

## TECHNICAL NOTE

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### The Use of a Xerox 6500 Color Copier in Forensic Sciences

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Photographic documentation of wounds and disease processes is a well-established supplemental method of recording pathological findings both within the hospital and the forensic environment. The first recorded use of a photograph in a homicide trial was in 1874, when an antemortem photograph was used for the purpose of body identification [1].

A few well-chosen photographs are invaluable in rapidly converting the written narrative of an autopsy or pathological report into a readily comprehensible recreation of what was truly observed by the pathologist. Even the most objective pathologist cannot avoid coloring his description of gross observations by the preconceptions, biases, and prejudices he may hold. Indeed, even simple descriptions such as "there is edema of the subcutaneous tissue" requires an opinion based on prejudices concerning the tissue and its normal state. The absence of written observations are often as important as recorded observations and can always be interpreted as either being unobserved or not present. In addition, most procedures performed by the pathologist result in marked changes in the examined item. The testing is nearly always semidestructive. Therefore, errors or suspected errors of opinion concerning gross observations cannot be investigated adequately by use of the pathologist's description. Microscopic sections provide a partial remedy. But insofar as there is the possibility of grave sampling errors when preparing a microscopic slide, this cannot solve the problem. Properly framed, focused, and exposed photographs provide the best means of documenting grossly observable lesions or their absence.

Traditionally the role of black and white photography has been preeminent because of the belief that color documentation has been cost-prohibitive. Color photographs, either transparencies or prints, were reserved for the unusual or special teaching case despite the fact that the conservative courts have approved of color photographs since 1943 [2].

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In our laboratory a dual system evolved that became cumbersome. Routine identification and wound documentary photographs were recorded on black and white film and converted to black and white prints for the record or for distribution to interested parties, including the courts. Color transparencies were retained primarily for training purposes, with occasional color prints being prepared at great expense for special purposes. In the Public Safety Department of Dade County a combined approach of black and white and color is used. Transparencies were prepared by a private concern at considerable cost should teaching material be desired. This tended to restrict use of this photographic material for this purpose. Black and white is used as a backup and, in some situations (such as to show contrast in tire marks) only black and white is used.

On 25 Jan. 1976 this department leased a Xerox 6500 Color Copier and black and white photography ceased to be used. Color photographs are taken with bulk-loaded 35-mm Ektachrome® film, which is developed with Kodak E6 Processing Kits. The film is trimmed and mounted and converted to a 51 by 51-mm (2 by 2-in.) color transparency. The materials costs per transparency are film, \$0.0709; processing, \$0.0133; and mount, \$0.0140. This totals \$0.0982 per slide. The Xerox color prints costs (disregarding the initial installation charges of \$108.00) are Xerox rental charges, \$0.2706; color toner, \$0.0290; and paper, \$0.0034. This totals \$0.3030 per color print. Our basic rental contract of \$255 per month for only 525 copies would cost out at \$0.48 per copy, with extra copies at \$0.10 each. Out cost experience, using an average monthly count of 1187 copies (662 over the 525), resulted in the lowered cost per copy of \$0.3030. Accordingly, the unit materials are influenced by the usage rate. Alternative contracts are available for very high usage rates.

The photography cost of \$0.0982 plus the copier cost of \$0.3030 results in a total photographic material cost, for a 20 by 25-cm (8 by 10-in.) color copy, of \$0.4012. This is an acceptable figure.

The quality of the pictures has been quite satisfactory. In addition, the transparencies may be readily used for classroom teaching purposes. A spin-off benefit is the use of the color Xerox to prepare illustrated instructional material for classroom use.

In the determination of fund expenditure three factors must be considered: use, quality, and cost. The color copier scores well on all three counts. There is the benefit of multiple-use capabilities for teaching and evidentiary purposes because of the versatility that far exceeds that of black and white photography. The quality is highly satisfactory for these purposes, with the additional benefit of the use of transparencies for projection purposes should such be desired. The color prints are used routinely in our courtroom presentations and have achieved widespread acceptance. A critical appraisal of the machine for the questioned document examiner has been published by Purdy [3]. He has reviewed the principles upon which the machine is based and these will not be repeated.

In summary, we have been eminently satisfied with the performance of the Xerox 6500 Color Copier and its uses.

## References

- [1] *Underzools v. Commonwealth*, 76 Pa. 340 (1874).
- [2] *Green v. City and County of Denver*, 111 Colo. 390, 142 P. 2d 277 (1943).
- [3] Purdy, D. C., "The Xerox 6500 Colour Copier," *Canadian Society of Forensic Science Journal*, Vol. 9, No. 3, 1976, pp. 117-121.

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