

THE OTHER PRINTING PROCESSES: 2

PLANOGRAPHIC & STENCIL

Planographic systems print from a flat surface.

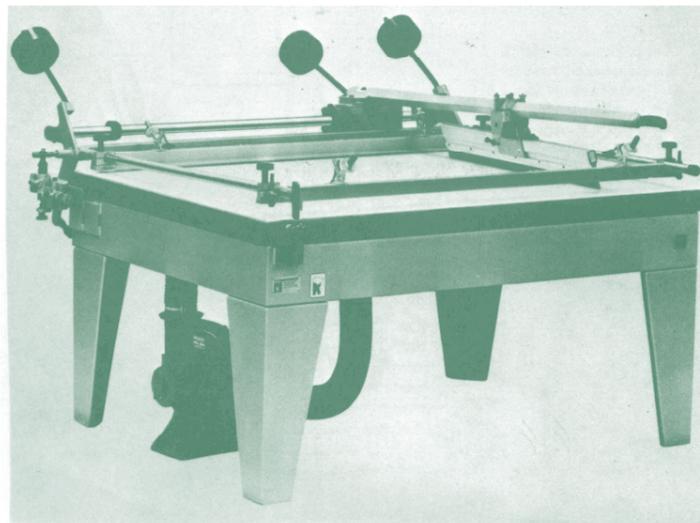
Lithography is the widest-used printing process today, and is described separately.

Collotype was a very tricky process, but considered of the highest quality for black and white reproduction of photographs. It was therefore used for art print reproductions, scientific illustrations, and high-quality book illustrations. The printing surface was in effect a photograph itself – a coating of gelatine on a thick glass plate, with the image more ink-receptive than the non-image parts. The dampness of the air affected the production. The natural reticulation of the gelatine gave the same effect as the halftone process, but without the distracting regular pattern of the halftone's dots. The process is no longer used commercially.

Xerography was only discovered in the mid twentieth century. It uses a photo-sensitive metal coating on a drum which is then electrostatically charged and on which the original image is exposed, causing the charge to flow away from the lit areas. The drum is then dusted with powder of carbon and resin. The powder adheres to the charge on image areas, to transfer to the paper, when it is heated to melt the resin & thus stick the carbon to the paper. The process can be used as a copying system, to make plates for lithographic printing, or as a short-run printing process. The image can be changed at each revolution of the drum if required; this and the electrical nature of the process have made it very suitable for integration with computer technology.

Stencil systems print by passing the ink through holes in the printing surface that form the image.

Screen Process printing (often known as 'Silk-screen' though silk screens are obsolete; also occasionally as 'Serigraphy') uses a wire or thread mesh stretched tightly over a frame as a support for the image, which can be as simple as a cut-out sheet of paper, or more often a photo-sensitive image chemical coating, exposed to an image (in this case a positive image so the non-image areas are hardened), and then with the image areas washed away to let the ink through. The ink is poured over the stencil, and wiped through with a rubber-bladed squeegee. The process is very adaptable, and can be done by hand with minimal facilities, or by machine on an industrial scale. It can print on almost any surface (even ones that are not flat), and uses a much thicker layer of ink than others, making it suitable for many specialist applications. It is used to print on crockery, glass, metals & plastics (such as equipment cases & dials), as well as for posters, fabrics, and wallpapers. Electronic circuit boards, and early integrated circuits were produced using screen process systems, but moved to lithography for finer detail.



Stencil Duplicating, once common in every office, where it was a copying rather than printing process, worked on the same principle, but used a sheet of tissue coated with wax as a master. This would be cut by typewriter, the keys cutting through the wax. The master was wrapped round a drum covered in cloth, containing the ink. The rise of the Xerographic copier made the process decline, but it has been revived with machines that cut the master by

a scanning process (or computer download), and print the required number of copies automatically, and is now used for lower-quality small-quantity printing work.

Illustration: a commercial screen-printing table. The pump underneath holds the printed sheet firmly in place by suction, and the frame is counterbalanced by the weights to aid separation after printing: the force required for a large sheet is considerable. This machine is hand-operated, but powered presses are also used.