very well – I have really loved the results on Canson Infinity's Baryta Photographique II (which is about the glossiest of that group) – with one caveat. I get pizza wheel marks on about half the prints I make on Baryta Photographique II. I'm not sure if there is a way to control the height or pressure of the pizza rollers, and I will be asking my contacts at Epson America and Canson Infinity about this. I haven't had a pizza wheel problem on any other paper, a group that includes glossy, matte and even metallic papers. Is the surface of Baryta Photographique II unusually delicate? The technical specifications claim that it is somewhat LESS thick than Platine (which doesn't have a pizza wheel problem). It is much less thick and inflexible than many matte papers that feed without wheel marks. Could the pizza wheels be grabbing it differently?



The P900 does a really nice job on the glossier Baryta Photographique II – but there are sometimes pizza wheel marks (which aren't a problem on Platine)

For comparison, Epson's official response to Legacy Platine on the smaller, dye-based ET-8550 is that it is too heavy to feed, and there is no profile or paper type available for it. The somewhat lighter Exhibition Fiber will feed, but also lacks a profile and paper type on the ET-8550. The recommended luster paper for the ET-8550 is the resin-coated Ultra Premium Luster – fine for mid-level printing, but not a fine art paper like Legacy Platine.

The ET-8550 is typical of desktop printers intended for photography – Canon supports baryta/platine type papers on the pigment-based Pro-300, but not the dye-based Pro-200. I've never used a Pro-300, which uses a unique inkset, so I'm not sure how it will perform, but I would consider its tiny cartridges disqualifying for serious photo printing (at current pricing, it's only \$100 cheaper than a P900 with a wider carriage and quadruple the ink capacity). Even the P900's predecessor two generations ago, the Stylus Pro 3880, was noticeably weaker than contemporary large-format printers on these papers. Its inkset was a generation behind its large-format contemporaries, and high-gamut barytas showed the difference. The P900 uses Epson's newest inkset, although an almost-full version missing green and orange kickers. The P900 is a desktop printer made for barytas and platines, and showing superb performance on those papers – an unusual and compelling combination.





These two images (both on Platine) were chosen as an acid test – saturated blues and violets have traditionally strongly favored Canon printers. Both of these look as good as the results from a modern Canon.

The only printer on the market that MIGHT exceed the P900's competence with baryta and platine art papers is its own big brother, the P7570/9570. The P7570 and P9570 use the same inks as the P900, but have the green and orange that the P900 lacks. When I used an older Stylus Pro 7900 that was the first model to use (an earlier version of) those green and orange inks, I recall its being something special in saturated greens and warm tones – I lost a bit in some of those colors moving to the Pro-2000. That printer was the predecessor of my Pro-2000, and the Pro-2000 has been here five years, so I certainly don't have any prints of the same image for direct comparison. I am also clear that the Stylus Pro 7900 was quite a bit weaker than the Pro-2000 in dark blues, and the P900 is very comparable to the Pro-2000 there. It does a nice job on images with lakes and oceans or deep, saturated skies, for example. Could the P9570 combine the two sets of advantages? If so, the P7570/9570 would be the only printer to reach the edges of printable gamut in blues, greens and oranges.

The P900 has a slight, but noticeable edge in detail over the Pro-2000. You have to have the right image to see it, but it's there. Where I see it is in high-detail landscapes shot with the GFX 100S and printed 16×20" on Platine. In the plane of focus, the P900 picks up just a little extra detail that the larger Canon doesn't get. This should be possible from the spec sheet – the P900 uses a 360/720 dpi dither with a variable droplet size down to 1.5 picoliters, while the Pro-2000 uses a 300/600 dpi dither with a fixed 4 picoliter droplet size. Some reviewers say that you shouldn't be able to see detail on this level, but you can (the 720 dpi setting is worth using with the right file). It won't make a difference if the file doesn't have the detail to begin with (a 24 MP image is 250 dpi at 16×20"), but if you have a file that's over 300 dpi at 16×20", it's there. The difference between the Canon at 600 dpi and the Epson at 720 dpi is probably due to the Epson's variable droplet size – even the GFX 100S is just below 600 dpi (it's 582 dpi to be precise) at 16×20", yet 720 looks better than 600.

To get detail on this level, you CANNOT let the printer driver resize the image (this is true of any printer). Any good print software package will handle this seamlessly, but if you're printing from Photoshop or a raw converter other than Lightroom Classic, you either need to resize and output sharpen the image manually or run it through a print package or RIP. Printers accept images at a couple of fixed resolutions (most Epsoms including the P900 at 360 or 720 dpi, Canons and some large Epsoms at 300 or 600 dpi). Printer drivers scale images that are not at those resolutions to one or the other of them, using a simple nearest neighbor or bilinear resize. They also scale whatever sharpening has been applied (the driver doesn't do any sharpening of its own), and final output sharpening should take place AFTER scaling.

Print packages like Lightroom Classic (part of an integrated suite) or QImage (dedicated) scale the image using a much more sophisticated algorithm, then apply output sharpening to the scaled image in the correct order. The print driver receives a correctly scaled and sharpened image, and only has to process the dithering and ink levels, which it does very well. ImagePrint Black (uniquely among packages an individual

photographer is likely to encounter) goes even a step farther, scaling and sharpening the image, then applying its own proprietary dithering and ink level control – bypassing the print driver entirely.

While it is (effectively? – someone may point out a weird method I am unaware of) impossible to manually replicate ImagePrint Black's proprietary dithering and ink level control, it IS possible to manually simulate the effect of Lightroom Classic or QImage – resizing an image to the print size and resolution in Photoshop or your favorite plugin, then applying output sharpening, has essentially the same effect. It is much simpler to use a good print manager like QImage or Lightroom Classic, or to print through ImagePrint, gaining even one further step. The reasonably priced QImage adds print management to any workflow that doesn't have it built in, whether it is based on Photoshop, Capture One, DxO or something else.



Arches 88 is very smooth by the standards of a top-level matte paper



And Arches Aquarelle Rag is highly textured – the P900 does a terrific job on both.

In addition to being a top-level baryta/platine printer, the P900 does an excellent job on matte papers. All four of the new Arches papers by Canson Infinity are excellent performers on the P900, from the very smooth Arches 88 through the distinctly textured Aquarelle Rag. They are all heavy enough to prefer the front feeder. Canson Infinity's Rag Photographique is a top-end, relatively smooth rag paper that is compatible with the rear feeder, although any heavy matte art paper should be fed one sheet at a time. Much more on individual media choices in the next article, but all the papers Canson Infinity sent performed really well.

A unique advantage of a sheet-fed, wide-carriage printer that can handle matte art papers is that the P900 is a very well suited printer for short runs of fine art books, and for greeting cards. There are several very high-quality double-sided matte papers available, such as Moab's Entrada Rag Duo and Canson Infinity Rag Photographique Duo. Using 17×22" paper, it is possible to fold books with either 11×17" or 8.5×11" page sizes, four or eight book pages on a double-sided printer page. Anything less than a 17" printer really doesn't allow eight-page signatures except for tiny books, and a roll-fed printer makes printing the back side more difficult. Printing Entrada on both sides, I wasn't able to see any printer marks on the first side from having been run through a second time. In addition to the possibilities for printing short-run books, there are a number of pre-scored greeting card papers available, which require a high-quality printer with a good, easy to use sheet feeder. The P900 is an ideal printer for these jobs, at least in shorter runs. Long runs may be better done on Epson's P5000, a much larger and heavier sheet-fed 17" printer that is best suited for heavy-duty multiple printing, such as large batches of greeting cards.

The P900 handles high-gloss papers better than any other pigment-based printer I have encountered. There is still some slight bronzing and gloss differential on high-gloss papers, but it is minimal and you really have to be looking for it. It is clearly better than the Canon Pro-2000, and that is especially interesting because the Canon uses a Chroma Optimizer, a clear overcoat ink specifically meant to reduce gloss differential. Epson uses something called Enhanced Black Overcoat, which uses the Light Gray ink for a similar effect. Epson is getting better results on glossy paper WITHOUT a separate overcoat than Canon is getting WITH one. The high-gloss resin-coated papers I have used so far are Epson's own Ultra Premium Glossy and Metallic Photo Paper, both mid-grade papers a significant step below most of what I would use on a printer at this level.

Here's Epson's Premium Glossy Metallic

And Ultra Premium Luster – both excellent results, neither with significant bronzing or gloss differential. The fact that it does very well on inexpensive resin-coated papers (not all pigment printers do) is a big advantage for the student or beginning printmaker. Start with resin papers and the P900 will grow with you into the world of art paper.

There are very few really high-quality papers that qualify as high-gloss, which is similar to the situation with darkroom printing – fiber-based glossy papers were really lustre or satin finishes, while true gloss finishes were inevitably resin-coated and of much lower quality. There were a couple of exceptions, with the most notable being Ilfochrome/Cibachrome, which WAS resin-coated (and the best version was actually a full plastic base), but it was also the most archival standard color process, and it had a look that a lot of artists liked. Ferrotyped fiber-based black and white prints were the other notable exception.

Similarly, there are a couple of papers that are exceptions to the high-gloss equals mid-quality rule in the inkjet world, and I am trying to get ahold of samples of Pictorico High-gloss White Film and Hahnemuhle Photo Rag Metallic for a follow-up article focusing on paper choices. Pictorico is the closest thing to the old high-gloss Ilfochrome plastic film, but it is an older product that may be very difficult to get and comes in a limited range of sizes, with 17×22” notably not available. A profile may be difficult to obtain for many uses, although ImagePrint Black does include one for the P900. The Hahnemuhle paper is a current product and easily available in a range of sizes. There is no problem with profiles – Hahnemuhle makes one available and ImagePrint Black includes one as well.

Ink and Print Longevity



The Ultrachrome Pro-10 inkset – the Light Gray is popped out for replacement...

Could the Enhanced Black Overcoat be why the P900 drinks Light Gray ink? I now have enough pages printed – well over 100 16×20” prints, primarily landscapes on a mix of matte and glossy papers, to say with some certainty that the Light Gray ink is by far the most used. A few cartridges (Violet, Cyan and Magenta) are still on their original setup cartridge, although all three will have to be changed soon. Those cartridges should easily get 200+ 16×20” prints per cartridge (remembering that much of the setup cartridge goes into filling the lines), possibly well over that. Most of the remaining cartridges were changed after 40-50 prints, and the replacement cartridges are between 2/3 and 3/4 full. These cartridges will get 150+ 16×20”prints per full cartridge.

The light gray has expended a full cartridge as well as the setup cartridge – 75 16×20” prints per cartridge? If it is doing the job of light gray plus overcoat, it is no surprise that it goes unusually fast – those are generally two of the fastest running cartridges on printers with both. I’d rather have this setup than an overcoat, since it appears to work at least as well. First of all, not needing the overcoat leaves room for the additional Violet kicker cartridge – a 10-channel printer which uses an overcoat has a full inkset, but no extras (Photo and matte black, two grays, two cyans, two magentas and yellow, but no kickers since the overcoat uses the tenth channel). Second, the light gray is running out about as fast as I would expect an overcoat alone to run – it has replaced two fast-depleting cartridges with one that goes about as fast as the faster of the two, which is a substantial advantage in total ink use (but always keep a spare light gray on hand).



Where it All Began – the Epson Stylus Pro 2000P was the first pigment inkjet a photographer could possibly afford. It didn't work very well, but it started a printing revolution.

Epson is on no less than their seventh generation of pigmented inks – they've been at this since 2000 or so. There was the original “pre-Ultrachrome” generation of ink that shipped with the 2000P, 7500 and 9500 (those last two numbers have, confusingly, been reused in some markets for the printers we call the P7570 and P9570 in the US) – the models I'm talking about here are the 20 year old ones, not the brand-new ones. This original six-color inkset was barely acceptable on matte papers and just plain lousy on anything glossy. The second generation was the original Ultrachrome printers (2200/7600/9600). They added a seventh ink, a light black (now, and less confusingly, called “Gray”), and they replaced the single black ink that had to serve on both matte and glossy papers with a choice of matte black or photo black. In this generation, and for several more to come, the only way to change from matte to photo black and vice versa was to physically exchange cartridges, draining \$75 worth of ink in the process. Many photographers and most print shops resorted to using two printers instead (or to choosing one type of paper and never using the other).

In 2005, Epson released what many would consider the first modern pigmented inkset, Ultrachrome K3 (used in the Stylus Pro 3800/4800/7800/9800 – it used eight colors (the added color was then called light light black – it now goes by Light Gray), completing the core set of black plus two grays, two magentas, two cyans and yellow that every serious pigment printer since that time has been based on (with various additions). It had eight printhead channels and eight cartridges in use at once – but a total of nine cartridges including matte and photo black, so the expensive, lengthy ink switch stayed.



The first printer with a P900-like concept. How many of us have printed with a Stylus Pro 3800 (or its close relative the Stylus Pro 3880)? It was one of the early pigment inkjets that actually worked.

The notable exception was that the 17" Stylus Pro 3800, the great-grandfather of the P900 (and the first of the 17" desktop sheet-fed printers) held nine cartridges and had a much simpler black ink switch. It was still only an eight channel head, but the valve to switch from matte to photo was right next to the head and wasted only a few ml of ink and a minute or two. The fourth generation, used in the 38880/4880/7880/9880, was K3 with Vivid Magenta, a reformulation of the two magenta inks while keeping the remainder of the K3 inkset. The Stylus Pro 3880, announced later than the other Vivid Magenta printers, still got the quick ink switch from the 3800, while the larger models kept the cartridge swap and associated costs.

The fifth generation, released in 2009, was Epson's first experiment with additional "kicker" colors in professional printers (they had built a few 13" printers that didn't use the full basic eight color set, but added a red). Canon had been using 12-color inksets with red, green and blue kickers (and no black ink switching) for a while by this point as Epson claimed that their better gamut per ink eliminated the need for the extra colors. They called the new inkset Ultrachrome HDR, and it had a significantly larger gamut than Ultrachrome with Vivid Magenta. The Stylus Pro 3880 would remain on the market through the Ultrachrome HDR era, leaving the 17" sheet-fed desktop printer with a smaller inkset a generation behind its big brothers.

The big printers in the Ultrachrome HDR generation got the quick, economical ink switch pioneered in the 3800 – cartridge-swapping and \$75 black ink changes were a thing of the past. The sixth generation, which Epson called Ultrachrome HDX, used the same colors as HDR, but improved the ink formulation, including a highly stable yellow ink that is by far the best on the market. Ultrachrome HDX printers (the P5000/7000/9000) can take a Violet ink cartridge, but it replaces Light Gray (permanently – it's a choice made at printer installation), and the added gamut in the blues is less important for most photographic uses than the smoothness of a three-neutral configuration. The 17" desktop P800 uses a subset of Ultrachrome HDX called Ultrachrome HD – it's the same color lineup and ink switching as the Stylus Pro 3880, but it uses the reformulated inks.

The next big change, and one the P900 benefits from enormously, was the late 2019 changeover from UltraChrome HD to Ultrachrome Pro. The big printers (P7570/9570) get 12 inks, all installed simultaneously, including the basic eight, plus Orange, Green and Violet kickers (without losing a gray), AND both photo and matte black installed with NO black ink switching at all. The P900 (released in 2020) gets a 10-color variant that loses Orange and Green, but retains Violet, and, most importantly, it also has no black ink switching at all. Print one print on metallic and the next one on Washi – the new Epsons, including the P900, don't waste any extra ink...

Ultrachrome Pro-10 as used in the P900 is a superb inkset – Epson’s basic eight inks have long been the strongest on the market. From the introduction of the basic eight in Ultrachrome K3, Epson has improved gamut with Vivid Magenta, again with Ultrachrome HDR, and yet again with Ultrachrome Pro in its variations. They made a stability breakthrough with the Ultrachrome HDX generation of inks, producing a truly archival inkset with a very large gamut, which has carried over to Ultrachrome Pro. The addition of Violet to the basic eight puts the P900’s dark, cool tones in the same range as a good Canon printer – Canon has always used a kicker in the deep blue range, and Epson hasn’t been able to get their cyans and magentas alone to make some of those colors – until now.

What Epson calls violet is similar to Canon’s blue, and it produces really lovely tones in the blues where Epson had previously been losing. Even though it lacks Canon’s red kicker, the latest Ultrachrome yellow is really nice, and it works with the market-leading Vivid Magentas to cover the warm tones very well. Numerically, the gamut of the P900 is very similar to Canon’s current 12-color Lucia Pro on papers where I’ve been able to find gamut volumes for both Epson and Canon printers. Looking at the graphs, the violet-aided Epson now matches the Canons with their blue kicker in the cool tones. Visually, this makes sense looking at a lot of prints – I no longer see the Canon blues as a distinct advantage for images with a lot of water or sky.

Print Longevity

EPSON T46Y4

Jaune / Amarelo / Amarillo

Yellow

Caution: Shake the cartridge well before installing it. / For best results, Epson recommends using up ink cartridge within 6 months of installation.

Attention: Bien agiter la cartouche avant de l'installer. / Pour des résultats optimaux, Epson recommande d'utiliser au complet la cartouche d'encre dans les 6 mois suivant l'installation.

Precauções: Agite bem o cartucho antes de instalá-lo. / Para melhores resultados, a Epson recomenda a utilização do cartucho em até 6 meses após a instalação.

Precaución: Agite el cartucho antes de instalarlo. / Para mejores resultados, Epson recomienda utilizar el cartucho dentro de los primeros 6 meses después de instalarlo.



U.S. Patent

EPSON

T46Y4

Y

It looks simple, but Epson's latest yellow ink makes a big difference.

One enormous advantage of recent Epson printers (including the P900) over their Canon counterparts is that Epson has developed a beautiful, highly stable yellow ink. Yellow has always been the Achilles' heel of print permanence – any yellow that gives a wide gamut is also likely to fade. HP has gotten exceptional print life out of a somewhat duller yellow, while Canon has used a much brighter yellow, but paid in permanence. Epson has always had the best yellow on the market, and their latest versions are exceptional. The P900 has a print permanence rating from Wilhelm Imaging Research of 122 years for a color print on Platine, framed under ordinary window glass. The comparable figure for Canon's current Lucia Pro inkset is 37 years. Using museum-grade UV glass, the Epson exceeds 250 years of continuous display (testing time ran out), while the Canon only reaches 80 years. Even tacking a P900 print to the wall unframed gets a permanence rating of 65 years on Platine, and 112 years on Epson Exhibition Canvas, where unglazed presentation is much more likely (Canon only lasts 20 years on Platine, and I couldn't find a result on a canvas comparable to Epson's).

These accelerated fading tests use an extremely bright light source for a shorter period of time to simulate the effect of more normal viewing light over centuries – it's not exact, but the ratios between different inksets should be about right – Ultrachrome Pro-10 is about three times as archival as its Canon competitor. Not every application needs extremely long print lives, but for those that do, the current Epsons are truly archival on a wide variety of papers and the current Canon inkset is questionable. A current generation Ultrachrome Pro print is one of the longest-lasting color prints ever made in any medium. Epson also has an Advanced Black and White print mode that uses very little of the color inks (some slight use of color inks allows a choice of B+W tones). These prints are even MORE stable – they are basically carbon-pigment prints that are among the most stable artworks ever created in any medium. An Advanced Black and White print is similar in stability to a high-quality pencil drawing made on acid-free paper. The fading times significantly exceed 400 years, and may very well be measured in millenia.

Epson is currently shipping four variants of this superb inkset, all but one having the Ultrachrome Pro designation and no black ink switching. Two use ten cartridges and ten channels (the P900 inkset featuring violet and the inkset from the huge P10000/P20000 which loses violet but gains a unique dark gray), eliminating black switching. The "big" version found on the P7570/9570 uses twelve cartridges and twelve channels to add orange and green to the P900 inkset, while the previous-generation but still available P5000/7000/9000 printers use eleven cartridges, but only have ten channel heads – they have the less annoying, head-based version of a black ink switch that doesn't require changing cartridges.

The four inksets will have slightly different gamuts (I've only used the P900 and an earlier generation of the orange/green boosted inkset in the Stylus Pro 7900). The blue/violet boost in the P900 inkset (and, presumably, the P7570/9570 inkset) makes a real difference in water and sky – Canon has always had a richness here that Epson has just now equaled. I am looking forward to using a current generation orange/green boosted printer, especially coupled with the blue/violet boost in the same inkset. As of late 2021, and even without considering the longevity, Epson has a

substantial advantage over anyone else in ink technology – their Pro-10 inkset is equivalent to Canon’s Lucia Pro 12, and there’s still a larger version.

In addition, Epson has the 3 to 1 advantage in print longevity, which is enough that it makes a real difference in higher-end print sales. I’d certainly sell a Canon print as a greeting card (I’d also sell a dye-based print as a greeting card – longevity isn’t terribly important in that market), and I’d probably sell a Canon print at an art fair where customers are looking for wall decoration rather than collectability. Would I sell a Canon print in a gallery, knowing the current longevity situation? Probably not – I wouldn’t feel right selling a print that I knew was not as permanent as it could have been. HP’s current printers offer at least the longevity of Epson prints, but they have gamuts more typical of mainstream printers from 2010 or so. I’ve never used a pigment-based HP, either the Z3200 generation or the current Z9, but I would be concerned about HP’s ongoing support for photo printing. Parts shouldn’t be a problem, due to HP’s position in the graphic arts market, but are they going to provide photo-optimized drivers? Are paper manufacturers going to offer the same quality of profiles for a far less common printer? Most manufacturers do offer some level of profiles for the Z3200 and Z9 series, but not all – Moab and Red River are exceptions, and the most important exception is ImagePrint Black, which supports Epson and Canon plus HP’s big latex-ink sign printers, but not HP photo inkjets.

One weakness of Epson’s multiple inksets is that you cannot use smaller printers to perfectly proof larger ones. You can get close, especially with images whose gamut is not extreme, since the basic eight inks are the same across all current-generation Epsoms. If the image gamut fits within what the basic eight can do, all of the current Epsoms should be very similar – it’s when there are highly saturated colors that one or another might show its strength. A P900 will easily exceed a P7000 or P9000 in blue and violet, so an image with deep sky or ocean might look better on the smaller printer. Conversely, a P7000 or P9000 will have something in the warm tones and on saturated foliage that a P900 doesn’t, due to orange and green. A P7570 or P9570 should combine the two advantages, while a P10000 or P20000 may be smoother than anything else in gray transitions, and is the best black and white printer of the bunch (while losing both the extended blues and the warm tones and greens).

The basic eight inks are so good that even the “wrong” printer for any particular print will do a very nice job – but it won’t be identical to another Epson with a different ink variation. I’ve certainly printed fall images with saturated reds and yellows on the P900, and it does a very good job, similar to a modern Canon, but I keep thinking back to the extra pop on that old Stylus Pro 7900 I had around some years ago, and looking forward to the P9570 for those particular images. Conversely, the P900 is BY FAR the best Epson I’ve used in the cool tones.

Canon has eliminated this confusion by putting their full Lucia Pro inkset in everything from the 17” Pro-1000 (the P900’s closest competitor) to the 60” Pro-6100. Canon’s full inkset goes back to 2015, and isn’t up to Ultrachrome Pro standards of gamut or longevity, but you can proof a print on a desktop Pro-1000 and pull a 60×90” version off a Pro-6100 at a print studio with confidence that the colors will be the same (they can actually share profiles, although the Pro-1000 is sometimes profiled separately). This was a brilliant strategy, but it’s held back by an older inkset

with significant print longevity issues (I was, frankly, shocked when I looked up the Wilhelm results – I knew Epson had a breakthrough with their new yellow, but I didn't know how big).

Conclusions

The Epson P900 is, without question, a Highly Recommended printer, and Ultrachrome Pro in its many varieties is presently the best inkset on the market. Who's the P900 for? First of all, it's the most reasonably sized and priced entry into full-on fine art printing. Anything smaller is going to use a reduced inkset that lacks one or more of the "basic eight" inks, dye-based ink, tiny cartridges or a combination of the above. Compared to the smaller P700 with an identical inkset (but much smaller cartridges), the P900's combination of 16×20" printing and much more economical cartridges is well worth the extra \$400. It comes with about \$200 in additional ink, so the real price difference is more like \$200, and they aren't radically different in physical size – they are almost exactly the same height and depth, and the P900 is only 4" wider – exactly the difference in carriage width. There is almost no reason to consider the P700 when the P900 is around (and you can find a P900 for as little as \$1000 if you search for rebates – there's one running until the end of December, and they aren't uncommon).

It's pretty much THE pigment-based printer for small spaces. Other than the P700, nothing else capable of a full-on fine-art print workflow with a wide range of paper choices is anywhere near as easy to live with. The P900 will fit almost anywhere a desktop inkjet will fit (It's actually less bulky than many print/copy/scan machines, although it's wider to accommodate the 17" carriage). It has no problem fitting in small apartments, and would probably fit in a van for the van-living photographer relatively easily. It's as serious a fine-art printer as there is, yet it fits in spaces that nothing else does. Almost any other printer in the same size and convenience class is dye-based and primarily useful with resin-coated papers, while the P900 has a full fine-art selection.

Canon's older Pro-1000 enters into this discussion, but it's twice as heavy and has no roll feed option – while the P900 is primarily a sheet fed printer, it DOES have a roll option. You can't print a panorama on a Pro-1000 except by cutting sheets from a roll or using one metallic paper available in 17×39". The Canon also has the significant print longevity issue, and, despite a full 12 ink inkset, does not have a gamut advantage. While the Canon uses larger cartridges, they are enough more expensive that the ink price per ml is almost exactly the same (and Canons run through BOTH Chroma Optimizer AND Light Gray quickly, while the P900 consolidates that extra use into one cartridge with Enhanced Black Overcoat). Canon needs a new inkset with improved gamut and, more importantly, improved longevity.

It's also an ideal printer for relative newcomers to serious printing. If you're moving up from a dye-based printer, the P900 will feel familiar, yet it will open up a world of papers and deliver a very significant improvement in image quality (no matter what dye-based printer you're moving up from). It's the best printer around for paper experimentation, due to the combination of sheet feed and extremely wide profile availability. I'd be surprised to find any paper manufacturer that offers ANY profiles at all who doesn't offer one for the P900 (obvious exceptions: Canon and

HP). If you're learning to print, you're likely to be making relatively small prints, well within the capabilities of the P900 – and there can be no better tool. If you decide to start making big prints (or a ton of prints) and move up to a big roll-fed printer, P900 experience is highly transferrable – same papers, very similar inkset.

The third use case for a P900 is as a second printer for an owner of a (particularly Epson) large-format printer. Having a sheet-fed P900 around makes several things easier. One is small prints – pulling 8x10s off a sheet-fed printer is a heck of a lot easier than running them on a roll. Another is in experimenting with papers – I've mentioned elsewhere that it is a really superb printer for paper experimentation, and committing to a 24" or especially 44" roll of something is a much bigger deal than buying a pack of 8.5x11" to experiment. Since it travels relatively well, it is the right printer for extended shooting trips away from home (if you can take a printer other than a little dye-sub at all). If you move frequently, a P900 is about as much printer as you want to manage, but it is highly manageable. If you spend a significant part of the summer somewhere, it's certainly worth taking the P900 along. You can even make things like business cards on a P900 – one case where you want to is if you want to use a photo on your card, and the "office" printer is a laser (or if you do little enough text printing that the P900 IS the office printer). I use it as my office printer, since the vast majority of my written work is submitted online and rarely printed. The occasional text page is just fine on the P900, and (other than not duplexing), it'll handle more than that as well. It's a relatively slow text printer, but quality is excellent, with the benefit that photo quality (on mixed text and photo documents) is unbeatable.

The final compelling use case for the P900 is for the student of photography. A good printer is essential to really learn the art and craft of photography, and the P900's combination of reasonable size and price, exceptional print quality and encouragement of paper experimentation make it an excellent choice. It's probably at the top end of many students' shopping lists, with questions of whether it's worth the extra investment compared to a good dye-based printer.

Compared to something like an ET-8550 to learn on, there are two questions. The first is how much the P900's significantly wider color gamut (and better black gradients) matter? To a beginning student, probably not much – but as you progress into intermediate and advanced studies, they become more important. The second is whether you want to get into paper experimentation. The ET-8550 is at its best on a midrange resin-coated paper like Epson Ultra Premium Luster. The P900 does a nice job on that luster paper, but opens up a much wider range of papers as well, from higher-end fiber-based luster and gloss papers to matte art papers and specialty papers from metallics to Washi. Weighed against that is the P900's (modestly) larger size, higher price and higher consumable cost. For the more advanced student, or for a student in the earlier stages of a program that will lead to more advanced work, these advantages are likely to be compelling.

The two factors (other than carriage size and maybe the extended gamut in warm tones and greens – that will require the comparison test I am preparing with the P9570) that might lead some to consider a larger printer are speed and durability. The P900 is not a slow printer, but it is not a blindingly fast one – around 15 minutes for a 16x20" print at the highest quality settings (and why would you use a printer like this on lower

quality settings?). The roll-fed P9570 is three or four times as fast, or more if prints are ganged up on a roll. The P900's speed is just as it should be for its intended use, as a fine art printer for an individual photographer or a small studio.



Epson's P5000, their 17" solution for high volume production. It's three times the size of the P900.

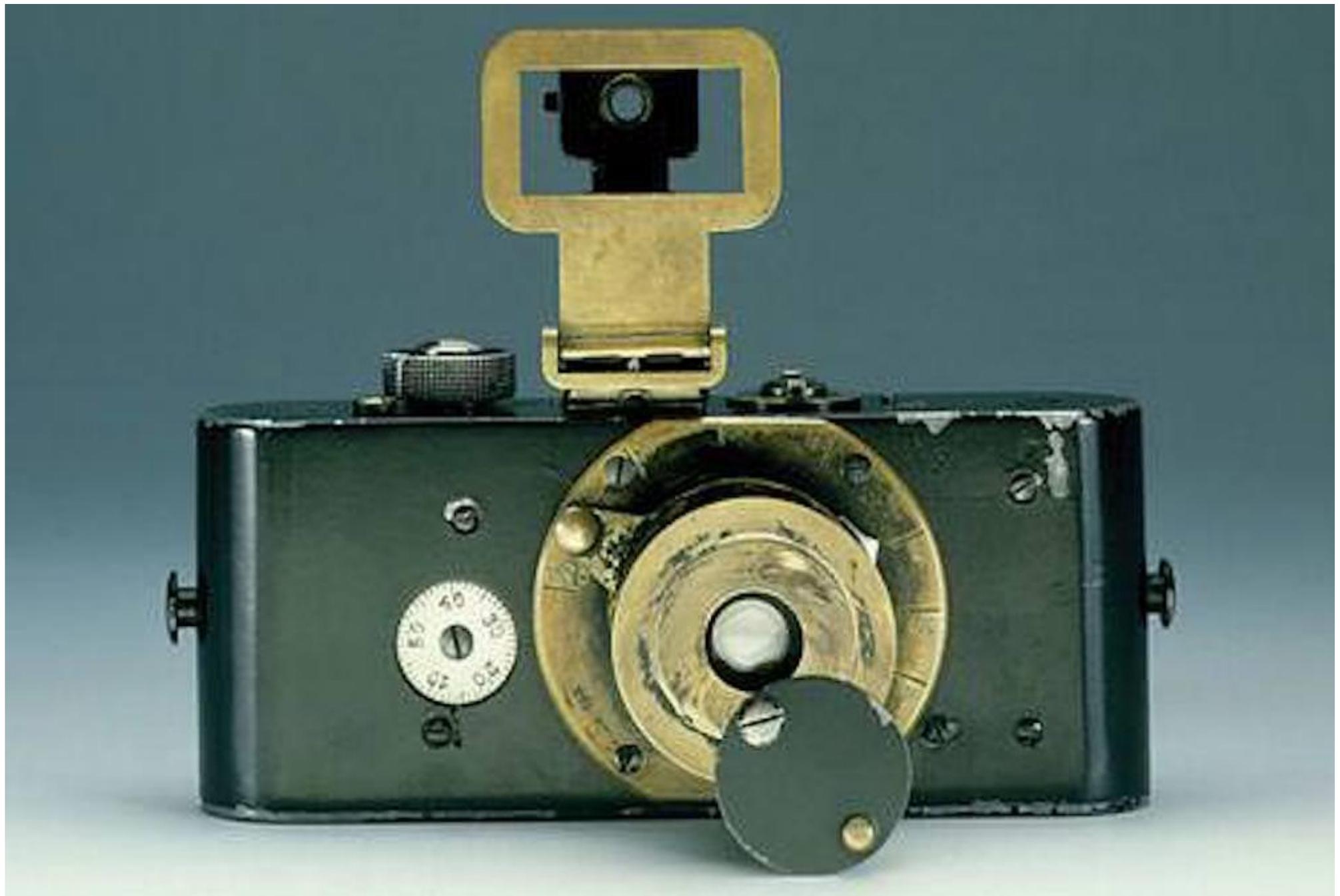
It's not a production printer – Epson makes a 17" production printer (the P5000), which is three times the size and weight of the little P900. It's also a slightly older ink and head generation – the P900 should edge it out at the margins on image quality. Most photographers don't need the P5000, and the 17" production series has a reputation for being finicky if they aren't used enough – they're fine if they're used every week, but older models had a reputation for clogging if they sat around. I haven't used one in ages, so I can't personally comment on the current P5000's susceptibility, but Epson improves that in each generation. If you are printing a lot of work for sale (an event or commercial photography business that primarily sells prints), there is certainly a reason to consider the speed of a production printer. If you are printing for shows or gallery sales, unless you are REALLY busy, P900 speed is fine.

The same is true of durability – the P900 is a well-built printer, but it is built for a photographer, not a print shop. If you are (like the majority of LuLa readers) someone who prints for yourself, or for a few friends, or maybe even a small, art-oriented print for pay business, the P900 is plenty of printer. If you are running a larger print-for-pay business, you probably want the tank-like durability of a big machine, and you're capable of doing the routine maintenance they require. Schools and colleges with the space and budget for something like a P9570 will appreciate the build as multiple users feed odd things into the machine. Digital darkrooms for rent (is there such a thing – there were shared co-op darkrooms in the film era, and, if the digital equivalent doesn't exist, it should), could also use a super-durable industrial machine. For most photographers, a P900 level of durability is the right one – the size, weight and cost of a big printer are a significant minus unless you need the wide carriage, and the P900 will handle periods of use and disuse better than a bigger printer.

The final reason one might consider a roll-fed beast is carriage size. Certain types of photographs want to be printed big, and certain types of spaces would do well with big prints. 24" roll-fed beasts print big, and 44" roll-fed beasts print REALLY big. A 24" printer is plenty for most paper prints, although 24×30" and 24×36" are popular sizes that are actually best printed on a 44" printer, because borderless prints are very hard to mat and frame. You can either print slightly undersize on a 24" printer (generally not more than around 23" wide or your frame shop will hate you), or print true 24×30" or 24×36" on a 44" printer. A 44" printer will also print 30×40", 30×45", 40×50" and 40×60", relatively standard but oversize paper prints. Canvas and other fabric printing, which is unlikely to be matted and loses some size on the edges to stretching, often goes bigger, and a 44" printer can print a canvas with an image area of 40×50" or 40×60" even after stretching. These are huge sizes, and not everybody needs them. Epson America told me (to my surprise) that the most popular canvas print size is actually a 12×12" square – within the capability not only of a 24" printer, but of the P900 as well, even after stretching losses.

There is one more carriage-size consideration. The P900's maximum standard print size on most paper is 16×20" on 17×22" paper, a popular size that fits well in many homes, and an easy size to get mat boards for. Unfortunately (and this is on the paper manufacturers, not on Epson), most cameras have a 3:2 ratio sensor, which leads to an uncropped print size of 16×24". One would think 17×25" paper is the solution to this problem,

and the P900 happily accepts 17×25” paper – unfortunately, 17×25” paper doesn’t really exist (although 16×24” opening mats DO). B&H lists 171 17×22” papers and FOUR 17×25” papers (two matte papers each from Moab and Inkpress).



Who would have thought it? The format Oskar Barnack chose for the Ur-Leica has bedeviled people trying to print on standard paper ever since.

This problem is actually (much) older than digital printing! When Oskar Barnack chose the frame size for the Ur-Leica way back in 1913, he chose to make it exactly twice the size of a 35mm movie frame. The movie frame was 18x24mm, so the 35mm still frame became 24x36mm, introducing the 3:2 (1.5:1) aspect ratio. Standard print sizes had already been set based on a 5:4 (1.25:1) aspect ratio, and Barnack COULD have chosen to make the Ur-Leica 24x30mm for exactly the same aspect ratio as 4x5", or he could have chosen the very close 24x32mm, which would match the 4:3 aspect ratio most roll film (except the 6x6 cm square) is aiming for. Instead, he gave it a long, skinny frame that has stayed with us for well over a century, and that paper manufacturers have never noticed despite something like a billion cameras made in the past century that use Barnack's aspect ratio. Personally, I prefer the 1.33:1 GFX/645 frame for many images, but the Barnack frame has been with us forever, and it's here to stay.

. Most formats other than 35mm are pretty close to the standard print ratio. 4x5" and 8x10" sheet film are exactly the same ratio as the standard prints, and are probably where they came from. 6x4.5 cm (645 medium format), 6x8 cm (obscure medium format), whole plate (archaic sheet film size, 6.5x8.5"), and 110 film are very close. In digital sensor sizes, Micro 43 and Fujifilm GFX are the closest to standard prints (at 1.333:1), while Phase One's larger medium format sensor is just a bit longer and skinnier at 1.35:1. Unfortunately, full-frame, APS-C and APS-H make up the vast majority of digital sensors in interchangeable-lens cameras, and they're ALL in Oskar Barnack's 1.5:1 ratio. Neither the camera manufacturers nor the paper makers are likely to budge after over a century, so we're left with cropping or mismatched sizes! If you like to crop anyway, you're fine.

The 1.5:1 ratio print sizes that actually work with easily available papers and mats are 6x9" on 8x10" or 8.5x11" paper (7x10" is useful on 8.5x11" – it's close but not exact, and it's easy to mat), 10x15" on 11x17" paper, 12x18" on 13x19" paper (this is the one and only case where camera manufacturers, paper makers and mat companies are actually on the same page) and 16x24", which pretty much requires 17" roll paper. 8x12" is easy to mat, but not as good to print – the options are printing wastefully on 11x17" paper, two prints at a time on 13x19" paper or three prints on a 17x22" sheet (one perpendicular to two). A 17" roll printer adds 16x24", which is a useful size. 24" roll capability adds 20x30" as a standard size, and 44" roll capability adds 24x36", 30x45" and the huge 40x60" size. 40x60" is the largest print that is reasonably easy to mount on a backing board, and backing boards large enough for a matted 40x60" print are hard to find, since the boards themselves are 40x60" – but a print that size should probably be presented without a mat.

The P900 will print 6x9", 7x10", 8x12", 10x15" and 12x18" with ease (all of which have easy mat availability online). 14x21" is a nice size that fits on 17x22" paper, but the pre-cut mat industry has never heard of it. If you cut your own mats or get custom cuts, it's great, as are any number of fractional sizes including the very useful 7x10.5" on 8.5x11" paper. The optional roll unit (or the rare 17x25" paper) adds the very useful 16x24" size, but the P900's roll unit lacks a cutter – you are left trimming the print off the roll with scissors. One of the very few arguments I can

see for the P5000 over the P900 (assuming that you aren't churning out hundreds of greeting cards and 8×10" prints) is that it's a much easier machine to print 16×24" on, because of the excellent, cutter-equipped roll unit.

The P900 is such a useful machine for photographers, and such a good fit for so many photographers' usage levels, that I have repeatedly encouraged Epson to make a "P1100", a P900 in a 24" width with a built-in roll feeder and cutter. I have suggested both the "P1100" and a "P1200" – same thing, but with orange and green inks added. Compared to the existing P7570, a P1100 or P1200 would be much smaller and lighter, since it wouldn't support 700ml ink tanks, nor be built for use in a busy graphic arts shop. It would be around the speed of a P900 (~30 minutes for a 24×36" print at maximum quality) and it would use ~100-150 ml ink cartridges. It would retain a similar sheet feed mechanism to the P900 in addition to a similar style of roll feeder (built in – sheet paper >17×22" is rare enough that roll capability shouldn't be optional). The only real addition would be a built-in cutter.



Epson already has a compact wide-format chassis they could modify to make a photo printer like the “P1100”. This T5170 actually prints 36” wide, and it’s barely 100 lbs with the stand. The printer is 50” wide, while accepting 36” paper. The 24” version only weighs 60 lbs (no stand – the stand adds 25 lbs), and is only 38” wide.

A printer like the hypothetical P1100 might weigh under 100 lbs without the stand, and it might be around 36” wide. The P900 is 25” wide, adding 7 inches of carriage would make it 32”, and it might have to add a bit of extra width to support the wider carriage and an optional stand. It would probably be something like 22-24” deep (similar to a P900 with the roll unit), and perhaps 10” tall (a little taller than the P900 to accommodate somewhat larger cartridges in the same position)? It would certainly need at least an optional stand, but the stand might not even need to be included – that printer could sit on a largish table or a counter easily enough. The P7570 (existing 24” roll printer) weighs a stout 268 lbs (some of that is the stand), and is 55” wide, 26” deep from front to back and 48” tall including the stand (the printer itself is more like 24-26” tall, but it is essentially always used on the stand – to the point where Epson doesn’t bother listing the height of the printer alone).

That is a huge difference in livability, without much difference in functionality for the average photographer. In one way, the P1100 would be even more useful to the individual photographer than a P7570 – it might well have a better sheet feed. Epson claims a much improved sheet feed on the newest generation of the big printers, and I haven’t used one, but every big printer I have used except the old HP DesignJet 130 (which was also about the size of a “P1100”) has been a roll-first, bordering on roll-only machine.

Even a 44” “P1400” is worth considering, although the weight of 44” media could mean that the mechanism would need so much stiffening that it is getting much closer in size to the P9570. Interestingly, there is at least a partial way around this – the heaviest rolls of 44” media aren’t what I thought they would be (heavy watercolor papers and canvas). They are actually very long (~200 foot) rolls of almost plain paper, used in graphic arts shops, but not really by photographers. I hadn’t realized those rolls were that long – once I saw the lengths, it made sense. Setting a 100 foot length limit would keep the heaviest rolls around 20 lbs, and a 50 foot length limit would keep even really heavy media around 15 lbs. The problem with a 50 foot limit is that, while fine art papers are almost all in 39’, 40’ and 50’ rolls, things like Epson Premium Luster and Enhanced Matte come in 100’ rolls. Unless not only Epson but other paper brands are willing to repackage midrange papers, a 50’ limit removes a bunch of useful papers from consideration.

A 44” printer would also need larger cartridges – anything much under 250-300 ml is too small. There have been a number of compact 24” printers with optional stands well under a hundred pounds over the years, although none with a true photographic inkset. I don’t recall ever seeing a truly compact 44” printer, nor one that can be used without the stand – even the relatively svelte ones are a couple of hundred pounds and 67-68” wide.

One way around some of the drawbacks of 44" would be to make a 36" version instead. The big graphic arts printers our photo printers are based on come in 24" and 44", so photographers don't tend to think about 36" printers – but almost all of the standard art papers come in 36" rolls, and 36" is wide enough for some very large prints – not only do true 24×30" and 24×36" work (popular sizes that have to be borderless on a 24" printer, causing matting issues), 30×40" and 30×45" work even on canvas with the stretching losses, and 32×48" works on any non-canvas media or even on canvas with a low-profile stretch. Even 36×48" and 36×54" borderless are possibilities, because extremely large prints are often framed unmatte.

Whether or not a 44" (or 36") printer on the P900 idea makes sense, I think a 24" model certainly does, and the paper feed is easier because even the heaviest standard 100' rolls in 24" width are only a little over 10 lbs. Moab does package Somerset Velvet 255 in 100' rolls (very oddly for a watercolor paper), which are more like 15 lbs. The big roll of Somerset is a very expensive special order item even at B&H, and it is more commonly found in much less unwieldy 33' long rolls.

For many photographers, the P900 will be a Goldilocks printer. It has a truly superb gamut and image quality, approaching the best on the market. It is truly archival, far exceeding any other desktop printer except the nearly identical P700, equaling the newest larger Epsoms, and losing on the margins only to a couple of HP models that have significant support worries. A print from a P900 on a well-chosen paper is among the most archival photographs ever produced by any means – the processes that compare are exotica like platinum/palladium and carbon pigment, along with the very best B+W silver gelatin prints on truly fine fiber-based paper. It is the most versatile printer made from a paper selection viewpoint – there are only a few media that require a larger printer (some rigid media will go through the flat feed of the P7570/9570, but not the P900), and those are outweighed by the convenience of easily changing media every print if desired. At the same time, it is relatively affordable, has decent consumables costs and fits easily into most spaces and lives.

It is not quite the broadest gamut photographic inkjet printer on the market, nor is it quite the most archival, or quite the cheapest to run. On the other hand, it does well in every one of those categories, and getting an improvement in any one will necessitate a significant sacrifice in something else. Its biggest drawback is not even its own fault, but a product of the century-old "Barnack war" between companies who make cameras with a 1.5:1 aspect ratio and paper makers who stubbornly stick to 1.25:1 print sizes. Come on, paper makers – 17×25" is a REALLY useful size (and, while you're at it, make 9×13" paper for 8×12" prints)! It's easier to adjust some paper cutters than to replace most DSLRs and mirrorless cameras.

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