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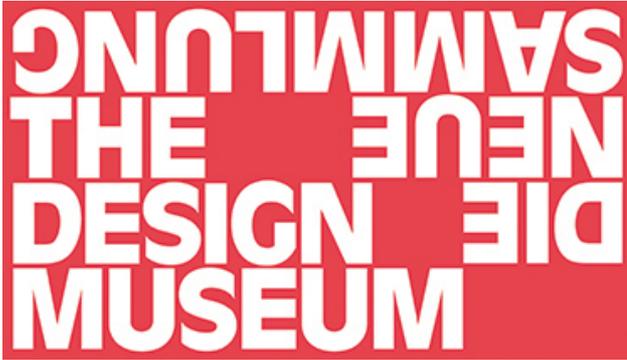
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FUTURE TALKS 019. PHOTOGRAMMETRY AND PAINTED OUTDOOR SCULPTURE: ASSESSING JEAN DUBUFFET'S 'JARDIN D'ÉMAIL'

Photogrammetry and painted outdoor sculpture: Assessing Jean Dubuffet's 'Jardin d'émil'

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This paper explores the use of photogrammetry to help with the treatment of Jean Dubuffet's (1901-1985) Jardin d'émil (1974), a painted outdoor sculpture owned by the Kröller-Müller Museum. Painted outdoor sculptures are under constant threat of degradation from the environment, resulting in gradual surface damage. Consequently, repainting has become a necessary part of conservation maintenance to ensure that the visual quality and appearance remain as the artist intended. However, documenting extremely large sculptures can be challenging, especially when they have a textured surface or difficult to reach areas. The need for precise documentation to aid with repainting can be met with innovative technology like photogrammetry, a 3D imaging technique that uses photographs to make 3D models.

Jardin d'émil is painted white with additional hand-painted lines in black and is extremely large at 600 m². Visitors can walk over its surface, which along with outdoor weather conditions has furthered its degradation. The surface of the sculpture has been damaged in several places, and the museum is currently carrying out a restoration in which years of overpaint have been removed. This has exposed original black lines, which highlights how inaccuracies in previous repainting efforts had altered the work's design. A 200 x 300 cm Maquette made by Dubuffet in 1968 was used to create Jardin d'émil and is an artwork in itself. The Maquette acted as a reference for the original painting of the sculpture in 1974 and is intended to be used for the current on-going repainting restoration.

This research was done at the initiative of the museum during the current on-going restoration, led by the senior conservator of sculpture and modern art. Photogrammetry was assessed in its ability to document the unearthed original lines, highlight deviations between the Maquette and sculpture, and in its use as a practical reference for repainting. 3D models of both the sculpture and Maquette were made in partnership with the 4D Research Lab at the University of Amsterdam. The 3D models produced were analysed with the open-source software CloudCompare, which determined the degree of deviation between the Maquette and the sculpture and highlighted problem areas prior to repainting.

Hand-painted markings are inherently difficult to reconstruct, especially on a large-scale surface. To help practically with repainting, the 3D models were uploaded onto the app 'emb3d', which enables the offline viewing of 3D models on a tablet or phone. This allows conservators to use a portable, responsive and geometrically accurate 3D model as a reference during repainting, achieving increased precision. This paper will weigh the benefits of using photogrammetry with the inevitable cost and time taken to produce a 3D model, which can be used by conservators wishing to explore this technique in relation to painted outdoor sculpture.