

# ORANGE IS THE NEW RED -

## The repainting of Robert Murray's *Duet* (Homage to David Smith)

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Fig. 1

Robert Murray's abstract sculpture *Duet* (Homage to David Smith) was made during the California International Sculpture Symposium held at the California State University, Long Beach (CSULB) in 1965 (fig. 4) and has since been part of its outdoor sculpture collection. A 2012 survey revealed that the paint had completely faded. It had also suffered so many losses and abrasions that it no longer protected the metal substrate against corrosion (fig. 6).

The sculpture was chosen as the first case study for a collaboration between the University Art Museum (UAM) at CSULB, the Getty Conservation Institute (GCI), and RLA Conservation, Inc., because of the urgency of the treatment and because it embodies many of the challenges associated with the conservation of painted outdoor sculptures.

**THE SCULPTURE** The 1965 Symposium at CSULB was the first in the United States to pair artists with local industries to create innovative sculptures using new materials and technologies. Murray was able to work at the Bethlehem Steel shipyard in San Pedro, one of the few facilities capable of handling the big scale steel sheets he required (fig. 2).

After bending and assembling the steel sheets, Murray sanded the surface and applied a light orange paint coat without any prior priming. The paint was a recently developed and custom-mixed epoxy coating by Flex-Coat Corporation (fig. 3).

But the paint rapidly faded and the sculpture was repainted shortly after its fabrication in a darker hue to offset the fading. Subsequently, it was repainted many times which resulted in a strong color shift over the years, from the original light orange to markedly darker and redder top layers (fig. 5).

**EXAMINATION AND RESULTS** Samples were taken and analyzed to better understand the history of the artwork. They revealed 14 paint layers in total (fig. 9), identified separately by means of FTIR, THM-Py-GCMS, Raman Spectroscopy and ESEM-EDS (fig. 10, 11 / table 1). The original paint was confirmed as a modified bisphenol A epoxy resin. The light orange color was achieved by adding lead chromate and lead molybdate pigments, mixed with titanium white and different paint extenders. The layers subsequently applied were found to consist mostly of alkyd paints and synthetic organic pigments.

In addition, excavation windows were uncovered to observe the paint stratigraphy and to perform color measurements (fig. 7).



Fig. 2



Fig. 3



Fig. 4



Fig. 5

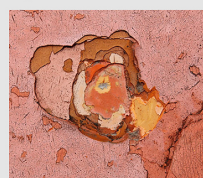


Fig. 6



Fig. 7

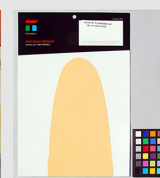


Fig. 8

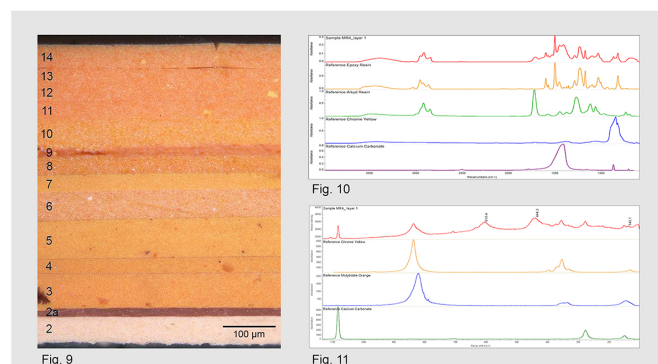


Fig. 9

Fig. 10

Fig. 11

Layer	Identified binder	Pigments and fillers	Detected elements
1	Bisphenol A epoxy resin Alkyd modification	PW 6 (Rutile) PY 34 (Chrome yellow) PR 104 (Molybdate orange) Calcium carbonate (Alumina / aluminum silicate?) (Silica?)	Ti, Ca, Pb, Cr, Si, Al, Cl, Zn, Fe, Na, Mg

Table 1

**CONSERVATION TREATMENT** The conservation included the removal of all paint coats and the repainting of the sculpture onsite. One of the main difficulties was to decide whether to revert to the original orange or keep the more reddish hue, which the sculpture showed during most of its existence. Taking into account a wide range of considerations, the project team decided to repaint with the original color (fig. 1). However, characterizing the original orange was a challenging process that also included gathering archival documentation and consulting with the artist. Subsequently, a three coat paint system by Tnemec was selected for its stability and suitability for steel substrates outdoors. It comprises two epoxy primers and one fluoropolymer top coat (fig. 8). Prior to the repainting, chemical stripping, lead abatement and cleaning of the metal surfaces had to be performed. Following the original application technique, the coatings were applied with paint rollers and brushes.

**CONCLUSION** The research into the sculptures' fabrication and history, as well as the paint examination resulted in the repainting of *Duet* in its intended color. Obviously an absolute congruence with the original hue could not be achieved without direct references. The final color selection was a compromise illustrating perfectly the tension between theoretical, ideal situations, and practice. It also highlights the need for standardized documentation systems of painted surfaces including the production of paint swatches documenting the original appearance of an artwork.

**FIGURES** Fig. 1: The sculpture *Duet* after repainting in May 2015. // Fig. 2: Fabrication of *Duet* at Bethlehem Steel in 1965. // Fig. 3: Label of epoxy paint can by Flex-Coat Corporation. // Fig. 4: The sculpture *Duet* in 1965. // Fig. 5: *Duet* before the conservation treatment in 2012. // Fig. 6: Detail of flaking paint before the conservation treatment in 2012. // Fig. 7: Comparing color in excavation window to industrial color fan deck. // Fig. 8: Paint coupon with custom-mixed paint by Tnemec. // Fig. 9: Cross-section of a sample with all later paint layers (no. 2 - 14). Original coat (no. 1) is missing in this image. Coat no. 2 shows still a similar hue as the original and is covered by a clear coat (no. 2a). All additional paints (no. 3 - 14) exhibit darker and more reddish colors. // Fig. 10: FTIR spectrum of the first original paint layer, compared to references of an epoxy resin, an alkyd resin, chrome yellow pigment and calcium carbonate. // Fig. 11: Raman spectrum of the first paint layer, compared to references of chrome yellow, molybdate orange, and calcium carbonate. // Table 1: Overview of identified components in the first original paint layer.

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The Getty Conservation Institute

