

## Medium Meets Support

by Hugh Phibbs



While it would be impossible to completely describe the chemical and physical nature of the materials which comprise the works of art and artifacts which may be considered for preservation, it is valuable to think of certain attributes which are quite important in the design of the matting and framing packages.

The combination of the medium and the substrate which supports it is one of these. Simply put, the medium is the glue or binding substance which holds the design together, while the substrate is whatever it is attached to.

Some media such as pastel, chalk, and graphite lack binders. They may be characterized according to their method of application, as pressure activated. The harder the artist presses, the more material is deposited. Watercolor, acrylic paint, gouache, tempera, casein, and some inks, can be classed as water activated since their application depends on the presence of water initially, and the manner in which it dries. Oil paint, oil crayons, and some inks have the physical and chemical properties of the oil which binds them. This complicates their consideration since many oils are extremely slow to dry and they may change chemically as they age. Crayons and encaustic paint

are wax based and can be activated by either pressure or heat. There are also paints and lacquers which depend on the drying of solvents which can contain natural or synthetic components. In the end, each of these materials will be applied with pressure, dispersion in a medium which will dry, or heat.

The substrate is whatever supports the design. This makes classification problematical and it may be simplest to group them into the categories, animal, vegetable, mineral, and synthetic. Animal substrates include raw hides such as vellums and parchments, tanned leathers, and animal glue layers such as photo emulsions and glue grounds in traditional oil paintings. Silk and wool are also animal based.

Papers and woven materials made of cotton, linen, or woody fibers can be classed as vegetable. Papyrus and fiber-based boards begin to resemble plywoods and ordinary woods which comprise the more rigid forms of vegetable substrate.

Mineral supports can include metals, ceramics, glasses, and geological materials. Synthetic supports or substrates range from modified celluloses such as cellulose nitrate or acetate, to any of the polymers such as polyethylene, polypropylene, polyester, polycarbonate, polymethyl methacrylate and polystyrene, which can be made into durable surfaces.

It may be tempting to limit consideration of this problem to only those

combinations which are most commonly found. Two factors argue against this. One is the tendency of technological innovation to proceed without much consideration as to the longevity of the resulting products. Cost and performance in the short run are the factors which are given weight when new products are designed. The other factor which argues for a complete consideration of the media/substrate combinations is the widespread view among artists that creative freedom and innovation are more important than adherence to traditionally successful techniques. When art schools teach students to value and practice durable methods, framers will be able to ensure the preservation of much more of their work.

Some media will bond well to many of these substrates, while others will bond to only a few, and even then poorly. Oil paint can adhere to most of the natural and some of the synthetic support materials, while pastel may stay on the surface of some papers if it is handled very carefully.

Consideration of the possible combinations given this wide array of media and substrates may seem dauntingly broad, but a look back in time can give organization to the topic. The preservation of the earliest designs which have come down to us, those on the walls of caves, fortunately, does not fall to the framing community. It is worth remembering, that these works, which survive in pristine shape while they are in isolation, can be beset by biological degradation if they are visited by too many viewers.

The substrate which has survived from the early history of Europe in the greatest number of examples is the vellum or parchment page. This may seem somewhat ironic to framers since these materials are so notoriously difficult to handle in a frame. They can be preserved in the volumes for which they were designed, however, for hundreds of years. Their extreme reactivity to moisture which makes them so problematical is less important in the consideration of the bond between them and their media than is the smoothness of their surfaces. These skins were traditionally prepared on a stretching frame on which they were dried and pared to the desired thickness with a scraper. This left the surface quite flat and the portions of hair follicles which remained did not

provide a significant variation to that surface. The degree to which this surface can be reworked is recognized in our word "palimpsest" which refers to a parchment which has been written on more than once and imperfectly erased. Media which are activated with pressure will be a problem here. This problem is obvious enough that pastel or chalk on vellum can be regarded as an unlikely possibility.

Graphite is more adhesive. The carbon which comprises the graphite is layered in such a way that each piece may repel its neighbor but may be attracted to another material. Here, the framing consideration involves the depth of the graphite layer. If a design made of a pressure-adhered material is executed on a substrate which allows the material to penetrate its surface, the loss of particles from the surface may not be acutely noticed since there are many particles behind them in the substrate. Where the surface does not permit this penetration, any loss to static or physical insult will be more noticeable.

Waxes should bond well and since many come from animal sources, they can be expected to be chemically compatible. The adhesion of water activated media will depend on the binders they contain. Inks, especially organic acids such as iron gall ink can be expected to bond very well, while watercolors may flake and bulked watercolors such as gouaches may present serious problems. Tempera and casein are both animal based and should have good chemical compatibility but tempera especially requires a stable support surface. For each of these media, the tendency of the skin to react to changes in relative humidity compounds the adhesion problems since the cockling which will result can produce contact between the medium and the glazing. The depth of the separation between the skin and the glazing should be expanded to account for this in addition to whatever was required by conditions of friability.

Oil-based inks adhere well to parchment but the more massive layers of oil painting may not be accommodated by such a reactive substrate. Synthetic materials such as acrylic paint may be flexible enough to bond well but the combination of such an antique substrate and so modern medium may be unlikely. ■