Repurposing of Waste Marble Slabs for Architectural Façades

How do we design and fabricate façades from luxurious waste?

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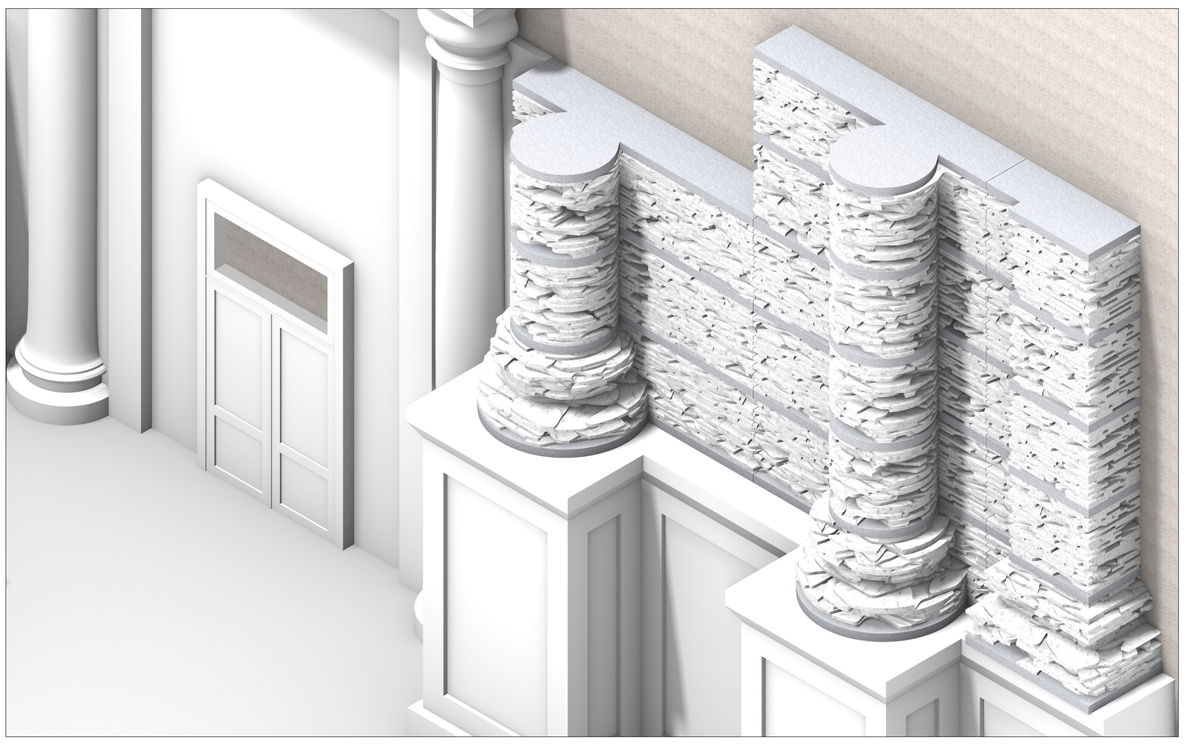
Why?

Marble—a finite and luxurious resource with historical and cultural significance—sees up to 50% of its quarried material wasted as sand, gravel, offcuts and larger rocks. This manufacturing waste is typically downcycled into road construction or landfilled.

How?

We applied state-of-the-art computer vision methods and developed a field-based packing algorithm that integrates masonry rules and aesthetics to repurpose waste marble slabs, using an on-site robotic platform for (re-) assembly tasks.



What?

We fabricate modular, reversible marble façades by layering offcut slabs and post-tensioning them with customized cast binding layers. This approach allows us to design a wide range of geometric shapes that seamlessly incorporate the unique shapes of the marble slabs.

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