

QUARRYING A NEW VERNACULAR: A Material-Centred Approach to Place-Making

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Synopsis

The studio aims to explore architecture as a landscaping process through the lens of materiality. We believe in low impact, sensitive approaches to building, within and beyond the limits of the ways sustainability has been addressed up to now. Our focus is on an architecture of locality in which geology, climate, local community and craft play a critical role in the making of place. Starting from extraction, the architectural design process examined here is holistic in nature, with the maker, the engineer, the user and the architect in constant interrelation, working together as stewards of our natural resources. In effect, the architect is asked to work in service of the material, and no longer as his/her own protagonist. We believe that this can lead to a more sustainable practice.

While the focus of our explorations will be on stone, we will highly encourage hybrid material studies, specifically of those extracted from the earth. Our design studio holds the belief that in pursuing circular, net-zero, cradle-to-cradle economic models, we must radically re-think the way in which we source and specify construction materials, and that by revisiting past methods and understanding past logic, we will be best equipped to imagine new and better ways forward.

“We will need to learn different ways of making buildings [...] and to contrive rituals that accustom us to saving. We will need to become good craftsmen of the environment”.

(Sennet, R. *The Craftsman*, 2008, p 12).



Edward Burtynsky, Super Pit #1, Kalgoorlie, Western Australia, 2007.

Projects Overview

STAGE 5

SEMESTER 1: Urban Masterplan

At the end of Semester 1 you will be asked to submit a coherent urban intervention in a designated location. Your proposal should be informed by carefully considered research questions and an initial masterplan related to the material protagonist.

Scales of inquiry:

Mapping (1:5000, 1:2000, 1:1000)

Site Reading and Analysis (1:500)

Masterplanning (1:500/1:200)

SEMESTER 2: Building Project

In the second semester, you will be developing the proposal further, augmenting it with programmatic, tectonic and contextual substance. We will ask you to explore and experiment through multiple iterations to finally produce a building-sized project ensconced within your proposed masterplan. To help you navigate this process, we will issue a complementary brief with more semester-specific guidance at the end of January.

Scales of inquiry:

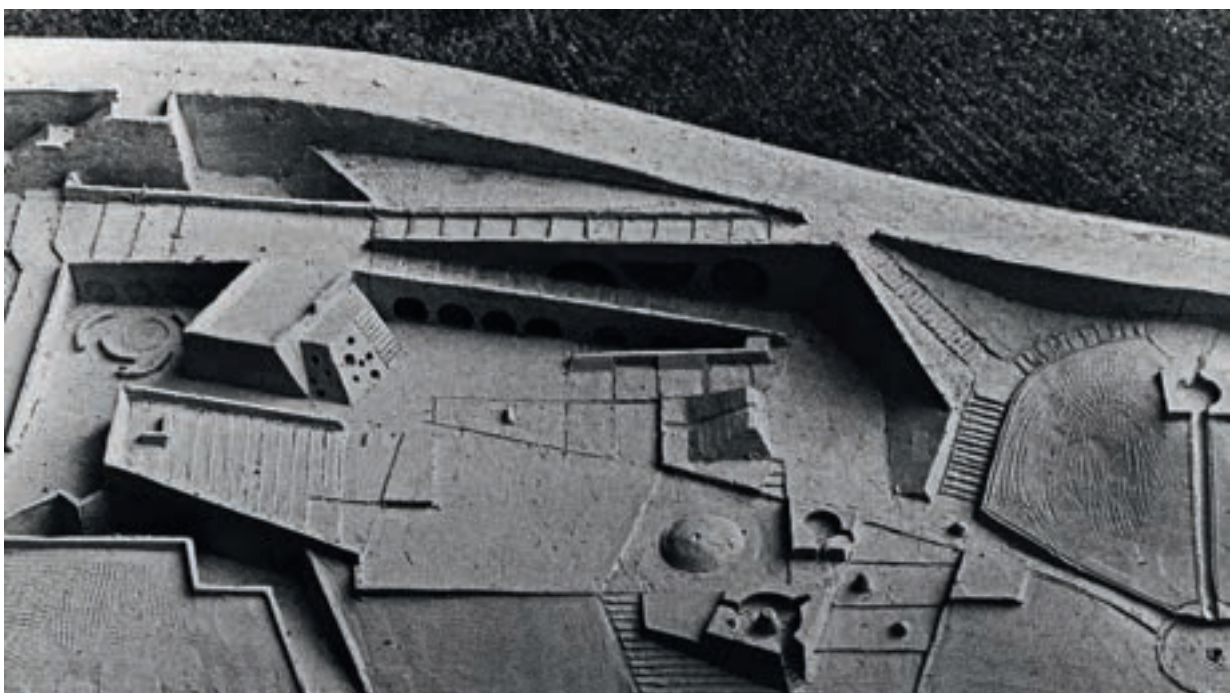
Architectural (1:100, 1:50)

Technical Intention (sketching experimentations of 1:20, 1:10, 1:1)

STAGE 6

At the end of the first semester, you will be submitting your background research forming a thesis proposal. In the first half of the semester, you will start by sharing a parallel process of exploration with Stage 5. In the second half, while thematic continuities will continue to anchor our shared events and conversations, you will gradually veer toward more personally defined research questions that take a more expansive view of locational and programmatic possibilities.

Semester 2 involves intensive experimentation and iteration so as to synthesise spatial and tectonic translations for the questions you are pursuing. Since every project will be distinctive in its own right, we will work with you to generate a more personalised plan for the second semester. Your final submission should be a building proposal that is resolved coherently at multiple scales and, importantly, embodies your thesis.



Isamu Noguchi (1934-2016), landscape models.

MATERIAL LIFECYCLE



Stone has been the cornerstone of engineering and central to place-making for thousands of years, and until the turn of the past century, its extraction, handling and application were executed and managed sustainably with logistical precision, skill and care.

Traditionally, quarries were worked predominantly by hand, using methods of digging, cutting, heating and wedging, taking the form of either open-pit or sub-surface mines. Building stone (limestone, marble, granite, sandstone, slate, etc.) can be quarried dimensionally or as aggregate, along with a range of other minerals (clay, sand, kaoline, gypsum, etc.), which are either used in their own right or processed and reconstituted into other materials, such as brick, cement and concrete. In recent years, stone has become a luxury product associated with high cost and veneer cladding systems, at the mercy of having its inherent qualities forgotten (strength, durability, thermal performance, acoustic capacity, to mention only a few). Destructive quarrying processes (drilling, blasting, charging, tamping and firing etc.) have become the default industry methods, with most usable building stone being crushed to aggregate or burnt to make cement, emitting large amounts of CO₂ in the process. The hazardous repercussions of these high-impact processes are not only reflected in the decreasing biodiversity and scarring of our natural landscapes, but also (if not more critically) demonstrated in the cultural and socio-economic unsustainability of our built environment.

This has contributed to a de-skilling of trades and a deep loss of understanding of material in the architectural profession, which has brought questions of material ethics and sustainability to the forefront of mainstream discourse. Material-agency is also social-agency, and we invite you to consider this dynamic as you develop your urban scale and building programmes.

In addition to the more traditional and established understanding of the concept of quarrying, we will also investigate quarrying as a process of urban



Top of page: Quarry blasting for cement production.
Above: Traditional technique of drilling to split stone, circa early 20th Century.

mining, re-using, upcycling, re-appropriating spaces and materials, re-generating dead topographies, and taking ownership of landscape conditions that can be used as a source of materiality for new proposals.



Top left: Stonemasons using plug and feather technique to split granite block, location unknown, circa 1930.
Top right & centre: Traditional cutting, spitting and hoisting techniques on quarry sites, circa late 19th-early 20th Century.
Bottom right: Marble caves of Carrara, Italy.

CRAFTING

We are interested in harmonising intersections between human and natural processes through the agency of making (crafting) at different scales and for different dwelling purposes. Sociologist, Richard Sennet, describes craftsmanship as “the intimate connection between hand and head”, an absolutely necessary ingredient in dealing with the physical crisis that we are facing on an ecological and sociological level (Sennet, R. *The Craftsman*, 2008, p 12).

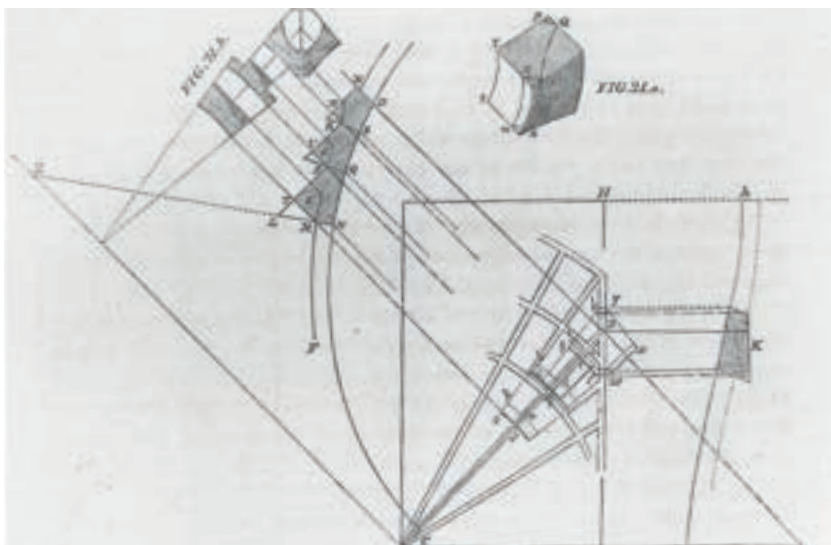
Material has to be worked and manipulated in order to put it to good use —either by hand, with traditional tooling, mechanically or digitally— but it must first be understood. A skilled mastermason will be able to read the condition of a building stone by his own touch, or by the sound of its chime when struck with a tool. While knowledge of this kind (gained through experience) was once a core part of building economy and quality assurance, post-war circumstances along with modernist ideologies have caused this valuable asset to become increasingly scarce.

We encourage you to adopt the mindset of “architect as master builder” and to associate closely with stonemasons, makers, quarriers and tradespeople in design process, in order to develop holistically considered schemes that are of their context.

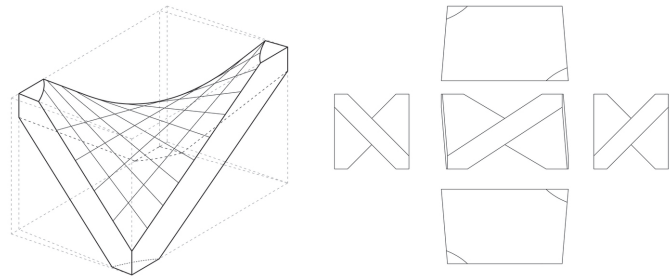
In dialogue with the material, stone craft has served as a continuum, freezing moments in time and embodying cultural memory. In this studio, we recognise the symbiotic relationship between the quarrier, maker, architect, engineer and the user as being central to the fabrication of not only sustainable buildings, but beautiful ones too.



Photographs of stonemasons at work, France, circa early 1900s.



Late Gothic stereotomic drawings, extracted from: Leedy Jr., Walter C. “Fan Vaulting: A Study of Form, Technology, and Meaning” (London: Scolar Press, 1980). Stereotomy is the art and science of cutting stone.



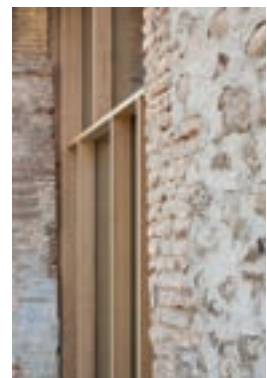
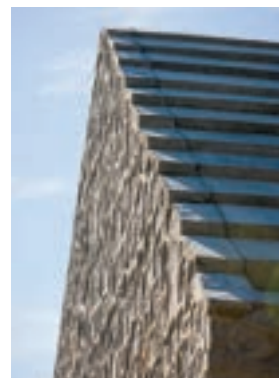
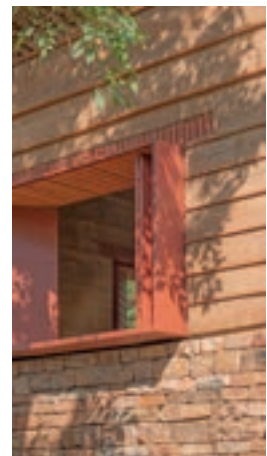
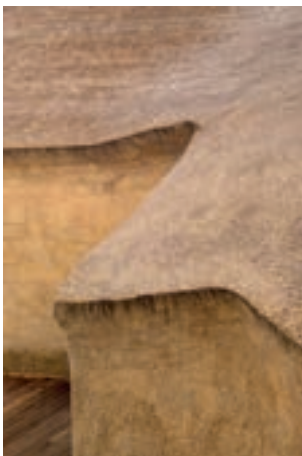
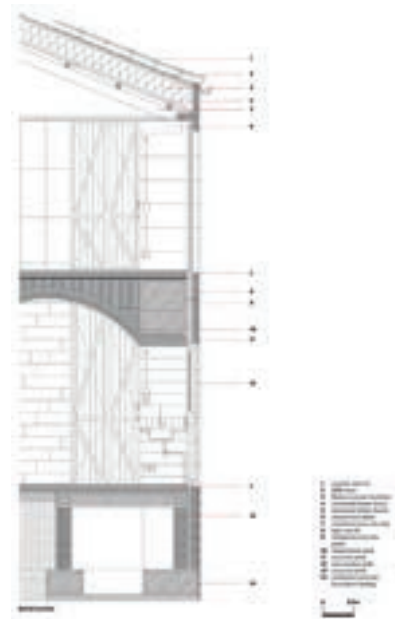
Fabrication of a french limestone vault prototype that produces almost no material waste, 2017. Architects: New Fundamentals Research Group. CNC fabrication: SNBR, Troyes, France.

A New Vernacular

Vernacular is not derived from aesthetic, but from the process of material-based responses to place. The way stone has been used in buildings is a fundamental aspect of vernacular architecture and detailing within the UK, but also globally. This can be read, for instance, in the expression of a pitched roof or the detailing of an arched window opening, determined by the surface texture, size, shape, strength and bed depth of the slates or stones. Where used and detailed appropriately, fascinating opportunities arise when stone is used in hybrid with other natural and engineered materials, such as: timber, earth, clay

tiling, terrazzo, thatch (straw), lime mortars, hemp, copper, zinc, glass and steel, etc.

As part of your building projects and technical investigations, we invite you to draw inspiration from a host of case studies, and to allow your broader contextual research to critically and imaginatively inform the aesthetic decisions of your designs.



Top image & detail drawing: IBAVI architects, social housing project in Mallorca, Spain, 2019.

Matrix images: GuineePotin-Architectes; Studio Wok; New Makers Bureau; New Makers Bureau; CRUX Architectos; Stefano Pugatti Architects; Dekleva Gregorič Arhitekti; country house, Verona.

CONTEXT

The studio will use as its testing ground the “road” between Edinburgh and Berwick-upon-Tweed. Both sites have a long significant history in the use of stone as local building vernacular, creating a very interesting palimpsest of stories of materiality and making.

Berwick-upon-Tweed

Greatly characterised as a liminal zone between Scotland and England, Berwick-upon-Tweed is built along a narrow coastal plain, penetrated by rivers (including Tweed) and is underlain by sedimentary rocks of limestones, shales and sandstones that are concealed in the inland by glacial boulder clay. Sandstone travels through the town as a key building material along with pantiles and brick (earlier construction periods) made from local clay deposits. Rock formations wrap around the area from Pier Road to Magdalen Fields and cliffs are also visible at low tide. The industrial history of the town contributes to this with the copper industry, the grain trade and iron manufacturing flourishing during the 18th and 19th century.

Edinburgh

Edinburgh’s urban fabric is fragmented due as much to its the variegated and dramatic topography as its long history of urban interventions, which have transformed the city’s form often inflected by political and ideological contentions and economic drivers. Since the 1701 Act of Union, sways between support for unity with England and independence from it have affected the city’s growth in quite specific ways at key moments in its history. Its formation has been greatly affected by the dramatic, rocky and hilly topography, in which stone has been nurtured for ages, giving itself as part of the more natural landscape or building material. Moments of friction between ephemeral and permanent infrastructures, reveal themselves in disorienting scraps of urban space, oddly shaped parcels of land, sites that can’t quite seem to find lasting uses. Stone materiality becomes a thread of connecting these fragments together. Most of the fabric is built from grey/brown sandstone, quarried from different quarries, as for example the Craighleith Quarry (operating from 1615 to 1942 and now occupied by a retail park) which supplied the building stone for the iconic Edinburgh Castle, parts of the Old and New Towns and even Leith Docks.

Voiced in stone, different stories are being told

through the city’s landscape: from fashioning the topography, to expressions of national identity, and urban development. We invite you, as a studio, to (re) craft stories that add to these narratives.

Field Trip

Our field trip will follow the road from Edinburgh to Berwick-upon-Tweed and to other regions within the UK, where we will visit operational and forgotten quarries to have a closer reading of the breadth of indigenous stone and earthen material available to us.



Antique map showing the road from Edinburgh to Berwick-upon-Tweed, circa 1792.



Berwick-upon-Tweed, present day.



Hutton Stone's Darney Quarry (sandstone), near Berwick-upon-Tweed. We will be visiting this quarry and Hutton Stone facilities during our field trip.



Aerial view showing Craigleith Quarry as it looked circa 1935.



Aerial view showing Craigleith Retail Park, present day 2024.

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