



Since the first auction by James Christie in 1766 Christie's has expanded both in locations and in the range of items it handles, selling everything from pre-Columbian American art to rock'n'roll memorabilia as well as contemporary and classic paintings, sculpture, ceramics, furniture and jewellery at its rooms in London, Amsterdam, Geneva, Rome, Milan, Paris, Hong Kong and New York.

The supporting catalogues that the company produces are not only a guide for prospective bidders but are widely used as reference publications by art historians, museums and collectors, as they encapsulate the expertise of Christie's specialist staff. Given that the items listed and pictured within sell for anything between a few hundred and several million pounds, accurate and faithful reproduction is paramount.

Coupled with the need for quality is the requirement for rapid production. Christie's originates and publishes more than 600 catalogues a year, ranging from 'magalogues' at around 100 pages up to nearly 300-page books supporting major sales. Print runs are typically in the low thousands, and the majority of work is produced at the company's inplant facility at South Bermondsey, with some overflow work contracted out to external printers.

In late 2004, Gordon Baird, managing director of Christie's International Media Division, the branch of the firm responsible for the production of all printed materials, was looking for ways to speed up repro work and improve consistency between jobs originated in London, New York or elsewhere internationally. With well over one hundred thousand images being handled each year (more than 160,000

# Colour quality under the hammer

**World-famous fine art auction house Christie's has improved print quality and consistency and dramatically shortened lead times in catalogue production by implementing end-to-end colour management and printing to ISO standards. Michael Walker reports.**

in 2005), anything that would streamline production whilst improving colour consistency was important to investigate.

"We wanted to implement complete colour control in all areas, from image capture to print," says Baird. "We were aiming for better consistency between proofs and press without chasing colour."

The photographic studios at Christie's London site use high-end Leaf Volare digital camera backs to capture flat art and 3D objects; there is also an ICG drum scanner to handle the small proportion of transparencies that remain.

According to Baird, the image capture from the digital cameras using the manufacturer's generic input profile wasn't ideal and necessitated an amount of basic colour correction work for all images:

"We were starting with non-ideal RGB images," Baird comments, "which we had been correcting using Photoshop, but this process was time-consuming and unique to each photographer or image editor, which wasn't adequate from a process control perspective, even though the results were still good."

To address this and take the time and potential for variability out of the image capture and repro process, Baird

called in Lastra Imaging who appointed colour management consultant Neil Barstow of colourmanagement.net to review the entire production process.

Barstow's first step was to accurately profile the Leaf camera backs. As the cameras are always used under strictly controlled studio lighting conditions, building input profiles was a reliable means for producing accurate colour capture. Profiles were created for flat art, 3D objects and for shooting under polarised light, often necessary to reduce shine on canvases; a special profile was even made for shooting old mahogany, which can otherwise appear too red. The drum scanner was also profiled.

The photographers view the captured images on high quality calibrated and profiled monitors in subdued lighting conditions so they can judge the need for any colour correction and pass that information to Image Processing along with the digital file. Since the photographer has seen both the original object and the capture on a reliable display, he can vouch for the capture quality. At the repro stage, where wider gamut profiled screens are used, subject experts will also examine the images and make recommendations for improvement.

Working with profiled monitors means that repro operators can reliably view and soft proof images approved by the photographers and make safe decisions about further adjustment; previously, it was often the case that a repro technician or subject specialist would have to physically locate the object – painting, piece of jewellery, sculpture, item of furniture – in the warehouse in order to assess the accuracy of the image, which could be extremely time consuming.

Having optimised the image capture and retouching process, the next area for attention was the press. To achieve reliable and consistent press behaviour, it was decided to run to ISO 12647-2 conditions, which define measured colours rather than ink weights, and a 'tonal value increase' (TVI) which includes all factors in the prepress/press operation that can affect tonal values on paper, not just the dot gain.

Rather than attempt to profile each press (there are four MAN Roland B1 presses at the South Bermondsey plant), test jobs were run on one until optimum colour and TVI values within the tolerances of the ISO standard were reached and then the other presses adjusted to match. The TVI optimisation process also included calibration of Christie's CTP device to allow for press behaviour.

From an iterative series of trials and measurements it was then possible to create a custom CMYK output colour profile that allows images from the Leaf camera backs to be converted directly to press CMYK. Any further image editing is then carried out in CMYK as Christie's repro operators have long experience of and familiarity with this mode of colour editing.

By standardising on these press conditions it becomes straightforward to achieve measurable consistency in the printed results. More than that, carrying out the measurement and adjustment process has brought improved quality in the end results, as Gordon Baird explains:

"We now find we're getting a better dynamic range and improved colour saturation in print; there's more life and shape in what's on the paper than before."

The third major part of the colour



Christie's publishes more than 600 catalogues a year

management project was to provide accurate and reliable proofing to support the photography, design and repro processes. Existing digital proofers at Christie's were difficult to profile accurately to match the press via their proprietary control software and were ultimately replaced with large format Epson models driven by GMG software. This enabled accurate modelling of the press behaviour to be achieved, which in conjunction with careful profiling of the RIP/proofer combination and proof viewing under controlled lighting conditions gives an extremely close match between proof and printed result.

Unlike many printers, who still work to a generic proof 'standard' and then try to match it on the press, the ISO-based method applied by Lastra and Neil Barstow maximises the capability of the press and then seeks to make the proofer reproduce that, which is a more sensible approach as the press is the output device that governs the quality of the finished product, not the proofer.

The colour-managed approach also allows for faithful soft proofing, allowing the studio photographers and the repro operators to make valid assessments of their images and to make image corrections in a predictable environment. Images are scatter-proofed before page layout is completed so that early assessment can be made; any corrections deemed necessary can then be standardised for entire shoots or classes of subject, such as jewellery, ceramics or 'old master' paintings, again saving time and producing consistent results.

The work on proofing was carried out during the spring of last year and live production using the colour-managed system began in July/August. Up to this point, Gordon Baird had ensured that all processes were paralleled using existing methods, but the switch-over went smoothly.

"Now we can put a job on the press and run it to the numbers and get a faithful representation of the original subject in ink on paper, given the limitations of the process," comments Baird, adding, "We've managed those limitations and eliminated all the variables so we have a closed loop from image capture to ink on paper."

In theory, achieving complete end-to-end colour management and process control shouldn't be too hard to do when you operate your own printing plant and have control over every stage in the reproduction process. But what happens when part of the process has to be carried out elsewhere?

In Christie's case, it is sometimes necessary to outsource work to meet particular deadlines but of course quality cannot be compromised. To ensure that it's not, Christie's, Lastra and Neil Barstow have been working with three external printers who carry out overflow work for Christie's, helping them to implement ISO 12647-2 for their own presses. Because the press conditions will then be a good match to Christie's own, jobs can be printed externally with a high degree of confidence that the results will be as good as if done in-house.

Neil Barstow sums up the project thus: "We have simplified processes by minimising the idiosyncrasies which appeared in the past and given the ability to view images correctly; this doesn't remove operator skill, it enhances it."

Gordon Baird is happy that the project has achieved its aims. "We've managed to provide a better starting point in each process area for a more consistent result. As well as saving time on image correction, we're getting results that are as good as was ever possible previously when good photography, great repro and excellent printing came together, but on a consistent basis."

- [www.christies.com](http://www.christies.com)
- [www.colourmanagement.net](http://www.colourmanagement.net)