The Architecture of the Nordic Marble 'left-over'

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Publication date:
2022

Document Version:
Peer reviewed version

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This project investigates the materiality of marble through a focus on quarried ‘left-overs’ - the enormous quantity of material that is either too small or the wrong color to attract an industrial buyer. The global commodification of what was once a high-value, low-volume craft industry has led to the reduction of marble to a luxury finish, one that is often extracted in Europe, processed in the developing world, and shipped back to the West as countertops and bathroom tiles.

In spite of the (literally) superficial use of marble today, it remains one of the most widely admired materials for its heterogeneous depth, aesthetic imagination and historical associations. New technologies in digitization, robotic fabrication, and computational analysis offer the possibility to capably process small ‘left-overs’ and re-engage with marble’s historically-embedded fascinations, encouraging locally sustained, micro-extraction over the global appetite for marble as an index for luxury and kitsch.

Two works are proposed as a single installation in dialogue, each expressing contrasting material potentials employing ‘left-over’ pieces of Nordic marble. Starting from centuries-old marble expressions such as rustication, book-matching, and translucency, *Column* and *Wall* display the rich vocabularies possible when re-interpreting old practices using new technologies. Both works utilize marble ‘left-overs’ under 150kg from the still active marble quarry in Fauske, Norway, which are commercially available in two types: Hermelin (grey and white) and Norwegian Rose (pink, white, with hints of green and orange).

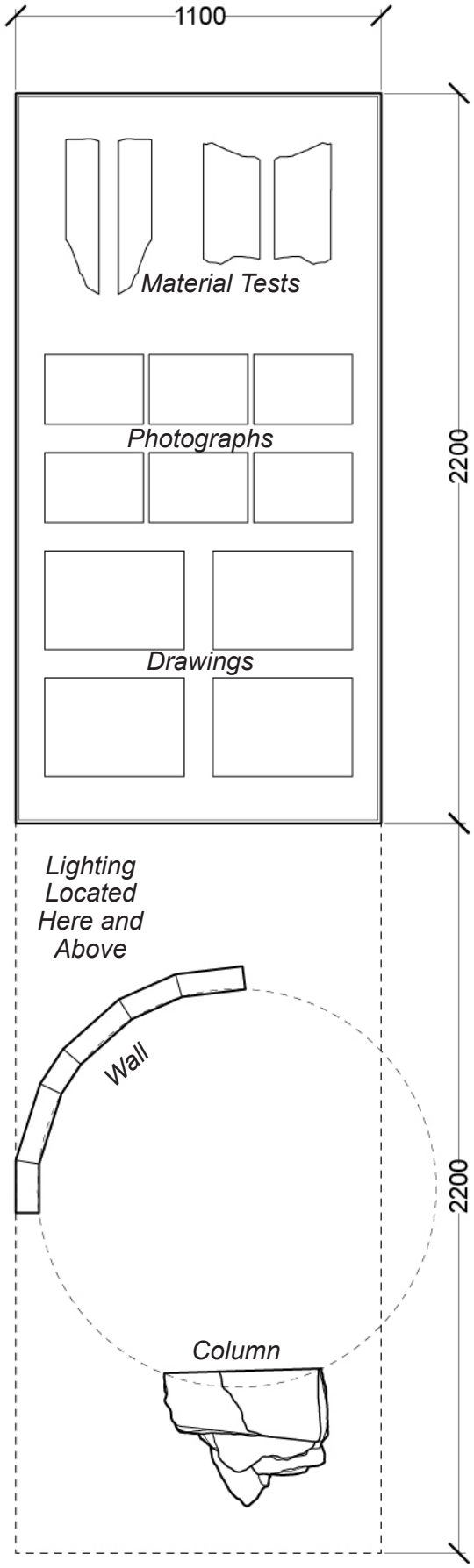
In *Column* the ‘left-overs’ are assembled through concepts in tooling, patterning, and chance: aspects that were historically captured in the architectural concept of ‘rustication’. After digitizing each ‘left-over’, a hammer drill is attached to the robotic arm for precise, creative control of the drilling pattern, yielding a book-matched pair that connects with other pieces through a unified tooled pattern. Waste is minimized to what is removed to for the horizontal bed joints. Other faces of the column are understood through *aleatoric* thinking, whereby chance relationships emerge in relation to the mirrored properties of the tooled face.

In *Wall* the translucent capacity of marble comes alive through precise shaping and machining. The signature pinkish-red interior of Norwegian Rose, immersed within a matrix of snow-white-dolomite, offers a dialectic between hot and cold, fire and ice. Computational analysis enables an optimized wall coursing based on the Roman technique of *opus pseudoisodomum*, minimizing waste. Each ‘left-over’ is sliced into a sequence of 70mm slabs, then shaped into a rectilinear block before receiving a single, ruled surface cut with a custom-built robotic wire saw; revealing a translucent interior while retaining the structural stability of an interlocking, stacked wall.

EXHIBITION LAYOUT AND MONTRE
In the proposed layout, one module of 2200 x 1100 is used for the display of both the *Wall* and the *Column*. Both pieces fit within these dimensions while still allowing people to move around and see different aspects of both pieces.

To the right of the pieces is a 320mm deep *Montre*. The *Montre* will display material tests in splitting, photographs of the construction and assembly of both pieces, and drawings representing the design and assembly logics.

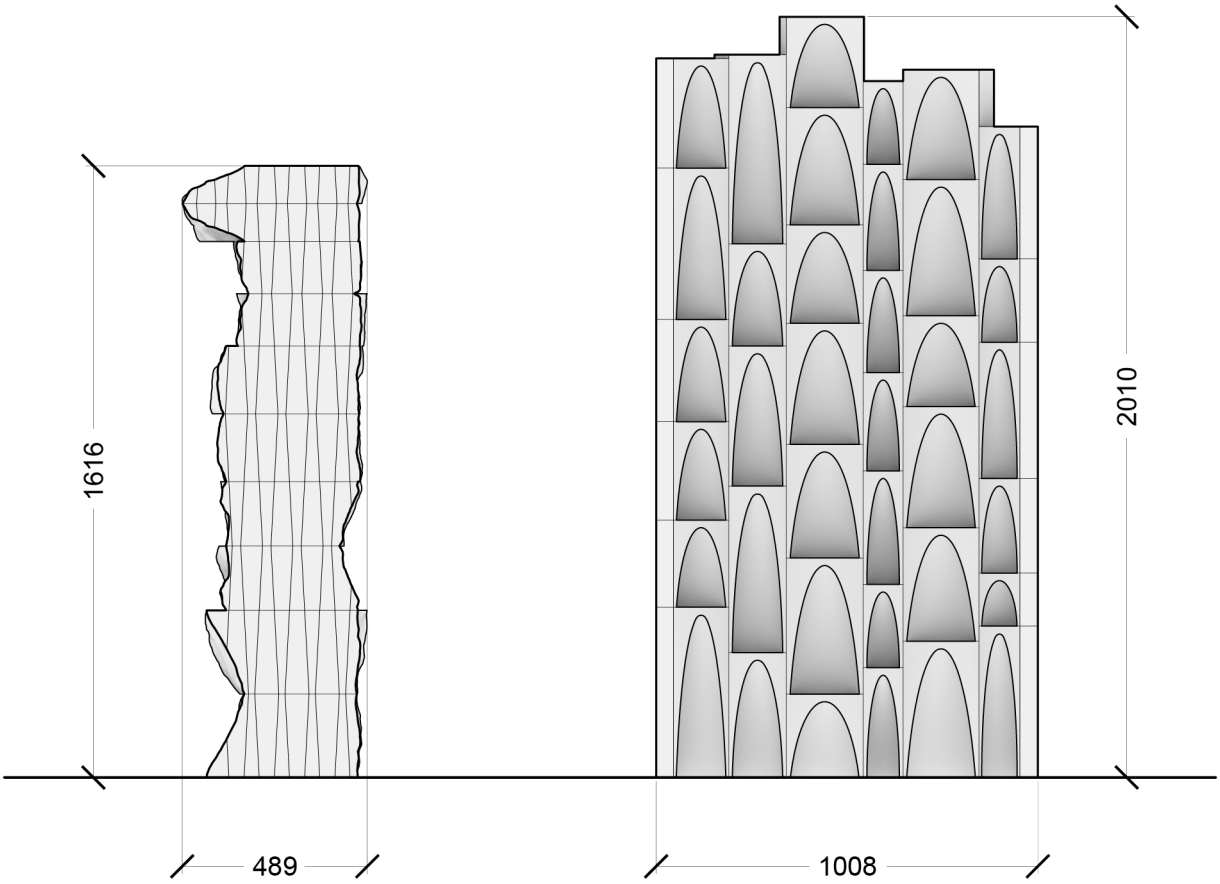
LIGHTING
Some time will be needed working with the exhibitions team to properly light the *Wall* piece – placing lights behind and above the installation to help illuminate the more translucent moments of the marble.



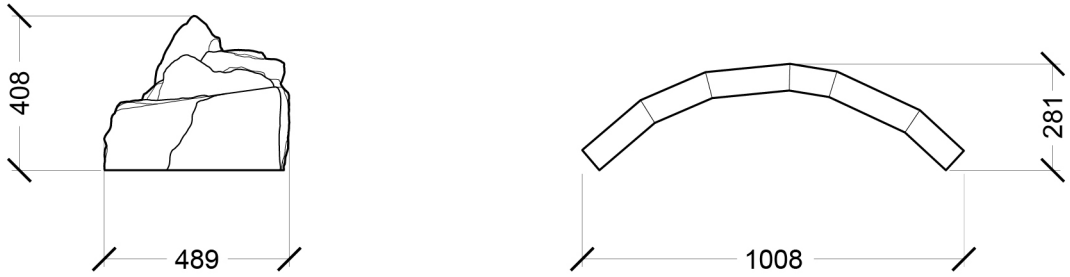
EXHIBITION PLAN
1:20

The *Column* in its initial installation.

Wall captured during its initial installation assembly.

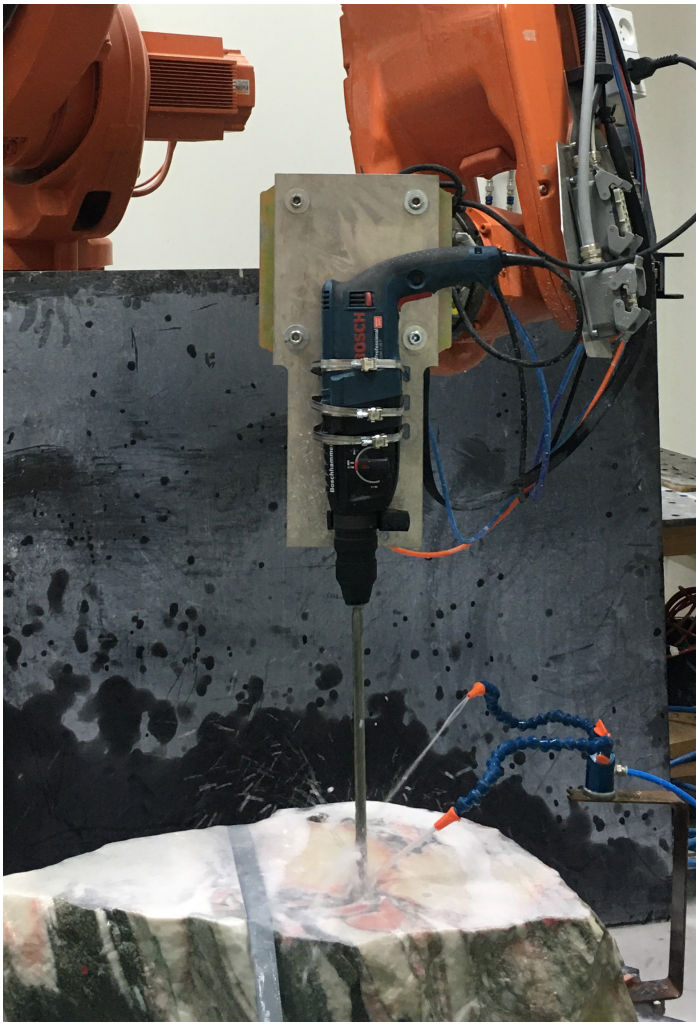


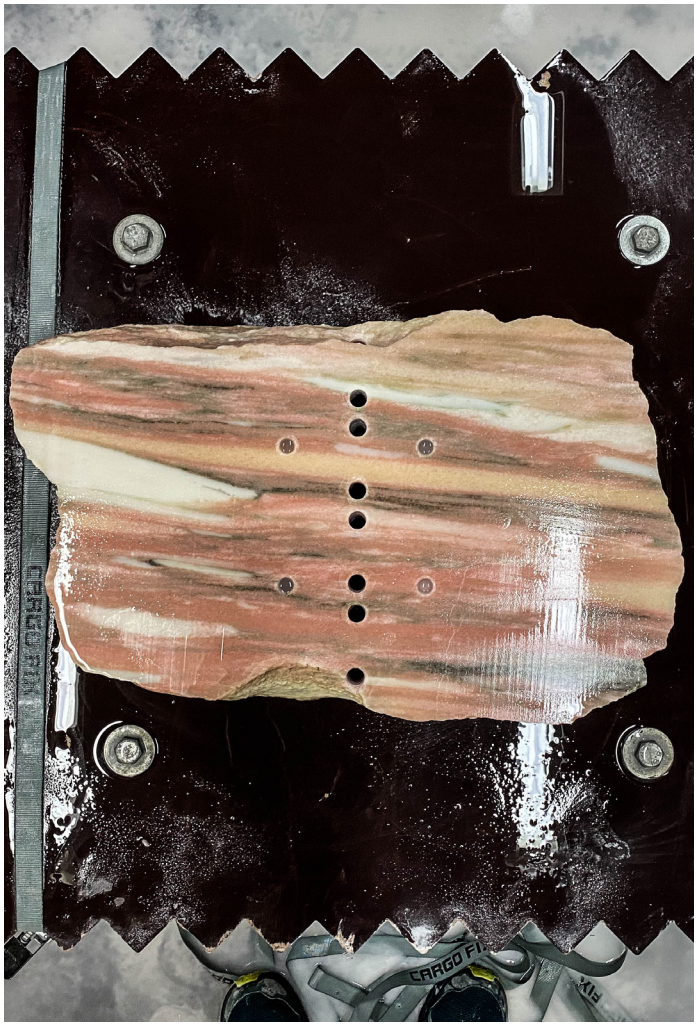
COLUMN AND WALL ELEVATION
1:20

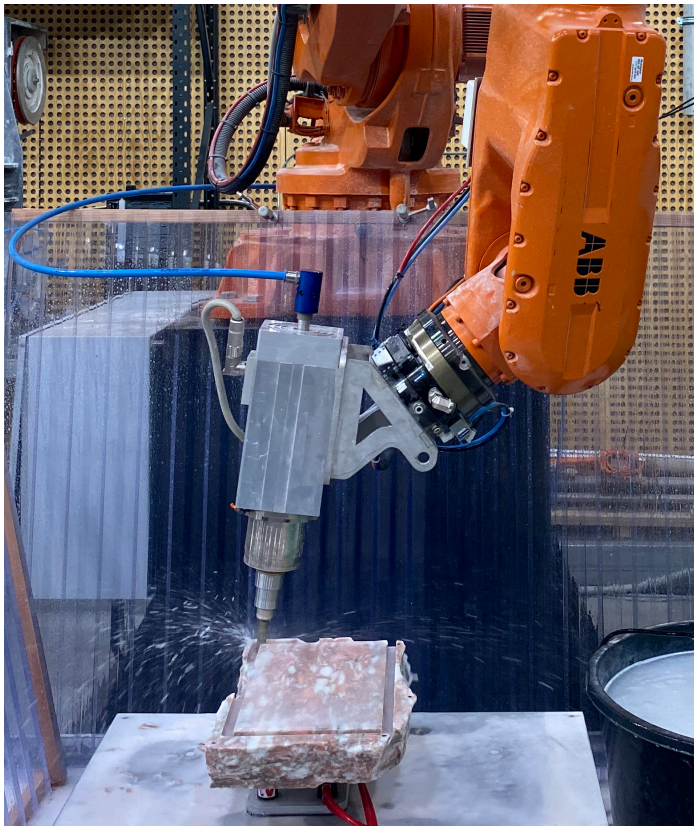


COLUMN AND WALL PLAN
1:20

Individual Dimensions for *Column* and *Wall.*







Clockwise from upper-left:
Robotic drilling to split and book-match marble for *Column*
Drilled holes ready for analog splitting of marble for *Column*
Edge articulation to create a block of marble for *Wall*
Ruled surface cutting of marble block to reveal translucency in *Wall*

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EDUCATION

Ph.D. / Architecture Design Research (2013)
Virginia Polytechnic Institute, Alexandria VA USA
Master of Architecture, First Professional Degree (2001)
Virginia Polytechnic Institute, Blacksburg VA USA
Bachelor of Arts / History (1998)
Indiana University, Bloomington IN USA

RECENT PUBLICATIONS

Jonathan Foote, H. Göritz, M. Hall, and N. Matteson, eds., 2021, *Lewerentz Fragments* (ACTAR).

Jonathan Foote, 2020, "The Silence of Michelangelo: Meditations on the beating hammer," in *The Place of Silence: Environment, Experience and Affect*, Mark Dorian and Christos Kakalis, eds. (Bloomsbury).

Jonathan Foote, 2019, "Tracing Michelangelo's modani at San Lorenzo," *Mitteilungen des Kunsthistorischen Institutes in Florenz*, Heft 1, LXL Band, 2019, pp. 45-74.

RECENT EXHIBITIONS

OnSite Gallery: Arkitektskolen Aarhus, Aarhus DENMARK (2020)
Solo exhibition of 'Column 1' research project, designed and installed with Robert Trempe, co-researcher.

"Jorn Rundt", Museum Jorn, Silkeborg, DENMARK (2020)
Video installation, 3D scans of Asger Jorn's Havana wall murals, with R. Baumeister, T. Lee, and C. Dayer.

"Oneiric Inventories", Virginia Tech, Alexandria, VA, USA (2017)
Ceiling Installation for Frascari Symposium III: Ceilings and Dreams, with C. Dayer. In permanent collection.

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EDUCATION

Master of Architecture, First Professional Degree (2001)
Graduate School of Fine Arts, University of Pennsylvania, Philadelphia PA USA
Bachelor Of Arts (1997)
Hobart College, Geneva NY USA

RECENT PUBLICATIONS

Trempe, Robert & Reinhardt, Dagmar & Buthke, Jan. "Ghost in the Machine: Scanning Agency." Paper published in proceedings for the Second Annual Design Research Conference, Monash University, Melbourne, October 2019.

Trempe, Robert & Buthke, Jan. "Instructive Anholt: Denmark's Most Remote and Reflective Municipality." Paper published in proceedings for the ACSA 2017 Fall Conference, Marfa, October 13, 2017.

Trempe, Robert. "Geometrias Fresadas - Dibujando Para La Manufactura Usando El Dibujo Y El Proceso." Paper published in proceedings for The Digital Reveal - Seminario Internacional de Arquitectura, Bogota, September 1, 2016.

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OnSite Gallery: Arkitektskolen Aarhus, Aarhus DENMARK (2020)
Solo exhibition of 'Column 1' research project, designed and installed with Jonathan Foote, co-researcher.

Second Annual Design Research Conference Gallery: Monash University, Melbourne AUSTRALIA (2020)
Exhibition of student works from pedagogical project exploring digital thinking pipelines titled 'Ghost in the Machine: Scanning Agency.'