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Non-Toxic Intaglio

The Fine Art of Printmaking has existed for approximately 500 years. Traditionally, printmakers all over the world have made use of materials and techniques that were very hazardous to health and environment. Since the mid-1990s, however, the printmaking studios in the USA, Canada, Great Britain, Australia and Scandinavia have been testing new acrylic- and photopolymer-based alternatives and environmentally friendly etching methods that did away with organic solvents altogether. The technical development within the areas of acrylic- and photopolymer-based materials has offered printmakers a wide range of new materials and techniques. Not only do they replace the traditional techniques; they also make new options available, being cheaper, more durable, faster and mutually combinable. Last, but not least, it is possible to integrate digitally generated artwork with traditional techniques in copper etchings.

With the support from the Environmental Protection Agency, the Ministry of Culture and the Ministry of Education in Denmark, we have now been able to implement the use of the new techniques in all of the education sector and most of the printmaking studios in Denmark. Outside of Denmark the message has reached much of Scandinavia. The development in Norway, Sweden, Finland and Iceland, where we have held a number of workshops, is hastily following the Danish example.

Toxicity in Traditional Etching: It is a well-established fact that conventional materials for intaglio printmaking contain quite a cocktail of acids and chemicals the danger of which is otherwise unseen in the creative arts. Each of them may have damaging effects on the health of the artists and on the surrounding environment, but used in combination they pose a very serious threat to anyone who uses them with some frequency.

The conventional materials are mainly oil-based, and most of the acid resistant grounds have arisen from the petrochemical industry. That applies to e.g. asphaltum varnishes, shellac, mixes of tar and wax, resins and the like. Several of

these products have been found to provoke cancer, and also to contain organic solvents. During the processes of drying and heating they generate toxic fumes which soon permeate the indoor climate of the studio. But organic solvents are not only a part of the contents of oil-based varnishes; they are often in constant use in conventional printmaking studios for cleaning plates and tools. In consequence of their volatile nature they are easily absorbed into the blood via inhalation and skin contact.

The Chemistry of Acrylics: All acrylic resists consist of acrylic and polymer substances in a more or less liquid form and contain water as solvent. They acquire the qualities that make them suitable for intaglio during the drying process - the separate polymer particles, which constitute a watery emulsion while the resists are fluid, begin to bind as the water evaporates in the drying process. Eventually they will be bound solidly together in a long, single polymer chain, thus creating a very tough substance which is durable as well as completely acid resistant. Acrylics that have been brushed, poured or sprayed onto a clean plate bind so tightly to the surface of the plate that the ferric chloride will not be able to work its way under the edges along the eroded metal.

As long as acrylics are fluid, they can easily be cleansed off brushes and surfaces with soapy water, but they become water-proof when fully hardened. Dried (dry) acrylic remnants can be removed either in a mild solution of soda crystals and water or in diluted ammonia water. Many acrylics dry very quickly, but the drying and hardening period can be further shortened by the use of a drying cabinet.

In the acrylic resist etching system we still use traditional oil-based etching inks, while all organic solvents have been removed from the studio. Wiped plates are cleaned with salad oil and de-greased with dishwashing detergent.

Step by step examples will be presented from Henrik's new video "Non-Toxic Intaglio Step by Step" as well as a variety of prints made with the new methods.