

15: Flatpack without boredom

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dRMM (de Rijke Marsh Morgan Architects)

I am going to enthuse, about rather than make claims for innovation. If I do have a talent it is for surrounding myself with talented people and being able to provide some valid focus for them.

Kurt Vonnegut in *Slapstick* enthuses about two dumb siblings, he and his sister, who on their own are these monstrous, clumsy oafs, but when they put their heads together could uncannily predict the future, and the future was great, with predictions like variations in gravity. For me, the design we do collectively is definitely design as research, with design as the object and research as the process, although we are not in the business of designing objects, and that is a critical distinction. For the dRMM studio, the point is to really explore a process and a programme. It is not really about the boy scout mentality of new form-finding, which I have always been rather bored with. I think a preoccupation with form over content is usually a sign of an arrested intellectual development.

dRMM is nothing to do with de Rijke Marsh Morgan, Architects. It actually means Dr. Millimetre. My favourite English architect is not one architect, but a family. So it is John Smythson who is credited with Hardwick Hall but it is hard to tell whether it was he or his brother or father, and I think that speaks volumes about this kind of assimilated intelligence. This building is famous because it is the apotheosis of Elizabethan competitive architecture. For me it is a fabulous technical achievement which also gives an enormous amount of pleasure. So you could talk about it as 'Hardwick Hall, more glass than wall', and rave on about the glass area for the time, but actually if you look at the plan it is just as much about timber and the fact that the UK used to have oak of that dimension in order to span 10 to 15 metre floors. The compositional achievement is just as much a technical as an aesthetic discussion.

From my background, perhaps more impoverished in terms of natural resources – no stone or timber to speak of in Holland – I think it is significant that it took a carpenter to redefine modern architecture. Rietveld was famous as an architect in Holland as much as somebody who made the de Stijl stool.

The business of making and doing is something that has been at the heart of dRMM's atelier-like studio. It is all about learning what you cannot find out in books. For me, it was kicked off by the inevitable first project, a DIY house for my mother, the automatic client for any architect still studying. I was at the RCA (Royal College of Art) at the time, and it became a way of really finding out about detail, which you never do in school. The best description of this project was on a drawing by a child which, unfortunately, disappeared with her when she went back to her family. They asked her what it was like and she said, "There's no roof, only sky, and everybody says fucking". It was one of those projects that was creative demolition – my mother needed a new roof, so we took it off – when I say "we", I mean my sister and brothers and I. We got better and better at demolition. The more we took off, the better it got, until it was just two party walls and a façade and then my sister and I had to put something back, which was effectively an all-plywood Midas approach. That for me was significant and it got me into timber, engineered timber in particular, and that is what I am trying to focus dRMM's efforts on at the moment. It is not so much a kind of moral high ground about global ecology, it is about enjoying parameters and wanting to work within parameters, not from a white sheet of paper.

Somebody said to me recently, “How do you get to do research?” in the sense of ‘Who funds it?’ When you are in independent practice, there is no one funding it, and, if you have left academe, you do not have that nice supporting world behind you. Instead, you have to persuade people to get enthusiastic about specific approaches and materials, and then bring in a level of enthusiasm from manufacturers into the midst of clients. My enthusiasm for timber is partly, clearly, a rejection of the antiquated nature of steel and concrete.

I personally think, in my potted history of the last three hundred years, that the eighteenth century is defined by brick, the nineteenth century is the steel frame era, and the twentieth century was concrete. In the 21st century, timber is the new concrete. Timber has the ability to eat carbon dioxide rather than produce it, and you do not need to be so clever to be enthused by the idea that, instead of producing a tonne of carbon every time you make a tonne of cement or one and a half tonnes of carbon every time you make a tonne of steel, you can eat two tonnes of carbon every time you make a tonne of timber. It is just not difficult. I like those parameters and I like the engineering possibilities of timber. Structure has always been for me the bottom line. However, the UK has a woefully inadequate national resource in terms of timber, ever since Henry VIII’s ‘clear-cut policy’ to develop the military naval base, so I see spruce and pine from northern Europe as the basis of what we will be doing over the next ten years.

Our work for Kingsdale School was a way into this area of timber research and innovation.



Illustration 00; Kingsdale School plywood model; Image: dRMM

The Architectural Foundation initiated the project. We won the competition on the basis of not really having a specific design. It was more about an approach to talking with the people there about how to go about it. It is a paradoxical site, I call it the ‘reverse oasis’ where you have a desert of privilege that kind of gives way to this oasis of poverty and neglect. We had to transform that, not just as an image, but in terms of educational performance.

In a way, therefore, the school was a precursor to the BSF (Building Schools for the Future) programme. In that sense, we were very lucky because the timing of it meant that there was a lot of scrutiny. Throwing a 3200m² roof over a courtyard is perhaps conceptually no big deal, but on the other hand, if there is innovation in this project it is partly technical. We pushed ETFE (ethyl tetra fluoro ethylene, or Teflon coated plastic) technology and superimposed it over the existing building. Its favourable weight to span ratio meant we did not have to do anything in the way of supporting structure to hold the thing up. I am proud of that achievement and I am proud of the fact that it is the first UK 'variable skin' ETFE envelope. The innovation in this project involves persuading a local authority and stakeholders and a great many clients – a multi-headed brief – that it is a risky solution, but that you should go for it.



*Illustration 01; Kingsdale school ETFE 'variable skin' roof & plywood auditorium;
Photo: Alex de Rijke*

It was high risk, because the untested design team used an untested material in a new context. There was no ETFE in education, there was no 3200m² of open space in education. Then we also were given the opportunity to work on the auditorium as a safe internal structure within this big space. We enjoyed working on this with Gordon Cowley. It is nice to work with people who are better-educated than yourself in certain areas, but you have to beware of that too because, as we know, specialists are sometimes people who do not have ideas any more. Luckily Gordon does still have lots of ideas, and his omnidirectional joint invention allowed for our distorted geodesic geometry.

It is a plywood public building, which is also an interesting achievement. The received wisdom was that this material was not chic enough or durable enough, or that it was too vulnerable or cheap. In fact, if you are able to use it in a certain way, then people

respect it. I think it is interesting to put an extreme example of design in the middle of a rather regular institutionalised environment and see the reaction.

The last part of the phased project provided for the music and sports departments

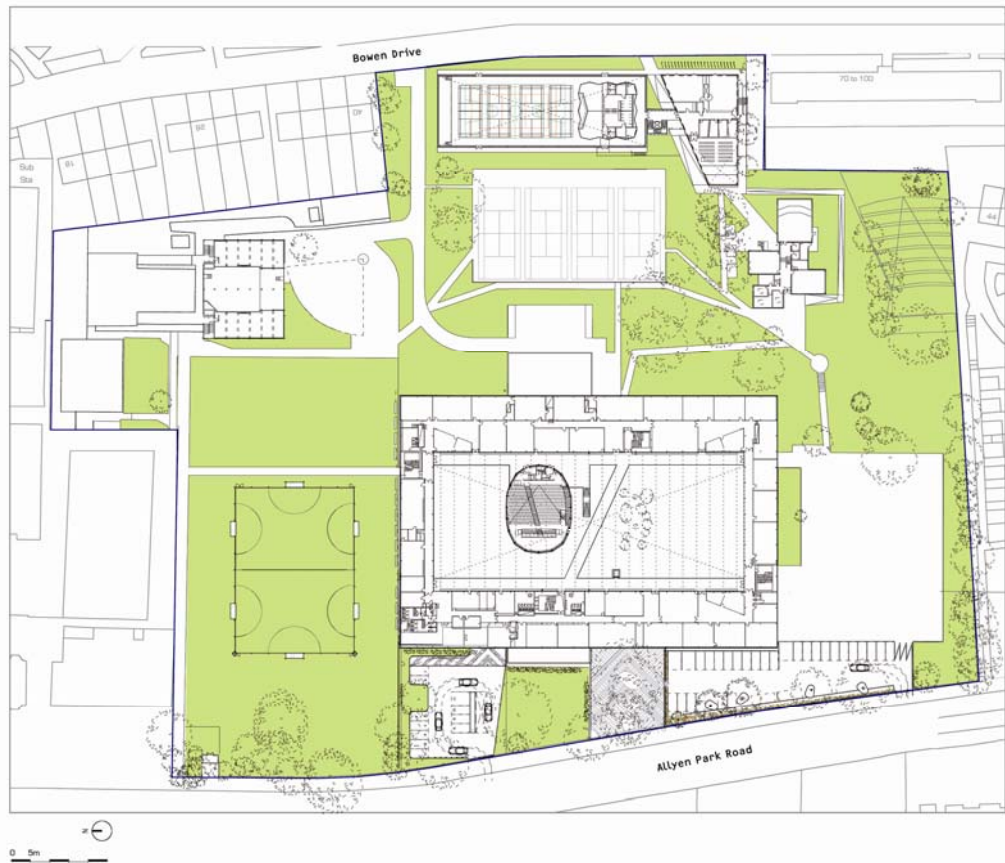


Illustration 02; Kingsdale School, site plan showing music and sports facilities at top; Image: dRMM

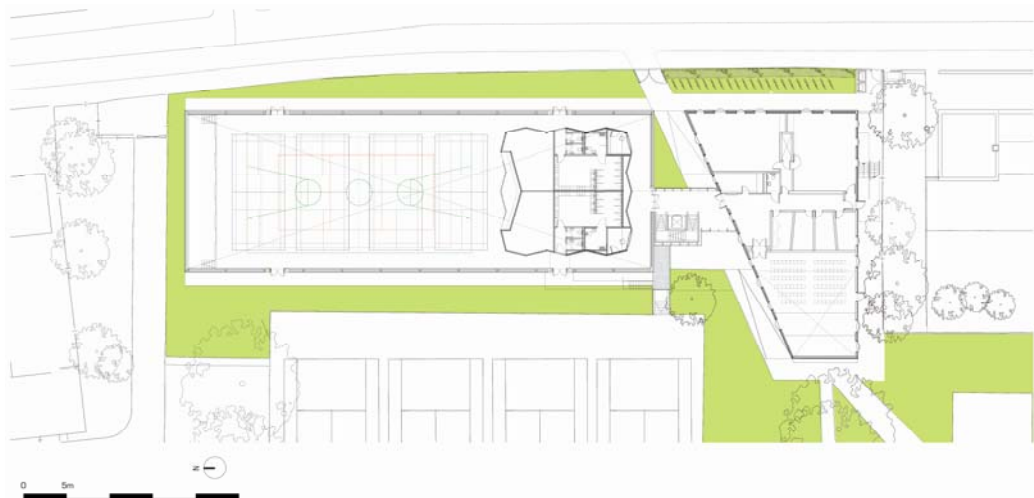
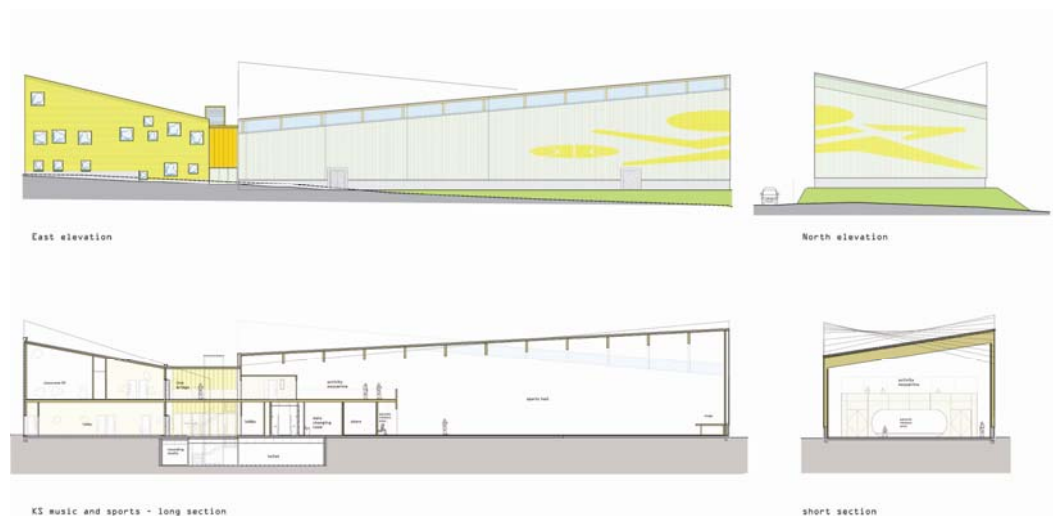


Illustration 03; Kingsdale School, ground floor plan of sport and music buildings; Image: dRMM

These departments had always performed well, and they got the best. The site was characterised by trees and also the lack of what we might call enjoyment. The trees give way to fencing which gives way to locks. We wanted to make a building which somehow responded to the idea of timber and these trees in a 'working relationship', but which also made a gatehouse. Rather than the school being a Cartesian object in space that does not address the community in which it is sited, the gatehouse is sited to attract the local housing community who do not necessarily have access to recording studios or big sports facilities.

We have worked closely with one of the more interesting engineered timber producers, KLH (Kreuz Laminiertes Holz). Austria is very well organised. Unlike the private land ownership in this country, where a small percentage of the population own enormous estates, in Austria about 80% of their forest, which is half the country's land area, is owned by many individuals. So, there are about 100,000 individuals who own 80% of the forestry in Austria, and it means that because of their vested interest they are not going to clear-cut it and sell their woods. They are going to maintain it as a kind of family heirloom. Unlike, say, Russia, where clear-cut tree felling is happening at a really alarming rate and with all kinds of environmental devastation as a consequence, in places like Austria they are planting at least twice as much as they are felling, and it is being done in a way that means they are going to be cashing in on it for the next fifty years. What they do with it is also interesting. Their lamination techniques mean that conventional, ordinary, matchstick quality timber can turn into something very special that is potentially unlimited, dimensionally and in application. All the waste is used too: insulation is made from wood dust, it is also burned to heat the factory and the local central heat and power plant. Our team visited the factory and had a great time looking at it. We ended up with a very close working relationship, which has meant that we can do extraordinary buildings that try to embrace the limits of the material itself rather than being conventional modernism done in wood.

In our case, the two themes that we explored at Kingsdale School were that of *perforation* in the Music School, characterised by the CNC cutting process, and *warping* in the Sports Hall, trying to produce a space with curvature generated from straight lines. If you want to get the money for a school sports building from the Department for Education and Skills, you must show them the right size plan, and if you meet the area for four badminton courts and you have no excessive characteristics in the drawing then you are likely to get the funding. So do not show them the section, which is something which makes, I think, special architecture out of a plan without inflection. It represents our ambition of trying to make something which is absolutely non-standard, for the same money and the same material as something standard. Sports halls are generally typified by a lack of daylight, usually steel frame and steel clad. I would describe them as dumb and blind boxes. What we wanted to do was make something that not only had daylight, but was something that was ordinary and extraordinary in a way that did not fall back on that cliché of the standard product.



*Illustration 04; Kingsdale School, Music & Sports Buildings, sections and elevations;
Image: dRMM*



Illustration 05; Kingsdale School, Sports Hall interior view; Photo: Alex de Rijke

I guess in design terms we made something special and we made it in a special way. Perhaps the innovation here is that it is a new way of approaching work collaboratively. It is not necessarily about the received methodology being taken on by a contractor with a set of contractual criteria, it was more about milking each contributor's imagination and ability. Contributors to the process about whom I would not like to enthuse, however, are the insurers of schools. After having persuaded them of the need to use ETFE for the first time in a school over the main building, when it came to doing an all-timber building a new set of building regulations suddenly appeared where Zurich, who have a UK monopoly on school insurance, said that not more than 20% of the exterior of the school could be clad in timber as that would then be an arson risk. Of course, we chose a special Dutch steel product which looks exactly like timber, not just to annoy them but also to reassure

them that this is the safe solution. Now that that is done, every time we want to do an all-timber building we can just do it and tell them that it is steel... I was quite pleased about that process in the end, although I come back to the point that steel is not a default solution to my mind. It is a last resort.



Illustration 06; Kingsdale School, Sports Hall exterior view; Photo: Alex de Rijke



Illustration 07; Kingsdale School, Music School interior view; Photo: Alex de Rijke

We used the thought process that we went through at Kingsdale School to develop a new 'Exemplar' school template for the DfES. The idea was to take the central space of Kingsdale School and extend it so that it became a whole 'climatic envelope'. This educational bubble project is called the Dura. We wanted to empower the users of the school by providing no more than a serviced base in which the fixed elements of workshops, studios and sports facilities that required heavy servicing – toilets, cores, that kind of thing – would occupy a relatively rigid concrete base, a kind of table. On this table many different meals can be laid out. Timber classrooms are stacked according to the school's pedagogic predilections, or perhaps trying to anticipate future change, change being the only thing you can really predict in education. This project tried to anticipate that and tried to allow those users of the school to effectively totally transform the place themselves. The tri-wire crane which assembles the classrooms remains in the building. We establish a dry site quickly in which your 'shanty town' of education can grow and that can be endlessly reconfigured. You might want to clear it out in fifteen years time to make it into a sports centre or a disaster relief zone or whatever; the point is that it is not about permanence, it is about a well-serviced flexible environment. I could talk about the fact that it is a zero energy building as well, but I shall move on. It is, but it was not driven exclusively by that sole concern.

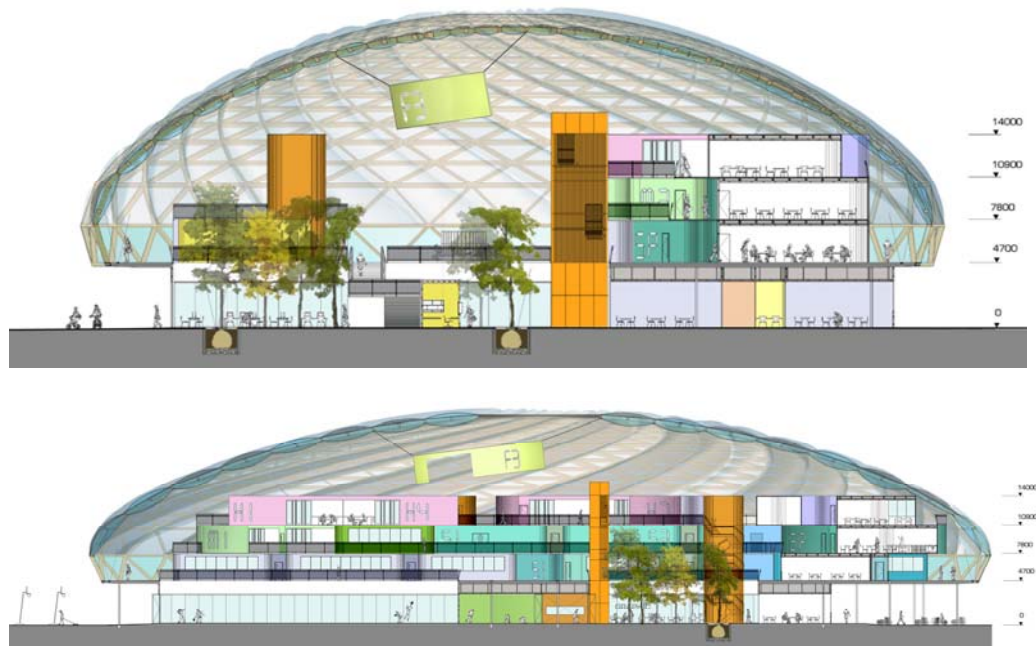


Illustration 08; Section through the Dura, School of the Future design in laminated timber & ETFE; Image: dRMM

More recent work is about speed, and using the same material. If you have not been to Milton Keynes recently you can see that it has changed quite a lot. [Shows picture of Austria.] The landscape is truly spectacular now and all the contractors work semi-naked. We are trying to get to grips with the idea of building at great heights in engineered timber and not necessarily having to resort to composites with concrete. We are currently working on that, having just done this. The director of Milton Keynes Gallery, Mike Stanley, invited us to exhibit some work. We chose to make a free-standing tower so that you could climb the 101 steps and look out and wonder. It really was a very fast design and delivery process. From the day of asking to the day of completion was inside two months. The project again involved a great deal of

contributions, not just the dRMM entourage, but this time with Price & Myers engineers instead of Mike Hadi Associates for the school project. We also worked with artist Richard Woods to contribute to the ambience of the café which is the converted shipping container in which all the timber arrived, at least conceptually.



Illustration 09; MK Forty Tower, seven storey freestanding timber core prototype;

Photo: Alex de Rijke

We are currently in planning for some eighteen-storey structural timber housing in Norway. I like working in Norway. They have a fantastic attitude to work and life. It is not just about this natural resource that they do something with, it is about putting everything they have back into society. Their work is socially motivated as well as being enthused and relaxed. They work around the clock but at the same time they also seem to disappear mid-afternoon and you realise they are just picking up the children and all that kind of stuff, then later on they will work again and later still do some hard drinking. They are great. I have a lot of time for the way they go about things.

Flatpack is generally boring and I am very bored with IKEA because their dominance of the market is nothing to do with quality, it is just everything to do with marketing and everything to do with cheap construction. I do not see them as innovators. I see them as incredibly good at business management and knowing what people want, at least until they get it out of the box. I am also irritated by the way the default for flatpack is the idea that it comes this way. I am more interested in trying to design to accommodate this way or even this way, but again without the repetition.



Illustration 10; Elements and conceptual model of Naked House; Image: dRMM

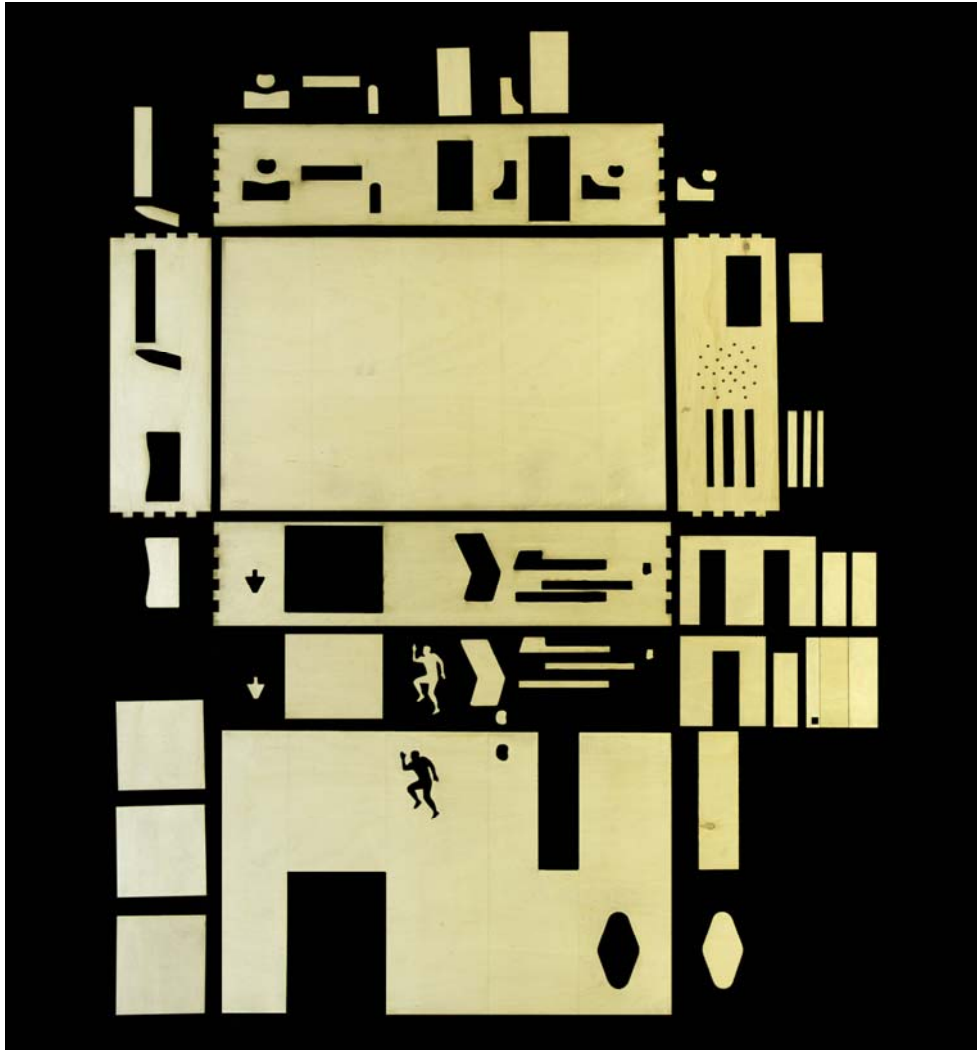


Illustration 11; Elements and conceptual model of Naked House; Image: dRMM

That brings me back to the container as the infrastructure product along with the ISO standards. It is a kind of global currency. I think containers are wonderful. I do not think they are buildings, they are just wonderful containers. They do exactly what they say on the tin, they do not necessarily make good architecture themselves but I see them as very good facilitators of architecture, so my little research project – which did not have a client but did attract some interest from the design museum, Norsk Form, in Oslo – is about the flatpack house which does not stand for repetition and boredom but stands for variation. It is about CNC processing to liberate design rather than restrict it. The house conceptually revolves around using four panels of my favourite cross-laminated timber but this time standing on the container in which it arrives, so that your house is a large timber box on top of a small steel supporting box with no concession to form but every kind of concern over internal space and content; the content being the idea of inexpensive, high quality, sustainable housing that could be applied anywhere.

The ground plan is based on, in this case, a three-bedroom family house with two internal patios which light a relatively deep plan together with perforations in the roof. All the furniture is cut directly from the walls and that makes the windows. It is dimensioned entirely on the Fibonacci series (Golden Section) and it comes as a series

of easily screwed together panels. The idea is you could stand or float it anywhere. I am currently looking at ways of using it in higher densities, in stacked forms. dRMM have had the opportunity to demonstrate it used in this way in Norsk Form's ex-transformer station gallery building. We assembled it in a couple of days at great speed and demonstrated that it is possible to quickly make an extremely high quality, enduring and sustainable house. In this design, mass production unexpectedly provides a personalising quality.



Illustration 12; Naked House arriving on site; Photo: Alex de Rijke