**Forensic Architecture**

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**Forensic Architecture Research Methodology**

**Method: Ground**

Cartographic Regression and Remote Sensing Analysis

Forensic Architecture (FA) has created a geo-referenced mosaic of 19th century maps, aerial photographs, and satellite images in order to bring the few cemeteries that are marked on historic (but not subsequent) maps forward into the present and to identify topological anomalies that might indicate the presence of unmapped cemeteries. There are many reasons why such cemeteries may not be located on certain historical maps, including the likelihood that the cartographers did not consult with Black residents who held the knowledge of their communities’ burial grounds.

A crucial stage in this cartographic and interpretative phase of the project lies not only in marking all confirmed and suspected sites of cemeteries, but in noting their location within the plantation’s grounds, i.e. in relation to property borders, field paths, and roads, physical structures, such as the big house, outbuildings, slave cabins, and sugar mills, and the edge of the cypress forest. Cemeteries were originally located at the edge of or within the forest; as the plantation expanded over the decades, the forest line ebbed, leaving cemeteries of the enslaved mired like forested islands in seas of cane fields.

3D modeling

For FA, the 3D model can operate as an investigative tool. For this research, we are developing two types of 3D models with two different resources and two different research questions:

1. The use of drone imagery allows for 3D point cloud reconstruction of spatial features with high accuracy, which can in turn enable investigative analysis. We are cross-referencing drone footage provided by local activists with remote sensing analysis developed from satellites. For example, drone footage from the Acadia Plantation Cemetery, captured in 2020, will be used to investigate the extent of the violation of this burial ground by Formosa through the use of trenching, the introduction of new roads, and the prior intrusion of borrow pits.
2. The 3D model will also act as the medium for cross-referencing our findings from this cartographic regression with archival photographs in order to reconstruct the spaces used and occupied by Black people—the slave cabins, fields, cemeteries, and the cypress forest. The model will prioritize these spaces over the still-celebrated Big House—the world of the slave master. Taking the Whitney Plantation as its anchor, this model will serve as a narrative device for explaining to a general public the operational logic of a plantation, its structures of forced labor, and the spatial patterns through which it extracts value, produces death, and lays the ground for future occupation by petrochemical facilities.

Interactive Interviews

Through an “interactive interview” practice, local activists, archaeologists, historians, and genealogists are leading FA researchers through the landscape, sharing their stories—many of which have been passed down through the generations—of known cemeteries and other significant anchors, including churches and postbellum freetown communities that grew from rows of slave cabins, many of which were still inhabited into the 1970s. Once combined with mapping, storytelling becomes a key to discerning the logics around the location of cemeteries, as well as the transformation of the land from plantations to petrochemical plants.

Predictive Method

Through the combination of the above three methods, FA will aim to develop a predictive method for locating cemeteries of the enslaved across the region. If possible/required, FA will conduct ground sensing to test this method onsite in Fall/Winter 2021. The aim is that this predictive method can determine the areas of high probability for cemeteries on each of the plantations, thereby revealing the entire region as a landscape of immense cultural and historical significance that cannot be used for industrial development but must be known, protected, and reckoned with.

**Method: Air**

Remote Sensing

Processing historical data collected by air monitors such as the Ozone Monitoring Instrument (OMI) on NASA’s [Aura](https://aura.gsfc.nasa.gov/) satellite, we are deducing reliable estimates for the quantities of toxic materials released into the atmosphere as a result of industrialization in the region.

Infrared Thermography

FA is documenting air pollution levels at a selection of facilities in the parishes of St. James, St. John the Baptist, and Ascension, building on the remote-sensing readings at the local scale of a selection of facilities. With thermographers from Earthworks, we will identify the sources of emission plumes of volatile organic compounds using a filming technique known as “infrared thermography”—using FLIR (Forward Looking InfraRed) cameras calibrated to detect and visualize the presence of at least twenty airborne gases. Spatial analysis and 3D modelling of the sources of gases identified via infrared thermography provide the base for the simulations in the next section.

Architectural Modelling and Simulations

The Department of Mechanical Engineering at Imperial College London (ICL) is a long-term collaborator with FA and has been at the forefront of model development for fluids dynamics. The ICL fluid dynamic simulations have been used extensively in chemical industries. Their high-fidelity Large Eddy Simulation (LES) techniques, which are used to model large scale turbulent mixing and fluid problems, can provide the required “optics” to trace the movements of particles and gaseous compounds through space and time. Using data on Formosa’s permitted emissions from the Louisiana Department of Environmental Quality (LDEQ), as well as meteorological data (such as temperature and wind direction) and environmental conditions, we are estimating the concentration of toxins in air, and from there, their accumulation on land or in bodies of water, can also be accurately estimated.