

Egg Cetera #4: Mayonnaise and the making of masterpieces

April 9 2012

In the fourth report of our Egg Cetera series on egg-related research, conservator Spike Bucklow describes how far the simple egg has extended the richness and splendor of paintings.

Eggs in paintings often hint at resurrection. Dutch flower paintings, for example, look pretty enough for an old-fashioned chocolate-box, but look closer and you see a meditation on the cycle of life and death, with [petals](#) wilting, grapes rotting and [butterflies](#) about to be trapped by [spiders](#). Even when the painting is bursting with life, as in Jan van Os' painting 'Flowers and Fruit' (1732) at Cambridge's Fitzwilliam Museum, the nest of [eggs](#) alludes to new beginnings.

I'm a conservation scientist at the University of Cambridge's Hamilton Kerr Institute. My work aims to extend the lifetime of paintings, and ensuring their longevity requires an understanding of their materials. Chemical analysis showed that Jan van Os' eggs were painted with poppy oil but, as is quite common, not all parts of the painting used the same medium. The white tulip, for example, was painted using poppy oil mixed with a water-based protein-containing medium – quite possibly egg.

Mixing oil and egg in the kitchen gives you mayonnaise, which acts like a liquid when you spoon it out of the jar, but like a solid when you put it on the plate. Jan van Os' oil-and-egg medium was similarly 'thixotropic' and he used it with a stiff bristle-brush to leave furrows in the paint that mimic the petals' ribbed surfaces. Light falling on the painting casts

shadows that create the impression of volume in the tulip. When I trained as a student, I copied the painting and was able to appreciate, first-hand, the artist's extraordinary skill at preparing and manipulating his mayonnaise-like paint.

Egg white, or glair, was one of the paint media used in illuminated manuscripts, along with gum Arabic. Egg white tended to give a matt-velvet-like surface to opaque layers, whereas gum Arabic could produce more glossy and transparent films. Egg yolk may also have been used on its own in illuminated manuscripts to create rich, creamy, paint. Early Italian panel paintings relied even more heavily on eggs. Egg white was used as a temporary varnish whereas yolk was used as a paint medium to suspend and bind pigments, as was a mixture of the yolk and white, after removal of the membrane that held them apart in the shell.

Using egg, as opposed to oil, as a paint medium makes some tasks easier and others more difficult. Egg dries as soon as it leaves the brush, so egg tempera paint cannot be mixed or blended on the painting, as can oil paint. A desire for naturalism in paintings hastened egg tempera's fall from favour as a paint medium and, today, it is mainly used by icon painters, copyists and some conservators. But eggs were not used only as a medium to distribute pigments – ground-up eggshells were used as a pigment that was related to 'gofun', a popular Japanese pigment made from oyster shells.

Eggs have had great practical and symbolic value for artists. Seven centuries before Van Os painted his eggs, artists were concocting wonderfully exotic (and somewhat ludicrous) recipes for synthesising pigments. Hen's eggs incubated by toads feature in a recipe for making gold, and eggs with their whites replaced by mercury and incubated under horse-dung feature in recipes for making red pigments (like vermilion). It is a fair bet that the egg functions in these recipes as a symbolic reaction-vessel in which transformations take place.

We are slowly unravelling the mysteries of artists' materials. Today, most analysis of paint media requires microscopic sampling, and I am involved in a cross-disciplinary initiative – with the Fitzwilliam Museum, Department of Chemistry and Cavendish Laboratory – to develop completely non-destructive methods for the analysis of works of art. Sampling Jan van Os' [painting](#) cannot be justified but, thanks to the MINIARE (Manuscript Illumination: Non-invasive Analysis, Research and Expertise, www.miniare.org/) project, we may one day know if his white tulip really was painted with egg mayonnaise.

Provided by University of Cambridge

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