

The Architectural Review

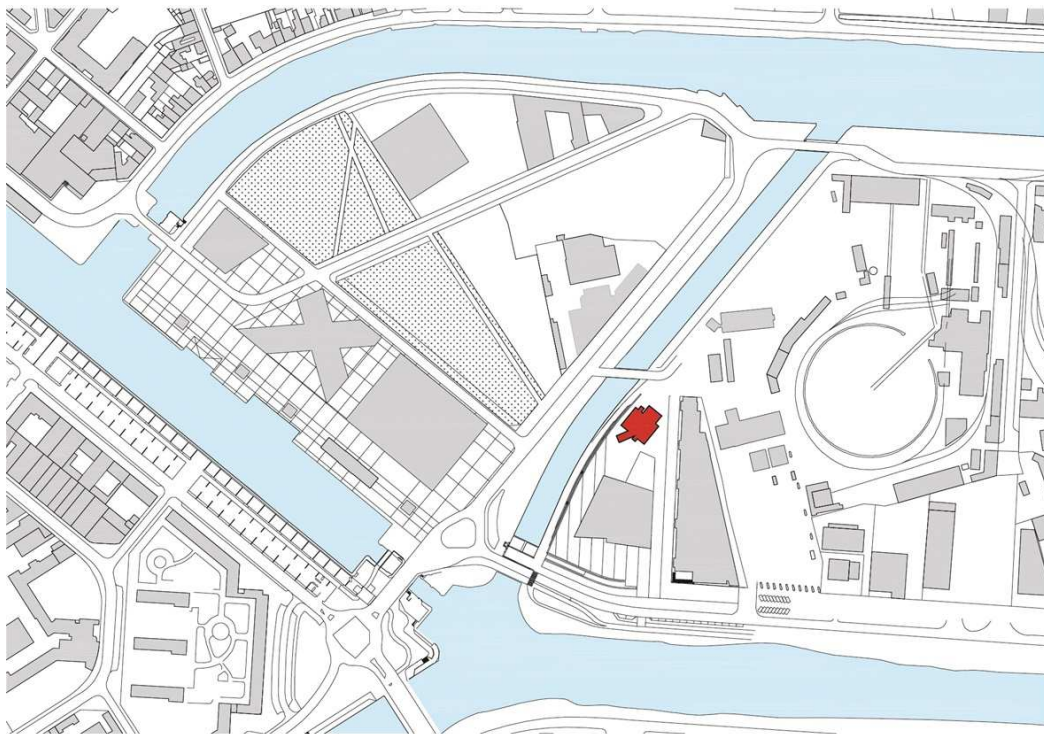
Vertical hangar: Bruther's fab lab in Caen

28 June, 2016 By Andrew Ayers

Rising above the strident budget, this research centre is a persuasive instrument for inventing the city's future

For some time now, futurologists have been predicting a third industrial revolution, one in which 3D-printing processes will completely shake up manufacturing, allowing individuals to choose those perfect parametric spoons online and print them off in a jiffy in the privacy of their own home. Or, if we prefer, we'll be able to design our own, and watch them take form before our very eyes. The fabrication laboratory – or 'fab lab' for short – is an important step along the way. Pioneered in the US about 15 years ago, fab labs are equipped with the latest digital-printing and other such machines, and allow anyone to experiment in the creation of personalised objects. According to the *Fablabs.io* website, there are now 588 worldwide, 58 in France, making the country a pioneer in the matter (compared with the UK's mere 23 or Canada's miserly 10). One of the most recent has opened in the Norman city of Caen, in a building commissioned and run by Relais d'sciences, a non-profit organisation set up in 1998 to further science, technology and industry in Lower Normandy.

Encouraged by a sizeable grant from the regional authorities for the project, and the city of Caen, which proposed a site in the Presqu'île Portuaire (the former docklands now being redeveloped), Relais d'sciences held a limited architectural competition in 2013 to find a design for its new Maison de la Recherche et de l'Imagination (MRI), which it is hoped will become an incubator for new talent and businesses. Entrants had a limited budget (€4.1 million), a small site (735m²) and a very tight nine-month construction window. All these factors influenced the winning design, by Parisian duo Stéphanie Bru and Alexandre Thériot, whose firm is Bruther.

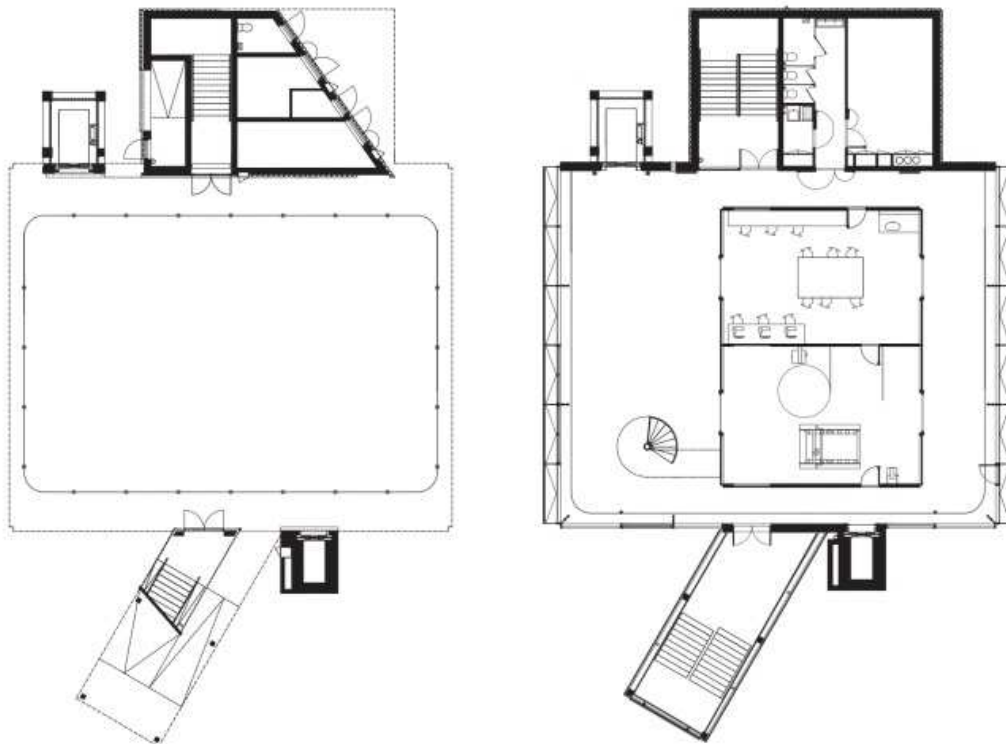


Site plan of Bruther's fab lab in Caen

In response to the small site, the architects built a 34m-high tower, not only to allow a total floor area of 2,500m², but also to take advantage of city views, and to create a landmark to attract users. They went for maximum flexibility in the form of 6m-high, entirely open floors, with circulation and other ancillary spaces pushed to the periphery as load-bearing piers. The construction timeframe, meanwhile, determined the type of structure, the architects opting for supporting elements in concrete with prefabricated steel beams and floors strung between.

'They went for maximum flexibility in the form, entirely open floors.'

Then there was the budget which, at €1,640/m², not only left no money for finishes or details, but meant that the transparent facades the architects had planned to wrap around the building couldn't be realised entirely in glass. To economise, they turned to ETFE cushions for the upper level on each floor, which are kept inflated by small motors. (In the end they weren't as cheap as they might have been, since the French authorities deemed them an experimental technique, and required that a licence, known as an ATEX, be obtained for them – a time-consuming process.) Low-cost corrugated polycarbonate clads the southern staircase tower and the northern lift shaft.

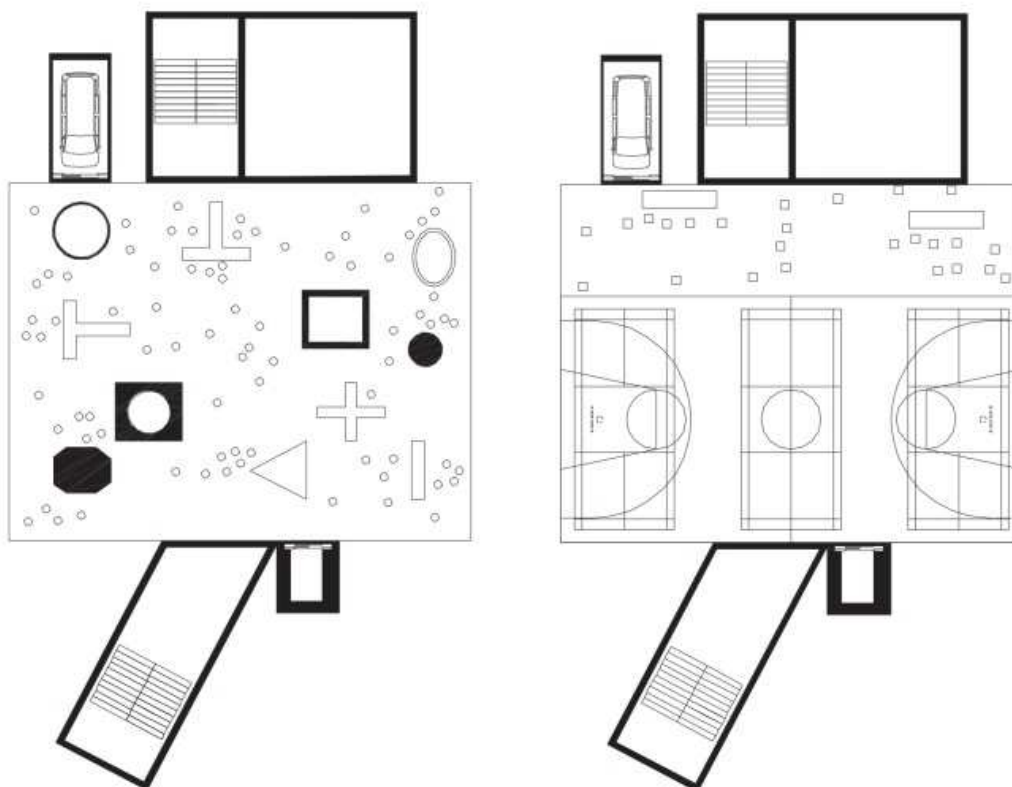


Floor plans of Bruther's fab lab in Caen

Floor plans of Bruther's fab lab in Caen – [click to expand](#)

Despite the need to cut costs, Bruther proposed extras outside the programme, namely an open-air covered ground floor – good for unloading, events and keeping the building dry in the event of floods – and a ‘sky bar’, which is a roof terrace coiffed with a large, metal-framed, polythene-covered dome that has all the necessary outlets and brackets for sound, light and audiovisual equipment. The architects also wanted their building to contribute to the financial health of Relais d’sciences, with a plan that allows each floor to be hired out separately for events, and an annual energy rating of 50 kWh PE/m².

According to Stéphanie Bru, ‘In our firm we try to demonstrate that you can have good thermal performance while keeping maximum transparency. We have a “culture” of the free plan, where we try to dissociate things, or at any rate the structure. We don’t really like what you might call the “domestic” – little windows, etc. We try to break free of all that, and instead create a sort of tool that can evolve with time.’ This is an approach the architects had experimented with in the Saint-Blaise community centre in Paris (2014), but the big difference in Caen is that for around the same money they had to provide twice the floor area. The resulting ‘vertical hangar’ is a savvy bricolage of materials and techniques which the architects imagined as ‘a structure that becomes infrastructure’.



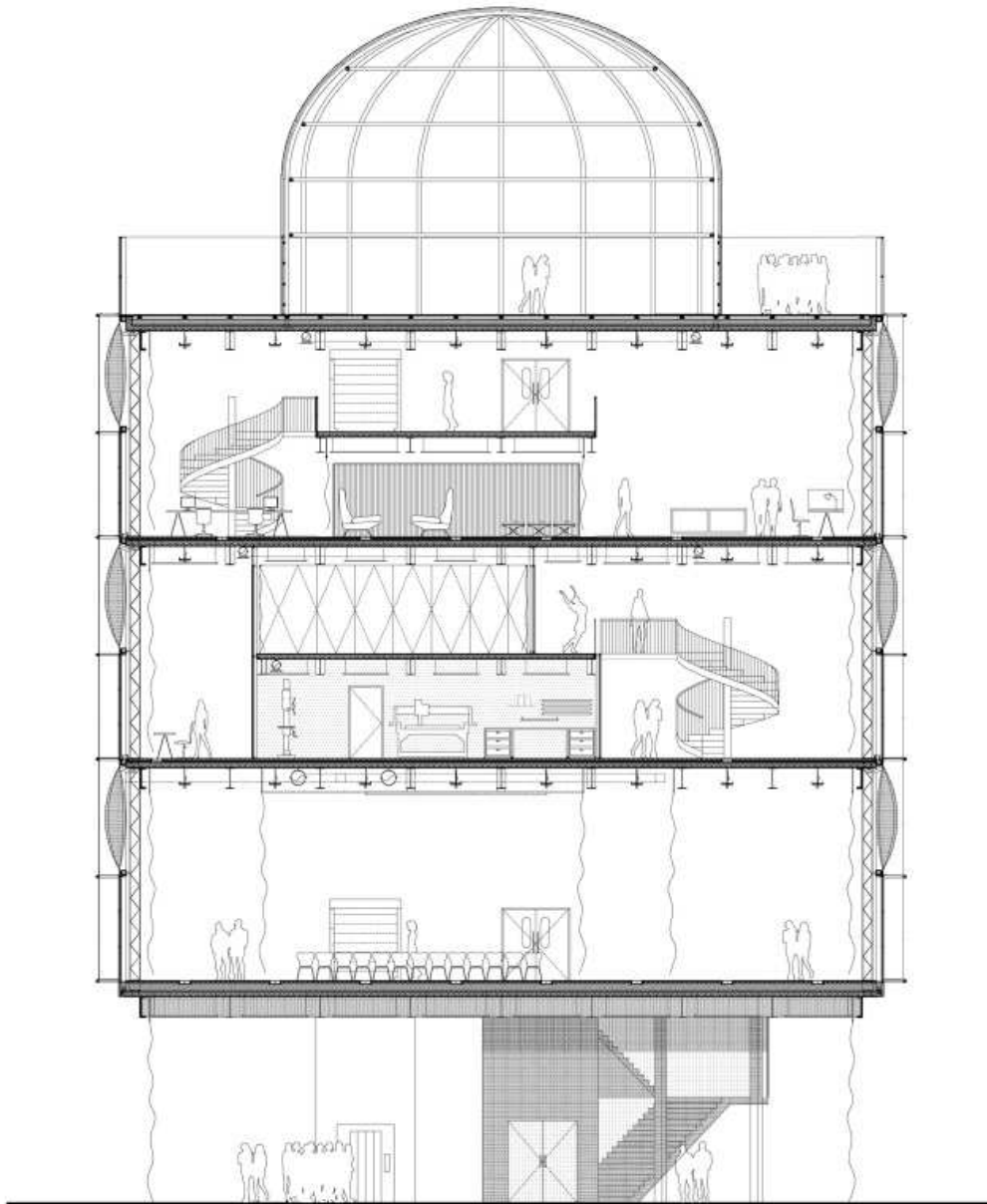
Conceptual floor plans of Bruther’s fab lab in Caen

Conceptual floor plans of Bruther’s fab lab in Caen - click to expand

And while the expression might imply a dry, technical rationality – the facade articulation, for example, was primarily the product of thermal-performance requirements, smoke regulations and cost cutting – they happily admit the artistry that went into the building’s composition: the skewing of a stair tower here, the prolongation of a lift shaft there, the finessing of the fenestration detailing, to give their creation poise and presence in the seemingly random cacophony of the Presqu’île Portuaire redevelopment.

‘Architecture is what remains when you get rid of the superfluous’

'We don't subscribe to the religion of minimalism, but we look for a certain nudity,' say the architects. 'Architecture is what remains when you get rid of the superfluous. Our buildings are both stripped and expressive.' The approach equally applies to their interiors, which at the MRI are pretty rough around the edges. The lower of the three floors has been left entirely open to form a 'living room' (as Relais d'sciences termed it in the brief) for events, while the upper two floors have been equipped with mezzanine floors that shelter workshop space underneath and conference rooms above, all with glass walls so that the light streams through. The effect, on the sunny autumn morning I visited, was resplendent, a sort of start-up Van Nelle Factory for the 21st century.



Section of Bruther's fab lab in Caen

Section of Bruther's fab lab in Caen - [click to expand](#)

There are of course precedents: Piano and Rogers' Centre Pompidou (AR May 1977) and Lacaton & Vassal's FRAC Nord-Pas de Calais (AR January 2014) spring to mind. From the former the MRI borrows the dream of uninterrupted, all-glazed floor space, and from the latter the assemblage of materials and achieving more for less. It also poses the same problems as these buildings: that sometimes occupants don't know what to do with the extra space, and that open space generally needs to be divided up to make it usable (implying extra cost when you add new partitions so that you have something to push your furniture up against). Transparency can be problematic too – staff in Jean Nouvel's Fondation Cartier building were long rumoured to be prone to bouts of sick leave due to the stress of goldfish-bowl exposure and the cult of tidiness and perfection it induces – and, when I visited, Relais d'sciences clearly hadn't yet figured out how to make its new building work for it.

On the other hand, if the futurologists are right, fab labs will soon be a thing of the past as every household becomes equipped with 3D printing. And when that happens, Relais d'sciences will need to find new uses for its building – which, since it comprises as close as you can get to pure space, shouldn't be a problem. Meantime, Caen, which is known as 'la ville aux cent clochers' (the city of 100 bell towers), has a new one in its collection, already nicknamed R2D2, and which lights up at night like a Chinese lantern. If Relais d'sciences can adapt to its beautiful new home, the city will enjoy a persuasive instrument for inventing the future.

Caen Research Centre

Architects: [Bruther/ Stéphanie Bru & Alexandre Theriot](#)

Structural engineer: Batiserf

Acoustics: Altia

Photographs: [Filip Dujardin](#)