

Fat Over Lean

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The first technical principle of modern painting practice is that painting always proceeds from “leaner” layers with less oil to “fatter” layers with more or richer oil. Painting this way assures that each layer adheres well to the layer beneath it, and that the paint film develops less internal tension on polymerizing fully over time, minimizing one source of surface cracks. This principle is correct in theory, but how it goes into practice is worth comment, both in terms of how consensus painting materials have recently developed, and how paintings were originally made, with handmade materials.

As far as long term cracking is concerned, the use of the generally accepted substrate of stretched canvas presents an inherent issue. If stretched canvas is used, the paint film needs to be engineered for maximum flexibility and the canvas needs to be protected from moisture in some way from the back. This at least helps minimize the potential for expansion and contraction through humidity changes. Laurie goes into this problem and technical solutions for it in significant detail. Current conservation strategies on this vary and can be researched, but tend to use some kind of panel insert system for the back of the painting. This can also be extended to protecting the canvas itself from moisture through a coat of a relatively flexible and hydrophobic size such as PVA, although the flexibility of any material will diminish over time. Given the fact that it is now possible to make dimensionally stable panels that are also relatively lightweight in larger sizes, while, on the other hand, larger stretchers are necessarily more complex and therefore expensive, this way of working is recommended if possible.

With regard to adhesion, it is important for underlayers to dry matte. It is possible, on panels, to grind the underpainting back between layers, removing any supernatant oil and opening up the surface for the next layer. Underpainting layers can be made leaner with solvent, or matte with an addition of a form of calcium carbonate to the paint. More gritty aggregates can also be used in larger scale work to add an internal tooth to the work, in consonance with early practice.

It is often stated that *alla prima* is exempt from the fat over lean rule because it is simply one layer. This is true, and can be pushed to significant extremes, as long as the same materials are used throughout the layer. If, however, one medium is used to start, and a faster drying or leaner medium is put over it, even though both are wet when applied – in “one layer,” – subsequent wrinkling can occur when the whole layer dries. It is not, in this case, a matter of the relative richness, or “fatness” of the paint, but of potential discrepancy between two paints drying at different rates. This is possible even using the chalk putty medium, for example, if both mediums are on the dense side, making the layers themselves relatively discrete. If complex or dense *alla prima* application is the goal, the underpaint is still made leaner and faster-drying.

The fat over lean principle is not specifically part of any older text, although it is often stated that underlayers should dry matte. The fat over lean focus of 20th century texts may well have occurred because the quality of the linseed oil used for painting for most of the 20th century, especially in America, was not high. Linseed oil, as has been

shown, is capable of a great range of behaviors depending on how it is processed. Technical art history has demonstrated conclusively that it is possible to make non-yellowing linseed oil. Experience with cold-pressed linseed oil refined in various older ways has shown it to be non-yellowing, especially so when aged in the light. The hot pressed, alkali refined linseed oil of the early to mid-20th century, however, had a definite tendency to yellow, and is relatively volatile, surface drying in a way that makes wrinkling likely if such an oil were used liberally on a large canvas. As such, the 20th century system in print is typically quite cautious about “the oil.” However, the quality of oil in general use has improved, and a high quality, refined, cold-pressed oil, both in the paint and as a medium, makes a significant difference. Going further and using the type of oil that was the foundation of older painting – an organic, cold-pressed oil that has been hand refined – creates the next level of non-yellowing behavior, film strength and stability, especially when using linseed oil with any form of calcium carbonate. Relative to the behavior of commercial tube paint alone, the strength and stability of this system in use needs to be experienced to be believed.

A problem often encountered with the modern academic system in use, lack of saturation, sinking in or drying down of subsequent layers, is traceable to painting in too lean a manner, for too long. However, it is logical to paint lean, or rely on a resin medium, if the oil itself has been repeatedly shown to be suspect, and this is what it was for at least the first half of the 20th century. But this is exactly where the older oil technology – epitomized by the behavior of the various hand refined linseed oils – fundamentally changes the way the system both behaves and ages. In order for the paint to dry with luminosity in alla prima work, or later layers of indirect work, the medium must contain a percentage of resin or a pre-polymerized oil. This also suspends the pigment particles so they remain more dispersed, allowing more light to enter and refract. As indicated by the general run of the National Gallery Technical Bulletin research into the materials of older practice, a high quality pre-polymerized oil is preferable to resin for this purpose in the long run because it is less likely to become brittle and yellow. In spite of the famous reference to resin in the Strasbourg Manuscript, in spite of tremendous interest in resins in the 19th century as the “lost secret of the Old Masters,” there is still no evidence of the global use of a resin by any major oil painter of the 15th to 17th century era. (Although an exception is probably the complex tempera grassa medium of Lotto, which recent research has shown contains egg, oil, and resin.)

Fat over lean remains valid as a principle within the context of the older system based on a cold-pressed, hand refined oil, especially with regard to the adhesion of paint layers in indirect work. However, it is less crucial or more forgiving if the system itself is based on higher quality oil, especially the more stable hand refined oil. The De Mayerne Manuscript is thorough in terms of discussing diverse aspects of the craft, and contains many entries on how to make linseed oil non-yellowing or quicker drying. Yet, in contrast to the extensive discussion of paint film issues in a 20th century text such as Ralph Mayer's *The Artist's Handbook of Materials and Techniques* (1940-1991), De Mayerne contains no references to paint wrinkling or cracking, or on how to avoid this. (Conversely, there is no discussion of hand-refined oil in Mayer.) Given the much higher quality of the oil in use, this may not have been an issue at the time. Experience with the hand refined linseed oil system (see Appendix I) has confirmed this in practice. If a calcium carbonate is used, another level of long term physical and chemical stability can be achieved for the paint film. Even small additions of egg yolk also enhance stability and brightness, although the use of egg yolk is safest over time on panels.