The Analysis and Treatment of Food Artifacts:
A Sugar Paste Wedding Cake Topper and President Grover Cleveland's Wedding Cake

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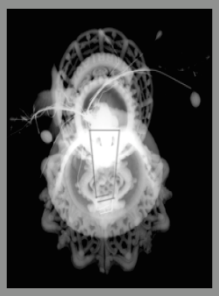
ABSTRACT: Objects with food elements are found in archaeological, archival, and increasingly, contemporary fine art collections. A survey of approaches to the conservation of food artifacts was undertaken in order to determine how these artifacts are dealt with and understood by cultural heritage collections. The analysis and conservation treatment of President Grover Cleveland's wedding cake (1886) and a sugar paste wedding cake topper (c. 1930's) serve as case studies for the treatment of food artifacts. Both objects are in the collection of the Buffalo and Erie County Historical Society. Analysis of the Cleveland cake, conducted in order to clarify historical understanding and inform the treatment plan, involved identification of cake ingredients with x-ray radiography, x-ray fluorescence, Fourier transform infrared spectroscopy, and gas chromatography-mass spectrometry. Conservation treatment of the cake and cake topper included consolidation, structural stabilization, filling losses, and stain reduction of the cake box.

Cleveland Cake (1886), Before Treatment

After Treatment, with MarvelSeal barrier housing

Cake Topper (c. 1930's), Before Treatment

After Treatment



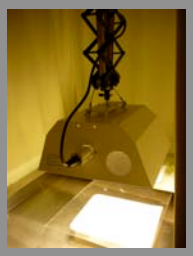
X–ray of cake topper from upper back with metal armature highlighted

TREATMENT PROCEDURE: The cake was consolidated to increase adhesion and prevent crumbling. Solubility testing and application procedures were tested on cake mock-ups. A solution of 5% Paraloid B-72 in ethanol (w/v) was selected as the optimal consolidant due to the solubility parameters of the object. The application method chosen was a combination of syringe injections and eyedropper surface dispersal. Consolidation was performed in an ethanol vapor chamber to encourage bonding by preventing rapid solvent evaporation. The consolidation treatment had the unexpected temporary effect of increasing the cake's odor, releasing a distinct molasses scent. Heavy stains in the cotton lace of the cake box were treated by first detaching the lace from the box with deionized water and wet cleaning it in a bath of 0.3% Orvus paste in deionized water. Aqueous light bleaching was performed on the lace to further reduce staining.

Solvent testing on cake mock-ups

Injection of Paraloid B-72 consolidant

Removable, two-part MarvelSeal housing



Light bleaching set-up for lace stain reduction

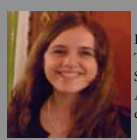
The treatment of the cake topper involved consolidation of the pastry elements with a solution of 5% Paraloid B-72 in xylene. The consolidant was generously applied to the pastry elements with a plastic eyedropper and placed in a xylene vapor chamber for five days. After consolidation, the fragments were joined as possible with a solution of 50% Paraloid B-72 in xylene. After the pastry base was stabilized, mechanical straightening of the crushed sugar paste elements was performed and fragments were joined with a solution of 50% Paraloid B-72 in 50/50 acetone and ethanol, bulked with glass microballoons. A fill for the area of loss in the front of the bell was made from Kerr dental plaster. A mold was made from a neighboring area of the bell with 3M ESPE Express STD, a polysiloxane putty. The plaster fill was tinted with dry pigments and adhered in place with the 50% B-72 in a 50/50 acetone and ethanol solution bulked with glass microballoons.

Pastry base before consolidation and joining

Topper is inverted to reduce pressure and enable injection of B-72 solution into breaks

UV-A induced visible fluorescence, Fill fluoresces green

CONCLUSION: The project began with the goal of stabilizing both food artifacts, with the additional hope that more information about the Cleveland cake's ingredients could be discerned. Both treatments were successful in stabilizing the pieces to prevent further loss of original material. Paraloid B-72 was an effective consolidant for both objects as well as an adhesive for joining sugar paste fragments. Stain reduction of the cotton lace on the cake box with Orvus WA paste baths and light bleaching was also effective. Though historical research and scientific analysis of the cake ingredients with x-ray radiography, FTIR and GC-MS was not conclusive due to the number of ingredients, the rejuvenation of the molasses scent during treatment permits tentative identification of the object as a baked plum cake.



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