DEGREE ZERO

Unearthing Stone Materiality

Jeremy Ficca

QUESTION

How might a reconsideration of stone extraction, processing, and material performance yield a different form of architecture?
How might stone be elevated beyond a decorative role in architecture?

PROMPT

Formed over millennia or in mere minutes, the earth's geological features and the stones collected or extracted displaces our perception of time made visible through material. Stone is one of our most archaic materials, but for many cultures also one of the most revered. It is a material that intersects a remarkably rich history of building across cultures and time, where it has been used equally for its significance and utility.

This studio seeks to explore the contemporary potential of stone as a primary building material. It will research the evolution of the material's use and the current circumstances of its global extraction and processing to understand how this plentiful natural resource may open new types of architectural expression while coming to terms with the environmental and human impact of its extraction. Guided by an ecological ethos and situated within the year's focus upon materiality, aesthetics, and extraction, the studio aspires to produce work that addresses the timescales of architecture and its materials. Furthermore, the studio will develop design proposals that consider the aesthetics of architectural refinement, labor, and extraction. Working heavily through models and across scales, students will explore architectural conditions to ultimately develop an architectural project that demonstrates their interpretation and utilization of the material.

The studio will operate in a 'mini-thesis' model in which students, in dialogue with the instructor, will be expected to define the scope of their their investigations within the subject of the studio.

Badami Temple Caves, Karnataka, India
Quarry Stone Scraps, Vals, Switzerland

Quarry Cave, Carrara, Italy, Edward Burtynsky
Robotic Marble Milling Process, NYTimes

In the mountains of Carrara, you see what you can no longer actually see: millions of tons of mined marble that have found a form and a location somewhere in the world, or have been wasted, reduced to rubble. You see the remains of mountains, their insides that would otherwise be invisible; you see incisions, streets, serpentines, and bridges, and when you get closer, you hear the noise of the saws, the excavators, and the trucks.

Presence and absence become equally important; aesthetics and overexploitation two sides to the monumentality of marble. Am I looking at mountains, or am I looking at the missing parts of mountains, at no longer existing mountains that no eye can possibly reconstruct.
- Angekika Stephen

Jeremy Ficca, AIA

CONTEXT/PREDICAMENTS

This studio is structured around a collection of predicaments that illustrate the contradictions, challenges, and opportunities of the subject. This is illustrated well through recent work related to the Parthenon statuary housed in the British Museum and often referred to as the Elgin Marbles.

This past June, robotic reproduction of an Athenian horse head commenced in Carrara, Italy to demonstrate the viability of reproducing the Parthenon's Elgin Marbles. The 3D model used to generate the robotic toolpaths was generated by members of Oxford's Institute of Digital Archaeology with the use of Lidar equipped iPhones and iPads and scanned surreptitiously under the watchful eyes of British Museum docents. The robotic carving, conducted in the shadows of a quarry frequented by Michelangelo, reveals the confusing intersections of ancient and modern material practices and our material and immaterial worlds. While the original statuary was hand carved over many months by highly skilled stone masons, robotic carving occurs over days, largely absent the mason's hand. Whereas stone carving historically relied upon stereotomic drawing to translate design intent to stone masons, digital workflows forge direct connections between the model and production equipment, circumventing drawing altogether.

Stone is a widely available natural building material and offers the potential to reduce distances between material sourcing and building. The strongest stones outperform concrete while offering unmatched durability and aesthetic potential. While contemporary use of stone in building is largely relegated to veneer might there be untapped potential for this material?

LEARNING OUTCOMES

Over the course of the semester students will have:

- researched the evolution of stone construction techniques as practiced globally
- understood and applied the affordances and constraints of architectural stone
- developed a robust knowledge of the cultural, ecological, and performative dimensions of an architectural material
- articulated, through a design proposal, a position toward contemporary application of a naturally sourced material
- explored how material informs spatial and structural conditions
- utilized physical models as instruments of design imagination

Note: the studio may travel to Madison, Wisconsin to visit Quarra Stone, one of North-America's leading stone processors.