

MICRO

VERY SMALL BUILDINGS RUTH SLAVID

RUTH SLAVID

MICRO

VERY SMALL BUILDINGS

K

DAS PARK HOTEL

All you really need from a hotel room is somewhere to sleep that is secure and reasonably comfortable. How often have we all said that or heard it? Artist Andreas Strauss has taken this idea to the extreme, producing a hotel so minimal that it looks like a student project. The great thing about it, however, is that it actually works. First opening for the Ars Electronica Festival in Linz, Austria, in the summer of 2005, it took 150 bookings – not bad, considering that there were only three rooms available.

As its name suggests, Das Park is set in a park in this genteel Austrian city. The idea is that it need offer no more than a place to sleep. After all, a park has lavatories and showers, and there are plenty of cafés and restaurants around, plus a swimming pool nearby. The 'rooms' consist of concrete drainage pipes (donated by manufacturer C. Bergmann) that each weigh 9 1/2 tonnes. They have been adapted as simply as possible. A small round hole in the top provides light and

air. A platform acts as a base for a mattress and sleeping bag, with a small surface with a lamp to one side. The space under the platform is for storage. Most importantly, there is a secure, hinged timber door.

Potential visitors book through a website, and are given a unique code for the electronic lock on the door. When they go, they leave as much money as they consider appropriate. Internally, the surface is finished with a clear varnish, and artist Thomas Latzel Ochoa painted a unique mural on the end wall of each pipe.

The hotel is only intended for use in the summer, and its thermal mass means that it remains cool, even in the hottest weather.

Visitors to Das Park in its first year ranged from local teenagers, using it like a 'love hotel', to visiting Dutch cyclists. The project was only able to get off the ground because of arts funding, but Strauss is keen to keep the idea going – and extend it. He is already

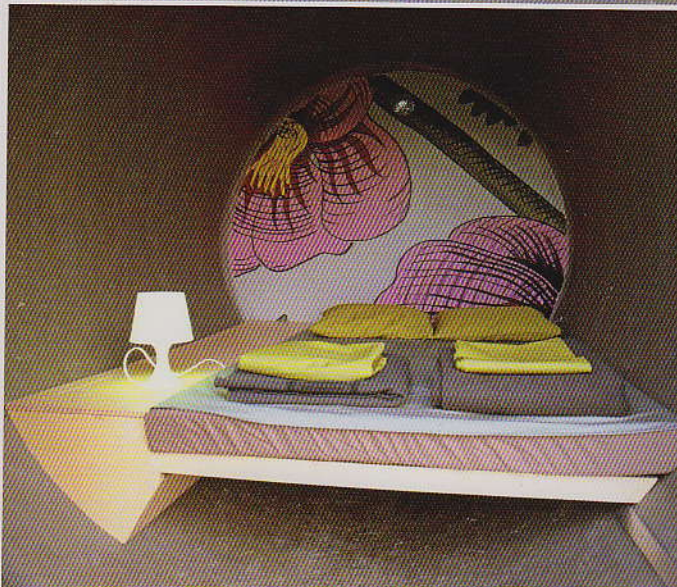
in talks with an organization in Slovenia, and is also looking at the possibility of using solar power to provide electricity for the locks, if a location is chosen that cannot easily be cabled.

And if it doesn't prove a success? Well, says Strauss, you simply remove the 20 screws that hold the door, end panel and interior platform in place, and the hotel reverts to a series of drainage pipes, ready to be placed in the ground and do the job for which they were originally intended.

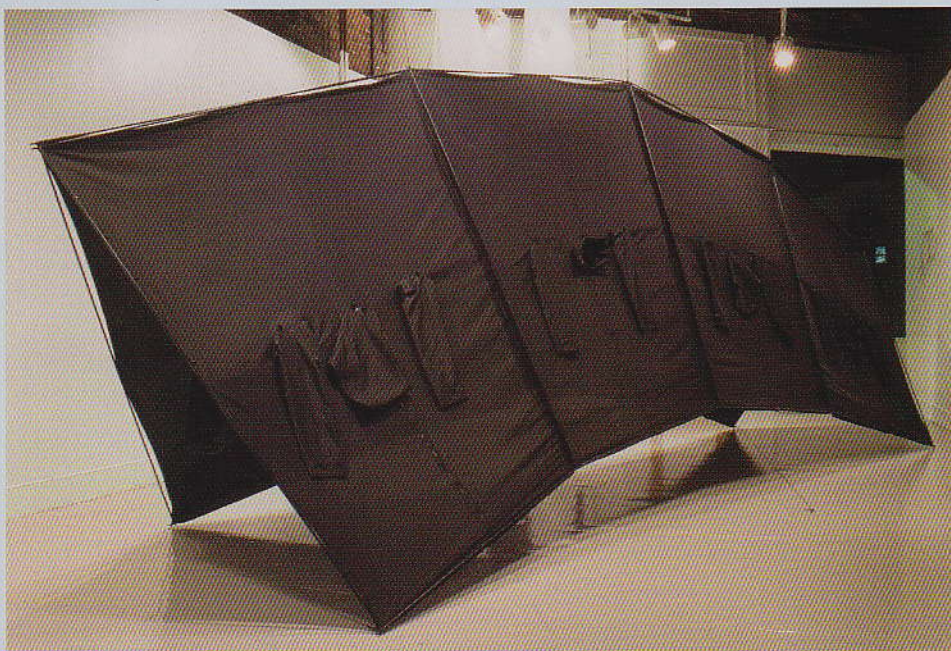
Below left: A hinged, lockable door provides access to each of the 'hotel' rooms.

Below right: Each pipe contains one room in a parkland setting.

Bottom right: Murals by Thomas Latzel Ochoa enliven the interior, which has been designed simply but ergonomically.



This page: Prefab Coat by
Takehiko Sanada. Re-
cycled polyester garments
can be zipped together to
form a shelter for one or
several people.



Below left: The Basecamp, a new offering from Airstream, can be towed behind a vehicle and is described as a 'multi-purpose tent-trailer'.

Below right: Basecamp interiors are sleek and modern.

Much more in tune with most people's notion of mobility is the idea of a dwelling on wheels. Traditionalists may plump for the horse-drawn Romany vardo or caravan; others prefer the internal combustion engine.

Mobility has a particular attraction for large numbers of people in the United States, harking back to the covered wagons of the pioneers crossing the continent and also to an idealized vision of the footloose hobo. Travel writer Richard Grant, in his book *Ghost Riders: Travels with American Nomads*, describes both the history of American nomadism and its appeal today.

Some of these people on the move are 'snowbirds', fleeing the cold winters of the north and east for the warmer temperatures of the south. And although travellers, they are not necessarily loners, meeting for example in huge numbers in Quartzsite, Arizona every January and February.

These modern-day travellers' home of choice is the RV (recreational vehicle), which tends to be functional and even comfortable, but ugly. There are, however, exceptions, the best known of which is the sleek aluminium Airstream trailer that has become a design classic. A towed vehicle rather than an all-in-one, it is now available in alternative formats,

such as a mobile office and also the Basecamp, another elegant solution which the company describes as 'a lightweight multi-purpose tent-trailer'.

Some of the projects in this chapter subvert the aesthetics of the RV, while others throw down a challenge to our perceptions of how we want to live. For example, Andrea Zittel's A-Z Wagon Stations, (see page 110) are a deliberate attempt to slip between the cracks of consumerist society, while architect Jay Shafer, whose work is superficially so much more conformist, is demonstrating with the XS House just how much it is possible to live without (see page 122).

Whether they are concerned with creating an exhibition space from washing machines, breaking down the barriers between inside and outside in the middle of woodland, or turning the workaday shipping container into a plush marketing suite, all the projects here make us think again about some of our preconceived ideas – whether those ideas are to do with homes or leisure or even our conventional expectations of a theatre.



DESERT SEAL

Tents have advantages but also limitations. They are lightweight and provide some shelter from the elements, although this is mostly just keeping the rain out. But in an arid environment, they scarcely moderate the temperature at all.

This is the issue that London- and Munich-based Architecture and Vision has addressed with its Desert Seal prototype. Intended for some of the harshest environments – it can be transported by camel and emulates the behaviour of certain reptiles – it uses some advanced technology. This is a reflection of the background of the founders of the practice – Arturo Vittori has worked as an architect at Airbus in Toulouse and Andreas Vogler researched space architecture with NASA in Houston. Having looked imaginatively at designing for the difficult environments in space, they have then translated their ideas to some of the least forgiving places on earth.

Deserts are difficult environments because they are

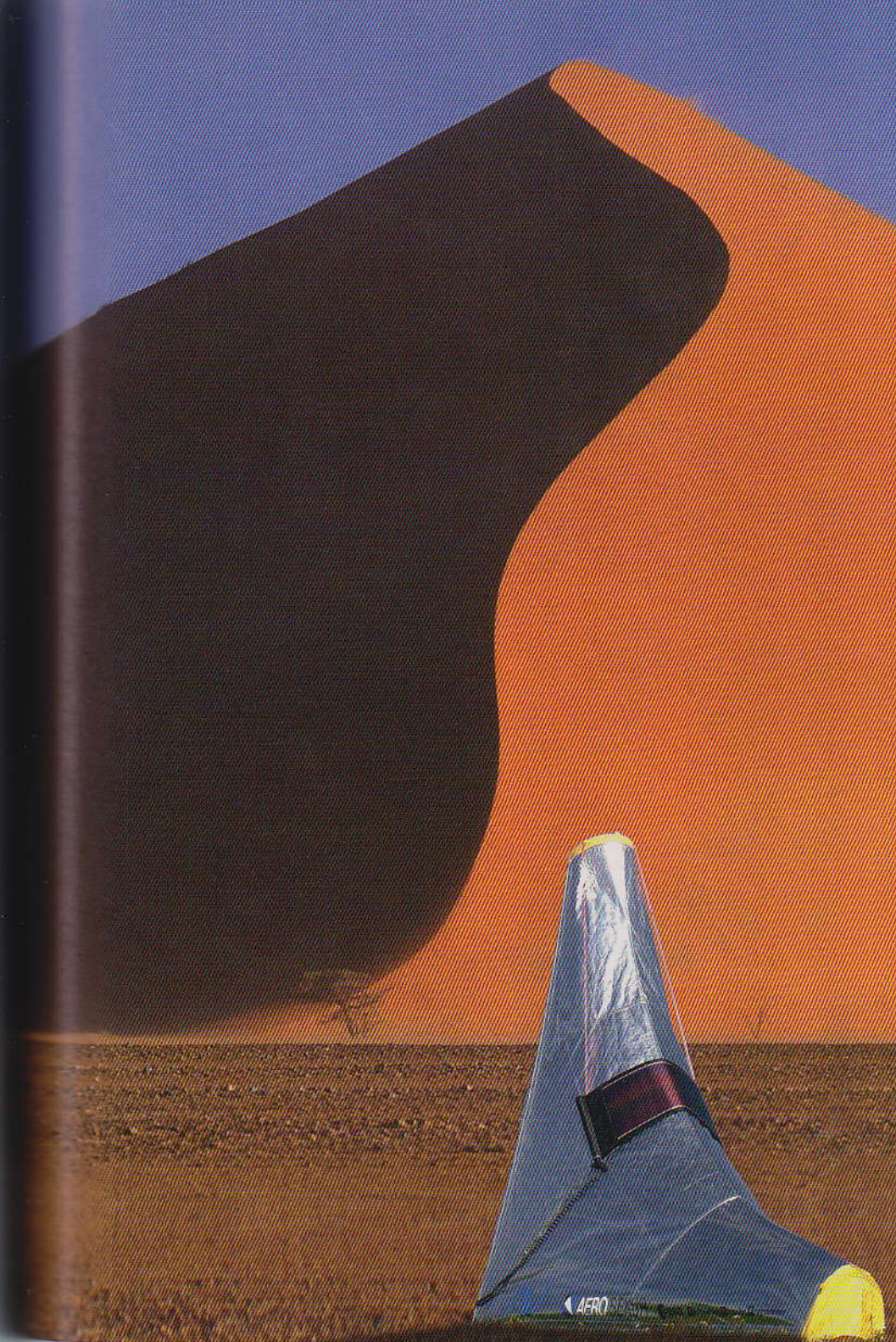
intensely hot in the day and equally cold at night. The most extreme temperatures are experienced close to the ground – move up just 1 metre (3 feet 3 inches) or so and they become more moderate. Desert Seal exploits this gradient in its design.

It is a tent, but very different from the standard shape. It is shaped like a boomerang (the designers describe it as 'anticlastic', which is defined as 'having transverse and opposite curvatures of surface'), so that it lies along the ground and then curves up at one end to be 2.1 metres (6 feet 9 inches) tall. At the top is a fan that brings in cool air during the day and warm air at night. This has the added advantage of making it possible to enter the tent in a standing position. An advanced solar-power unit runs the fan during the day, and replenishes a battery that runs it at night.

The structure consists of two bright yellow 'air beams' of polyurethane-coated polyethylene that are inflated to provide sup-

port. The outer skin is of a high-technology lightweight silver fabric that will reflect external heat during the day, and help to retain heat inside at night.

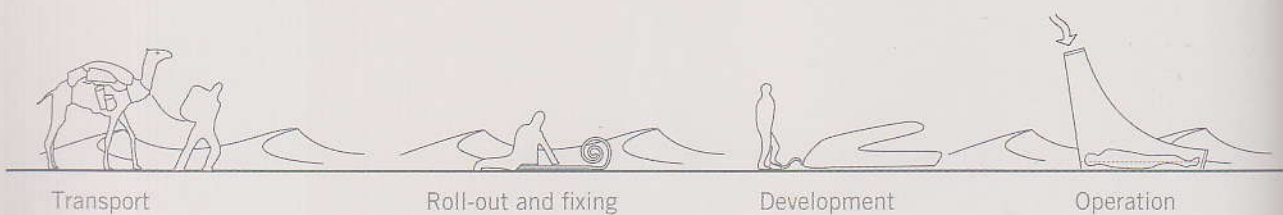
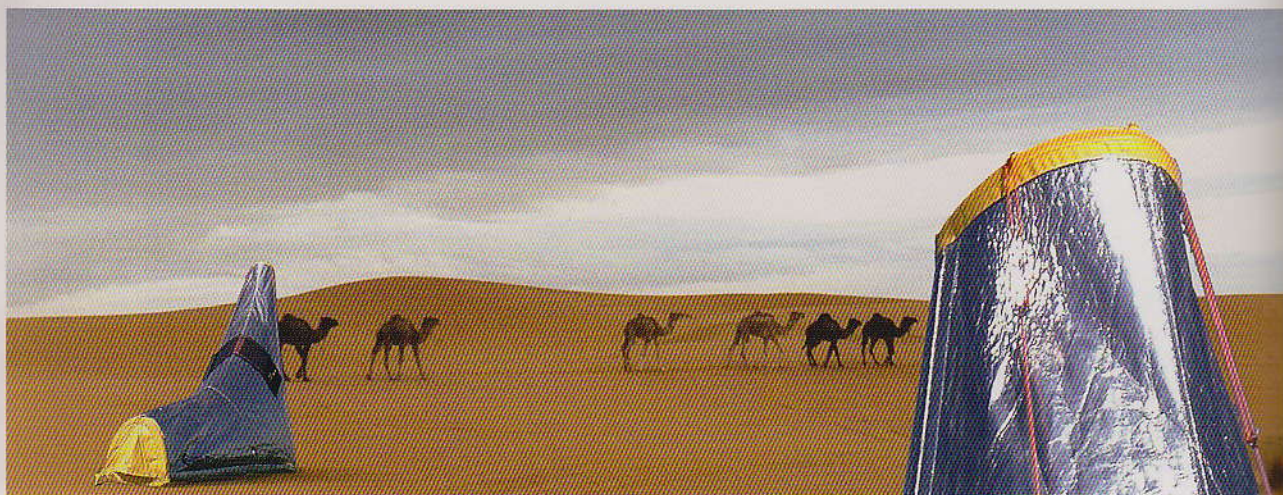
The lightweight nature of the materials allows the tent to be folded into a small space, and could mean the difference not just between comfort and discomfort but, in the extreme, between life and death.



Below: Alongside 'horses designed by committee' (as camels are sometimes known), the form of the tents seems less outlandish.

Below centre: The tents are designed for ease of transport and erection.

Bottom: The unconventional form and the fan take maximum advantage of the temperature gradients above the ground.



Below: One person can stretch out comfortably in the tent.

Bottom: The tent packs up small, and can be inflated with a foot pump.



CARDBOARD HOUSE

Cardboard is not an obvious building material, but its potential for construction has been realized recently by several architects, including the Japanese Shigeru Ban with his houses made from cardboard tubes, and Cottrell & Vermeulen Architecture in the UK, which designed an award-winning school largely constructed from cardboard.

One of the latest practices to be attracted to the idea is the Australian firm Stutchbury and Pape, which designed a prototype cardboard house for the House of the Future exhibition staged in Sydney Olympic Park in 2005. It worked with another architect, who has passionate environmental briefs and had previously worked with a student of his at Sydney University to develop a bay of a house made from paper and cardboard. In this latest project, the architects wanted not just to develop a house that could be afforded by people for whom conventional housing was unaffordable, but also to look at simplified ways of living and to design

something that had virtually no environmental impact.

Their solution is an A-framed house, built of cardboard members interlocked together for structural strength, in a similar way to the interlocking of the elements inside a wine box. The aim was that the house should be as easy to assemble as flat-pack furniture – or perhaps that should read ‘easier to assemble than ...’, given how common it is to have problems with the furniture.

Although the intention is that the design should be flexible enough to allow variations – for instance service pods for a kitchen and bathroom can be either inside or out on the veranda – the prototype evidently has to take one form. For this the architects have settled on five bays, two for a living area, one for a bathroom and two for a kitchen, with a sleeping platform on the mezzanine above. The fixings are nylon wing nuts, hand-tightened polyester stays and Velcro, and the architects

calculate that it should take two people only six hours to erect the structure.

To protect the house from rain, there is a waterproof overlayer, a sheet of hdpe (high-density polyethylene) that acts like a flysheet on a tent, helping to hold the house down as well as keeping out the rain. The same material is used for rainwater-storage bladders under the floor, and also for the construction of the bathroom and kitchen pods. The weight of the bladders also helps to hold down the structure.

Everything has been designed to be as environmentally friendly as possible. The cardboard is made from material that is 90 per cent recycled, there is a composting lavatory, rainwater harvesting and low-voltage lighting that can be powered by a solar panel.

With assembly (and disassembly) so simple, this counts as a movable, temporary dwelling. It weighs only about 2,000 kilos (4,400 pounds) and can easily be

delivered on a truck flatbed. Although the look is a mile away from conventional housing, the articulation of the structure internally provides an attractive appearance – and even potential shelving!

The architects believe that, at a cost of only about Aus \$35,000, this could prove an appealing option for people who would otherwise be priced out of the housing market.

The interlocking elements
give strength to what is
inherently quite a flimsy
material.



Below left: Visitors to the Future exhibition in Sydney were intrigued.

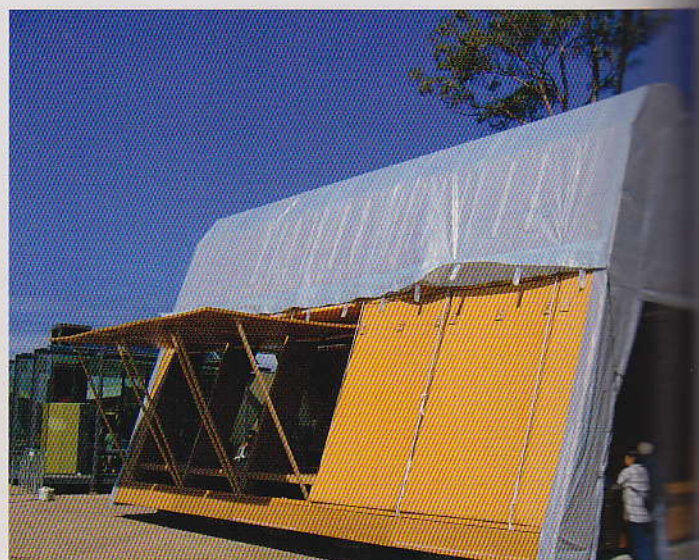


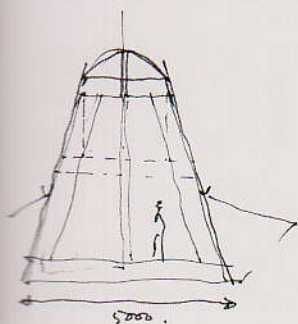
Below right: The waterproof covering acts like a flysheet on a tent.

Bottom left: A pivoting section of side wall doubles as an entrance and a shade canopy.

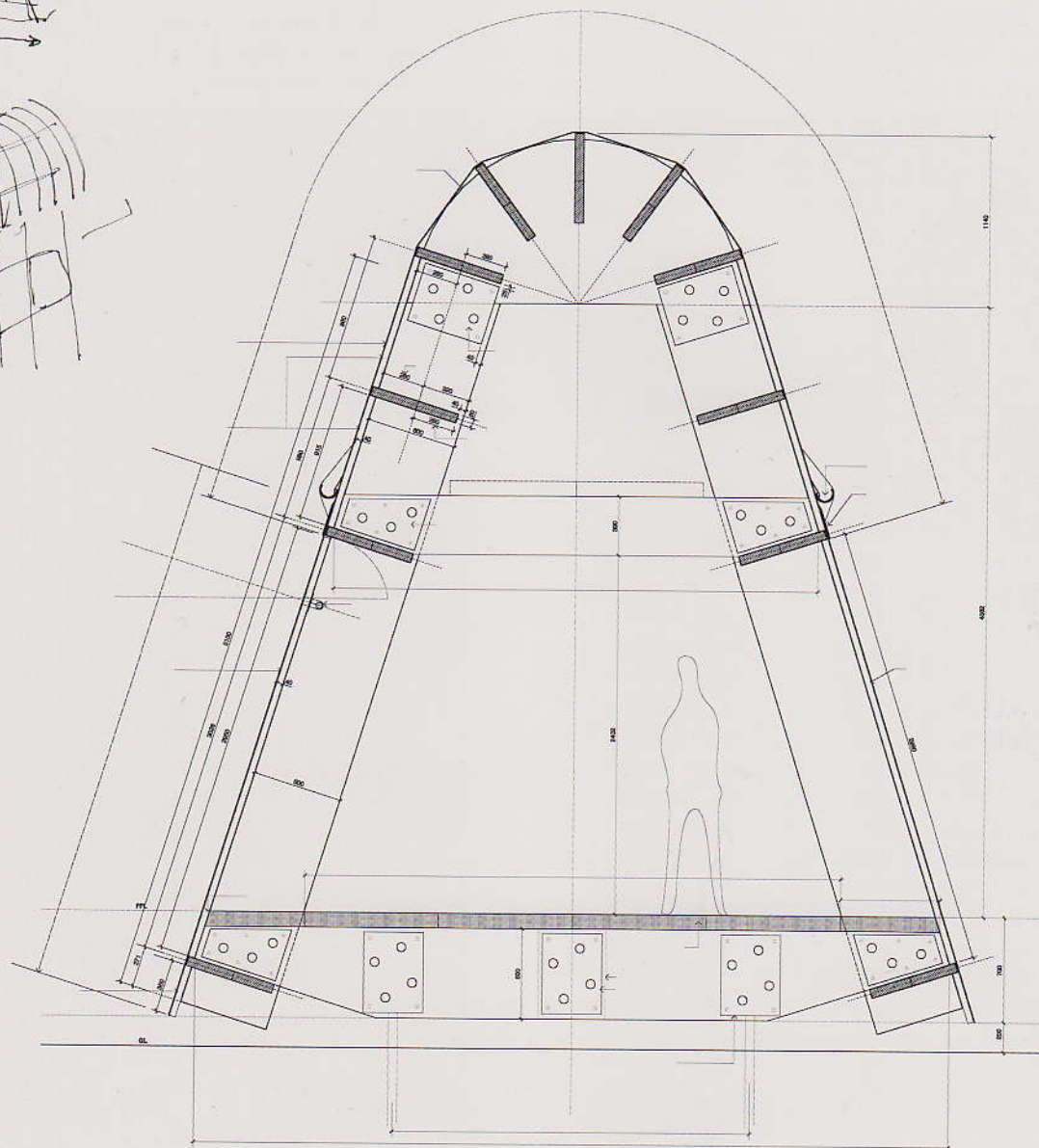


Bottom right: Top lighting and a mezzanine sleeping area allow maximum use to be made of the space.





Left and below: Initial sketches and a section through the cardboard house.



A-Z WAGON STATIONS

Andrea Zittel is an artist whose work addresses all aspects of her life. Having started in New York, where she designed clothing and furniture and interior elements to define her way of living, she moved back to her native California, to Joshua Tree in the California desert. There her experiments continued, with one of the latest being Wagon Stations, a deliberate play on the idea of the station wagon.

Zittel makes reference not only to this twentieth-century model but also to an earlier idea, the wagon trains that crossed America. Her wagons, however, are moved neither by horses nor by the internal combustion engine. Because they are light and can be broken down into five sections, the idea is that individuals can carry them from one spot to another.

At present, however, a number of them have found a place on her land. Built in aluminium, and shaped like oversized bread bins on legs, they are being

occupied by Zittel's friends, many of whom have set about customizing them. For example, fellow artist Hal McFeely has made his deliberately rough and ready, by using the discarded wood and broken-down crates that are freely available from the nearby Twenty Nine Palms Air Ground Combat Center.

This is a far cry from the much slicker versions that Zittel exhibited at the Milwaukee Art Museum in 2003 where identical units, lined up side by side, had a futuristic and somewhat forbidding look. But this is typical of Zittel's approach, which she draws together under the heading A-Z Living at her base, A-Z West.

Zittel herself describes it in the following way: 'The A-Z Wagon Station reflects the qualities that we believe create independence for the owner and user: compactness, adaptability and transportability. 'The original pioneering spirit of the "frontier" considered autonomy and self-sufficiency as prerequisites of personal freedom. Here at A-Z West

we are continuing to investigate how such perceptions of freedom have been re-adapted for contemporary living. We believe that, presently, personal liberation is more often achieved through individual attempts to "slip between the cracks". Instead of building big ranches and permanent homesteads, today's independence seekers prefer small portable structures, which evade the regulatory control of bureaucratic restrictions such as building and safety codes.'

When closed up, the Wagon Stations have an enigmatic appearance in the uncompromising desert landscape of California.

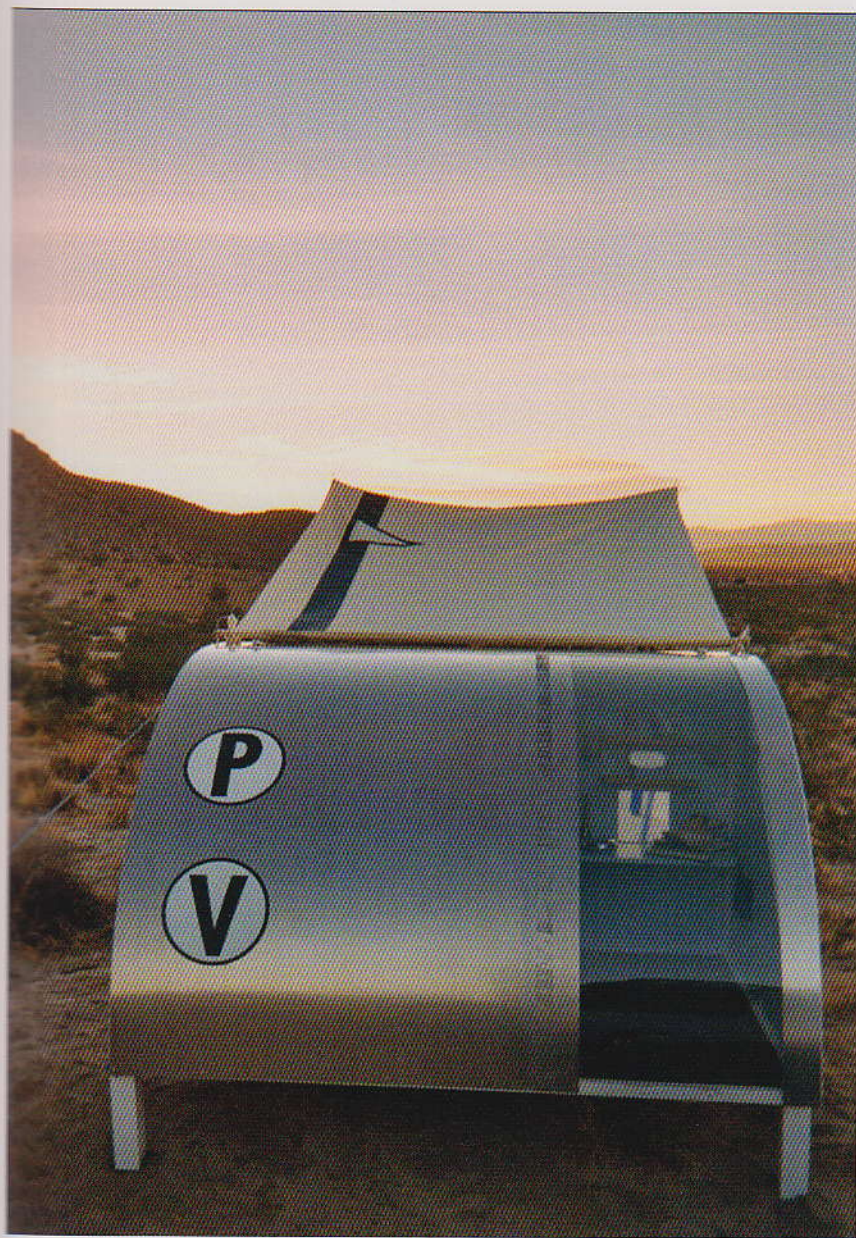


Below left: Artist Hal McFeely customized his wagon with discarded crates.

Below right: Back to back wagons on public exhibition. Customized by Andrea Zittel and David Dodge.

Bottom: Internally, the wagons can be made into whatever type of refuge the user desires. Customized by Jennifer Nocon





Left: Zittel believes that the wagons, which are light enough to be transported by hand, can help recreate a pioneering spirit. This example was customized by Veronica Fernandez and Peter Blackburn.

SUMMER CONTAINER

What does a Los Angeles-based real-estate company have to do with a Finnish architectural academic? Unlikely as the pairing may seem, the answer is that the real-estate company, Mossler & Doe, is representing the movable holiday home that the academic, architect Markku Hedman (of MH Cooperative), has developed. Think again and it doesn't seem quite so daft, since this is one of the areas where the usually very dissimilar cultures of Californian hedonism and northern European extremes coincide.

The Finnish seem to have a hard-wired relationship with their forests. A huge proportion of the population actually owns a patch of woodland, and these forests, which cover the majority of the landmass, are the natural sites for recreation. They are for the Finns a source of respite from the long winters, a place to escape to on the long summer days and get back in touch with the soil that has been hidden for so much of the year. And what better

way for an inhabitant of this design-conscious nation to take themselves into the woods than in an elegant transportable home?

For Americans, it is the movement rather than the woodland that is atavistic. Markku Hedman's concept is for a neat and simple dwelling that can shut up 'like a box of matches' for easy transport. Betraying his Finnish origins, he says that it can be drawn either on a trailer by a car or on a sled by a snowmobile.

The piece also has a strong theoretical basis, forming part of his research into the concept of a 'minimum home', which draws on ideas first expressed at the second CIAM congress in Frankfurt in 1929.

When closed up, it measures 2.8 x 2 metres (9 feet 3 inches x 6 1/2 feet), with this latter dimension opening out to 3.5 metres (11 1/2 feet). It is 2.4 metres (7 feet 9 inches) high. Built with a wooden frame, it is clad in sandwich panels consisting of plywood

treated with phenolic resin (a material more commonly used for truck floors) with polystyrene insulation in between. Integral shutters close the cabin up entirely for transport, and on arrival one simply swings down the door, opens the shutters and pushes out the inner section. The house stands on adjustable legs to take account of uneven ground.

The main space acts as a kitchen/living area, with all storage along one wall, and a table that can fold away, allowing the smaller sleeping unit to be pushed into it for transportation.

The prototype house weighs about 700 kilos (1,540 pounds) although Mossler & Doe believe that this could be halved if it goes into commercial production. Internally it uses colours reminiscent of the seasons in a Finnish forest and has a variety of windows to provide interesting views. Intended applications include a base on an island for fishing trips, a home for a forester or a first holiday home for a young couple.

Remoteness should not be a problem, since the intention is to use solar panels or a wind turbine to generate electricity. A cooker could be fuelled by kerosene, and a water tank included.

For Hedman this is just one of a series of experimental projects, of which others include Snail, aimed at urban environments, and the Shrewd Shed, prefabricated houses built for the Finnish housing exhibition in 2000. Such small projects have to carry a considerable theoretical weight, as Hedman is keen to discuss them in the context of both post-structuralism and critical hermeneutics. None of this, however, is likely to be visible to the casual observer, or indeed to the customers of Mossler & Doe, who will only see an exceedingly attractive holiday home.

Below and bottom: Elevations and sections showing the cabin shut for transport and open for use.





Opposite far left: With the shutters closed, the cabin presents an entirely impenetrable appearance.

Opposite near left: Windows have been positioned carefully to offer delightful views.

Below: Utterly at home in Finland's forests, the cabin should also appeal to Americans' love of movement and remote spots.



pPOD MOBILE THEATRE

Touring theatres have a history as long as theatre itself. Before the days of readily available transport, it made more sense for the theatre to come to its audience than the other way round. The Horse and Bamboo Theatre is in this tradition, and indeed originally travelled around the UK and Europe in a horse-drawn wagon, which is how it acquired its name. Its three actors staged, and still stage, a range of contemporary masked and puppet theatre, but it now operates from a base in Rossendale, Lancashire, in the north of England.

This does not, however, rule out the need for travel, as the theatre tours small towns and villages and puts on shows for groups of up to 35 people. To enable it to do this, it commissioned a travelling structure, the pPod, from Berlin-based practice magma. Could it have simply used a tent? Of course it could, but this custom-designed structure has a number of advantages.

It is fast to erect, and there

is a theatricality to the process that in itself draws the crowds. And unlike a conventional tent it can stand on a hard surface, so it can be used as easily in a car park as in a large hall.

The theatre is constructed from six aluminium rectangles that are tilted round an imaginary axis. This results in a slightly drunken-looking shape, but one that is structurally stable. When the outer of two layers of fabric is stretched over it, it follows doubly curved hyperbolic paraboloids, despite the fact that there are no curved members supporting it. This stretched fabric provides both protection from the weather and longitudinal stability. Made of PVC-coated polyester sheeting, and in a strong red colour, this outer fabric has microscopic holes in it. These allow views through to the opaque silver-coloured inner fabric, but are small enough not to be penetrated by droplets of rainwater which, because of their surface tension, just run off the stretched fabric as if it were an umbrella.

The inner fabric, which hangs from curved inner members that also provide cross-stability, forms an opaque enclosure for the stage and auditorium. There is a floor system that consists of a frame of 10 x 10 centimetres (3 7/8 x 3 7/8 inches) rectangular hollow aluminium sections, fitted together and set in position by bracing cables. Counterweights are fitted to the edges of these frames when the theatre is used outside, to stop it being lifted by the wind. Film-faced plywood floor panels fit into the frame, and there is an entrance ramp, also of film-faced plywood, that makes wheelchair access possible. Both the benches and the stage are of foldable plywood.

Galvanized steel nodes join the elements of the aluminium frame. Because of the complex geometry, every one of these nodes is different. Originally it was thought that the aluminium tubes would be cut on a CNC router, but in the end they were cut and welded by hand. This meant that

magma had to create a new detail for the nodes, with a steel sphere as the centre point, so that the steel pins could be cut perpendicular and would fit at every point of the sphere. The nodes are colour-coded to make assembly simpler. Artificial lighting is suspended between the inner and outer fabric, so that at night the tent glows.

The architects, working with two engineers from Buro Happold, have fulfilled the part of the brief that demanded 'a magical space and object', as well as creating a structure that the three actors can put up in 90 minutes. Travelling theatre has seen nothing like this; the little Lancashire theatre has created a benchmark against which others will be measured.

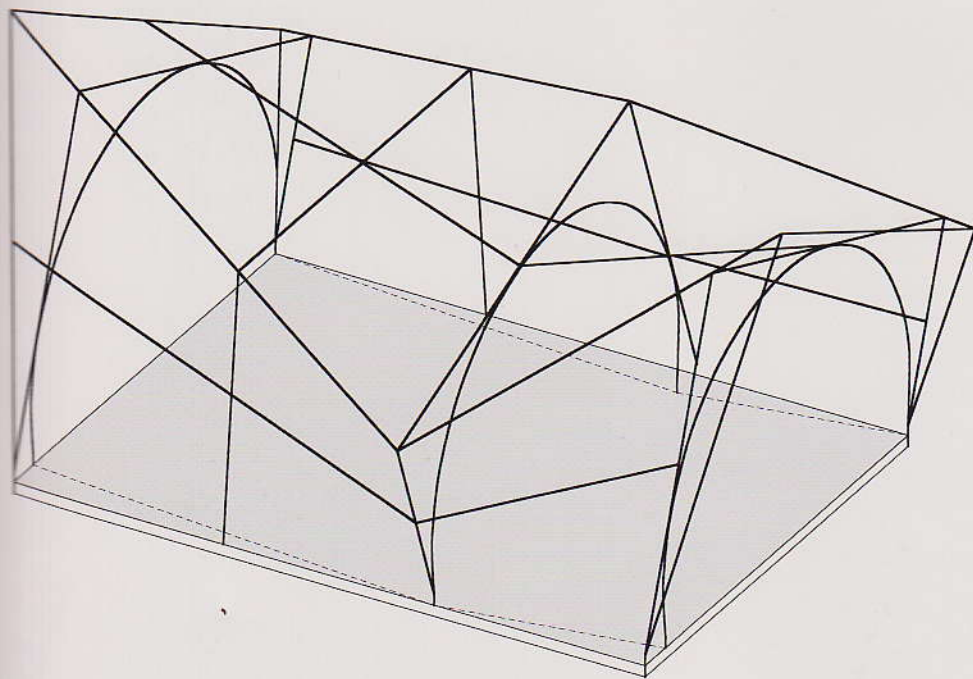




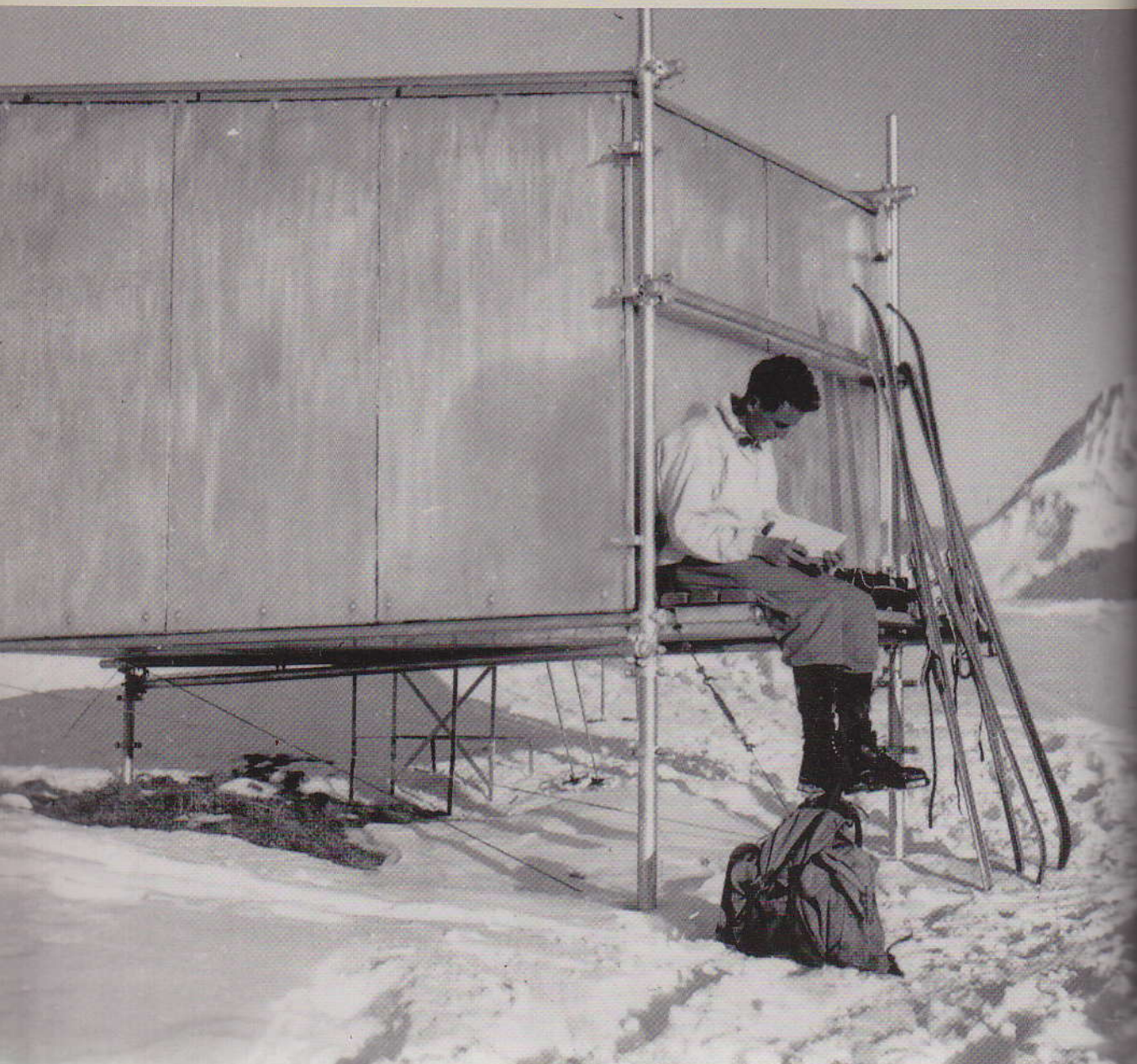
Opposite left: Tiny holes in the outer fabric allow views through while still keeping out the rain.

Opposite right: Three actors can erect the theatre in just 90 minutes.

Below: The inner and outer frames are the result of clever engineering that produces a drunken-looking, but stable, lightweight structure.



COMPACT LIVING



Left: Perriand's Refuge Bivouac, first installed on a mountain in 1929, was one of the first demonstrations of the feasibility of lightweight, movable shelter.

Below: The Cabanon at Roquebrune, France, was not merely a summer refuge for Le Corbusier but a laboratory for his ideas about dimensions and simplicity.



There can't be many log cabins that have been proposed for listing as UNESCO World Heritage Sites, but exactly that happened with one at Roquebrune Cap Martin in the south of France at the start of 2006. A modest-looking structure in an idyllic setting, its credentials for such an honour are not immediately obvious – until you realize that this is the famous Cabanon of Le Corbusier, where the colossus of modern architecture spent his summers, overlooking the beach off which he subsequently drowned in 1965.

Le Corbusier built his Cabanon in 1951 and, despite its unassuming exterior, it acted as a laboratory for his ideas. Measuring 3.66 metres x 3.66 metres x 2.26 metres high (12 feet x 12 feet x 7 1/2 feet), it was based on his Modulor dimensions, a system of proportions based on the human body.

For Le Corbusier, as well as being a delightful escape from the pressures of urban life, this was a follow-up to ideas from decades before

– the new concepts of, ironically, urban living, developed by CIAM (Congrès Internationaux d'Architecture Moderne) formed in 1928 and culminating in the Athens Charter of 1933. These ideas of simplicity, of living in the smallest possible space and of prefabricating wherever possible, have continued to appeal both to architects who embrace Le Corbusier's legacy and to others who would deny his influence.

One of the earliest to take these ideas further was Le Corbusier's long-term collaborator Charlotte Perriand. She worked with Le Corbusier on the development of the 14-square-metre (150-square-foot) unit presented to CIAM in 1929 but, more importantly, she carried these ideas forward into practical application with first the weekend house, built up from a number of cells, and then the Refuge Bivouac. Intended for use on mountains, this latter was a lightweight aluminium structure that could be broken down into small enough elements

to be manhandled up the mountain. She and colleagues tested it by carrying it up Mont Joly to a height of 2,000 metres (6,000 feet). The four of them assembled it in four days, and then lived within the rigorously planned 8 square metres (86 square feet) for a further three days.

In this admirably realized project, one begins to see some of the contradictions that sneak in to the concept of small houses. Are they compact solutions offering low-cost living, or are they luxury second homes? The problem is that once a building becomes really small, there is only one way of living inside it – all the furniture and

fittings have to be planned ideally designed as part of a whole, and you have to deny yourself any extraneous possessions. If you have chosen this way of living, it can be appealing, but if it has been forced on you as the only way that you can afford to live in our acquisitive society, then the effect is rather different.

So the most extreme of the realized projects here, the m-ch home by Horden Cherry Lee in collaboration with Haack + Höpfner (see page 136), has found its first incarnation as housing for students, who have not had the chance to accumulate many possessions. Described as 'business class' design, because of the

Below and bottom: Lucky Drops House, Tokyo, Japan, Atelier Tekuto and Masahiro Ikeda, 2005. The extremely narrow house demonstrates the particular

skill of Japanese architects in fitting homes on seemingly impossible sites.

superb quality of materials, its appeal will be to the affluent and disciplined.

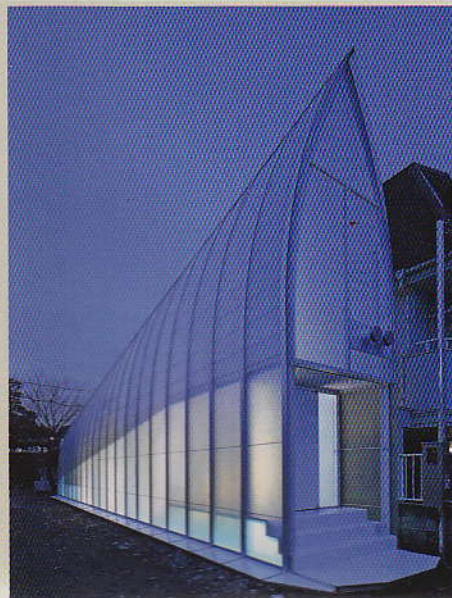
This is even truer of some of the projects shown here at the conceptual stage. While valuable in challenging our thinking about housing, they would certainly be unacceptable if imposed rather than chosen.

In contrast, the Katrina Cottage (see page 134) takes a far more conventional approach to housing, as befits its purpose – to provide inexpensive and relatively temporary homes for some of the families whose lives were devastated by Hurricane Katrina in the summer of 2005.

That building is relatively inexpensive, but there are also circumstances where people build tiny 'proper' houses that cost a considerable amount of money, because land itself is so scarce and so expensive. The prime country for this is Japan, where architects have risen to the challenge with some inventive designs. The house by Shuhei Endo

(see page 162) earns its place here not only for its size but also for being on such an improbable site. A similar level of inventiveness has been shown by Atelier Tekuto and Masahiro Ikeda in the long and very narrow Lucky Drops house in Tokyo, which has a section like a Gothic arch. In the Shinjuku-ku area of Tokyo, Atelier Bow-Wow has built a four-storey house above a narrow strip of pavement, raising it on stilts to allow pedestrians to continue passing underneath.

And in a country where the vast majority of houses are off-the-shelf kits, it is not surprising that imaginative designers have come up with compact and contemporary options, such as the 50-square-metre (538-square-foot) 9tubohouse by Boo-Hoo-Woo.com. In this, designers Makoto Koizumi and Makoto Masuzawa have used an attractive arrangement of sliding full-height glazing to create a small house that includes all the standard functions in a cleverly planned space. But where land is expensive,



Below: Casa de Pollo, Spain, Santiago Cirugeda. The 30-square-metre (322-square-foot) house was designed to demonstrate the possibilities of compact social housing.



the more conventional solution is to build apartments, and these lend themselves to both prefabrication and miniaturization. Examples include the brightly coloured Spacebox student apartments in Rotterdam (see page 166) and the Abito flats in Manchester, England, designed by Building Design Partnership and aimed at young professionals. In Catalonia, Spain, a row blew up in 2005 when the country's housing minister, Maria Antonia Trujillo, proposed the construction of 30-square-metre (322-square-foot) flats as a way to tackle a housing crisis compounded of a shortage of property and high prices. The regional government in Catalonia refused to invest in the idea, saying that such flats were smaller than the minimum acceptable area in which one could live. In response, architect Santiago Cirugeda built a 30-square-metre (322-square-foot) Casa de Pollo (chicken house) apartment entirely from recycled materials as a demonstration project, arguing that potential residents could build similar

places for themselves with a week.

Small dwellings also have a role to play away from the pressures of city life. In this situation it is probable that more people hark back to Thoreau's cabin at Walden Pond than to Le Corbusier, whose humble dwelling now seems rather incongruous in the swank setting of the Côte d'Azur. Projects such as the woodland cabin of Robbrecht en Daem Architecten (see page 168) certainly look back to this rustic lineage, although as international distinguished architects their ascetic isolation is only temporary.

MICRO-COMPACT HOME (M-CH)

British architect Richard Horden is still a partner in the London practice Horden Cherry Lee, but is also now professor of architecture and design at the University of Munich, and it is appropriate that students there should be the first to benefit from his latest innovation. Called the micro-compact home (m-ch), it is designed to solve housing shortages in as agreeable and effective a way as possible. Even Horden, an advocate of abolishing wasted space as much as other wasted resources, would not expect such a tiny enclosure to form a permanent home. So the intended use is by students and other birds of passage more concerned with having a roof over their heads than with generous dimensions.

Horden claims that the design is based on the concept of the Japanese tea house, although some may be reminded more of the capsule hotel. Measuring just 2.6 metres (8 1/2 feet) in each dimension, it nevertheless manages to include all the essentials for life, on two

levels. This Horden achieves by having a full-height entrance, shower and kitchen area, and a sunken dining area with a fold-down double bed above it. Storage is both beneath the floor and behind the dining area. Materials are aluminium, perspex and epoxy-coated OSB (oriented strand board).

The trick for living in such a tiny space is that everything is purpose-made and fitted in, but Horden envisages a range of cubes with different functions. The shower and lavatory doubles as an entrance lobby where students can divest themselves of their snowy clothes. Dripping water will drain away through the outlet grille of the shower. There is an integral sound system and two flat-screen television monitors with broadband connection. The kitchen has a double radiant hob and a microwave oven plus a fridge/freezer. Living is not, therefore, austere.

Windows incorporate privacy blinds, and lighting consists of LED low-temperature technology, avoiding

the danger of overheating on summer evenings. The cube is highly insulated, so that energy use should be low, and there is potential for placing photovoltaic panels on both the mast and the flat roof.

With such a small area, there is no need for conventional rainwater drainage. Instead rain can run off the flat roof and down behind the rainscreen cladding to the ground.

The tiny house works because every detail has been considered so carefully, and because everything is well made and of the highest quality. Doors and drawers open and shut with the reassuring clunk that one gets from a top-of-the-range car.

The idea of a living cube is not entirely new. For example, German practice Sturm und Warteck came up with a prototype of a rotatable housing cube in 1998. With high levels of insulation and photovoltaic panels, it is nearly self-sufficient in energy. This effectiveness is increased by the building

having one highly glazed façade and being able to rotate to face either towards or away from the sun, depending on the time of year. This does, however, mean that the cube is seen as an object on its own in the landscape, whereas part of Horden's cleverness lies in the fact that he has thought of a number of ways of combining the units.

In Munich, where there is a terrible shortage of student housing, the student housing authority, with sponsorship from telephone company O₂, has built the O₂ Village, a two-level cluster of six inhabited units plus an experimental one. Horden, in collaboration with Munich-based Haack + Höpfner Architekten, uses 150-millimetre (6-inch) steel tubes to create the support structure, and envisages everything from a one-off house to a multi-storey complex. For example, he sees potential for a 'tree village', 15 metres (49 feet) high, of 30 of the micro-compact homes surrounding a central lift-core and stairs. An internal ring of vertical



Left: Inside, high-quality finishes make a liveable space even with the bed folded down.

Below: A single micro-compact home can provide an elegant refuge in the midst of the natural environment.



Opposite top: At Munich University, several units have been combined to form a student village.

Opposite below: With the bed folded away there is space for eating, working or relaxing.

service 'reeds', would supply power and water.

Reeds are also a reference point in the reed huis collaboration with Dutch artist Marijke de Goey, intended for a reed-based landscape. Here the masts are multiplied beyond the purely functional to form an enclosing structure that echoes both the surrounding landscape and de Goey's sculptural interests. Intended uses are as accommodation for those on sailing or skating holidays, or as rural retreats.

In contrast, the Golden Cube would be one of a series of unconnected units, intended to provide relatively inexpensive accommodation for holiday-makers in that most rapacious of cities, Venice, Italy. The cubes would sit in the lagoon, stabilized by vertical piles on either side and accessible only by boat. There would be platforms on two sides, and a canopy above the entrance with photovoltaic cells providing electricity. A solar pump would circulate lagoon water for

cooling, and all waste would be stored and removed by boat. In keeping with the baroque opulence of the city, the aluminium exterior would be anodized in a gold colour.

Although not intended as 'mobile homes', the cubes could relatively easily be moved to other locations. With a cost of only about £30,000 (\$55,000), the m-ch homes are already attracting interest from other places with housing shortages. London, for instance, has shown interest in using them to provide key-worker housing. Another forthcoming project is for a ski village, and in preparation Horden has adapted the design to include an external lockable drawer for storing skis and ski boots.

The Munich students took a few weeks to adapt to living in the houses, and then professed themselves very happy with them, asking to extend their stay from a semester to a year. The girls, in particular, liked the sense of security and the fact that they did not have to live

with other people's mess. With a laundry and a bar nearby, the students were not relying on their tiny homes for every need, but having moved in at a time in life when they naturally have very few possessions, it will be interesting to discover if they will have learnt habits of clutter-free living that will carry through to a taste for compact living once their lives become more complicated.



MICRODWELLINGS

Austerity doesn't get much more extreme than in the Microdwellings devised by Danish artists' collective N55, which can, as the organization says 'be constructed by anybody who knows how to weld'. Their irregular polyhedral form, made up of hexagons and squares, is supported on a tripod of short legs on pads, with the idea that the impact on their surroundings should be minimized. Although when considered as a straight option they would only suit a user with no requirement for comfort, privacy or even sanitation, they are only a starting point for one of the group's developments, all of which reflect its serious concerns with personal property and finding alternative ways of living.

Indeed, the shape is reminiscent, on a smaller scale, of the Spaceframe, a structure on a raft in Copenhagen harbour that the group built in 1992 and has lived on ever since. That has a floor space of only 20 square metres (215 square feet), making it pretty

micro itself. In contrast, the Microdwellings, which can also float or be suspended, can be assembled to form a larger conglomeration, with units of several sizes. At the time of writing, there were plans for the construction of a 'Space on Earth Station' for an exhibition in London made up from the units, offering a possible way of living as the planet becomes less and less able to tolerate a 'natural' form of existence.

But N55 has put thought into the way that a single Microdwelling could work, creating an interior with a shelf that can be both table and bed, and a chair that echoes the form of the dwelling itself. People who want to live closely together could put their dwellings next to each other, or even join them, and as families expanded they could simply add more units.

Founded in 1966 and latterly consisting of a pair of members, Ion Sørvin and Ingvil Aarbakke (tragically, Aarbakke died of cancer in 2005 at the age of only 35),

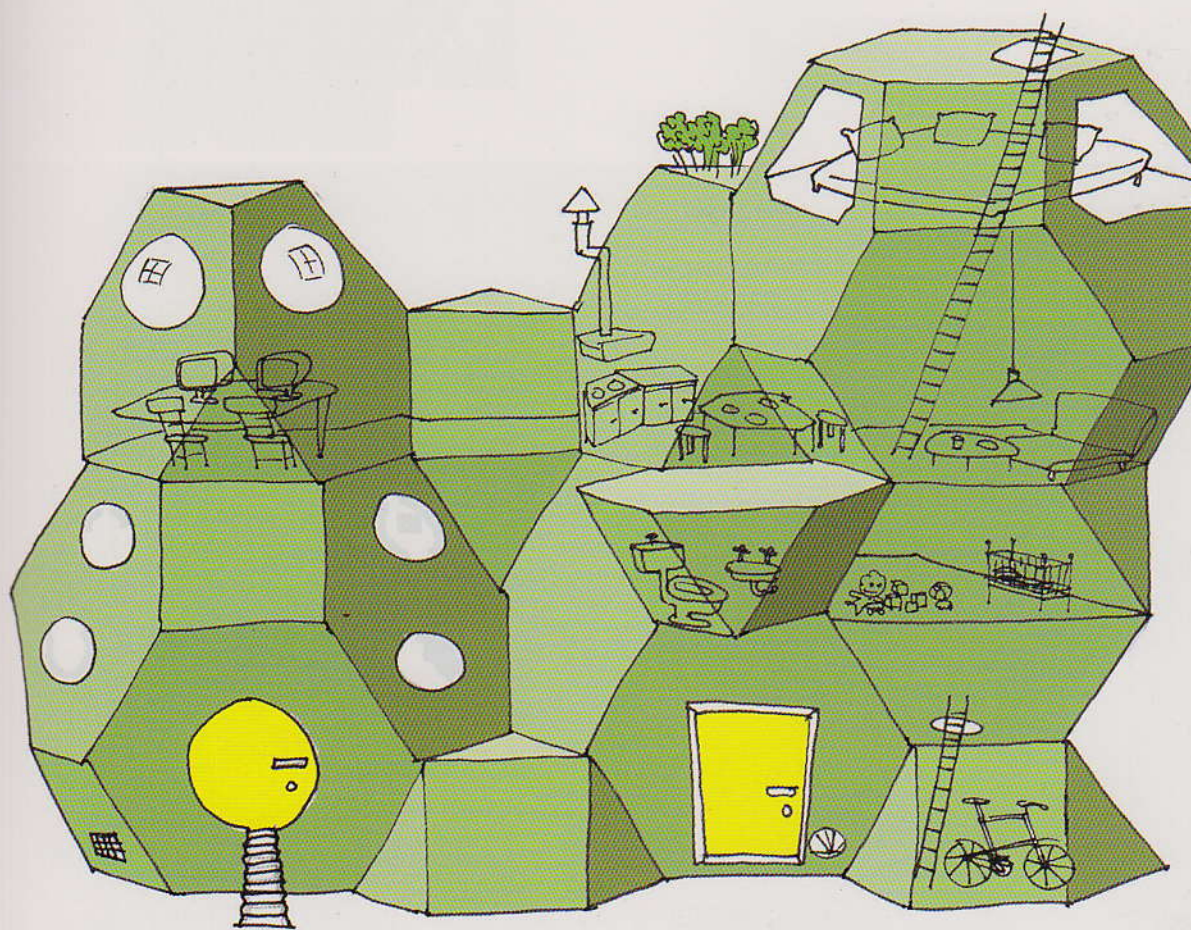
N55 is dedicated to the concept of common ownership and of eliminating personal possessions. Projects range from Land, an accumulation of plots of land in many countries that offer free and open access to all, to 'small truck', which is exactly what it says, a (largely) human-powered truck for moving small amounts of goods around cities. In keeping with N55's ideals, the construction methods are freely available, materials are as basic as possible (for instance, rubber doormats are used as bumpers), and as many spin-off ideas as possible are envisaged.

More closely allied to the idea of dwelling is the Snail Shell System, which received considerable publicity when Aarbakke rolled it through the streets of the northern English city of Leeds in 2002. A stunted cylinder of polypropylene, it can be rolled from one place to another on removable caterpillar tracks. An oar clipped to one side is an indication of the number of environments considered, since it can float, sit on the

ground or be buried. Three mooring points are included. There are only three intrusions into the main form – an entrance, an air inlet and a bilge pump. This last can also work as a vacuum cleaner or, with the addition of a hose, as a shower. A cylindrical storage box doubles, when empty, as a lavatory. And a layer of insulating foam on one side also provides a mattress.

Although a cleverly worked out idea, this Snail Shell makes the Microdwelling seem almost decadent in its home comforts. But by asking questions about how we live and what is necessary, N55 holds up a mirror to the consumerism and hidebound thinking that pollutes the relationship that most of us have with our homes.

Below: N55 envisages combining the Microdwellings to form a community.

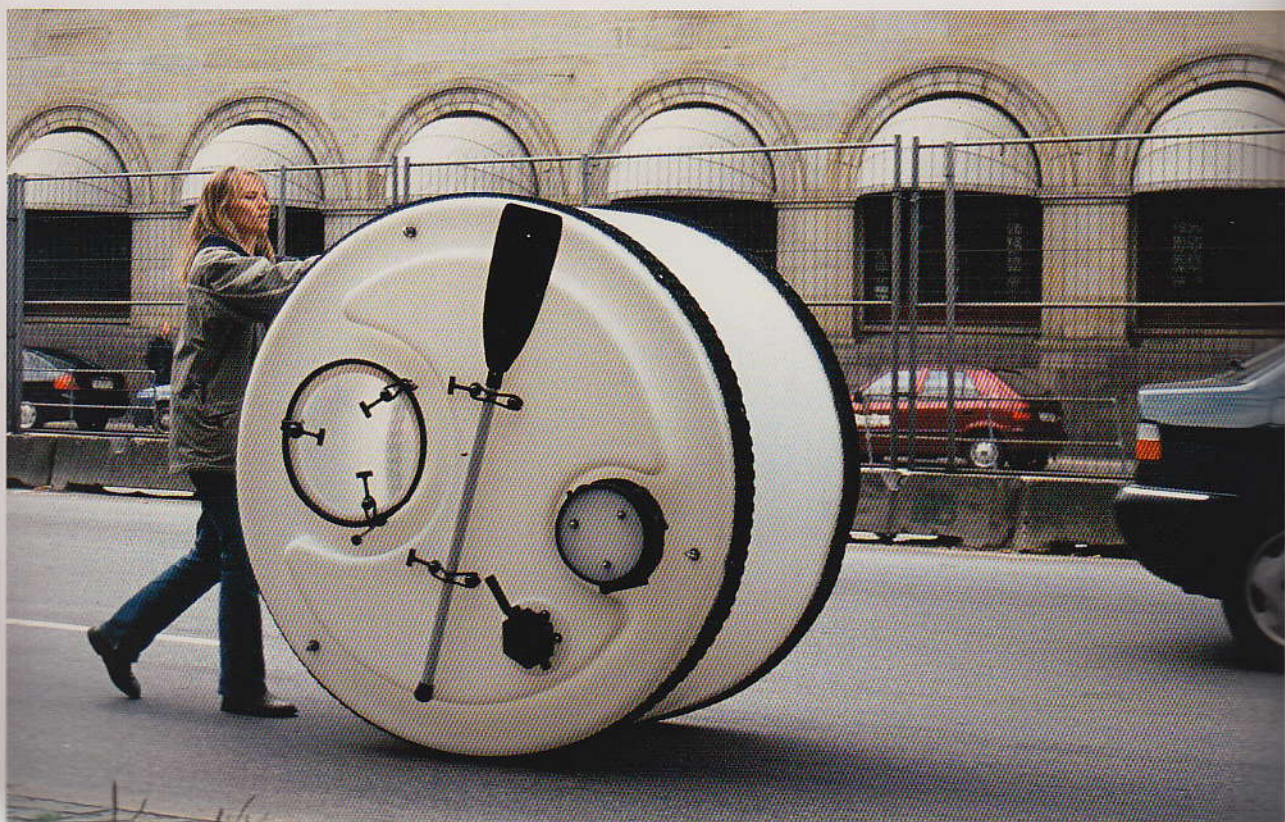
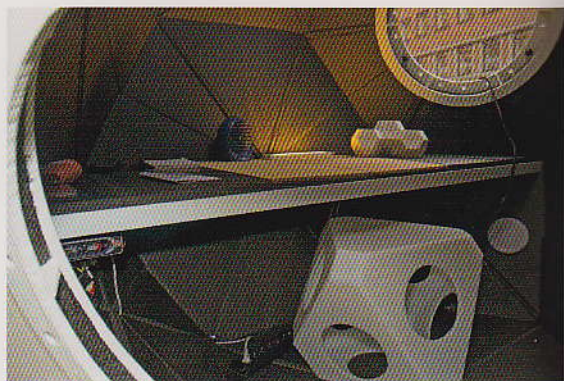


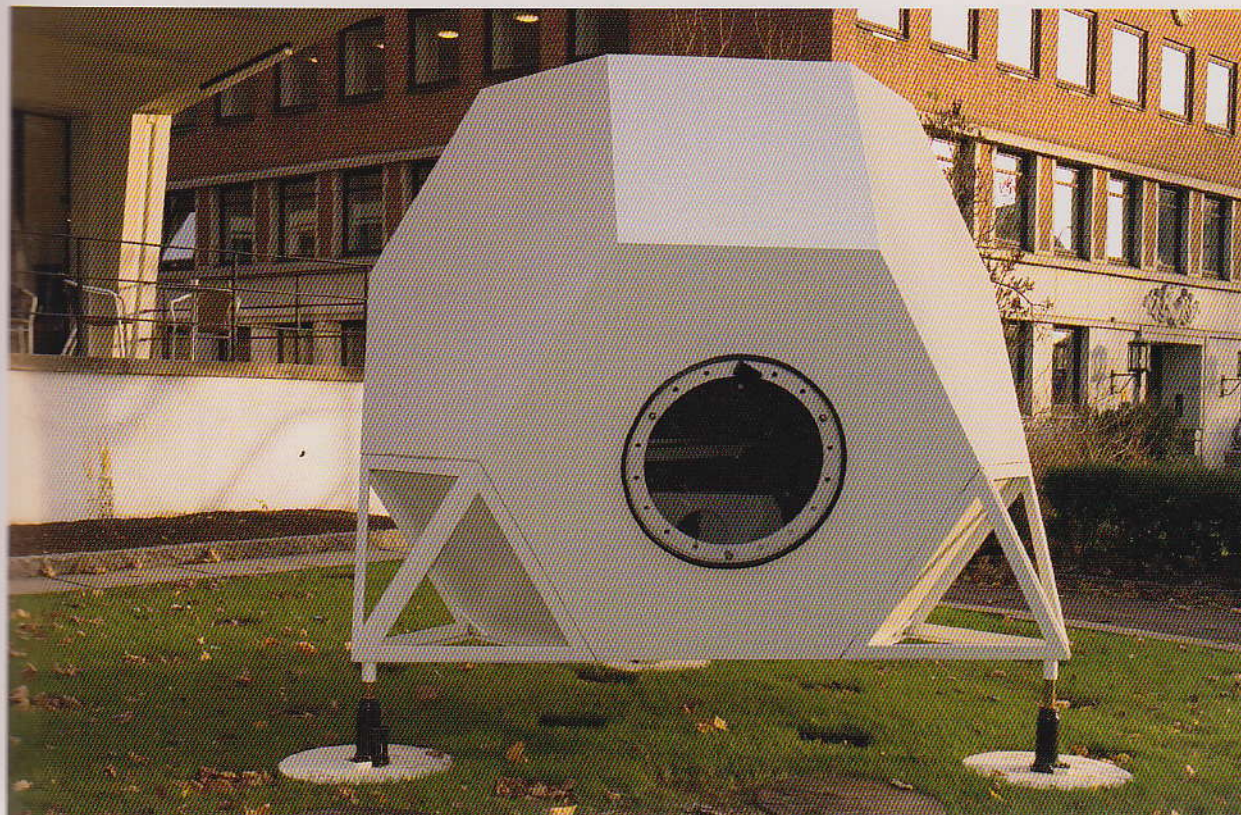
Bottom: Ingvil Aarbakke rolled the Snail Shell System through city streets to show how transportable basic accommodation could be.

Below: A stool and a shelf that can double as a bed make an individual Microdwelling almost habitable.

Opposite top: A skylight and a porthole bring light into the Microdwelling.

Opposite bottom: Standing alone, a single Microdwelling has a presence that is greater than its size.





EXTRA SPACE



Left: George Bernard Shaw's revolving writing hut, Shaw's Corner, Ayot St Lawrence, UK. Built on castors, it could be rotated to follow the sun.

It is a given that however large your house or office is, you could always do with a little extra space, just one more room that would make all the difference. Many architects start their careers by addressing this need, by designing extensions that are either in keeping with the original building or form a deliberate contrast to it.

Extensions, though, are not 'microarchitecture' since they are not stand-alone structures. But take them away from the house and they become different beasts – independent and often more specialized, since one is more likely to make the effort to reach them for a specific purpose.

Below left: Balloon for Two, Vienna, Austria, Haus-Rucker-Co, 1967. The suspended ball allowed the architects to sit 'outside' their office.

The most common use for an additional room is as a summerhouse, a place for relaxation and contemplation, although in the most generous examples these may also be used by guests for sleeping. And, with the growth of people working at home, often the shed or the summer room is converted to a home office. There are numerous companies offering off-the-peg home offices, some of them pleasingly contemporary in design. But even this is not an original idea. The British writer George Bernard Shaw, for example, wrote in a converted summerhouse in his garden at Ayot St Lawrence, Hertfordshire, England, through the first half of the twentieth

Below right: Yellow Heart, also by Haus-Rucker-Co, comprised a pulsating bubble inside an inflated capsule.

century. Built with castors that fitted onto a circular track, it could rotate to face the sun.

There are other strands of more fanciful thinking, often seen today in conceptual ideas coming out of art colleges, architectural students' work or thought up by young practices. Again these have precedents in, for example, the work of Haus-Rucker-Co, founded in Vienna in 1967. In an era when space travel and technology were as exciting as newly discovered mind-expanding drugs, this practice, set up by Laurids Ortner, Günter Zamp Kelp and Klaus Pinter, came up with ideas such as the Balloon for Two. Suspended

outside the architect's office, this allowed them to sit outside and enjoy the experience.

Another Haus-Rucker-Co project, and one that was entirely independent of a building, was the Yellow Heart, which consisted of a pulsating bubble inside an inflatable capsule. In this two people could relax in a bed while enjoying the inflation/deflation of the air that was pumped in sequence into the chamber. Now people seek that kind of other-worldly experience are more likely to choose tree houses as the delightful Free Spheres designed by Chudleigh (see page 172). Similar in feeling are



Below left: O2 Sustainability Tree House, Dustin Feider. The designer sees his lightweight tree houses as places to contemplate nature.

Below right: Bloomframe, Hofman Dujardin Architecten. The concept allows those without outdoor spaces to suspend a fold-out balcony from their window.

Sustainability Tree Houses, designed by Dustin Feider. Based on Buckminster Fuller domes, these are lightweight structures, slung between trees.

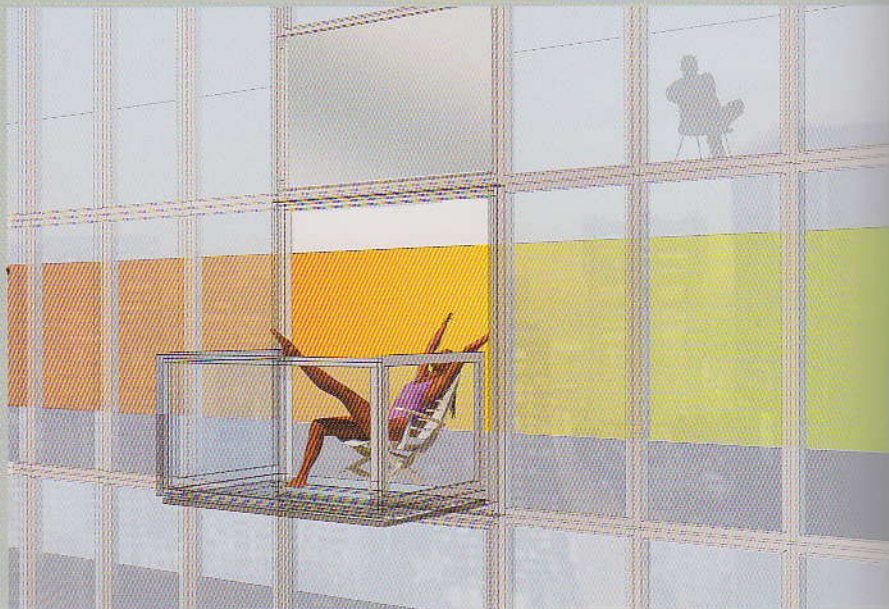
While Minneapolis-based Feider sees his tree houses as places for contemplation, Australian architect Andrew Maynard has a more serious purpose with his proposal for a Global Rescue Station Generation 2. This is to help with the campaign to prevent clear felling of the previously untouched Styx

Valley Forest in western Tasmania. Protesters have already created Generation 1 by putting a structure into one of the oldest trees. Maynard's proposal is for a little wooden building that would be attached not to one but to three trees by metal collars. Tall and narrow, it would consist of two rooms stacked above each other, the lower containing an office and lavatory, and the upper for sleeping in.

Building extra space in the garden or even the nearby

woods is a great idea as long as you have either ownership or access, but if you are stuck in an apartment you may still feel the need for more room without having the land to build on. Don't despair – ingenious proposals exist even for these conditions. One is from Dutch practice Hofman Dujardin Architecten, which has come up with a concept called Bloomframe. Intended for people without balconies, it aims to offer them some outdoor space with a kind of pivoting

window frame that folds out to create a balcony and then can be stowed away again. This will not be for sufferers from vertigo, as it has a glass floor; but it does not require as much courage as a proposal from Berlin-based company Realities: United. This is a pivoting seat that swings out to allow you to be suspended above the city, enjoying fresh air and even the view, if you have the courage to look. Because it is mounted internally and only swings out on a temporary basis, it would, says the



Below left: Hotel Everland, Switzerland, Sabina Lang and Daniel Baumann, 2002. The portable hotel suite can be craned into any desired location, including rooftops.



company, not be subject to any planning constraints. One can, however, foresee other objections.

If you have no ground, and are not brave enough to hang out of the window, another place to put a new structure is on the roof. There are structures such as Werner Aisslinger's Loftcube, a complete apartment that can be craned onto a roof, or more conceptual work such as ex.studio's Point of View lookout in Tuscany (see page 208).

Below right: The sleek interior of an Everland suite.



Somewhere between the two is Everland, a project by Swiss artists Sabina Lang and Daniel Baumann, which is a single portable hotel suite in a bright green-and-white enclosure. Making its debut at Yverdon on Lake Neuchâtel as part of the Swiss Expo in 2002, it later spent 15 months from the middle of 2006 on the roof of the Museum of Modern Art in Leipzig, Germany, before moving on to Paris and then Tokyo.

SUMMERHOUSE

Using mirrors to create an illusion of space is an old trick but one that is repeated frequently because it is so successful. It works inside buildings and also in gardens, sometimes as a way of brightening a dark corner, and sometimes to enlarge the dimensions.

Young architects Sylvia Ullmayer and David Sylvester have taken this concept further with their garden pavilion in north London by putting a mirrored finish on one wall. This works because the illusion is not dependent on deception. One knows exactly what is being done, and yet the eye is still fooled. By doing this, their pavilion does not reduce the garden but seems, from vital angles, actually to make it bigger.

Putting extra space into a garden is also a cliché but it is one that has been addressed here with intelligence, thanks to clients who are as design-aware and precise as the architects. David and Sybil Caines were living in a three-bedroom flat that

they loved, with two sons aged six and ten. They didn't want to move, but they badly needed more space, and they saw building in the garden, which is 61 metres (200 feet) long, as a way of achieving that. David Caines is a graphic designer, and had a sense of what he wanted to achieve although, as Ullmayer said, 'he didn't know anything about materials'. He knew that he loved the simplicity of the Eames houses in California, and also that he wanted the extra space to provide a place where he could paint, family and entertaining space, including somewhere to play table tennis, and a tool shed for his wife's gardening implements.

The architects started with the idea of a simple box shape, but responded to the clients' requirements, the shape of the garden and existing plants by kinking it. This bend in the horizontal plane is echoed in the vertical plane, by a butterfly roof of polycarbonate that drains to the centre.

Although supported on a steel structure on concrete pad foundations, the building's principal material is plywood. The walls were constructed so beautifully that the architects decided to plane them off and leave them exposed, the internal ribs providing a rectilinear structure that can act as shallow shelves. Along with the knots in the timber, and the ends of the screw holes, they add a level of visual interest.

The mirror finish on the 8-metre-long (26-foot-long) side wall is a deliberate contrast to these natural materials, but by the very artificiality of its reflectiveness, adds to the feeling of being in the middle of nature, or at least the artificial and splendid interpretation of nature that is an urban garden. Architectural critic Jay Meyrick has written that the summerhouse, 'shimmers playfully in the mind's eye like a cold, crisply cleansing slab of architectural sorbet'. It is certainly a refreshing alternative to the pastiche conservatory or the forbidding garden shed.



Below: The mirrored wall, kinked in the centre, seems to add to the size of the garden and the luxuriance of the planting.

Opposite top: Section through the summerhouse, which sits on simple concrete pad foundations.

Opposite centre: Site plan, showing the direct axis from the house to the pavilion at the end of the garden (right).

Opposite bottom: The polycarbonate roof brings more light into the summerhouse, which has plywood exposed on the inside.



