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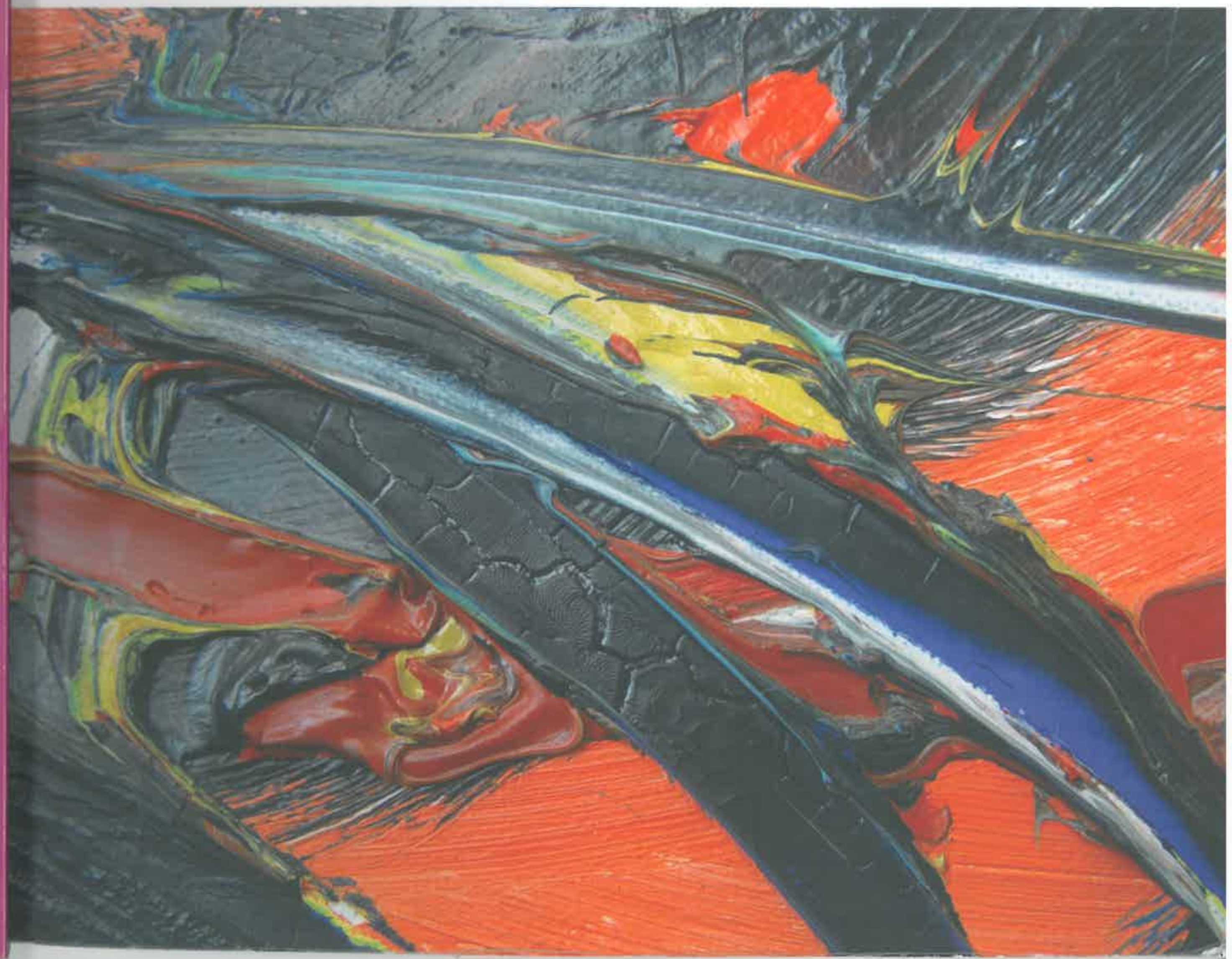
# Issues in Contemporary Oil Paint

# Book of Abstracts



# Issues in Contemporary Oil Paint

# ICOP

Cultural Heritage Agency
*Ministry of Education, Culture and Science*

**Symposium**
**28/29 March 2013**
Amersfoort
The Netherlands

## Colophon

Symposium *Issues in Contemporary Oil Paint* (ICOP)

Amersfoort, 28/29 March 2013

**Book of Abstracts**

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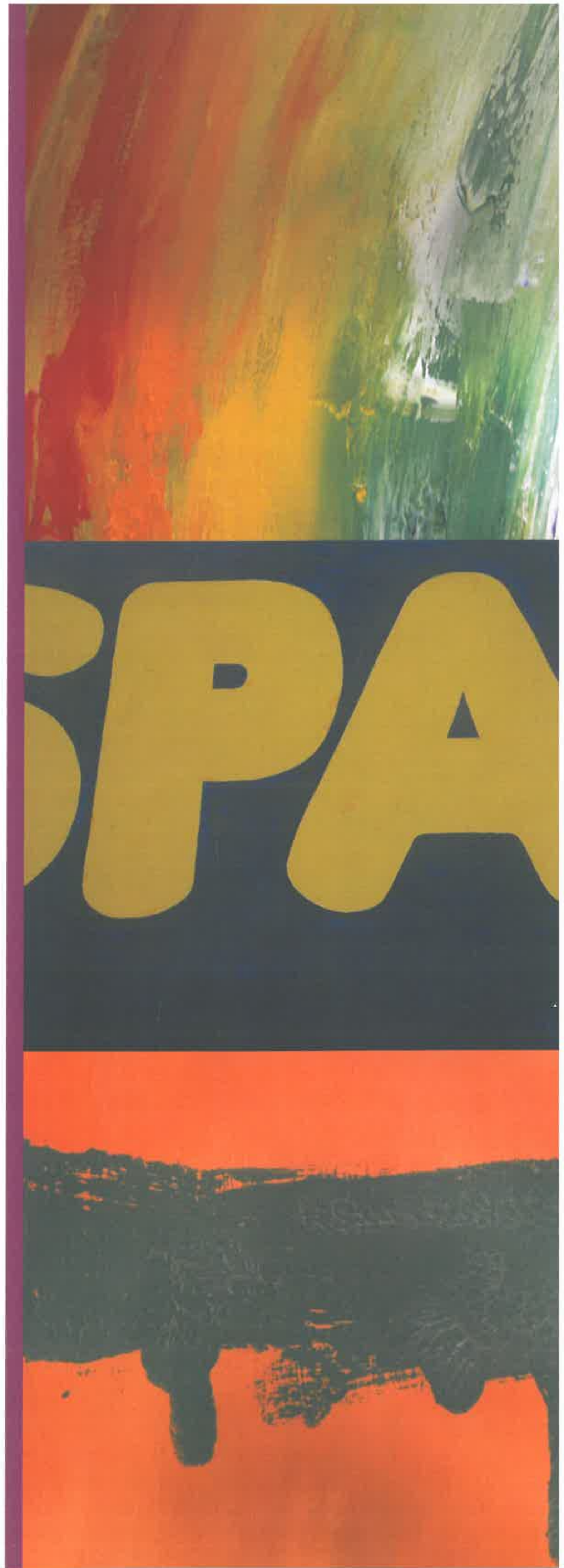

# Set back the race: Treatment strategies for running oil paint

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Oil paint, which seems to dry normally for years before suddenly turning soft and liquid is becoming a more familiar phenomenon these days. Running oil paint has been reported in many contemporary paintings from all over the world. The need to gain a deeper understanding of the complex liquefying process and to develop suitable conservation strategies is therefore urgent and the investigation in this field is steadily ongoing.

This paper presents first attempts towards post-curing of running oil paint with an emphasis on preliminary experimental results of heat treatment as a new method to deal with liquefied oil paint. Past comparative studies of several affected paintings revealed two key results, which have been evaluated: The state of oxidation of the liquefied paint was different when compared to well-dried oil paint aged under the same conditions. Second, all analysed paint samples consisted of semi-drying oil as the binding medium such as sunflower or safflower oil.

Linseed oil has been one of the most commonly used binding media for oil paint. Its unfavourable yellowing within the term of ageing though has lead to the usage of other oils such as sunflower or safflower oil. These are mainly employed for white, light and blue colour shades, where yellowing would cause an undesirable shift in hue. The disadvantage of these oils compared to linseed oil is their inferior drying ability due to minor amounts of polyunsaturated fatty acids such as linolenic acids. The chemical composition of the triglycerides influences the pathway of oxidation but also of the following fragmentation of these molecules. The presence of semi-drying oils in the paint formulation can be considered a main reason why liquefaction takes place.
The main purposes of this study were to gain a better understanding to which extent the curing of the paint samples by heat is a chemical or a physical process and to further comprehend the influencing factors. Pure sunflower oil, sunflower oil based paint and liquefied paint samples were used for these experimental studies.

The study was divided into two parts: At first, the impact of external influences on the drying and film building mechanism of pure sunflower and sunflower oil based paint were examined. Sunflower oil samples and fresh tube paint (manufactured by Schmincke as used in the 1990s) were therefore subjected to various environmental conditions in order to observe the drying process and evaluate changes within the paint properties. The samples were stored at room temperature, exposed to direct daylight, darkness and increased relative humidity.

The second part of the investigation considers thermal treatment of various paint samples. Preliminary tests to cure liquid oil paint with heat have already been successful. Further tests should reveal more detailed understanding of the processes which occur during a temperature rise. Next to the fresh tube paint and sunflower oil, liquefied oil paint samples provided by the studio of Jonathan Meese were tested. Meese is one of the





contemporary artists where the problem of liquefied oil paint is most apparent. The liquefying process appears in a paint which contains pure safflower oil as binding medium - 'Buff titanium white' Georgian Oil Colours by Daler Rowney.

The comparison of a short thermal treatment at higher temperatures with a prolonged thermal treatment at lower temperatures is of great importance as paint brittleness seems to increase with rising temperature. This was obtained by using a drying oven with constant operating temperature (40, 60 and 80 °C) and different timing cycles.
In order to monitor the stages of drying characteristics such as the *formation* of a *skin-like* film, vent holes, porosities, heterogeneous distribution of the binding media, separation of the oil media or possible voids were recorded. The samples were examined by visual and haptic perception. The surface and inner paint bulk morphology was described employing VIS and UV-light microscopy. Changes in material properties such as hardness, stickiness and viscosity after thermal treatment were evaluated using a needle test. For further analysis infrared techniques (FTIR) were employed before and after treatment to identify changes in specific bands to characterise the chemical alteration.

At present, tests and analysis of paint samples are still ongoing and results will be presented in March 2013. The curing the liquid oil paint with heat treatment may be presented as a successful experimental test and may contribute to a better understanding of the liquefying and drying process. However, further investigations are required in order to develop a practical implementation of the treatment for affected artworks.