

Digital Preservation and Reconstruction of Cultural Heritage in the Aftermath of the Beirut Port Explosion.

Lessons from Collaborative Interdisciplinary Efforts and Digital Technologies

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Abstract

Disasters, both catastrophic incidents and ongoing challenges, have shaped societies throughout history, leaving profound impacts on both human lives and the environment. The devastating 4 August 2020 port explosion in Beirut serves as a compelling case study. This tragedy caused significant damage to the city's cultural heritage, including museums, art galleries, libraries, and archives. The Archaeological Museum at the American University of Beirut (AUB) also suffered infrastructure damage and the collapse of a showcase resulting in the fragmentation of 72 glass vessels into thousands of shards.

In the aftermath of the explosion, the museum collaborated with its staff and volunteers to salvage and safeguard the damaged artifacts. With the assistance of a glass conservator from the Institut National du Patrimoine (INP) in France, they carefully lifted the fallen display case and recollected the fragmented glass vessels, demonstrating their commitment to post-disaster recovery.

The collaboration between the Archaeological Museum and the INP was one component of a comprehensive series of initiatives consisting of six missions, specifically designed to address the challenges in the aftermath of the explosion.

To salvage these shattered fragments and contribute to scientific knowledge, interdisciplinary projects were initiated in collaboration with different faculties at AUB. The partnership with the AUB's Faculty of Engineering and Architecture (MSFEA), led to the creation of the Digital Cultural Heritage (DITCH) incubator and focused on the development of virtual 3D reconstructions of selected broken glass vessels. This innovative approach holds the potential to provide virtual second lives for the objects through holograms or create 3D prints to replicate the original pieces.

The presentation will specifically highlight the development of the DITCH incubator, which initially concentrated on the reconstruction of small archaeological objects but expanded its scope to include the conservation and preservation of archaeological sites. The success of comprehensive digital documentation and scanning efforts will be highlighted, focusing specifically on the vandalized press in Anfeh, demonstrating the effectiveness of digital techniques in preserving and reconstructing cultural heritage sites. It will explore the implementation of preventive conservation measures at the Lebanon Mountain Trail (LMT) sites, and underscore the proactive strategies employed to safeguard

the cultural heritage and natural landscapes along the trail. This segment will emphasize the significance of preventive conservation in mitigating potential risks and ensuring the long-term preservation of cultural heritage sites.

The presentation highlights the achievements and lessons learned from interdisciplinary collaborations and the use of digital technologies in heritage preservation and reconstruction. It aims to inspire and inform future endeavors in the preservation and revitalization of cultural heritage.