Where
Blumer Lab,
Turconi -1

From Waste to Resource

About

Design Optimization and Augmented Fabrication for the Reuse of Concrete Waste.

This workshop investigates how to transform concrete waste into new architectural components through a two-phase approach that integrates computational design and digital fabrication techniques. The goal is to demonstrate how irregular materials can be leveraged to create valuable resources for construction through innovative design and assembly processes.

Part 1: Digital Exploration and Design with Reclaimed Elements
Participants in the first group will focus on digitizing and designing concrete waste pieces using 3D scanning and computational design techniques. The process will involve creating a digital inventory of the scanned materials and developing design strategies that incorporate these elements into new spatial configurations. By utilizing computational methods, the participants will transform waste geometries into novel design proposals.

Part 2: Assisted Assembly of Concrete Pieces in Unity
The second part of the workshop will delve into a guided assembly process for constructing a physical prototype of an architectural element using the popular game engine Unity3D. Here, we will bring the computational model to life, showcasing a step-by-step process of assisted assembly. Through the use of extended reality (XR) interfaces facilitated by Unity3D, participants will learn how to visualize the assembly process and ensure precise placement of each concrete waste piece in a step-by-step guided assembly.

This workshop provides a framework for reimagining the potential of concrete waste in architecture, encouraging participants to explore creative approaches to sustainable design and construction.

Schedule

10:30 – 11:00 | Welcome and Introduction

11:10 – 12:30 | Digital Exploration and Design

12:00 – 13:30 | Lunch Break

13:30 – 14:45 | Design and Analysis

14:45 – 16:45 | Assembly Process and Prototyping

16:45 – 17:00 | Guided Assembly & Prototype Construction

17:00 – 17:30 | Final Discussion and Wrap-Up

Team

Beril Önalan
Circular Engineering for Architecture, ETH Zürich
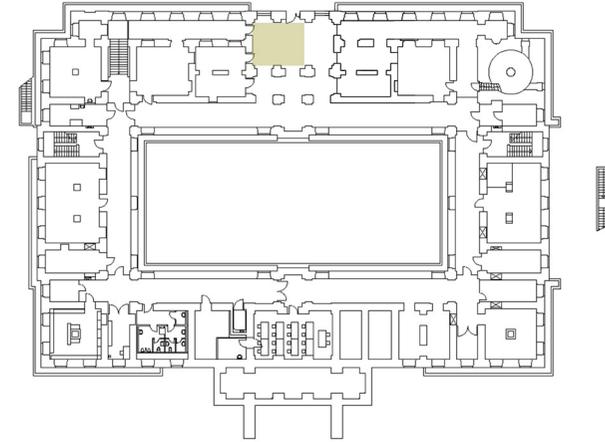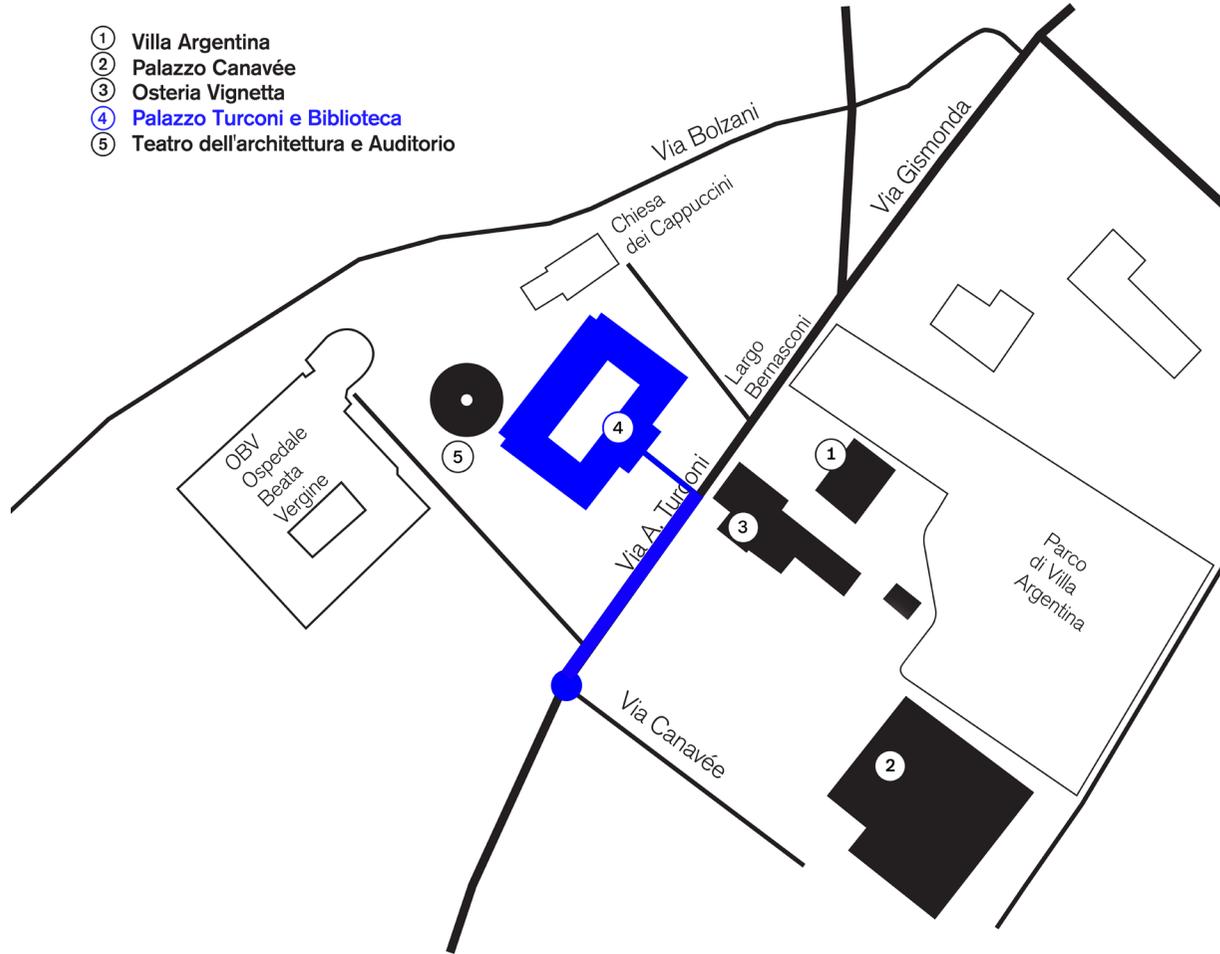

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Ioanna Mitropoulou
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① Villa Argentina
② Palazzo Canavée
③ Osteria Vignetta
④ Palazzo Turconi e Biblioteca
⑤ Teatro dell'architettura e Auditorio

Via Bolzani

Via Gismonda

Chiesa dei Cappuccini

Largo Bernasconi

OBV Ospedale Beata Vergine

Via A. Turconi

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Via Canavée

Parco di Villa Argentina

Turconi -1

Blumer Lab: W2: From Waste to Resource