

AALTOSILO

SILO DREAMING

...

Toppila
Oulu, Finland

Factum Foundation & Skene Catling de la Peña

February 2022

PROJECT TEAM

Aalto Siilo ry

Director of Association - Otto Lowe
otto.lowe@factumfoundation.org
Project Manager - Valentino Tignanelli

Factum Foundation

Calle de Albarracin 2828037, Madrid, Spain
+34 91 550 0978
www.factumfoundation.org

Skene Catling de la Peña

44 Lexington Street, London W1F 0LW
+44 (0)20 3858 9206
www.scdlp.net

Engineers HRW

Structural Design
Unit 10 Blue Lion Place 237 Long Lane, London, SE1 4PU
+44(0)20 7407 9575
www.ehrw.co.uk

We are collaborating with the following:

Alvar Aalto Foundation, Tommi Lindh

Oulu City Planning Department

Tapio Snellman - Filmmaker

Oulu University, Oulu - Eco-concrete Research

Tampere University, Architecture Department - Undergraduate Case Study

Arctic Drone Labs, Oulu University of Applied Sciences (OAMK) - Recording Projects

Nordic Academic Alliance, Oslo School of Architecture and Design (AHO)

Oulu 2026 City of Culture

and ideas are being developed with:

Virpi Suutari - Architecture Film Festival 2021, Aalto Capsule

Stora Enso, Helsinki, Timo Heikki - Timber and Cellulose Applications

Territorial Agency - Oceans in Transformations

Made by Choice

Oulu Urban Culture

Sustainable Kaihonjarju & Valve Centre, Oulu

Kulttuurivoimala RY - Culture Power Station, Toppila

Oulu Film Centre - Northern Photographic Centre

Oulu Music Video Festival and Archive & Elektorni Records

Kalito Cultural Magazine

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“Being unused for decades, the Silo provides possibilities, unique challenges and great potentials in reuse as well as in architectural and structural innovations. Rehabilitation of the landmark building will hail a new period, not only in the neighbouring Toppila area but also in the City of Oulu. The Alvar Aalto Foundation looks forward to the rise of the Phoenix!”

Jonas Malmberg, Alvar Aalto Foundation

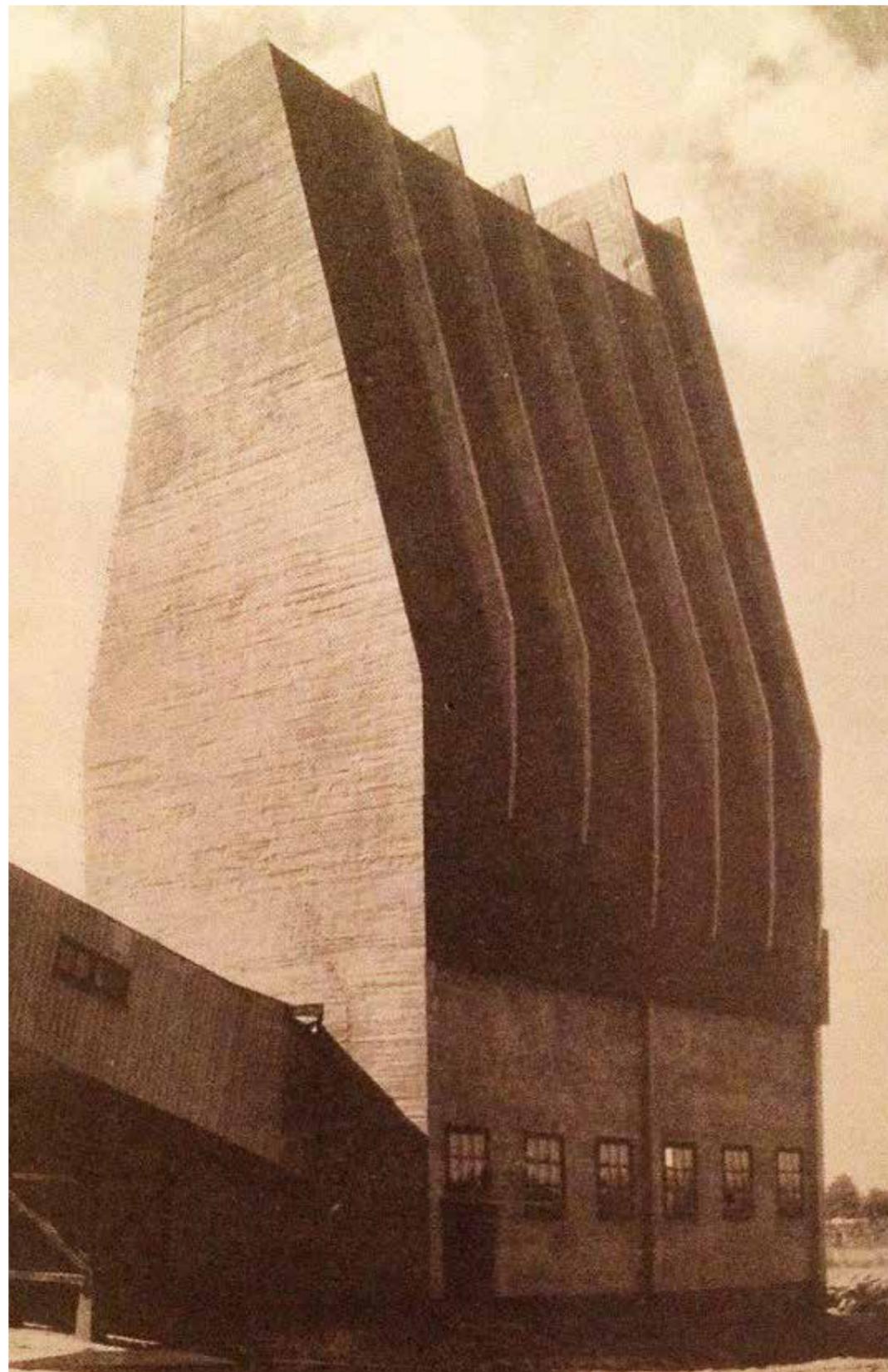
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Links:

www.aaltosiilo.com

www.archfilmfest.uk/charlotte-skene-catling

Front Cover - A still from the short teaser film, Aalto Siilo © Tapio Snellman



Aaltosiilo, 1931, *Arkkitehti* No.12

OULU RISING - SILO DREAMING

“That immaculate eye for detail is typical of the work of Factum Arte, a Madrid-based studio whose combination of digital analysis with assiduous craft is transforming the way we see art. I have been watching their work develop for nearly a decade. I am now convinced it is the most important thing happening in 21st-century art – because it can quite literally save civilisation.”

Jonathan Jones, *The Guardian* - February 2017

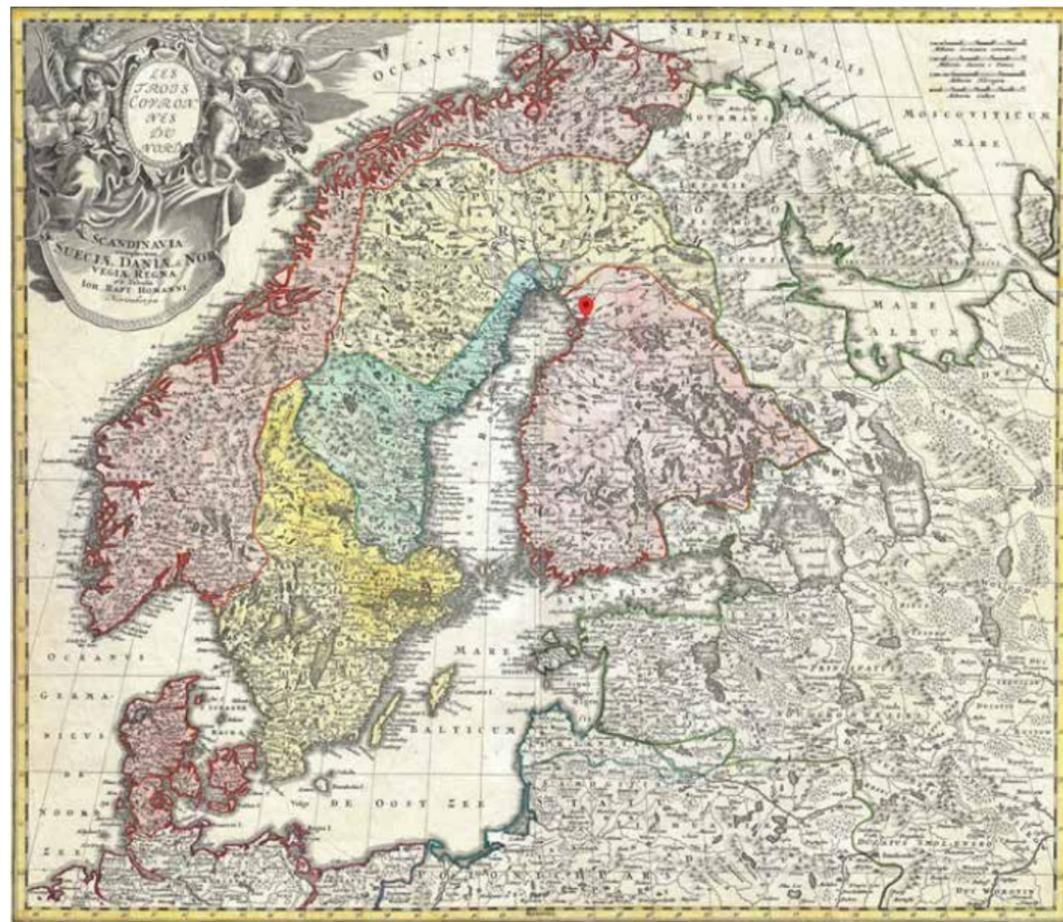
The AaltoSiilo, Alvar and Aino Aalto's first industrial building, was constructed in 1931 at the limits of engineering tolerance. It rises 28-metres high, springing from a narrow rectangular base divided into three bays, each 10 x 10 metres in plan. The walls and roof are cast-in-situ concrete of an almost impossible thinness – only 10 cm – held rigid by fins that punctuate the façade. The roof barely tapers off the vertical, with a parallel conveyor chute that carried wood chips to the top for distribution through steel funnels, suspended from concrete ring beams by flexible steel joints. Bitumen painted directly onto the concrete surface served as weatherproofing. It has the austere dignity of a secular cathedral, but one elongated and exaggerated, as if imagined by an expressionist filmmaker.

The Silo is currently the focus of a significant transformation. It sits at the northernmost edge of the Gulf of Bothnia in Toppila, a neglected suburb of Oulu, where urgently needed urban regeneration is connected to the alarming consequences of climate change. Refugees (including people from Syria and Somalia) are arriving as the arctic ice melts. Post-glacial rebound results in the land 'bouncing back' leading Oulu to rise by more than one centimeter a year. This affects not only the relationship between land and sea, but the composition of the sea itself. The melting ice is turning the Gulf of Bothnia into freshwater: its new population of pike and perch are clear evidence of this.

Oulu's complex history began in the 17th century, when its 'Tar Bourgeois' grew rich by supplying the treacle-black pine tar, extracted by burning trees, that was used for waterproofing the ships sent out to conquer what became the British Empire. The Silo was built when exploitation seemed natural, natural resources seemed infinite, and responsibility lay in satisfying human desire rather than preserving its environment. The Toppila factory complex, of which the Silo is one of the remaining structures, produced sulphite cellulose and wood pulp for the English paper producer Peter Dixon & Son Limited. It closed in 1985 as the newspaper industry's economic fortunes changed, leaving behind a ravaged landscape where once luxuriant, virgin spruce forests grew. Now commercial sharks are once again circling, eyeing the natural resources being unlocked by the rapidly melting permafrost.

THE CITY OF THE TAR BOURGEOIS

Fortunately, positive change is in the air and possible in Finland. Tech- and gaming-related startups thrived in Oulu with the growth of Nokia and now have their own identities. Research into sustainable building materials is ongoing in Oulu University and OAMK (Oulu University of Applied Sciences). With the rise of mobile telephones cellulose is being used once again for communication, but in nano-structured form in 5G technologies. There is a rising awareness of the urgent need for a new approach to the global role of this overlooked locality. The world is now being forced to confront its deepest prejudices as national boundaries, identity, consumption, materiality, preservation and sharing are all being renegotiated. There is global rethinking about what is valuable and even the nature of value itself. The regeneration of the AaltoSiilo and its re-use is a project being developed by Factum Foundation and Skene Catling de la Peña. The Silo is on the frontline of change and Oulu is rising. Both literally and metaphorically.



XVII century map of Fenno-Scandinavia.



Alvar Aalto at the opening of the Toppila Ltd



Toppila Pulp Mill shortly after completion (1933), snow covered wood in the foreground © Finnish Heritage Agency

AALTO SILO

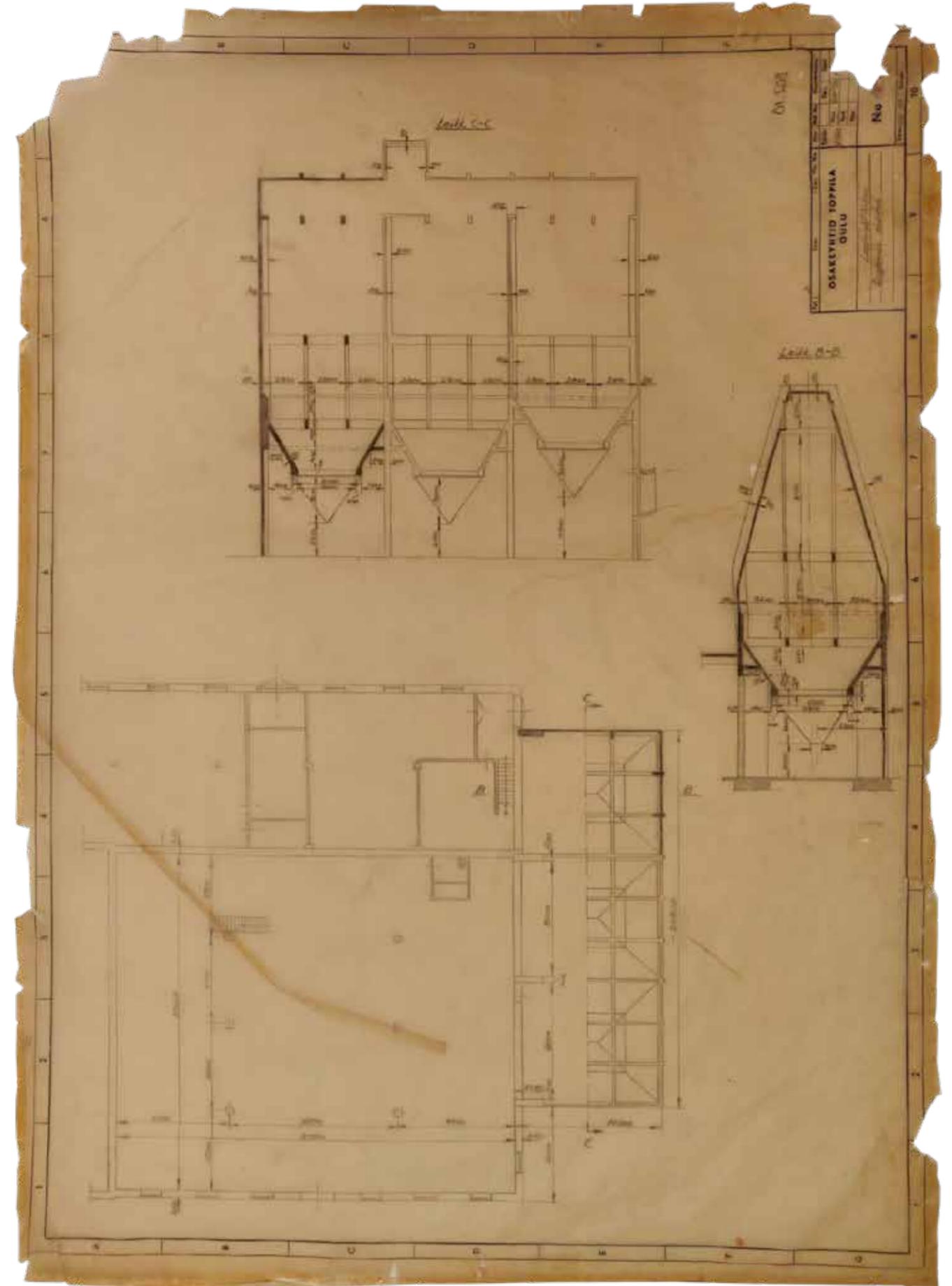
"Mountainous silos, incredibly space-conscious, but creating space. A random confusion amidst the chaos of loading and unloading... of railways and bridges, crane monsters with live gestures, hordes of silo cells in concrete, stone and glazed brick. Then suddenly a silo with... closed horizontal fronts against stupendous verticals of fifty to a hundred cylinders, and all this in the sharp evening light..."
"Everything else so far now seemed to have been shaped interim to my silo dreams."

Eric Mendelsohn, in a letter to his wife in 1924

Walter Gropius first published pictures of silos in the *Jahrbuch des Deutschen Werkbundes*, (the Yearbook of the German Association of Craftsmen), in 1913. The impact on the European Avant Garde was instant and electric. Le Corbusier saluted silos in 1924 as the 'magnificent FIRST FRUITS of the new age' in *Vers une Architecture*, (originally titled 'Architecture or Revolution'), and Bruno Taut published the monumental Central Elevator of Buffalo, New York, in *Modern Architecture*, 1929. But these reactions, and the modernist manifestos they inspired, were based purely on photographs. Only Erich Mendelsohn travelled to study and record the silos first-hand.



^ Alvar and Aino Aalto © Military Museum of Finland
> Archive architectural drawings of the Aaltosiilo



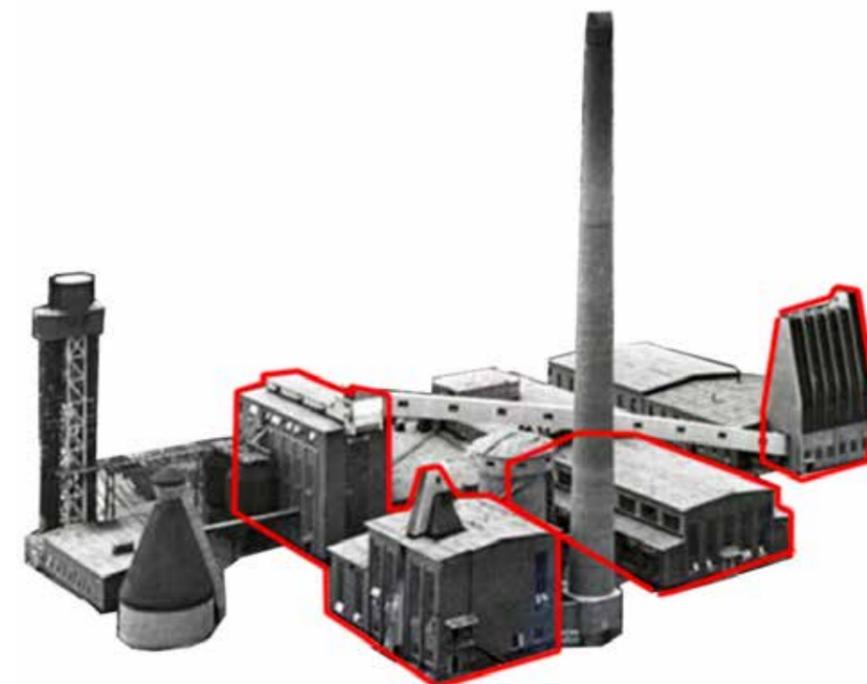


Demolition of the Toppila Ltd Factory in 1993 © Kaleva Archives

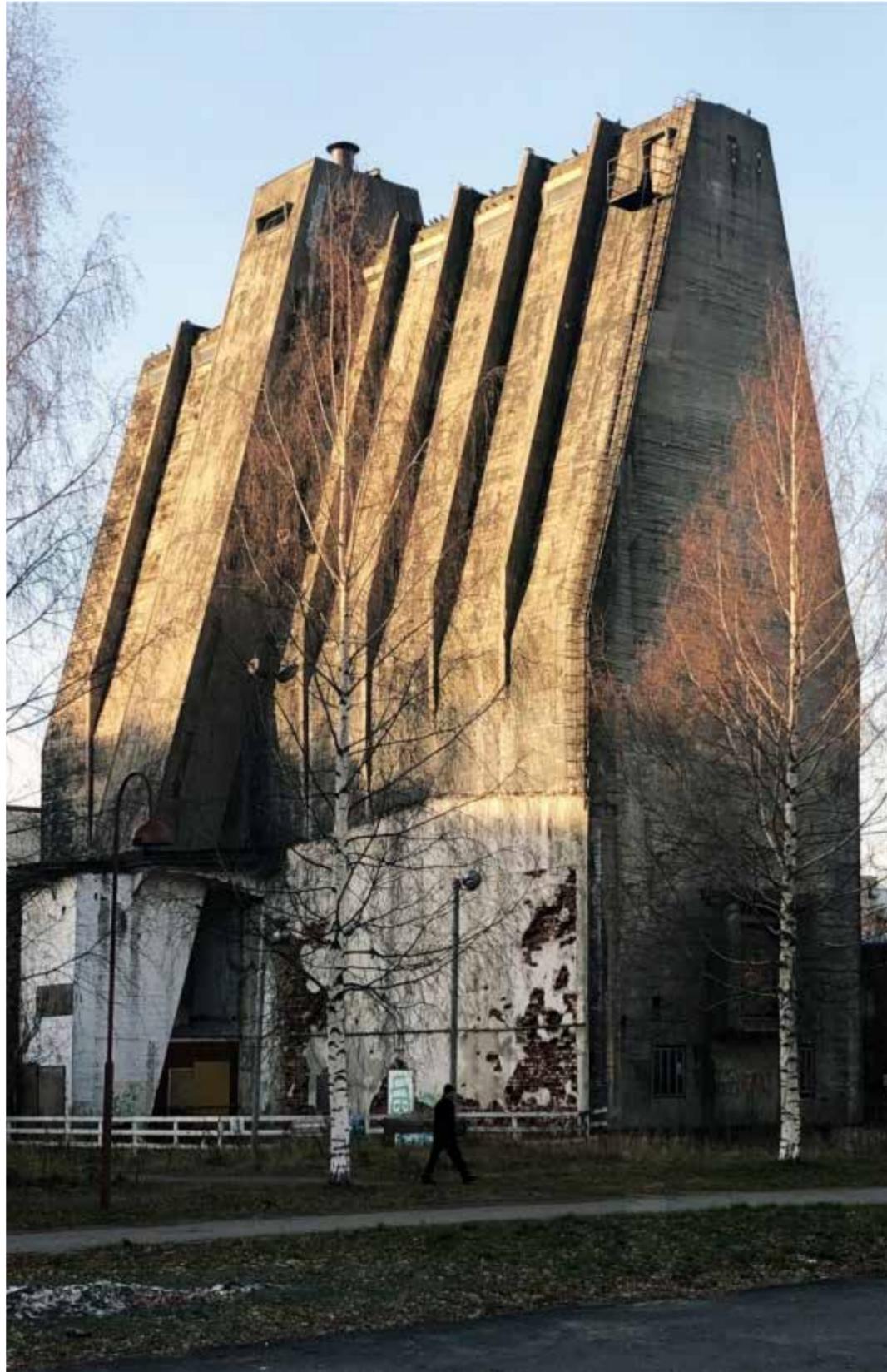
Beyond their impact on architecture, the American grain silos ushered in a new form of capitalism. Once they were able to store vast quantities of grain, merchants could create a commodities and futures market they could manipulate, where traders benefit, and farmers lose out. The silo as a silent, sculptural form, embedded in cacophonous industry and compulsive activity, offered a violent rupture with the past. One can imagine a fascination with the muscular power, frenetic energy and mechanical inhumanity of these places growing against a background of the machinations that led to the first World War. Aalto's Silo was built as Hitler was coming to power and Europe was fragmenting.

Rayner Banham taught at SUNY in Buffalo from 1976 to 1980 where he researched *A Concrete Atlantis*. He sees the silos as the antecedents to modernism. Banham describes the frisson he felt exploring the derelict silo buildings, their 'abandonment and isolation' like 'Roman ruins, enhanced by the flight of a bird of prey from the head-house at the sound of my approach'. He was transfixed by the Sphinx-like blankness of 'this huge, rippled cliff of concrete... because it consists almost entirely of closed storage volumes to which there is no casual access, it remains impermeable, secret and aloof...as inaccessible as the interior of an Egyptian pyramid.'

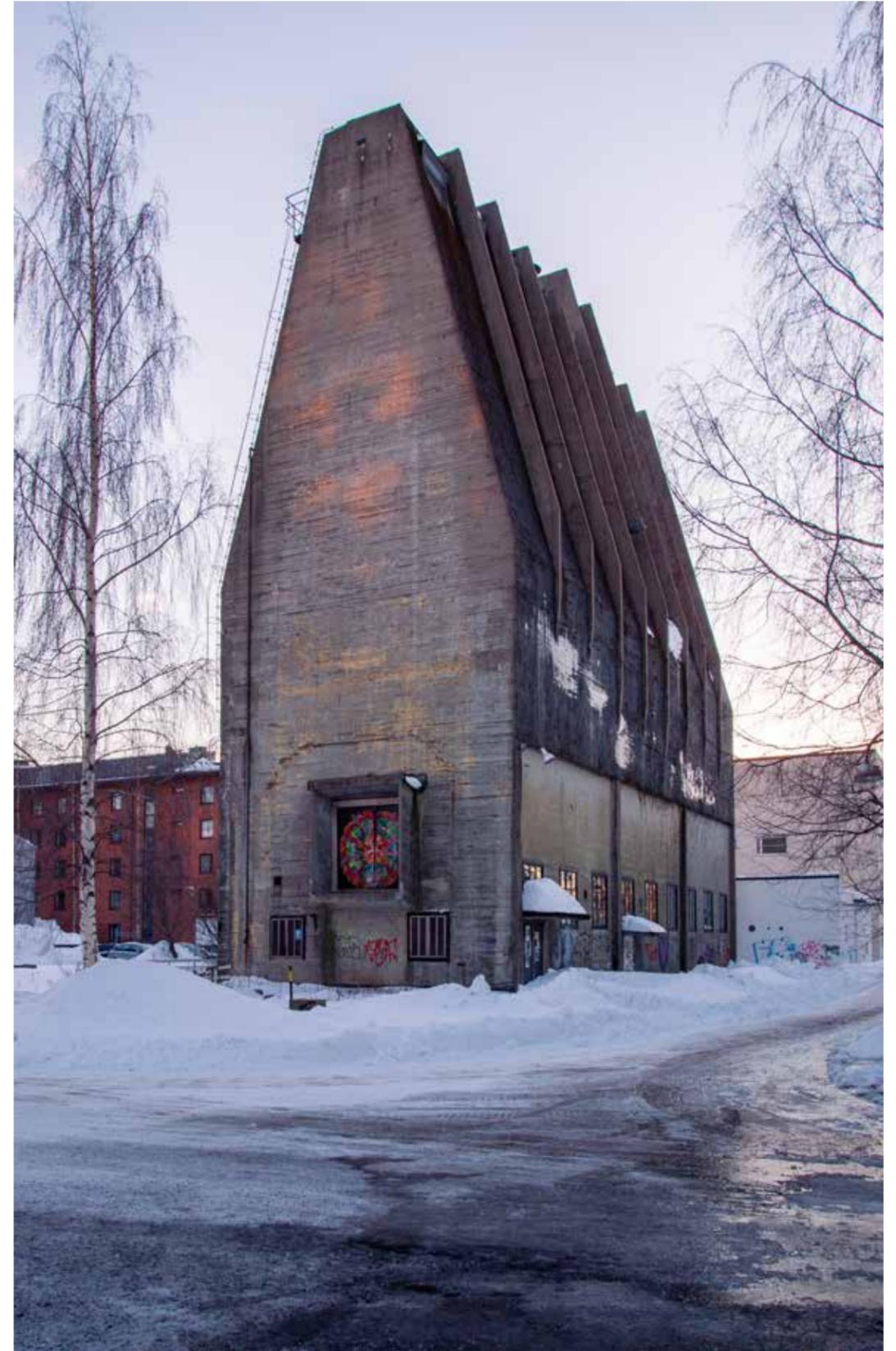
Aalto was christened the 'Sibelius of Architecture' and the 'Magus of the North' by Sigfried Giedion in his influential *Space, Time and Architecture*, where he observed that 'the Finns treat Aalto as a living god'. Aalto first appeared in the second edition of the book, published in 1949, where he was given more space than any other modernist architect. The Aaltos' first industrial project shares the same mysterious aloofness that seduced Banham in Buffalo and it was immediately celebrated; Moholy-Nagy visited in 1931 to take photographs and a large feature appeared in *Arkkiitehti Magazine* that year with most attention focused on this unusual, iconic structure.



The Toppila Cellulose Factory and its remaining buildings (outlined in red)



Aaltosiilo today



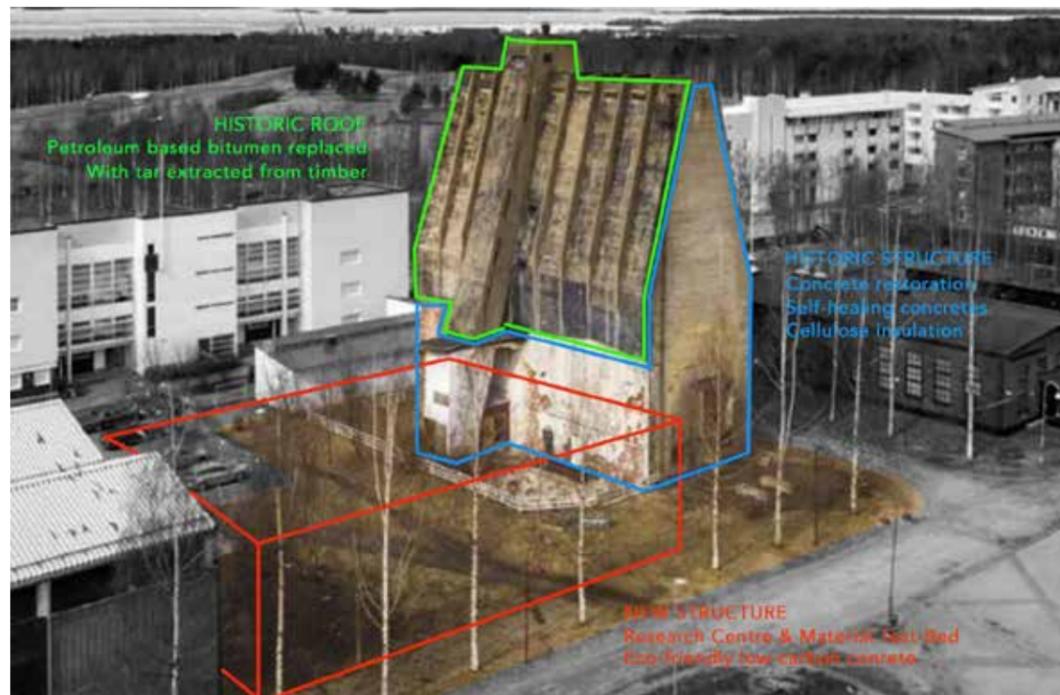
SILO OF IDEAS

The Aaltosiilo project seeks to save the cultural heritage of the Alvar Aalto design whilst expanding its use and functions to Oulu and the world. The revival of the Silo has been conceived of in three core parts: the **restoration** of the AaltoSiilo, the **construction** of a new Research Centre, and their **content**:

1. Renovation of the interior of the silo will preserve as much of the original Aalto design as possible. It will facilitate a variety of exhibitions and events with international reach. The works include, full interior and exterior renewal, new horizontal and vertical circulation and some light-touch spatial interventions.

2. The construction of a new Research Centre adjacent to the silo will serve the conservation of art and culture, and the manufacturing of facsimiles. This building will welcome the public, with a cafe/restaurant, open air cinema and sauna. Productive workshops, offices, and residences for visiting collaborators will complete the program. Recycled concrete will be used in the buildings construction, pioneering a CO₂ reduction emission strategy in collaboration with different local and international actors.

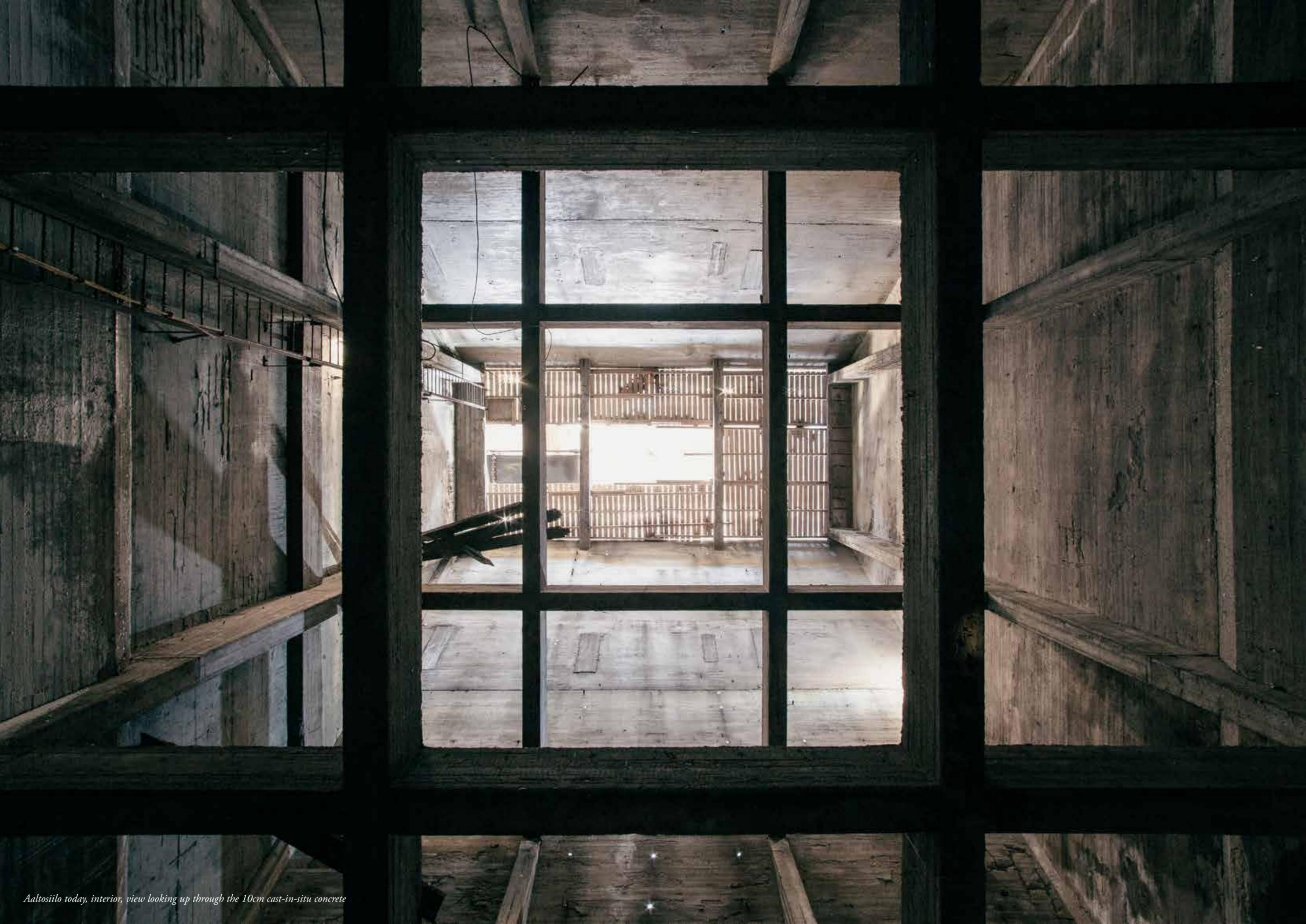
3. Content of the silo events will be focused on artistic storytelling about the anthropocene and climate change in the arctic region. Moreover, the Aaltosiilo project is engaging in different initiatives for transforming the neighbourhood through collaborative experiences with the community and cultural institutions.



^ The revival of the Silo has been conceived of in three core parts: the Restoration of the AaltoSiilo, the construction of a new Research Centre, and their Content

> Toppila, Oulu - red line indicates site boundary with the silo at the northern edge





Aaltosiilo today, interior, view looking up through the 10cm cast-in-situ concrete

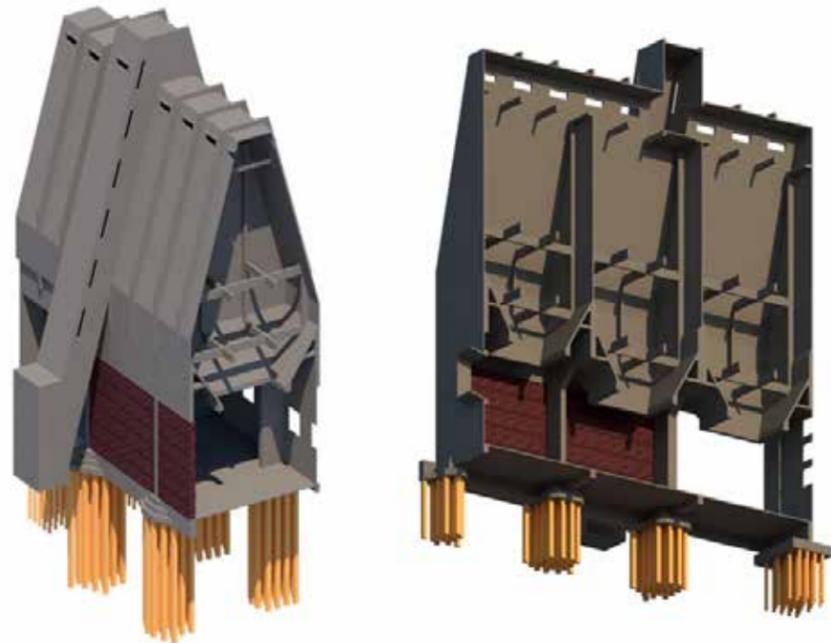
RESTORATION

More than four containers of waste, which has accumulated in years of neglect, were removed from the building. The surfaces of the lower interiors, up to the original 1930s bridge (which will undergo restoration for stability issues) were pressure-cleaned and pest control measures were also enforced to rid the Silo of the colony of pigeons that previously endangered further drone surveys

Arctic Drone Labs, in partnership with Oamk (University of Applied Sciences in Oulu), has already started recording the outside of the Silo to make a 3D model of the building. The scanning of the building and its plot was done using drone-based Lidar and photogrammetry during the summer. The model will soon be updated to include the interior of the building and will serve as a record of the building prior to restoration and also provide a base for the architectural plans.

The Aaltosiilo project ends its first operational year with the building and plot of land fully cleaned and cleared. For the first time in 40 years, the inside is illuminated by a new electricity network and dozens of working lights.

2022 will see the Silo renovated, with sustainable practices and innovative solutions that will hopefully allow us to host the first events and shared discussions with the community about its future. Everybody in Oulu is looking forward to the revitalisation of this iconic landmark and the work will continue at a fast pace, among Northern lights in the sky and snow on the ground.



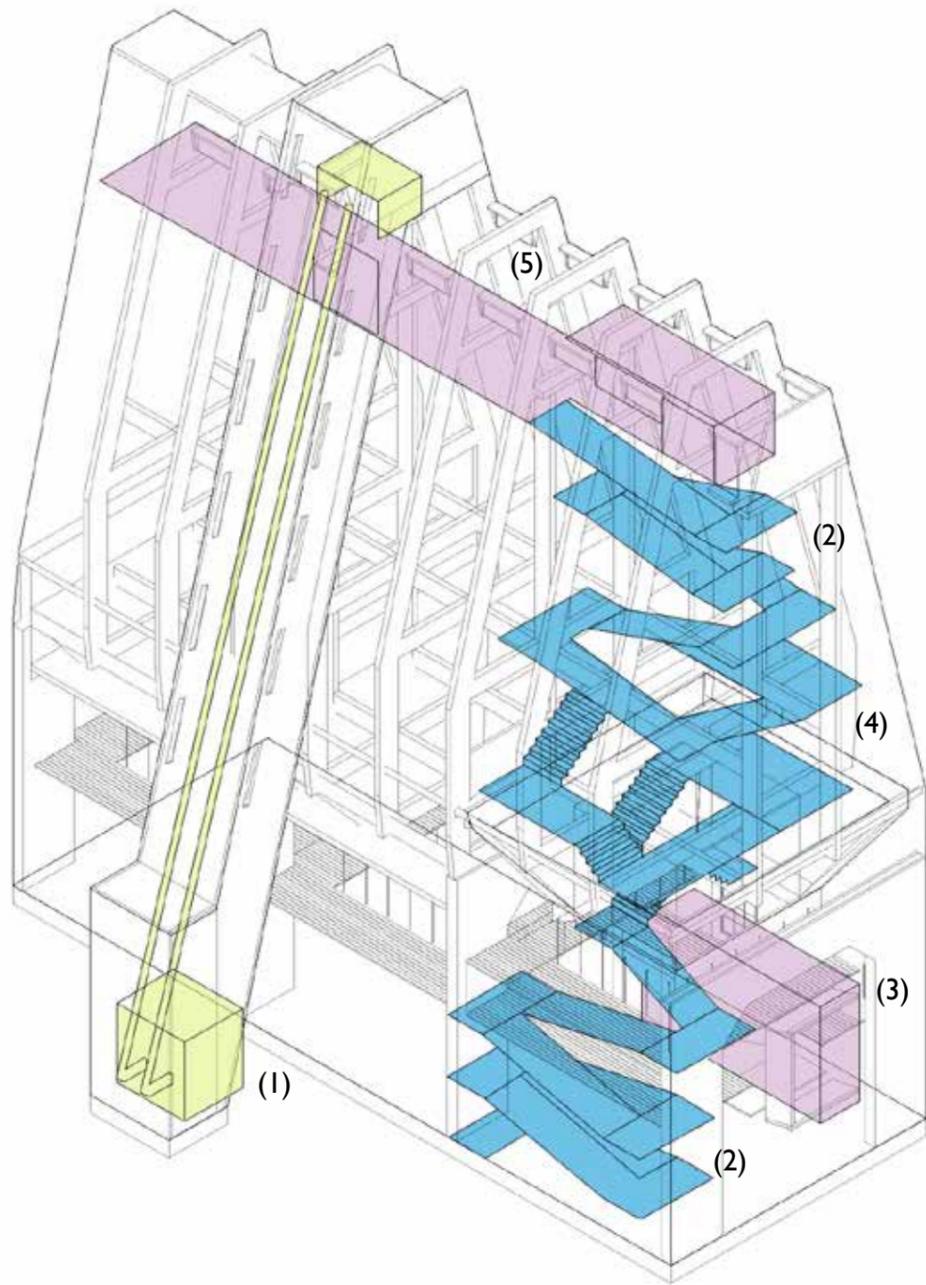
Engineering model of existing pile foundations by eHRW Structural Design



A team of workers taking decades of bird guano and building waste located in the interior of the silo



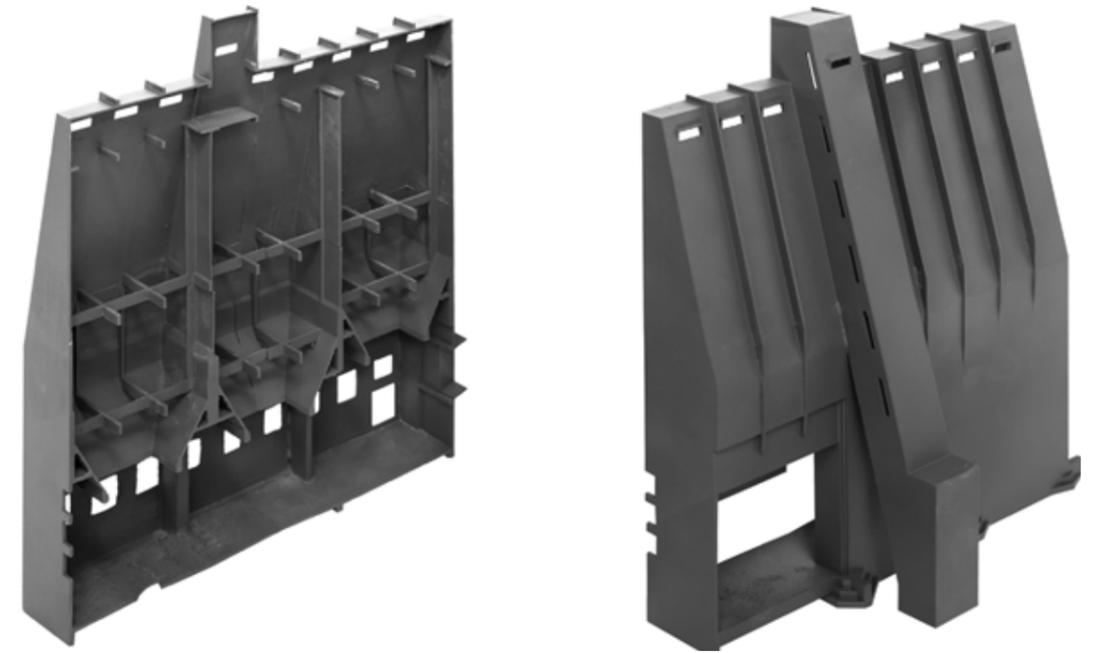
Drone scan of the exterior carried out in collaboration with Arctic drones / OAMK



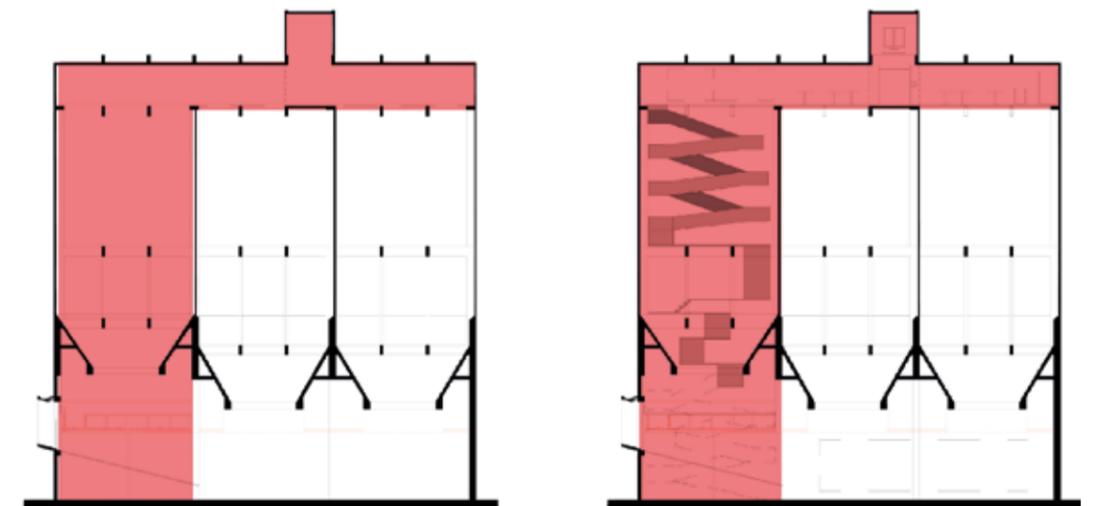
- (1) New entrance and diagonal elevator
- (2) Circulation ramps
- (3) Ground floor amenities
- (4) Stairs and ramps woven around existing concrete structure to create exhibition and performance space.
- (5) New rooftop bar

Proposed Circulation Diagram for the Restored Silo.

Visitors are brought to the top of the building, following the original route of the woodchips, and percolate down through a 'Cabinet of Curiosity' woven around the existing structure. The remaining two bays are untouched to be used as multi-purpose performance and exhibition space. © Skene Catling de la Peña & Factum Foundation



3D printed physical model generated from the data captured by the drone scan of the Silo



The white area will remain raw and as existing. The red area will be upgraded with minimal intervention, introducing a circulation route for public movement through the space.

CONSTRUCTION

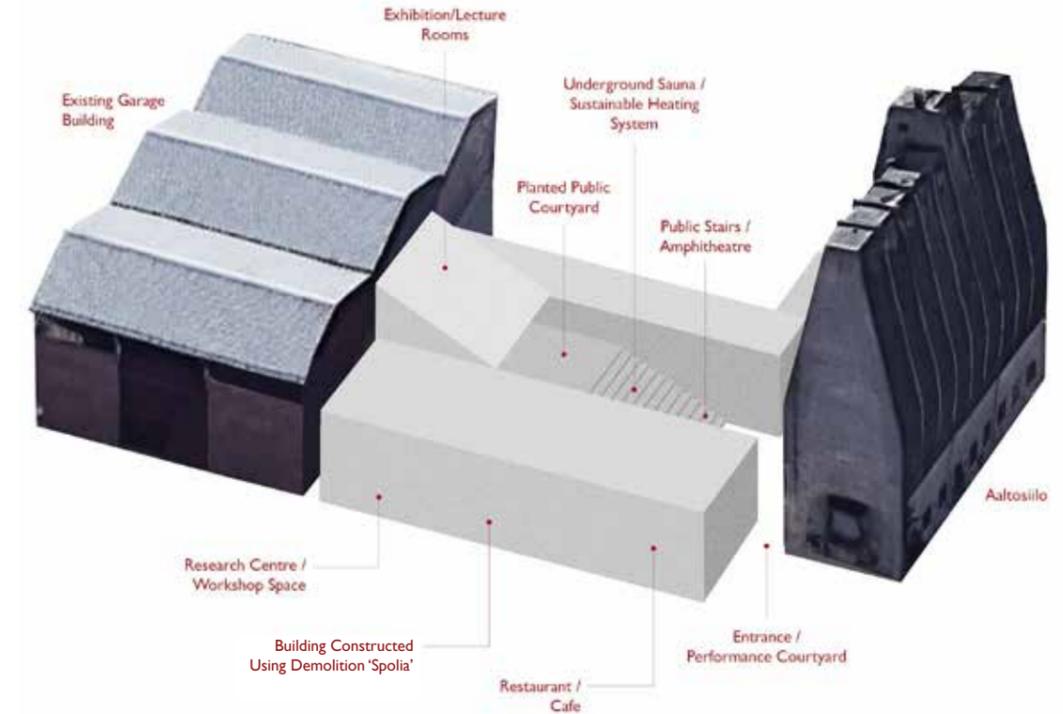
The new Research Centre will connect a derelict present to a former productive past in Meri-Toppila. The courtyard structure will stand separated from the Silo, and occupy the space of the demolished building where trees were once turned into wood chips. It is designed around a negative ghost of the silo footprint, generating three distinct 10m x 10m outdoor areas; a performance space, amphitheatre, and planted garden. Visitors will be drawn in and reoriented to face the silo which can be either the focus, becoming a surface for projections, or the background to events and performances.

At ground level, an entrance to the new diagonal Silo elevator generates an intimate and lively public space for the community. Amphitheatre stairs, leading to a raised planted courtyard, directs attention back towards to the silo, where visitors can appreciate the new urban landscape of Meri-Toppila. The stairs double as seating for outdoor screenings with the newly renovated silo becoming a projection surface.

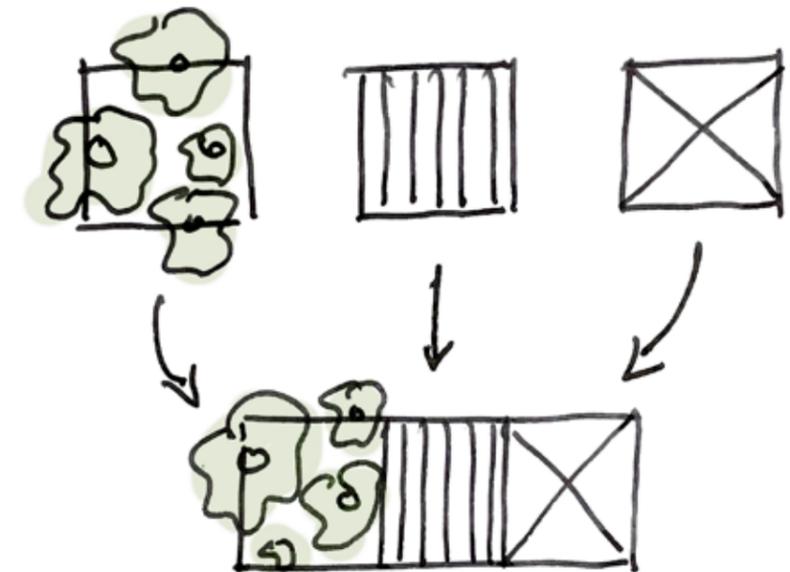
The programme of the Research Centre weaves public functions with active workshops and offices. A cafe and flexible exhibition hall welcomes visitors through an entrance colonnade. At the heart of the building is a community sauna, where heat generated is efficiently recycled throughout the building, optimising its environmental performance. Offices and residences perimeter the upper floors of the courtyard, and provide an active frontage, visible to the public.



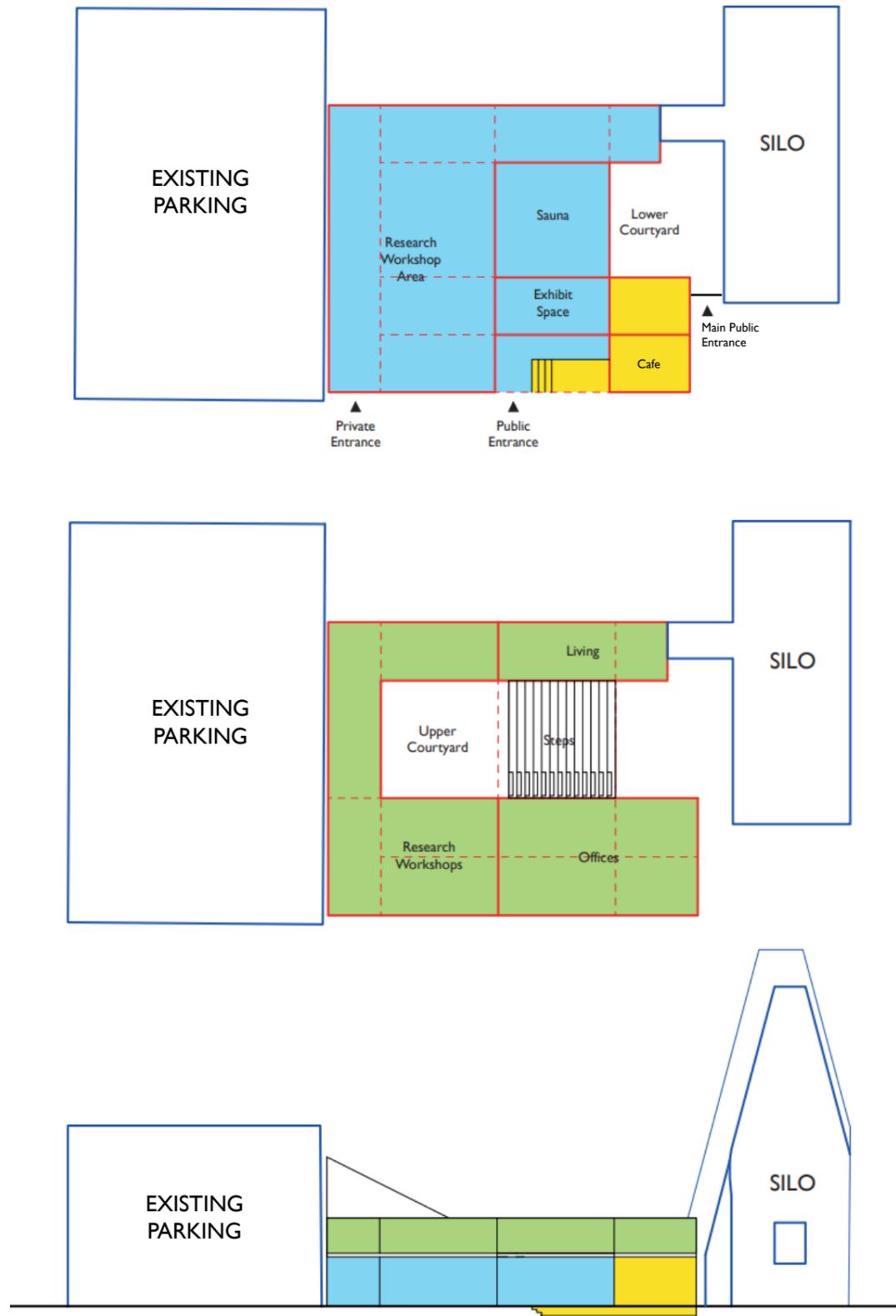
Diagrammatic sketch of the proposed new research centre, which shows at its heart the rotated, three bay 10m x 10m footprint made up of public square, amphitheatre, and garden. The construction method will set a protocol for the re-use of demolition 'spolia'



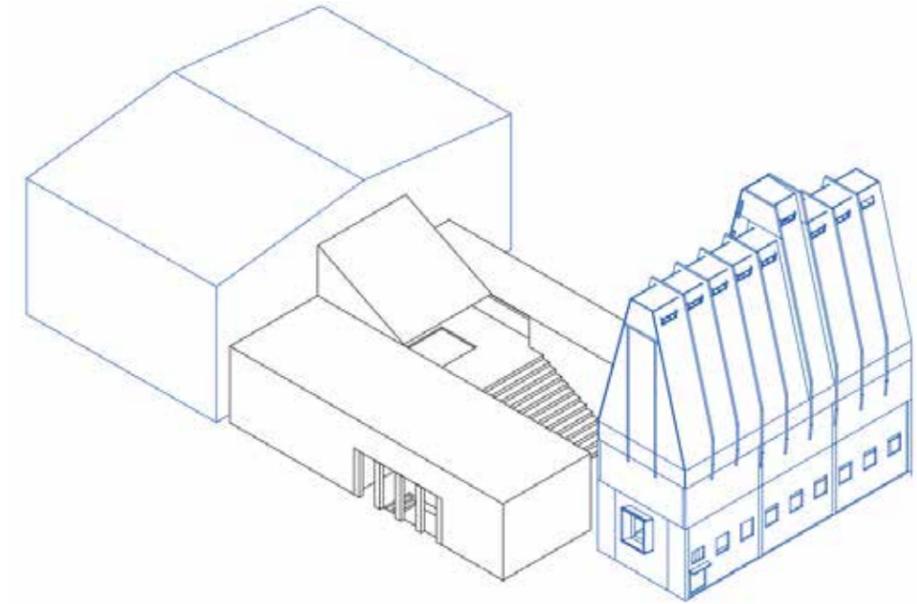
Diagrammatic massing of the tri-partite public courtyard at the heart of the scheme, made up of garden amphitheatre and public square. This is also the main public entrance point into the restored silo.



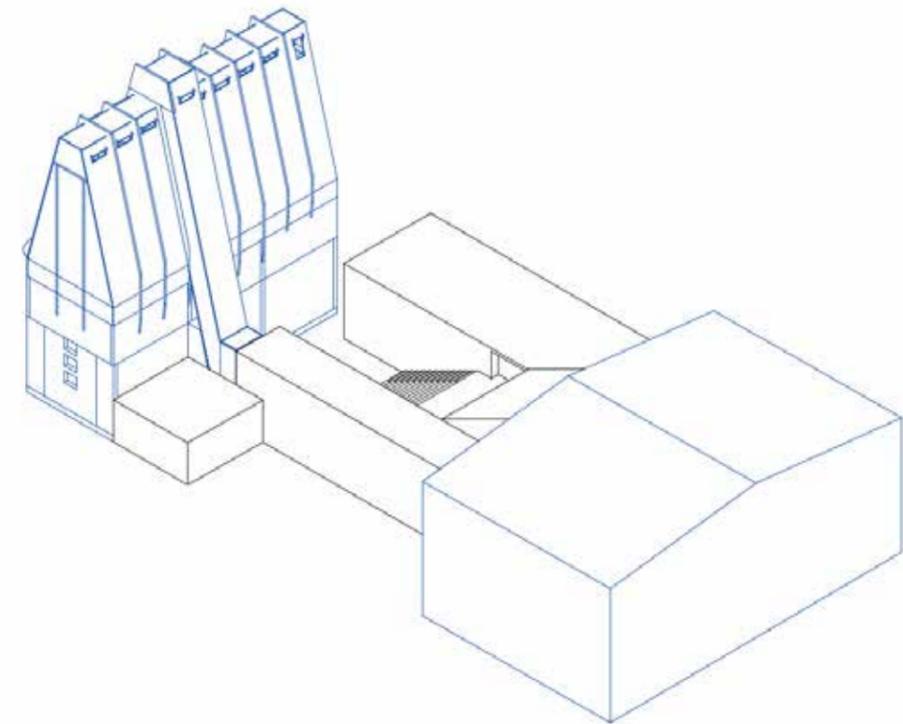
Diagrammatic breakdown of the courtyard arrangement - a planted garden, amphitheatre, and public square create three distinct public spaces that echo the footprint of the silo.



Programmatic diagrams of the proposed research centre. Ground Floor (top), First Floor (middle), Section (Bottom)



Diagrammatic massing of Research Centre - the new research centre becomes a multi-purpose public space and amphitheatre for focusing on and experiencing the Aaltosilo.



Diagrammatic massing of Research Centre - the existing silo becomes the focus of attention and the protected courtyard at the heart of the new research centre becomes an animated place for meeting and performance, where the silo itself can become a projection surface.

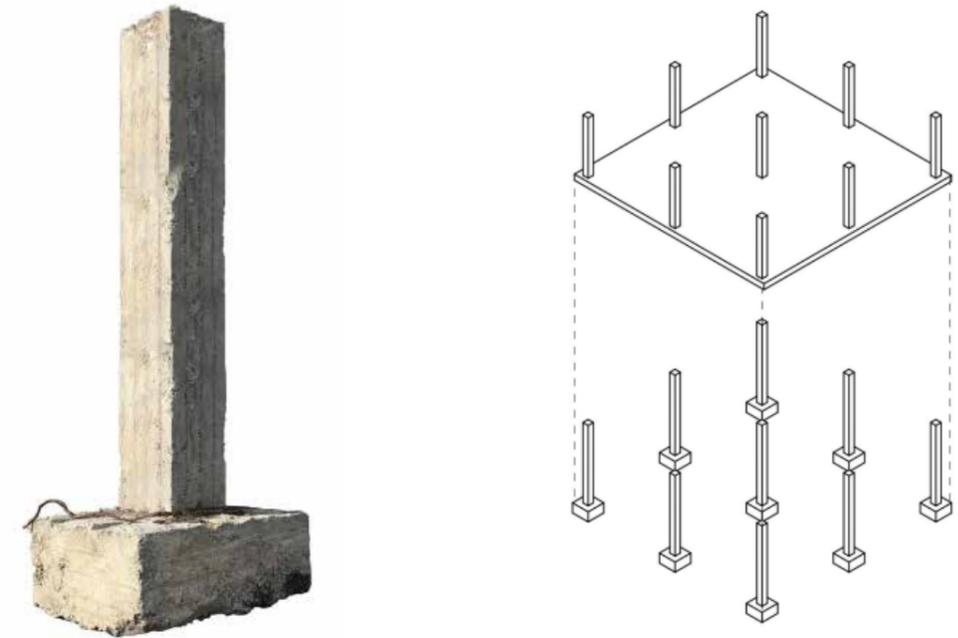
DEMOLITION 'SPOLIA'

The AaltoSiilo has the potential to address the urgent realities of the Anthropocene and current concerns about the future of architecture. Ephemeral structures of steel and glass using vast quantities of concrete are constructed and torn down every day, contributing to the existential crisis we are all facing. What is the role of the architect today? How can industrial architectural heritage be preserved and reused? Is the legacy of the impact of industry on the environment in the Arctic North insurmountable? How should buildings and nature be used, engaged with, enjoyed, sustained and preserved? Can changes in current architectural practice tackle some of the destructive industrial residue of the 20th century?

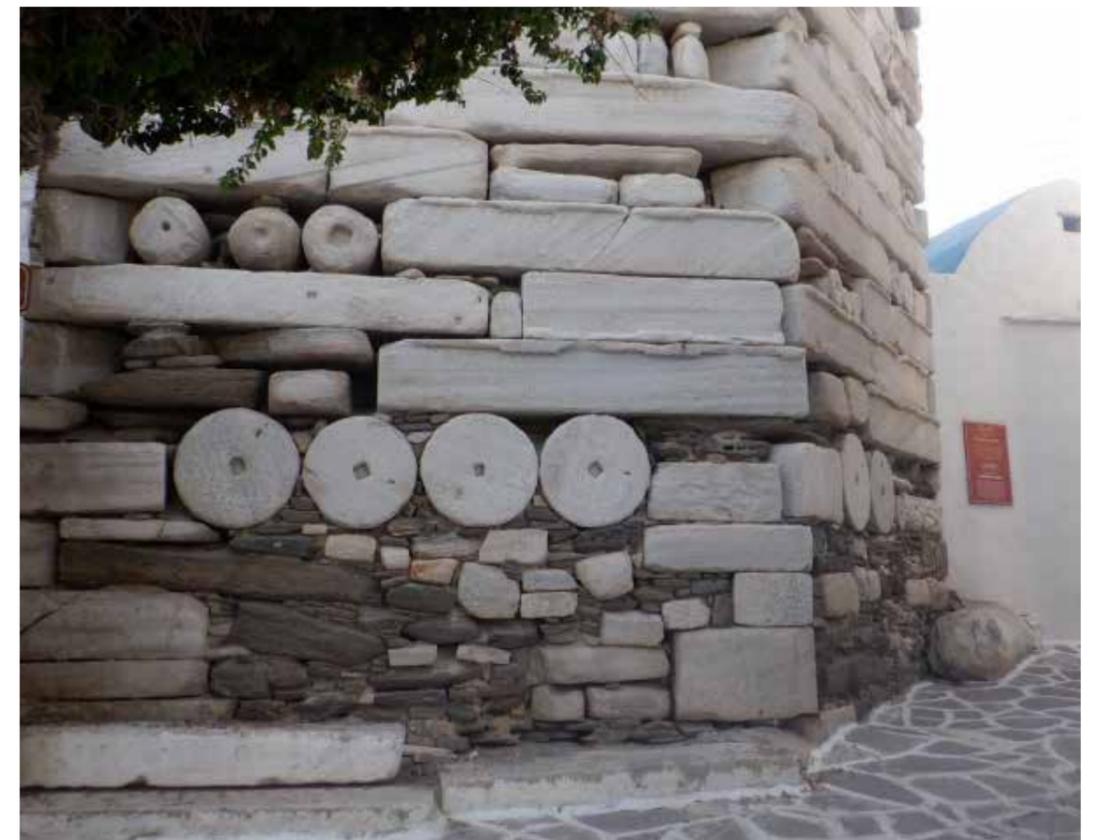
These industrial sites once generated and defined communities; physically, socially and economically. Abandoned, they are melancholy remnants of 20th century capitalism and architectural utopianism. It is time to rethink these spaces for a post-industrial era and to use them to examine every aspect of the way we currently live. The AaltoSiilo rethinks materiality for the 21st century and the role industrial heritage plays in memory, in shaping place and cultural identity. Oulu is the European City of Culture in 2026, this provides a target date for the completion of the New AaltoSiilo and Research Centre.



Concrete waste in Toppila, Oulu



Concrete demolition re-use diagram



The Frankish Castle of Paros, Parikia Island: Built by Venetians in the 1200s from the remains of ancient sanctuaries



^ Alvar Aalto's Muuratsalo or Experimental House



^ Concrete demolition processes
< Demolition Spolia: Architectural Toy Box, for the reuse of large pieces of concrete demolition 'waste'

PHARAONIC FUTURE

The Aalto Silo Centre for Digital Preservation in Oulu will initially focus on LiDAR recording and high-resolution photogrammetry applied to the digitisation of wooden buildings and Industrial Heritage in Norway, Sweden and Finland. This will be based on the successful model that Factum Foundation developed and has been running at the Graduate School of Architecture, Planning and Preservation at Columbia University (GSAPP) in New York. We have also been working with the Oslo School of Architecture and Design and are developing a number of projects that will start next year including the 3D recording of Stave Churches and Pyramiden, a disused mining community in the Norwegian archipelago of Svalbard. The emphasis on recording industrial buildings will be extended to look at the environmental impact of industrial waste on the flora and water resources of the region.

The Aalto Cellulose Silo will become a symbol for the application of technology to the preservation of natural as well as cultural heritage. An archive of the flora of the region will form a second element of the Aalto Silo archive. Factum Foundation operates internationally and will be bringing in preservation bodies from around the world to focus on the use of technology in preservation. This resonates with Oulu as a city known for its technological innovation. Even so, Jose Gordillo Martorell, the programme manager at Norrbottens Museum, Lulea Sweden, contacted Factum Foundation with a proposed collaboration aimed at capacity building among the Sámi people.



Restoring the roof and domes of Hassan Fathy's Stoppelaere House

The projects mentioned above demonstrate an existing need in the region which led to Factum Foundation's interest in the Silo. The projects envisaged for the new Research Centre at Alvar Aalto's Silo will be diverse. But true to Factum Foundation's mission, they will focus on the role and application of technology in preservation and on the training of, and transfer of skills to, a local team.

Factum Foundation commissioned Tarek Waly to restore Hassan Fathy's mudbrick masterpiece Stoppelaere in Luxor. This is now the home of the Theban Necropolis Preservation Initiative that has already carried out the high-resolution recording of the tombs of Seti I and Tutankhamun. Now is the time for new 'silo dreams', the re-thinking of Concrete and soft matter (see link to Kapoor book). It is time for change.... Massive change!!! Let's redesign everything with optimism; from how COP works to how we negotiate our shared future. This year is the anniversary of the discovery of Tutankhamun's tomb. In 2031 the Silo will be 100 years old. We have to act for the long term. Pharaonic culture, through its relationship to their environment, was able to project itself 3,000 years into the future. Can we?



The restored building, with a render of a projected sign for the Centre

Aaltosiilo
www.aaltosiilo.com

Factum Foundation
Calle de Albarracín, 28, 28037 Madrid, Spain
T +34 91 550 0978
info@factumfoundation.org www.factumfoundation.org

Skene Catling de la Peña
44 Lexington Street, London W1F 0LW
+44 (0)207 262 2806
admin@scdlp.net www.scdlp.net