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Time as Material
Truwant + Rodet +

In a world hit by environmental and ecological disasters, the necessity of every new construction must be carefully considered. A new building should offer possibilities for growth and shrinkage as well as for changes in program and in the dweller's mind-set. It should be able to accept the unforeseeable to justify its own existence. Flexibility in planning and use is one way to respond to this uncertain condition, but how can materials and building systems also embody these notions of transformation of our built environment?

I CHEAP, LIGHT, & ROBUST

When OMA began producing its stacks of blue foam models in the 1980s, the inexpensive insulation material Styrofoam had definitively crossed over from the construction site into the architecture studio. Even in the corner of our own model workshop you will find a small supply of pink, blue, yellow and purple foam. However, apart from a row of sharp-edged volume studies, at the end of each month there is a significant amount of offcut that disappears into the trash, filling garbage bags with 98% air and 2% material.

Although expanded polystyrene (XPS) was not invented until the 1940s-50s, it has taken the insulation materials market by assault. Climate change and rising energy prices after the oil crisis have ironically been best friends of this cheap, oil-based material, leading to a 90–95% market share in 2010. Since most Swiss buildings were built between 1949 and 1994, and «for properties completed before 1 February 2002, it is mandatory to undertake an energetic renovation [...] if the property does not meet the required standards, such as the minimum thermal insulation», (1) we can expect that a considerable amount of energy-efficient renovations will use XPS as a low-cost solution in the near future. (2)

It is light, it is easy to use, and its lifespan is almost unlimited according to some manufacturers of XPS. But is longevity a quality? And what kind of future can we imagine for all these foam-covered buildings?

II DECAY

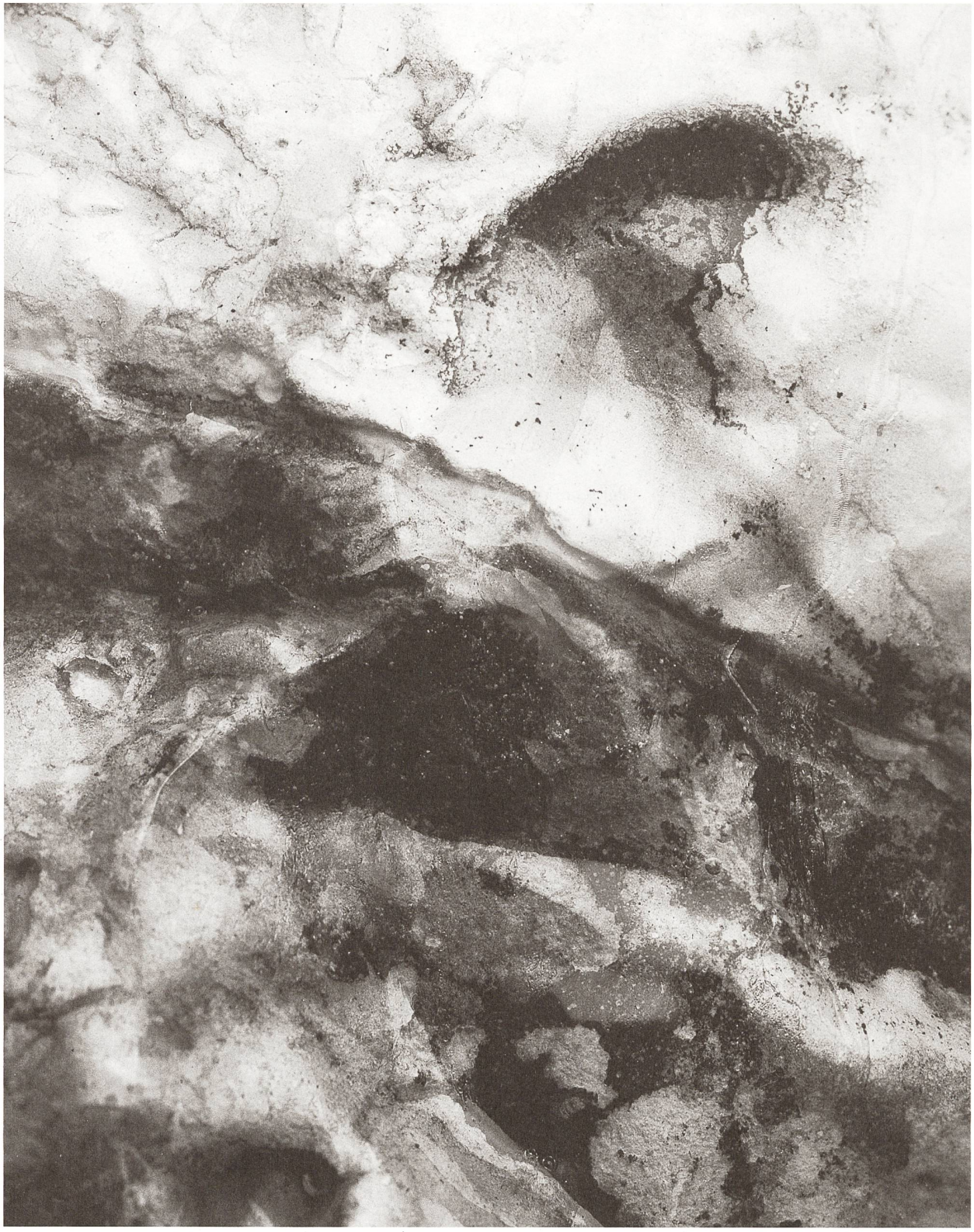
If no further construction was being built or maintained as from today, in 500 years there would be no evidence of human existence. (3) The Anthropocene would be untraceable. Time and change are rarely addressed in architectural practice, and often art is the only medium that records the traces of time. (A) We need artists like Pierre Huyghe or David Claerbout to show us the prospects of time and decay in architecture.

In 2006, the Kärcher company embarked on a 3-week endeavour to clean Mount Rushmore, 64 years after its completion. (4) The 4 gigantic stone sculptures, depicting the presidents' faces, meant to last forever, turned out not to be as immune to ageing as anticipated. The sculpted rock formation was slowly being consumed by lichens, «a composite organism that arises from algaeor cyanobacteria living among filaments of multiple fungi species in a mutualistic relationship». (5) This coexistence of algae and fungi creates a new organism that can photosynthesize while decomposing rock into minerals. Lichens cover 1/8 of the entire surface of the earth and can be found on your garden furniture, on your roof, on the gutter, slowly decomposing a huge range of materials in a relatively (considering the total age of our planet) short time, if not removed by a zealous homeowner with a powerful high pressure cleaner. (6)

The issue of time goes beyond the act of maintenance. A building decays and needs care and observation to fight against time and the environment in an attempt to remain in its original state. Architects' obsessions are often with securing performance for durability and keeping the environmental conditions out of their considerations, promising an untouched design. The garden around the building, in contrast, is growing and adapts. Gardening is an act of care and skilful endeavour in which time plays the leading role. Humidity, sunlight, bacteria, fungi and fauna are kept in a healthy balance and contribute to the development of a garden or park that consequently benefits from and contributes to a larger ecosystem.

Architecture is still considered an essentially static discipline. The moment a building is finished, it is at its best, and everything must be done to keep it that way. This way of thinking led us to believe that facades covered in polystyrene, nicely sealed with a layer of plaster, is a sustainable solution. Conversely, once we consider that polystyrene itself is almost non-biodegradable, that only a few organisms can digest it at a very slow rate, we see it in a different light.

A



A T+R+IMI+, New Landscapes, Basel, 2020. Image: Arnaud Bostelmann

B

C

D

E

B, D, E
T+R+IMI+, Uncertain Object, Basel, 2022,
XPS & spray foam. Image: by the authors

C Lichens, Brittany 2021. Image: by the authors

III DIGESTED

When we look at what is recognized as a sustainable and renewable material, wood is one of the forerunners. A natural material that can easily be reused and when it reaches the end of its life, the white rot fungi decomposes it completely. If we look back 290 to 360 million years, however, the forest floor was covered with unrotted logs. Fungi had not yet discovered how to break down the very powerful lignin that gives wood its structural strength properties, so the carbon-laden wood stayed in place until it became coal. It took fungi another 10 million years to figure out how to feast on tons of fallen trees. (7)

More and more mushroom enthusiasts are discovering that fungi, like the omnivorous Pleurotus mycelium, can easily learn to digest many more materials. It can actually grow on a diet of diapers or cigarette butts and digest toxic components and some plastics that normally end up in our environment. (8) If we are hopeful, we can imagine the massive amount of polystyrene foam that has been used since the 1940s being transformed into productive mushroom landscapes, creating a living environment of degradation and regeneration.

IV OVERGROWN

In 1983, a concrete fountain was erected on Waisenhausplatz in Bern. In this particular year, the column-like sculpture by Meret Oppenheim had not reached its final form yet. The artist had just put the perfect conditions in place so that the calcareous water from the Bernese mountains could leave a tuff deposit on the structure. This new rocky landscape has become the perfect ground for a vertical wild garden of mosses and wild grasses whose seeds are carried along by the wind. The simple structure put in place by Meret Oppenheim revealed a whole existing ecological system. It has created a dynamic sculpture that is never finished and that connects the city to its surrounding landscape.

How can we apply this to our own Styrofoam waste problem? We went back to our model shop with a can of spray foam insulation and built an object out of coloured XPS scraps, still 98% air and 2% of material. (B) We added no protective plaster and left the foam exposed to climatic conditions. At the humid and weathered coasts of Brittany in France, we found heaps of mosses, lichens and algae in the most amazing shapes that put the 1904 drawings of Ernst Haeckel to shame. (C) We dove with enthusiasm into the wonderful world of lichen-, moss-, and mushroom-fanatics and their homemade YouTube videos, to engineer the strangest-looking grey milkshake of organisms to cover our sculpture. The blistering heat of an extremely hot summer turned the spray foam into a warm ochre and warped the XPS. The rain and the sun transformed the smelly grey paste into a green fuzzy fur and eventually into a black crust. (D) The wind broke the sculpture in two, nothing that a little bit of spray foam couldn't fix.

We are still waiting for the mushrooms to digest the foam, and slowly dissolve its form. At the same time, we start to wonder whether layers of XPS can become part of an ecosystem, if architecture can be made interdependent with its environment, its temperature, humidity, light, fauna, and flora, embracing decay and regeneration, (E) if time can become a material.

Truwant + Rodet + is an architecture office founded 2015 in Basel, Switzerland, by Charlotte Truwant and Dries Rodet. Their background, shaped by various international experiences in Brussels, Rotterdam, Copenhagen and Japan, reinforced their curiosity and interest to look beyond architecture into broader research areas such as scenography, landscape urbanism and art. In 2017, they received the Swiss Art Award. Both partners have been teaching at ETH Zurich, EPF Lausanne & ENSA Versailles.