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On the cover: Robert Franzini's "Child," a relief etching, measuring 9" by 6 1/4", created through a process whereby ink is used as both drawing material and acid resist. See the author's step-by-step explanation, beginning on page 7.

PrintNews welcomes queries from artists, writers and others with expertise in the printmaking field who would like to contribute articles to the magazine. Queries and samples of work must be accompanied by a self-addressed, stamped envelope. Although materials will be handled with care, PrintNews cannot be responsible for the return of unsolicited manuscripts or graphics.

PrintNews is published bimonthly by the World Print Council, Fort Mason Center, Laguna and Marina Blvd., San Francisco, CA 94123, USA. 415-776-9200.

Subscriptions are by membership only: North America (includes first-class postage)—individuals and libraries, $30/year; groups and businesses, $40/year. Overseas (includes air printed matter) — individuals and libraries, $35/year; groups and businesses, $45/year.

Additional subscriptions are available to groups and businesses for $20 (North America) and $25 (overseas) each. Copies must be ordered with initial membership request or renewal and will be sent to the group address.

ISSN: 0733-1730

Volume 5, No. 1, January/February 1983
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Paper: Simpson #40 Opaque
Printing: Albany Press, Emeryville, CA
Typography: Kim Sullivan, San Francisco, CA

Views expressed by contributors do not necessarily reflect the attitudes of the World Print Council
A New Approach to Relief Etching

Given the resourceful and inventive nature of printmakers, the use of ink as an acid resist has probably been explored at various times and in numerous print shops around the globe. This report describes a method whereby ink functions as both drawing material and acid resist. An image is drawn onto a copper plate with ink, the ink hardened and transformed into an effective acid resist, and the image bitten into the plate by deep etching. The result is a relief etching that can be inked with a hard brayer and printed using an intaglio press.

The genesis of this method was directly tied to my experience with monotype. Monotype provided an exhilarating break from the intaglio and relief printmaking techniques I had been employing in my work. The spontaneous working of the ink on the surface and the ability to see the positive image were factors that made the monotype an exciting expressive vehicle for my images.

I was intrigued with the idea that an image, developed so directly and spontaneously on the plate surface, could undergo a transposition to become part of the plate itself. The printmaker in me was eager to investigate the possibilities.

I found that printing ink, in contrast to acid resists such as asphaltum and rosin varnish, is more malleable and does not dry quickly, thereby providing the artist with ample time to realize an image. Ink can be applied to the plate in many ways. Easily removed, it can be reworked and layered in a direct and spontaneous manner. When properly dried and attached to the plate, it is a superb acid resist capable of maintaining its integrity through up to twenty-four hours in an acid bath.

The resistant, impervious surface of engravers copper proved ideal for the process. The polished surface reflects light intensely and affords one a clear, exact vision of the gradually forming image. I discovered that when using ink as both drawing material and acid resist, I had to modify the techniques of application that had been effective with my monotypes. A continuous tone of ink and solvent, when brushed upon the plate and dried, was too fragile, breaking down quickly in the acid. The application of thicker layers of ink proved to be a more suitable approach.

Early in the investigation, the ink of the completed drawing was hardened by heating the plate on a hot plate. Although this technique produced some positive results, often the ink peeled off the plate prematurely during etching. The solution to this problem was to let the ink dry naturally on the plate, an

Robert Franzini, "Man Without a Mouth," relief etching, 8.5/4" by 6.7/8".
The polished surface of engravers copper reflects light and allows a clear, exact vision of the gradually forming image.
This heating method was reliable only when the layer of ink on the plate was even. Therefore, one had to be conscious of the necessity of an even application when working the image. The application of ink and working of the image normally, however, resulted in uneven layers of ink. This was due to the combination of heavily worked areas consisting of built-up layers of ink and areas where the initial application was sufficient for the desired effect. When the drying took place on the hot plate, the thinner areas of ink dried first, and the plate continued to bake until the thicker areas dried. This overheated the thinly inked areas, rendering them brittle and causing them to lift from the plate too early in the etching cycle. Another negative aspect of the heating technique was that when heated the ink (even though it was moderately stiff) spread slightly on the plate, closing off the finest textural and linear effects. This was unacceptable because it resulted in a loss of richness in the image.

Experiments determined that by allowing the ink resist to air dry, one could achieve excellent and reliable results. Ink grounds air dried four to ten days proved to be superb acid resists. With this approach, delicate areas of the resist rarely lifted during the first few crucial hours of the etch. Ink grounds air dried for less than four days would not lift from the plate during etching, but would change substantially in character. Textural and linear areas, for instance, were altered in shape, size and pattern. If the ink was not sufficiently air dried, the character of the image would change unacceptably during biting.

5) Etching the plate: A 9:1 strength of Dutch mordant was ideal for biting the plate. It was less apt to undercut fine textural passages or to break down the more delicate areas of the ink resist. Ferric chloride afforded less control over the result, but was very useful when the need arose to open bite large areas of the plate.

The nature of relief etching is such that those areas which have been lowered by etching are not substantially lower than the asphaltum can be dry brushed carefully over them to stop out the raised areas and prevent them from etching away. This usually works well only after the fourth hour in the mordant. If the resist on a large, heavily textured area breaks down moderately far along in the etch cycle (say, six hours); the whole area is stopped out with asphaltum. After completing the etch, the plate is cleaned and the surface rolled with ink. The ink is allowed to dry; and the plate is etched for several more hours to establish the textural areas.

Most plates were bitten at least ten hours. Plates with a combination of textural and linear quality plus large open exposed areas were etched in steps. The textured and linear areas were etched sufficiently (from six to ten hours), then stopped out with asphaltum. The open areas were etched up to twenty-four hours, and in special cases the plate was additionally etched in the stronger iron perchloride. The depth to which recessed areas of the plate had to be etched for success depended on the nature of the image. The deeper etching of selected areas helped to solve the problem of successfully inking complex relief images with the brayer. For safety purposes, eye protection and a respirator were used during the etching process.

When the deep etch procedure was complete, the ink was cleaned off the plate. Kerosene and fine steel wool were sufficient to remove ink that had been air dried. Ink that had been baked on the plate was much more difficult to remove. Lacquer thinner and

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original surface, but low enough so that they will not pick up ink from the brayer. An experiment was undertaken to determine the minimum etch time necessary to achieve relief printing. Using a 9:1 Dutch mordant with a water rinse each hour, it took between two and a half to three hours to produce the desired result.

If delicate areas of the ink resist break down during the deep etch procedure,
vigorous work with steel wool was necessary to remove it. Following the cleaning, the plate edges were beveled with a hand file, and the resulting texture on the edges burnished away.

6) Printing the relief etching: When inking the plate for printing purposes, the burrier must be of sufficient hardness (40-60 Duroimeters) so that foul inking will not occur. Through trial and error, one can discover the optimum coverage of ink which will produce a rich black, yet not fill in delicate textural passages on the plate. The relief etchings were printed on an intaglio press using felts and with less than normal intaglio pressure. To avoid a double or blurred image, the printing paper should not touch the inked plate until the actual moment of printing. This can be accomplished by simultaneously engaging the felts and printing paper in the press, then turning both back around the press roller. The inked plate is properly positioned on the bed and cranked through. Paper and felts are held against the roller so that they come in contact with the plate only at the moment of printing. The result is a clean, crisp impression. Rag content intaglio papers which have been slightly dampened prove ideal for printing.

7) Reworking the plate: Since relief etching is a reductive technique, further working of the plate involves the establishment of line and texture in the remaining areas of the original plate surface. The engraver’s burin and gouge provide for direct reworking in a linear, lozenge or dot pattern manner. Fine marks established by the burin have sufficient depth to print white. The gouge readily opens up large areas and also leaves a unique texture on the plate which appears in the print as embossed. This unique quality can be incorporated into the print when desired.

Textural modification can be achieved using the roast aquatint technique. The desired density coverage of powdered resin is applied and then bonded to the plate by heating. Three hours in the mordant provides sufficient depth for relief printing. Seventy-five per cent, the ideal resin coverage, results in a very coarse coverage sufficient to withstand the three-hour bite. A fifty per cent coverage breaks down before sufficient depth is achieved. The resulting textural effects can be controlled by paying attention to density of resin coverage and repeat procedure. A coarse texture in the print becomes finer through this procedure, and a relative tone becomes lighter.

By surface rolling the plate with ink, areas can be reworked with rat burin, ball burnishers and textured items. The ink is air dried, and the plate deep etched. An asphaltum ground can also be applied, and linear or stipple effects deep etched through the ground.

8) Variations in printing: A printing technique which yielded interesting results was that of inking the plate intaglio with silver ink, wiping the surface clean with tarfatan and printing onto black paper. The silver ink that printed out of the bitten areas produced a more subtle effect than in the normal relief printed impression.

Another technique involved putting ochre ink into the bitten areas, wiping the surface of the plate clean and then relief rolling the plate with a black ink mixed with blue. In the resulting impression, the push and pull of the warm and cool color was visually rich and exciting. One variation was to print the ochre separately, let it dry, then print the black over it, offsetting the registration slightly to obtain white as well as ochre with the black. Much scope remains for experimentation with various printing techniques. Possibilities exist for the incorporation of viscosity inking and for sensitive and inventive uses of embossing resulting from deeply etched plates.

The ink resist technique has provided me with a vital expressive vehicle for printmaking. Through the sharing of this investigation, I hope to provide printmakers with workable knowledge of the procedure and to challenge them to discover their own expressive use of this method.

Robert Franzini, "Things Which Are Not Seen #2," relief etching, 8-1/4" by 6-3/4".

Robert Franzini teaches printmaking and figure drawing at Morehead State University, Morehead, Kentucky. The investigation was supported in part by a faculty research grant from Morehead State University.

All of the photographs accompanying the article were taken by Michael Lucas, graduate assistant in photography at Morehead State University.