

Laying down the detail

The past, present and future of multi-layer printing, by David Chow

“Once Penn had mastered the technique of multi-layering platinum printing he started to revisit his vast archive ... and to transform them from being a “thing suitable for reproduction ... into something beautiful in and of itself.”

MY INTEREST in multi-layer photographic printing techniques was sparked two years ago when I viewed a number of Irving Penn's platinum prints at the V&A print room in London. At that time I had been printing in platinum for a number of years and was surprised at the density of blacks Penn had achieved, not only this but his prints had an almost three-dimensional quality to them. I was intrigued and wanted to learn more about him and his printing technique; little did I know it would take me on a journey of discovery into other fascinating multi-layer printing techniques.

Irving Penn was one of the finest platinum printers of recent times and created some of the most exquisite, complex, valuable and sort-after prints. He is championed as leading the revival of the process in the late 1960s/70s which had been dormant for over 50 years.

The book *Platinum Prints*, by Sarah Greenough, gives a comprehensive account of his life as a platinum printer. In her essay on Penn she describes how in the early 1960s he was obsessed with this alternative printing process and devoted many years of his life to mastering the technique. His early results using a single layered approach were in his own words “less than satisfactory”. Through extensive research and testing he was able “to replicate the process, but not in spirit.” However, in an interview with Greenough in 2003, Penn told her of the moment he had an epiphany. She writes: “Persistent,

meticulous, but also intuitive, Penn had a breakthrough while he was working on a television commercial for Nescafé. As he looked at the first platinum print he had ever made he realised ‘in a flash’ that he needed to coat, expose and develop his print multiple times in order to achieve the richness and complexity he desired. Also he immediately understood that in order to coat and develop his print several times, he needed to ensure that the paper did not change size during its repeated immersions in chemicals, so the paper had to be attached to a stable material, such as aluminium.”

Once Penn had mastered the technique of multi-layering platinum printing he started to revisit his vast archive of photographs/negatives he had taken for publications in the past, magazines such as *Vogue*, and to transform them from being a “thing suitable for reproduction ... into something beautiful in and of itself.”

I was inspired by these words and set about trying to replicate his technique. As I soon found out, printing in layers requires a very different approach to single layered platinum printing and a long period of testing ensued. However I soon started to achieve some positive results.

Fig 1 illustrates the density gains in layering platinum/palladium over a period of three days and three separate exposure cycles on Arches Platine paper bonded to aluminium. This test strip was then placed alongside a multi-layered platinum print created by Penn entitled

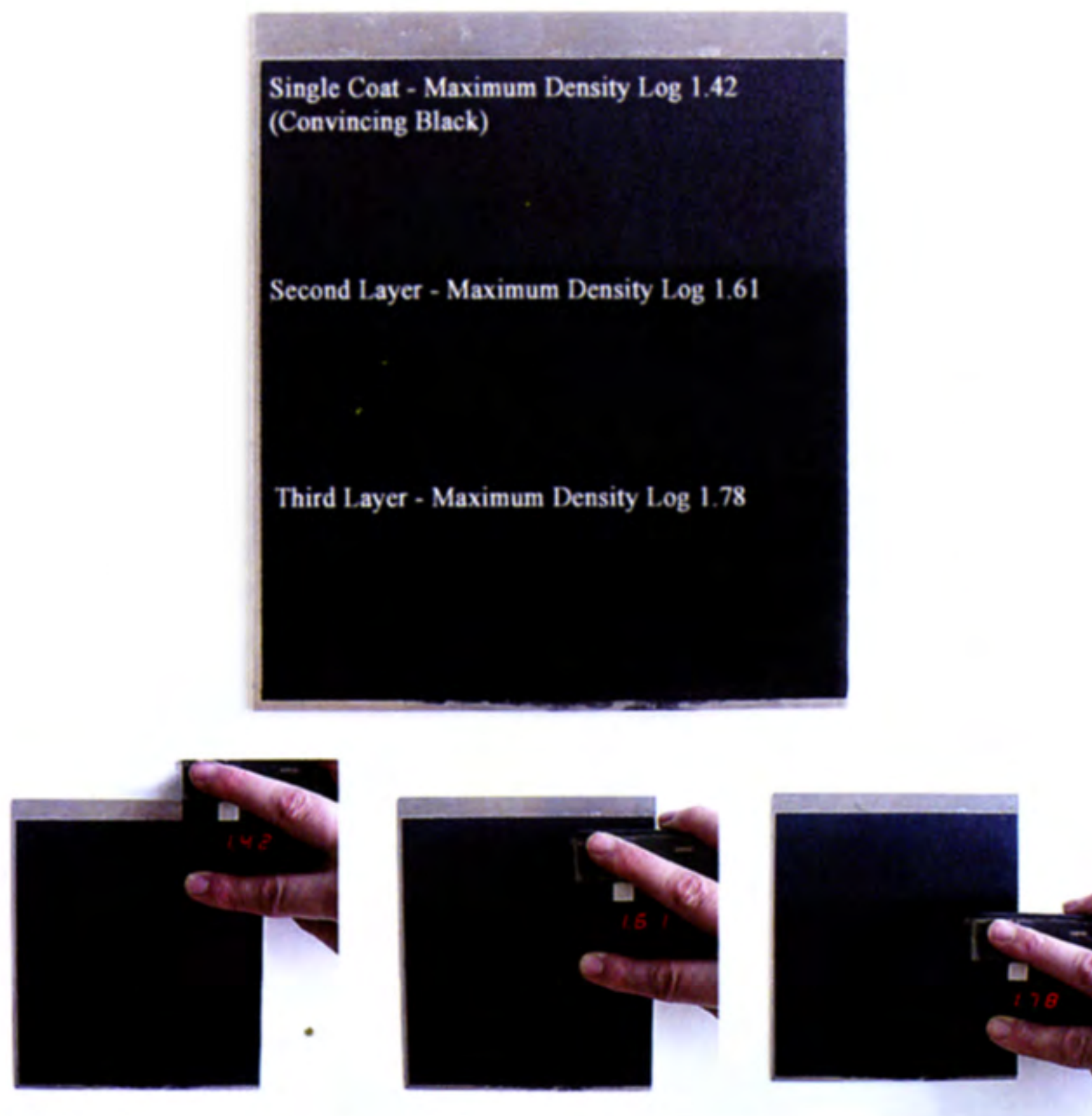


Fig 1: Test showing the layering of platinum and palladium over three successive exposure cycles giving in density gain from 1.42 to 1.78 (DMax).

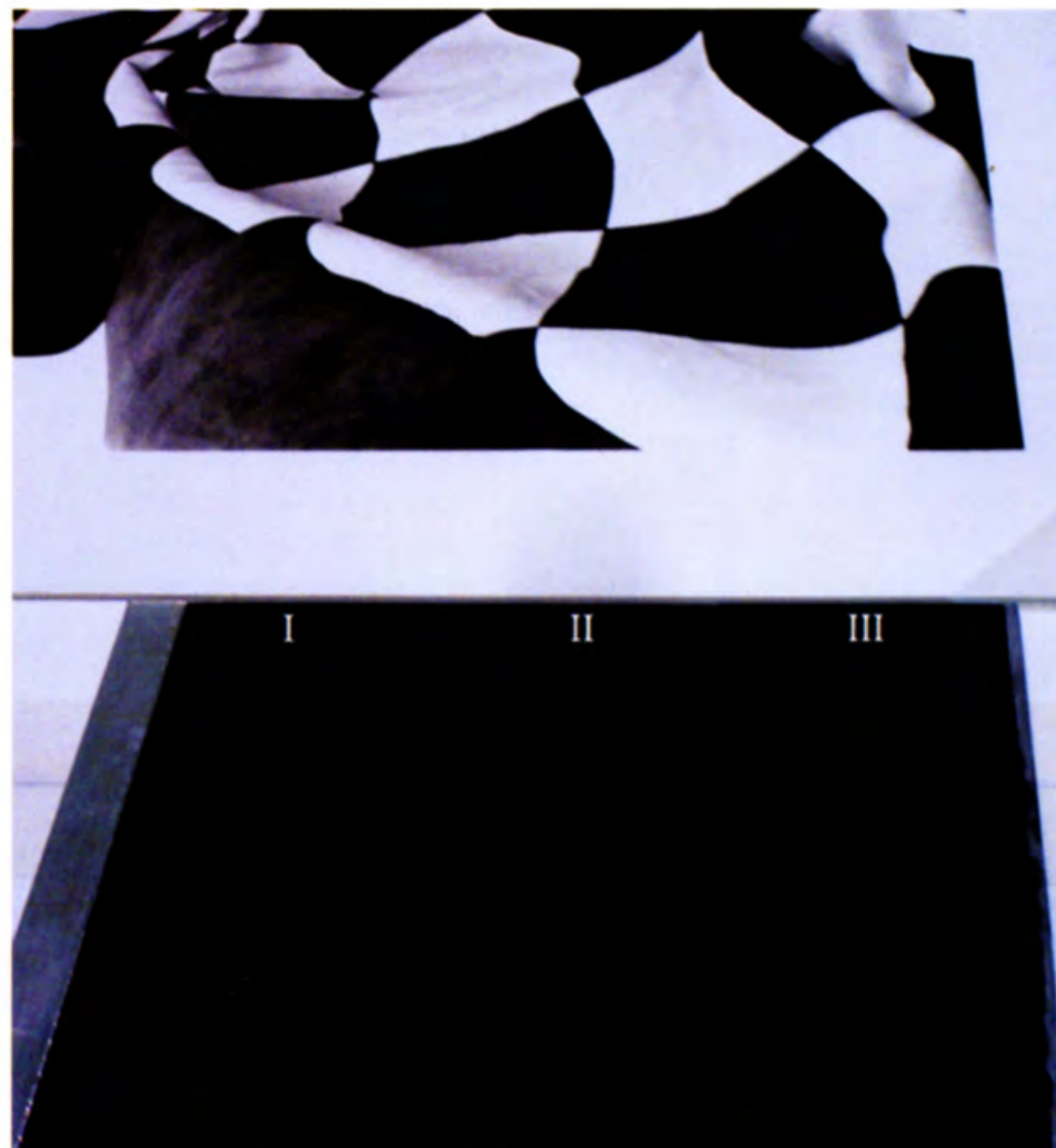


Fig 2: Comparison between Irving Penn multi-layered print and multi-layer test strip.



Fig 3: Single layer v multi-layer platinum print, printed by DC Editions (image © Claire Pepper).

Facing: A Sarah Moon colour pigment transfer print, © Sarah Moon and courtesy Michael Hoppen Gallery.

“ I went to a retrospective exhibition of the iconic fashion photographer Sarah Moon, held at the Royal College of Art. It featured over 130 silver gelatine prints and 30 colour pigment transfer prints. I had never viewed a colour pigment transfer print before and found them to be exceptionally beautiful. ”

Harlequin, owned by the V&A museum, as is shown in *Fig 2*. This particular Penn print is a good example to use as it has absolute black values to compare against. Unfortunately I was not able to take density readings from the actual print, not surprising as a similar example sold recently for over \$300,000; however with the help of the assistant curator of photography at the V&A, Rachel Francis, we both concluded that the density of the Penn print was comparable to the third layer of my test strip.

Once this testing was complete I started to re-print a selection of my images with this multi-layered approach. Overall the multi-layered prints have a greater depth and richness to those that I have previously printed using a single layer and negative, as can be seen in *Fig 3*.

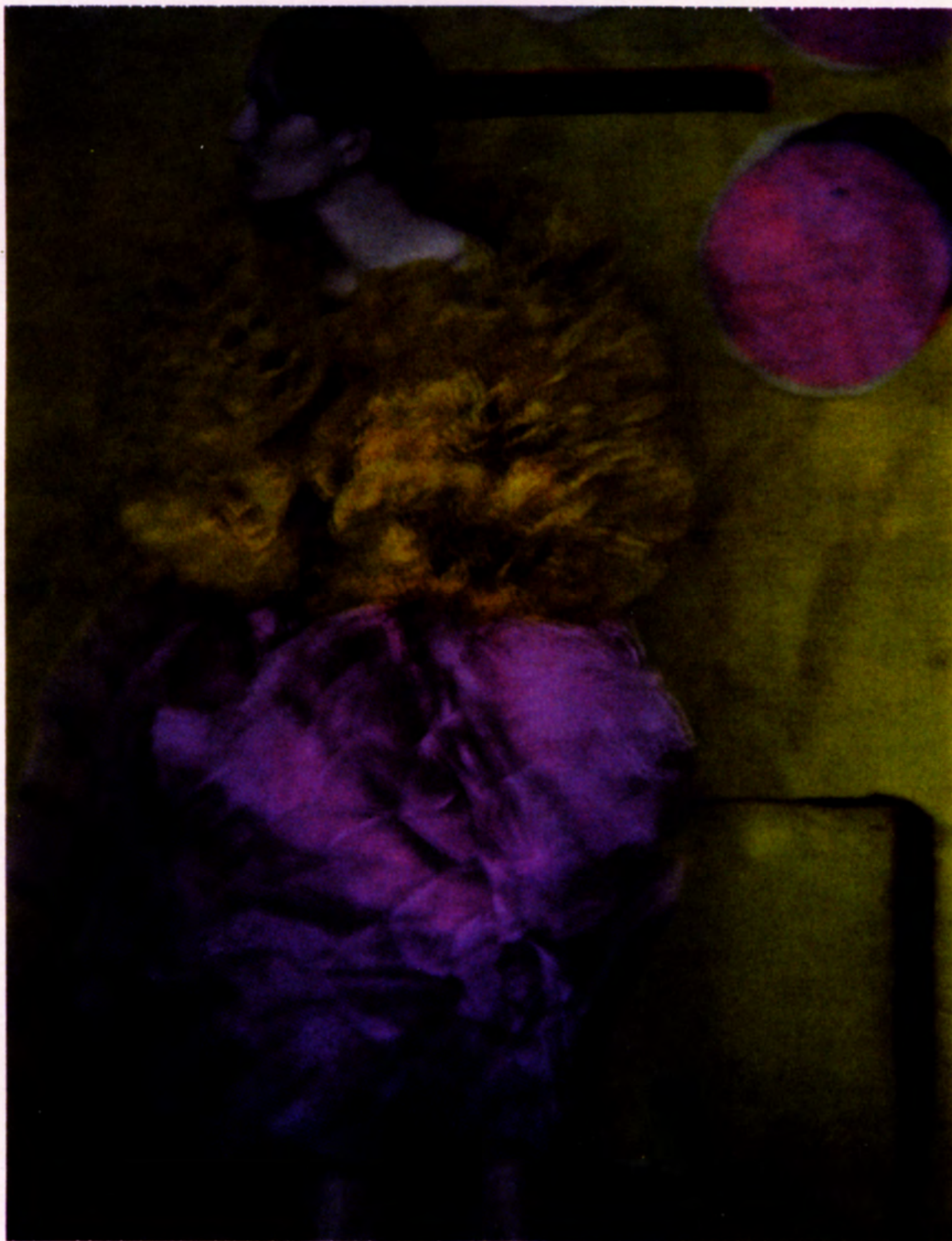
With the many advances in digital negative creation and platinum and palladium chemistry since Penn's printing days, I am in no doubt that a single layered approach to platinum printing can yield exquisite results. However I am of the opinion, based on my on-going research, that a multi-layered approach not only increases the maximum density of the blacks possible, but also gives the platinum printer greater control over the final print. This is a result of being able to craft individual negatives for each successive layer, using differing exposure times for each, as well as using different contrast mixes of platinum and palladium.

Around the same time as undertaking my initial research into Irving Penn's multi-layered platinum prints I went to a retrospective exhibition of the iconic fashion photographer Sarah Moon, held at the Royal College of Art. It featured over 130 silver gelatine prints and 30 colour pigment transfer prints. I had never viewed a colour pigment transfer print before and found them to be exceptionally beautiful, they had a great texture and depth to them

unlike other colour print processes I had seen. I wanted to take a closer look at the prints so I visited the Michael Hoppen gallery who represent Moon in the UK.

Being able to look at the prints up close and personal was a visual revelation, much like the time when I had viewed my first platinum print. Keen to find out more about the prints and how they were created, Michael Hoppen put me in touch with the printer Adam Lowe who had founded Permaprint in 1985, a workshop based in London that specialised in the creation of pigment transfer prints. Adam did this initially with the help of Gerard Aniere (a dye transfer printer) and soon after Michael Ward (a printer with considerable technical knowledge and editioning skills). They perfected all aspects of the printing and transfer process and worked with many important artists, among them Martin Parr, Sarah Moon and Richard Hamilton.

By 2001 Adam felt he had reached the limits of what could be achieved with the pigment transfer process and became more interested in the relationship between print and sculpture, and the ways in which information is mediated. This led to Permaprint morphing into Factum Arte, a workshop based in Madrid, which has since grown into a much larger enterprise dedicated to digital mediation and the production of works in two and three dimensions for artists and museums. Adam mentioned that he had developed a unique digital printer that was capable of printing multiple layers in perfect registration, much like a digital equivalent to pigment transfer printing process. I was intrigued and asked whether it would be possible to visit him in Madrid, he agreed and a date was set. In the meantime, he *suggested that if I* wanted to learn more about the pigment transfer process and the work they did with Sarah Moon I should contact Michael



Facing: A Sarah Moon colour pigment transfer print, © Sarah Moon and courtesy Michael Hoppen Gallery.

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Ward who had primarily worked with her.

Michael kindly agreed to meet me at my studio and initially showed me some stunning examples of pigment transfer prints that Adam and he had created over the years. He went on to talk about the history of the process, first developed in the 1870s by Louis Ducos Du Hauron, a French photographer who had adapted the monochrome carbon process by adding red, yellow and blue pigment to the gelatine. Permaprint used a modified version of the process involving cyan, magenta, yellow and black (CMYK) pigmented tissues, marketed by a Californian company called Ultrastable, set up in the late 1980s by Charles Berger.

I asked Michael if he could elaborate on the steps involved in making a pigment transfer print: “The first step involves the creation of CMYK negative separations from the source material. These were made by Adrian Lack of Senecio Press. Each separation is placed in contact with its appropriate sensitised pigment gelatine tissue and exposed on a vacuum table to ultraviolet light. The gelatine hardens in relation to the amount of UV reaching it through the varied densities of the negative. Harder in the shadows, softer in the highlights. Once all four colours are exposed the first is bathed in cold water, pin registered and squeegeed into firm contact with a thin sheet of degreased acetate. These adhered sheets are then bathed in warm water to enable the peeling away of the backing tissue leaving the pigmented gelatine on the acetate. Delicate rinsing reveals the tones of the image.

“The squeegeeing, peeling and rinsing process is repeated until the four colours are applied in register to the acetate. The full image is again soaked and laminated to its final surface. This might be handmade paper, a plastic base, aluminium, glass or wood.”

Clearly a complex printing technique, Michael went on to tell me about the numerous challenges involved in the process: “At each stage there were dangers that a print might be lost. The gelatine, once wet, was extremely delicate and sensitive to touch and movement. Minute pieces of flying dust or grit could land on the surface causing air pockets which might lift whole areas of gelatine when rinsing or bathing. Atmospheric changes in the studio could affect the strength of adhesion of the gelatine to surfaces. The worst worry was that something like that might happen in the final stages – then all would be lost for that particular print. Start again! Very frustrating.”

I was interested to know what he considered the qualities of a finely crafted pigment transfer print were. “The lushness and density of colour. The union of that colour with its surface. In other words, materials complementing each other. The print being an object, not just a record. This process allows for artistic sensitivity in that application. A good pigment transfer print can be appreciated as much for its material presence as for its image. I think it has a more physically tangible quality than the results of some other photographic processes.”

I went on to ask what it was like to work with Sarah Moon and whether he still created prints for her. “Sarah was a joy to work with. She wanted the process to give her something and was not involved purely for the archival reliability – she recognised how that deep, dense, rich colour worked with her imagery. Sarah also enjoyed the inherent serendipity and the accident element and what could be gleaned from those uncertainties. There are both painterly and filmic qualities to Sarah’s work and her images, in a way, loom. In some cases you are looking at the image and looking for it simultaneously. Her photography does much



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more than ‘capture an image’, it veils and reveals it. With the pigment transfer process the surface is no distraction from this – one can look deep into the print. In about 2001 my work led me to spend more time concentrating on painting and etching and I was happy to be able to put Sarah in touch with Tod Gangler of Art and Soul in Seattle, and he continues to make her pigment transfer prints.”

Having looked at a traditional way of creating permanent colour prints firmly routed in the past I was keen to pick up where I left off with Adam Lowe and learn more about the unique digital flatbed printer that he had created at his workshop, Factum Arte. So I flew out to see him.

Originally a painter, Adam is a man of great ambition, knowledge, passion and energy. The scale and scope of the projects he has been involved in since moving from London 10 years ago is quite staggering, whether it be in the creation of prints and sculptures for leading contemporary artists such as Marc Quinn, Jeff Wall and Anish Kapoor, to the building of an exact facsimile of the tomb of Tutankhamun. With over 40 employees, Factum Arte comprises a team of artists, conservators and technicians devoted to masterminding projects and solving problems and has gained a reputation for the uncompromising nature of its work and its commitment to pushing the boundaries that usually separate technology and craft skills.

I asked Adam what the motivation was behind the creation of a printer capable of printing multiple layers in perfect registration. “One of the main reasons came about as a result of my close working relationship with the photographer Boris Savelev, one of Russia’s greatest photographers with whom we had worked extensively at Permaprint. Boris’s images are the most challenging to print as a lot of the information is in the shadows. At a certain point

it became clear to me that we were never going to get the results that he wanted using traditional photographic methods such as pigment transfer printing. Digital printing was evolving in leaps and bounds and really what I wanted to do was concentrate on surface, surface recording, to eventually make a digital printer that could overprint in perfect registration.”

Adam went on to describe the long period of research and development that he and his engineer Dwight Perry spent in building this unique printer, shown in *Fig 4*. Many large format digital printers were bought, taken to bits and then rebuilt, put on liner guides and reprogrammed.

Alongside the development of the printer was the task of finding a suitable substrate that could take many layers of pigment. Adam decided to use ‘Gesso’ – commonly used by artists as a primer for coating wooden painting panels – coated onto aluminium, shown in *Fig 5*. Mixing and applying gesso is an art form in itself and although the final recipe used was relatively simple it took a considerable amount of testing to find the right mix.

With a suitable substrate found, further lengthy experimentation was needed to understand how to effectively print using multiple layers with a digital printer, a task that requires a very different sensibility from normal photographic printing. Initially Boris prepares the files in Photoshop specifically for the layering process, the first layer normally looks flat, but they are trying not to lose any information in any of the tonal layers at all. On average each print requires 4-5 layers, taking one and a half hours to print per layer, an example is shown in *Figs 6 and 7*.

Speaking to Adam and Rafa Rachewsky (a technician who also works closely with Boris at the printing stage), I established there was no

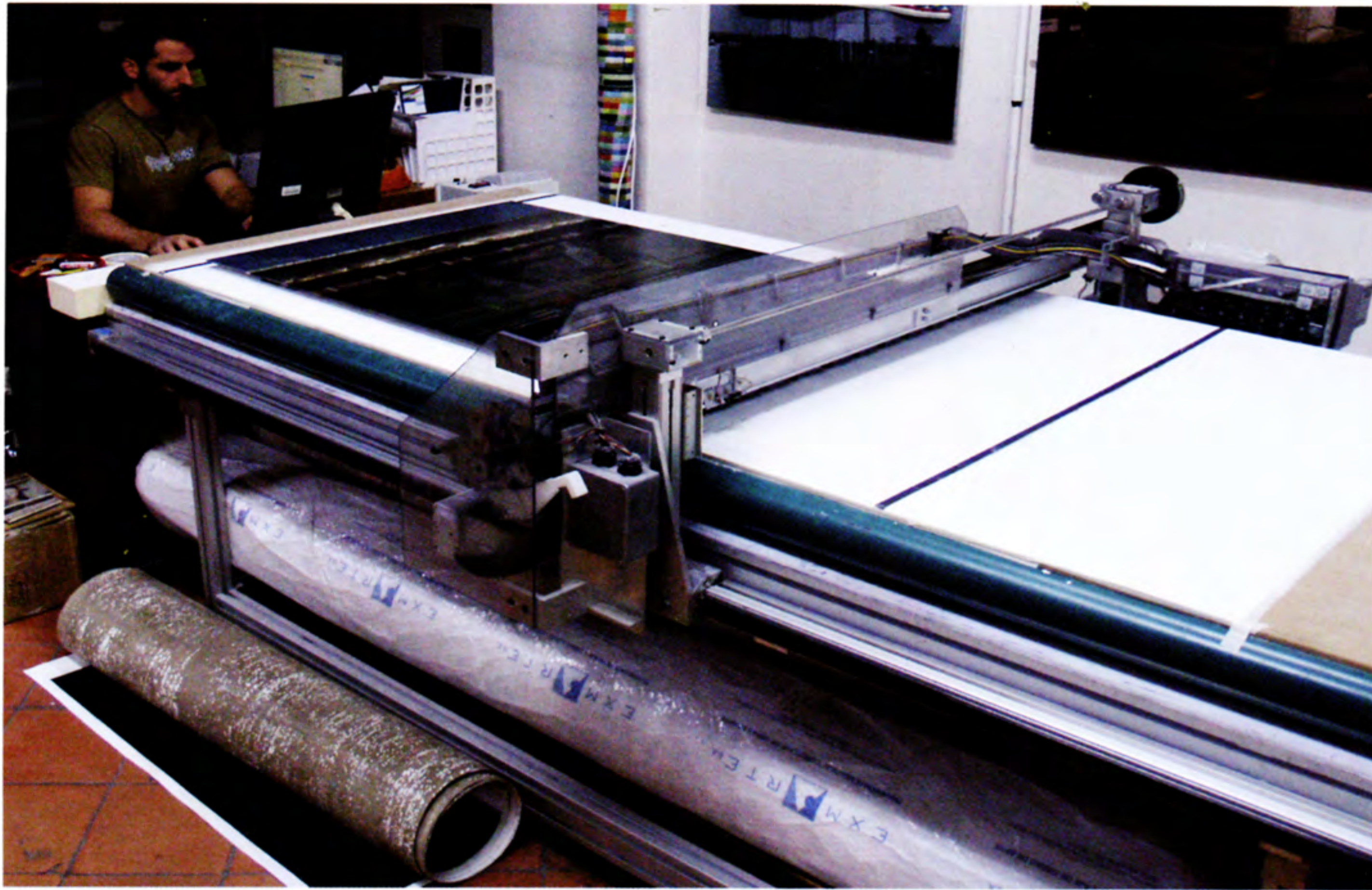


Fig 4: The unique flatbed digital printer created by Factum Arte, capable of printing up to seven layers in perfect registration.



Fig 5: Gesso-covered aluminium, the substrate created in-house for use with the flatbed digital pigment printer.

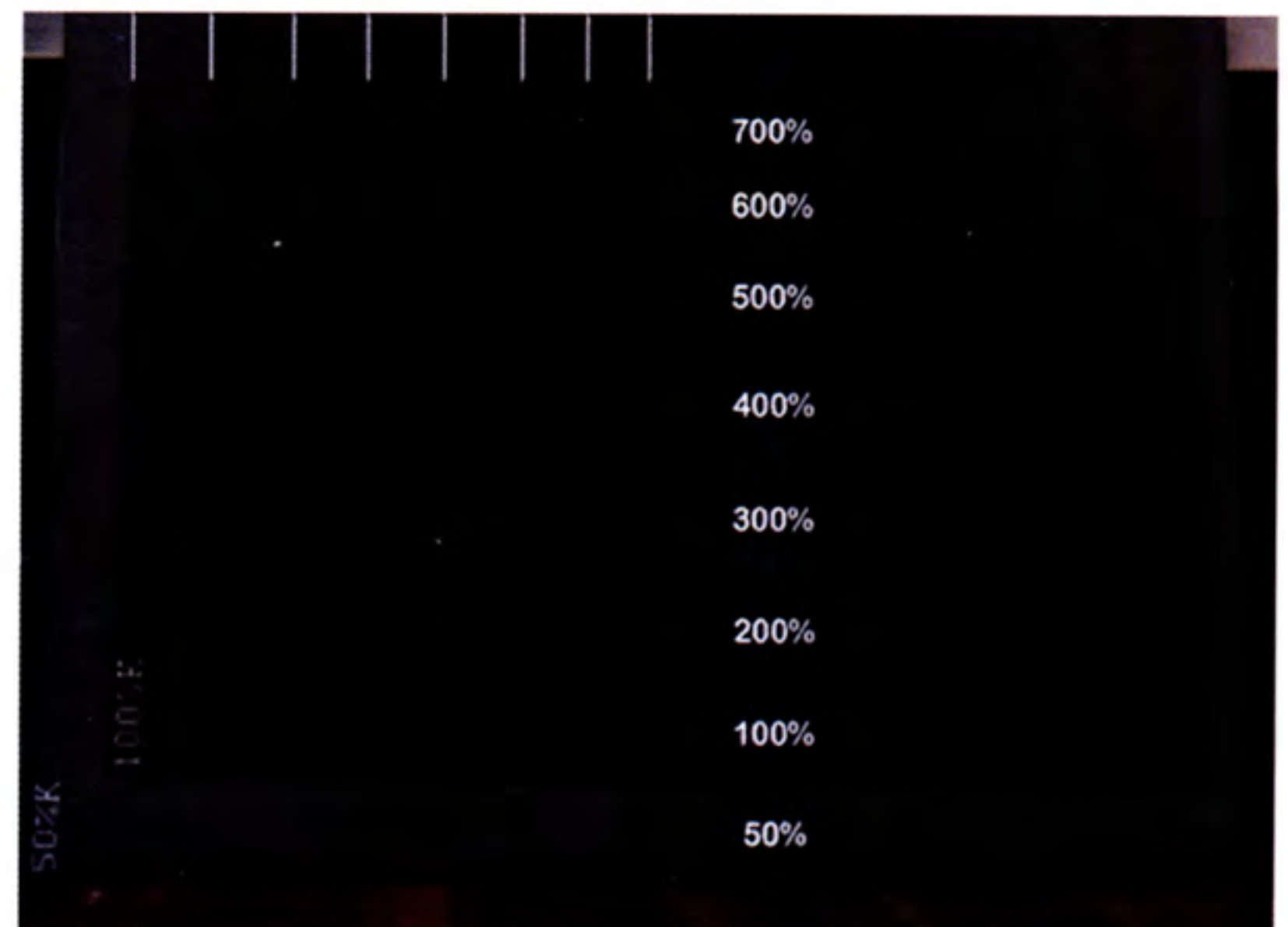


Fig 6: Test showing black being printed in succession seven times onto gesso-covered aluminium.



Fig 6: Dog, Moscow 2007, © Boris Savelev. Multi-layer pigment print on gesso (courtesy Michale Hoppen Gallery).



Fig 7: The four layers that were printed in succession to create the final print shown above.



Soldier 1990, Moscow, © Boris Savelev and courtesy Michael Hoppen Gallery.

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The author David Chow runs a dedicated platinum printing studio, for further information visit www.dceditions.com. To find out more about Factum Arte, visit www.factum-arte.com.

clear formula for the preparation of files for multi-layer pigment printing as each image requires a different approach. This matched my own experience with platinum multi-layer printing, it takes time and experimentation and after a while it becomes intuitive rather than something you can teach.

Once Boris is happy with the look and feel of the print it is polished with a transparent wax to both protect and give depth to the surface. It is not a uniform gloss like on a Cibachrome, nor a satin, it has the sheen of manually applied wax. The final image is clearly photographic but seems to have acquired the character and presence of a painting, hardly surprising as it is pigment, binder and wax on a gesso surface.

I asked Adam what he regarded as the main advantages multi-layer printing has over a single layered approach to digital printing: “One of the problems of digital printers is that it’s a one-off printing process and what we really wanted to do was what is possible in Photoshop in the act of printing. The main advantages of overprinting the same area several times helps control the intensity of the image and depth of layers and shadows which is simply not possible using a single layered print. By building up layers we can get blacks that can have a colossal amount of detail, which is especially important with Boris’ work. When you look at some of the images they seem to have the quality of a painting by Anthony Lopez or a realist painting tradition.”

And how do the results compare with the pigment transfer prints and other photographic processes? “The results are many times better than the pigment transfer prints and other print processes we have tried over the last 15 years. To give an example, one of Boris’ favourite images Dirty Window (facing) taken on a pedestrian overpass, has been printed as a C- type but the uniformity of the surface could never create the

physical sensation of the dirt on the glass or establish a difference between the dirty glass and the silvery light seen between the two sheets of glass. For the first time, Boris has been able to work on the file and bring out all the details seen through the glass. This image was made like a painting, drawing out small details in different layers. The use of pigment and gesso enhances this ambiguity.”

I was interested to know from Adam what the future holds for multi-layer printing at Factum Arte? “The current printer can print 110x240cm. We are now looking to increase the size and we are also looking into UV cured inks. While I am not convinced that the UV cured printers can give the quality and character of image we require, I am sure they will in the future and they seem to have many advantages.

“Away from the colour printing we are also developing a variety of 3-D scanners – both laser and white light scanners. I really want to develop a third axis for the printer so we can print perfectly on relief surfaces. There is a great deal of development and research going on at present in Factum Arte.”

Meeting Adam was a real eye-opener into the future of multi-layered colour printing. The prints they have created for Boris and other artists have quality to them unlike any other colour photographic printing process I have seen and have to be viewed in person to fully appreciate them. Boris obsessively strives to create a print that is exactly as he saw it when he pressed the shutter of his camera; working with Adam and his team at Factum Arte they have succeeded in achieving this goal with multi-layered pigment prints on gesso. I intend to follow the progress of this important workshop over the coming years.

David Chow



Dirty Window, © Boris Savelev and courtesy Michael Hoppen Gallery.
To view either Sarah Moon's or Boris Savelev prints visit michaelhoppengallery.com.