



Fig. 1 The author in 1968 with his first Rolleiflex

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A Passion for Photo Technology

*Looking Back at 50 Years of Photo
Technology*

2012

Preface

When, as is my habit, I go to bed late and then spend twenty minutes looking at one of the many photography books I have accumulated, I am sometimes curious to find out more about the photographers whose pictures have interested me. In particular, I want to learn about their cameras, the films and developers they use or the inkjet printers and papers they prefer. In other words: I am not only interested in the visual works, which often enough are impressive, but am equally intrigued by the technology with which they have been created. There is a fascination about cameras, those structures made out of glass and chrome or deep black – the fascination of the collector for the object of his desire. For the collector, cameras transcend their existence as soulless apparatus and turn into cultic, even beloved sculptures. In this essay, I am writing for those who like my photographs and who are equally interested in the technology which has accompanied my photographic work of the past five decades.

The analogue age

From 1956 until 2005 I usually worked with the most modern analogue 35 mm cameras of the respective time and generally used FP4 film by Ilford with Perceptol development, Agfapan 100 film with Rodinal development, or later, in the colour genre, Velvia film by Fuji. Occasionally, however, I also worked with my medium-format cameras. I found the large 4 x 5" format to be too slow and too heavy for my way of working, although on the other hand, I appreciate the wonderful image sharpness which I achieve with my Wista-4 x 5" or with the Sinar Handy. Today my large-format cameras mostly tend to occupy a place of honour on my studio shelf. To me, the painstaking selection of a lens suited for the respective motif was always a basic prerequisite for the successful production of good photographs. In general, I have good and very good lenses in my collection. Beyond that, however, I do have a few lenses that have been termed "divine" by the photographer Herbert Jäger, my friend in photographic spirit to whom I am indebted for much valuable advice concerning the improvement of my technique. For instance, the Planar 1:2.8 of the twin lens Rolleiflex 6x6, the 1:1.2 – 80 mm Apochromat lens of the old Canon FD series, the 50 mm Medical-Nikkor and the 120 mm Hasselblad lens are part of this group - and of course not least the 38 mm Biogon belonging to the Hasselblad SWC.



Fig. 2 The author in 1978 on a photo tour in America

During our trips prior to the year 2000, I used the Asahi Pentax 6 x 7 as standard medium-format camera for many years, followed by the lighter-weight Mamiya 7-II, an exceptionally good 6 x 7 camera with an aperture-priority auto-exposure mode. It is especially well suited for landscape photography. Its lenses are of exquisite quality and are not inferior to the Zeiss lenses of the Hasselblad. The 6 x 7 format meets my idea of the ideal proportion for many motifs. A fifteen-fold enlargement results in a picture format of 90 x 105 cm. It



Fig. 3 *My First Portrait: Eckhardt Machens*, taken in 1956 with a Kodak-Retina IIIC

seems sufficient to me, even if one wanted to cover the walls of MoMA in New York. Unfortunately, the Mamiya as viewfinder camera can only be used in the telephoto field up to a maximum of 150 or 210 mm focal length. That is why for real telephoto shots, I also like to use the Hasselblad with lenses of 350 and 500 mm in focal length.

Beginning a few years ago, I have also occasionally worked with the 6 x 12 Noblex panorama camera. Thanks to the built-in Tessar lens, extremely sharp photos even at the edges can be achieved. Not only does the camera use up batteries fast, I was also never really able to appreciate the format because its unusualness often dominates the content of the picture.

There is one technical aspect to my photographic work which I do not want to forget to mention, even if it applies more to the exposure technique rather than that of the camera: beginning in the early 1980's, I became interested in taking pictures of classical-modernist sculptures. Here I like to concentrate on works by Auguste Rodin, Wilhelm Lehmbruck, Georg Kolbe, Aristide Maillol and, among the more modern artists, Alberto Giacometti and Marino Marini. Some express the opinion that the photography of sculptures is merely the display of already existing works of art. While this may be the case, it need not be. Indeed, great sculptors such as Rodin and Giacometti valued the photographic interpretation of their work. Rodin had several "in-house" photographers – among them Alfred Stieglitz, and Giacometti even wrote a very moving letter on this subject to Matter, his photographer. When making such experimental photos, I generally work with shutter speeds of 0.2 ... 0.5 seconds and move away from the object with the camera during the exposure, so that an image with blurred structures is achieved. Usually, it still allows for recognising the main characteristics of the sculpture but gives it the appearance of momentum. Only very few of these photos immediately correspond to what I originally imagined, and thus I should actually use one of my Canon digital cameras, with which I could immediately view the image and delete it if need be. However, for reasons that I cannot explain, I usually prefer to use black-and-white film for these photos.

The digital leap

At the turn of the millennium, a fundamental change in my photographic technique began to emerge. It became apparent that digital camera technology would soon be smaller and lighter in weight than its analogue counterpart, and that in addition, it would offer many advantages in handling. This is why in 2006 I decided to primarily work digitally in the future. I selected the Canon 5D with a Canon lens (focal length 24-105 mm 1:4-L-IS-USM) as my new main camera. I also work with the telephoto lens Sigma 70...300 mm APO-DG and for wide-angle photos, with the Sigma 20mm 1:1.8 EX-APO-DG. To this day, I have never regretted taking this step. The ability to control the process during and after the exposure,

the high imaging capacity of modern zoom lenses, being able to dispense with work in the darkroom and to send images electronically are significant advantages as opposed to analogue technology. Yet despite all euphoria, it must be said that the atmospheric beauty of coarse-grained black-and-white photographs such as Michael Kenna has so skilfully created in his book *Le Notres Gärten* can hardly be achieved by digital means. Generally speaking, my impression is that prints of black-and-white photographs taken digitally appear to be less impressive than those in colour.

From 2005 on, I also always carry a Canon IXUS, a Lumix DMC-LX by Panasonic or a Samsung NV 24 on our trips. The pocket format of these cameras weighing only 200 g allows me to take pictures which would not be possible with medium-format cameras or larger digital cameras. The camera fits into the pocket of a coat, and with the resolution range of 10-12 mega pixels per image, good photos measuring up to 50 x 70 cm can be printed. This is consistent with the possibilities offered by 135 mm film. Aspherical zoom lenses in the focal length range of 35 to 110 mm (in small picture format) and image stabilisation ensure exceptional image quality even when taking hand-held shots. For instance, one can even take panoramic photos with the Canon-Ixus 960 IS by means of the "stitch assistant". By using SD chips weighing not more than one gram, the weight of the film material is practically omitted; previously it always had to be carried along. With a 4 gigabyte SD-chip, approximately 750 JPEG images of 3000 x 4000 pixels per image can be saved. In my opinion this type of camera will gain relevance in the future. In many cases, the weight of a camera is decisive for its use, and the lighter and smaller it is, the more often one carries it in one's pocket. Another aspect is that one does not attract attention with such a camera because almost everyone takes photos with such a device today. It is possible to connect these cameras to a HD or Full HD television set and to view the images with the highest quality.

For my photographs with larger cameras, I always use an extremely light Gitzo carbon fibre tripod. When travelling, I also carry an Epson P 5000 digital media player to which I can transfer all images saved on a chip without any effort. I can then view them on a large screen together with my wife Yuko when we are in our hotel room at night.

For slides or negatives of my analogue photographs, I use the Flextight Precision Scanner by Hasselblad-Imacon in order to convert the material to digital files. Other scanners that I tested – for instance, the Nikon scanner – did not come close to its reliability nor were they as powerful as the Imacon scanner.



Fig. 4 The author in 1988 in his laboratory. The computer is a Commodore 64 with 64 KB RAM.

My ideal camera



Fig. 5 *The author in 1988 with his Asahi Pentax 6 x 7 camera in Venice*

The high-quality print

Every photographer has special wishes for one or two improvements to the equipment, and usually such wishes come true after a few years. In other words, one must only be prepared to wait. I would like a camera such as the Lumix LX2 by Panasonic with a KB full format chip and a minimal resolution of 16 mega pixels in the 3:4 format so that sharp pigment prints measuring 80 x 100 cm can be achieved. Of course I know that no small cameras with large chips can be built because it would require an increase in the size of the lenses – but who knows what ideas the developers will come up with in the future. The camera ought to have a zoom lens with a focal length of 28 - 135 mm; in the macro area, a minimal focusing distance of 2 cm would be desirable. However, that would be less important. The camera's display should continually depict the image to be taken and should have a folding LCD hood so that the image can be viewed without difficulty even in bright light. When it comes to aspect ratio, I wish it were possible to have an aspect ratio in the Hasselblad format of 1:1, in addition to 16:9, 2:3 and 3:4. As far as I am concerned, the 2:3 aspect ratio could be dispensed with.

High-grade photo paper has always been a prerequisite for creating a photo as a work of art. In fact, the paper is often decisive for the purchase of a photographic print. The producers of modern inkjet paper for photographic prints have taken this into account; especially Hahnemühle, but also Canson, Ilford, Sihl and others manufacture paper which creates the impression of the most beautiful, classical photo baryta paper imaginable. The print is the substrate which gives the spirit of a photo its visual existence.

A fundamental factor for the success of an interesting photograph is its flawless presentation. A good print makes an impression on me even if I am not particularly interested in the subject. Until 2002, I only used baryta paper in my chemical photo lab. In the 1950s I used the Agfa paper 114e at first. It was a wonderful silver bromide paper with a matte finish and a rough surface. When Agfa ceased its production at the end of the 1960s I turned to the Tura baryta paper from Düren. At the beginning of the 1990s, the production of this paper ceased as well, and I ended up with the Ilford baryta paper, which is variable in contrast.

Today many papers have ceased to exist and the quality of the pigment printers by Canon, Epson and Hewlett Packard has become so good that chemical processing like Lambda printing does not make much sense to me anymore. In addition, the durability of the modern prints has been significantly improved over the past few years; now a life-span of up to 300 years is being discussed for some of them. However, in order to generate prints of the highest quality, only the very best printer is good enough. Thus I have decided in favour of the Epson 9800 pigment printer, combined with paper by some

renowned manufacturers. Until now I have enjoyed working with the Premium Glossy Photo Paper 250 by Epson, which comes in a roll and the Foto Rag 310 paper by Hahnemühle. In the future, I will also use Ilford's Gold Fibre Silk and test the paper produced by Sihl. After the pigment printing on Epson's Premium Glossy Photo Paper 250, I have large prints mounted on a Dibond panel by means of a double-sided adhesive film. Furthermore, the image side of the large prints is protected additionally by a Neschen PVC foil so that the pictures can be easily cleaned with a moist wiper from time to time.

On picture formats



Fig. 6 The author in 1998 viewing one of his graphic works

The dimensions of prints labelled as "large" have increased tremendously over the past 50 years. Around 1960, I thought that 50 x 60 cm would be the largest print I would ever produce. At that time, no larger format paper was available, and most photographers were working with prints measuring 24 x 30 or 30 x 40 cm. Agfa produced papers on rolls, but they were very laborious to process and therefore most photographers abstained from using them. Today, when I work on large pigment prints in the landscape, landscape architecture and megalith genres, it is usually in the 111 x 130 cm format; sometimes I consider ordering a printer with which it is possible to produce pigment prints measuring 160 x 200 cm or even larger. Of course, the maximum measurements to be achieved for pigment prints are dependent on the given format of the negative, the number of pixels in the scan, or on the size of the chip in the digital camera. For large photos, I work with a resolution of 180 dpi; for small ones, the resolution is 220 to 300 dpi. Most people who look at my photos say they particularly like the 111 x 130 format, but many of them do not have the free wall space in their homes to hang such large pictures. Because of this, my pictures are usually available in several different formats. One does not always need large prints in order to achieve an effect in the room. Small prints are often sharper, make a more valuable impression and are well-suited for being presented as a series. For instance, the above-mentioned English photographer Michael Kenna prints all of his Hasselblad negatives exclusively in the 24 x 24 cm format. Naturally, such prints can be easily handled, shipped, framed, exhibited and presented as a portfolio. Also, there are some subjects that are better presented with a small print than with a large one, such as are mussels, insects and still lifes. The older I become, the more I enjoy these smaller prints.

My cameras since 1950

When looking back on all those cameras I have worked with during the course of the past five decades, I recall some which are unforgettable: the Rolleiflex 6x6 with the Zeiss Planar lens. Due to its top-quality lens, this camera's imaging quality is without comparison. Next I wish to name the Canon AE1, which was small and easy to handle and was the first camera with an aperture-priority auto-exposure mode; it made



Fig. 7 Large format camera, WISTA 4 x 5"

photography much easier. The A1 and the T90 were subsequent developments of the AE1 with an even greater array of options. The 520 and the SWC Hasselblad with their 38 mm biogon lens are also unforgettable. The latter one, in particular, is top world-class in the wide angle field. As a landscape photographer, I have become especially attached to the Mamiya 7II. It is comparatively lightweight and robust at the same time. In addition, the quality of the lenses is wonderful - it is regrettable that no digital housing is available for it.

Year (approx.) - Camera model - Remarks



1950 - My parents' folding camera - Nostalgic bellows camera

I shot my very first photos with this old Agfa camera. My sister Ursula volunteered as a model, and I took pictures of the family.



1955 - HAPO 36 - My first own camera

I remember that I did not use this camera a lot as it ceased functioning soon. A repair was not within my means at the time.



1956 - Kodak Retina IIIC - Top camera of the 1950s

At this time, the Retina IIIC was the camera of my dreams. It belonged to my friend Eckhardt Machens. At times, I would borrow it, or we worked together and developed our pictures from Kodak Technopan film in the photography workshop of the Kolping House on Große Telegrafenstr a e in Cologne.



1964 - Rolleiflex 4 x 4 cm - Too few options

I only used this camera during my first trip to Poland. The special 4 x 4 format of the film did not appeal to me particularly. After a while, the film format disappeared from the market.



1965 - Rolleiflex 6 x 6 cm, Planar - Former professional camera

This camera served me well for many years. At some point, I sold it. Later on, I acquired a more modern version with auto-exposure, but I rarely worked with it.



1969 - Linhof Color 4 x 5" - Robust, but only for the studio

I rarely used this optical bench camera. For the studio, the options for adjustment are relatively limited, and for use outdoors, it is too bulky. However, it was useful for learning the large-format technique.



1970 - Nikon F - Status symbol of the 1970s

At the time, the Nikon F was a desired object, but the aperture indexing mechanism was coupled to the lens as a separate and rather bulky attachment. When changing lenses, the pin of the exposure metre attachment had to be placed in the receptive slot of the lenses. This was often obstructive. I did not like the camera and sold it soon after having purchased it.



1975 - Contarex SE - Top lenses, intricate camera

It was the most expensive small-format camera in the world, and the appropriate Zeiss lenses were the best to be had at the time (Leica engineers may contradict). The problem was that the films had to be loaded into light-proof film cassettes which always jammed. Torn films and many missed snapshots were the result. Once I "shot" an entire wedding with a torn film.



1976 - Canon AE-1 - Wonderful automatic SLR camera

This was the first camera controlled by a microprocessor, featuring a lens with auto-exposure. It was also the first camera that I was completely satisfied with. I have worked with it in many countries under stressful conditions without one single breakdown. Ever since I have only used Canon cameras when working with a small format.



1980 - Asahi Pentax 6 x 7 - Heavy but reliable

I used this camera both in the studio as well as on the road. However, the gear is so heavy that I had a trolley built in order to transport it. The lenses give a very neutral picture. The noise produced by the mirrors during release will even drive away predators.



1981 - Canon T 90 - Highly reliable workhorse

I have worked with the T90 often and enjoyed it. It is already highly automated, and I appreciate being able to concentrate on the artistic work while taking pictures, instead of having to think too much about the adjustment of the camera.

1982 - Canon F-1 - Indestructible small format camera with sports viewfinder attachment



This camera was especially resilient in hot and cold conditions. For easier framing, I used the sports viewfinder developed solely for this purpose. I worked with the camera for a long time and enjoyed doing so.

1983 - WISTA 4 x 5" - A loved one rarely touched



I liked this very robust camera at first sight. It was far less expensive than the Linhof Technika but of similar quality. After 20 years, the excellent Wista technicians carefully overhauled the camera so that it appears as if it were new today. Unfortunately, I am not a large-format photographer, but the camera is always close by. When I use it at times, it is always with my Rodenstock lenses with a focal length of 50-600 mm.

1989 - Hasselblad 500 - Finally, top of the line



A good camera, primarily due to the lenses and because of its light weight. However, it fell back behind the competition from Mamiya, Rollei and Asahi over the years due to its low degree of automation. And the newer version H3D is so heavy – it weighs 2.3 kg – that it is no longer a Hasselblad in the original sense of the word. The weight problem is also an issue for Rollei and Asahi 6 x 6 or 6 x 7 cameras. Unfortunately, there is no digital housing with a 6 x 6 cm chip for the 500 model.

1995 - Hasselblad SWC - Classic camera with unrivalled imaging quality



This mechanical camera which is specialised for the wide angle format is simply unsurpassed when it comes to beauty and performance. Unfortunately, one must always carry along the exposure metre if one wants to work with it – it neither has TTL nor priority aperture nor auto-exposure.



2002 - Mamiya 7 und 7II - 6 x 7- viewfinder camera with top-quality lenses

As a landscape photographer, I worked more with this 6 x 7 camera than with any of the others. It is not much heavier than a small-format SLR. With its set of top-quality lenses aperture-preferred automation, it offers the travelling photographer everything he or she needs for the landscape genre.



2003 - Canon 20 D - Lightweight DSLR, specialised lenses

A comfortably lightweight digital SLR with lenses of medium imaging quality and reliability. I did not work a lot with it because the D5 came out on the market shortly afterwards.



2004 - Sinar Handy - 4 x 5" hand-held camera without bellows extension

This camera with a fixed extension has a cult following, but I never had any success in using it. The 6 x 12 Horseman cassette, which I had intended to use together with it has a different lens to film distance than the Linhof cassette. The company Schneider Kreuznach has undertaken honourable attempts to solve this problem for its lenses but in the end it did not work.



2005 - Noblex - 6 x 12 panorama camera produces extremely sharp images, with high battery consumption

As can be expected from the Tessar lens, this 6 x 12 panorama camera was impressive due to its fantastic sharpness even into the corners of the image. Unfortunately, it does not have a built-in automatic exposure metre, and its battery consumption is huge. For artistic photography, the format takes getting used to.



2006 - Canon Eos D5 - DSLR with full format sensor

In my opinion, this is the queen of all digital SLRs for landscape photography at the moment – not considering the Eos 1 Ds Mk 3 with its 21 MP. The prints from this camera are of a convincing depth and brilliant colour up to a format of 80 x 120 cm. The camera is not as clunky and heavy as the 1 Ds Mk II or III and thus much more suitable as a travel camera in the landscape genre. Also, my impression is that the technical

possibilities of optical and electronic image transfer have been largely exhausted with it.

2007 - Canon IXUS 960 IS - Magic thing in pocket format



I am more fascinated by this 12.1 MP camera than by all of its predecessors I ever owned. It shoots extremely sharp images which can be printed up to the 50 x 70 cm format. It can be carried in the pocket, and thanks to the image stabiliser, the finest snapshots succeed – also due to the fact that one is not noticed taking a picture if one does it skilfully. Unfortunately, there is no shutter or time preselection mode, nor is there any RAW format. This, on the other hand, is provided by the Lumix LX2. However, my LX2 does not even come close to the Ixus as far as image sharpness is concerned. I hope that Canon will possibly add the missing features to the Ixus starting with the next version 2008/9, possibly even an initial focal length of 28 mm. The greatest hope, however, is for such a camera with a full format chip. But who knows, perhaps the 5D will not sell as well then? We will have to wait and see.

2010 - Hasselblad CFV-39 body - System Saved



If one wants to have the advantages of the Hasselblad system with its incomparable Zeiss lenses, but in the meantime has mastered the entire range of digital photography, then it makes sense to have this digital camera body. The sensor's dimensions are 36.7 x 49 mm, and it has a resolution of 39 megapixels. For most tasks of artistic photography such equipment is not absolutely essential, but for large-format prints of highest resolution, this camera represents a special class. Moreover, it is unsurpassed as far as retro-chic is concerned.

2010 - Sony NEX-5 - Use for Grandpa's High-End Lenses



This new mirrorless digital mini-system camera, released in 2010 – with 14.2 megapixels, APS-C type sensor (15.6 x 23.4 mm) and E- mount bayonet lens, with a camera body weight of only 280g (without lenses), has nearly all of the makings of my "dream camera". Live-viewfinder image, adapter for interchangeable lenses, focusing magnifier (for top-quality lenses with no aperture priority) and in addition a sweep panorama of 7 frames/s, 3 HDR, DRO shadow adjustment and full HD film. Whoever finds the right Zeiss or Leica lens for this camera (here the 3- mm Contarex-Distagon), can hope for dream results.

2011 - Fujifilm FinePix X100 - Object of Desire



This high-quality APS-C camera is equipped with a 35 mm (KB) fixed focal length and a super-bright, intelligent bright-line viewfinder. The optical quality of the lens can hardly be surpassed. However, the camera does not have interchangeable lenses. Moreover, the fact that the sun visor (75 euros!) is not included in the price of 1000 euros does not give the buyer the satisfaction that he/she has made a good choice.

2012 - Sony NEX-7 - Finally: The Camera for Life



Only six years of waiting and now I have it – my dream camera, which I had described above in 2006. Neither Leica nor Canon brought it to me, but Sony. Without the lens, the NEX-7 weighs less than 300 g, and I can use my Contare or Leica lenses from the sixties with it by means of an adapter. Thus, unsurpassed glass teams up with unsurpassed electronics/mechanics. I'm amazed how the ultra-sharp print (76 x 114 cm) slowly emerges from the Epson printer as if it came from a large format slide. More than 1700 line pairs per picture height, and a wistful look to the D5, the aging companion: Quo vadis amricula? And a big thank you to Sony.

As of 2012

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