



Exbury Egg

Nearly stepping on a bird's nest wouldn't inspire most of us to build an egg-shaped structure. But then, not all of us are like artist Stephen Turner, who specialises in artistic explorations of environmental settings. This interest means he spends long periods of time in odd, abandoned places, noting changes in the complex relationship between human-made and natural environments.

Why an egg?

Turner's bird's nest experience led to a theoretical project instigated by arts charity Space Placemaking and Urban Design Group (SPUD), which encouraged a collaborative process between artists, architects and engineers to design a temporary workspace within the New Forest National Park.

The egg concept, symbolising fragility and the cycle of life, fired the imagination of many. Following an exhibition where Turner had collaborated with architect PAD Studio to design and develop the idea, SPUD were keen to translate the paper project into an actual building.

'The plan was for Stephen [Turner] to live in the egg for 365 days, as he wanted to experience all four seasons,' says Wendy Perring, Managing Director at PAD Studio. 'We worked closely with Stephen to define what he would need as a home and studio.'

Turner was very interested in the effects of climate change on the New Forest and the nearby Lymington Salt Marshes in Hampshire. To help record and observe these changes, the Exbury Egg, so called due to its location near



Wendy Perring
PAD Studio, next to the Egg



Figure 1.4 (opposite)
The Exbury Egg, Hampshire

Photograph
 Nigel Rigden

Figure 1.5 (left)
The bow is an adaptable space for working, living and sleeping

Photograph
 Nigel Rigden



Exbury Gardens, would become a 'residency', tethered on a private mooring and floating in the Beaulieu River.

Turner's home for a year housed a bed, desk, small marine paraffin stove for cooking, charcoal burning stove for heating and wet room, which allowed Turner to exist in a basic fashion and create his art works.

Using boatbuilding techniques

PAD Studio's brief was highly unusual: to create an off-the-grid, minimal impact live/work structure that used materials with low embodied energy. Timber, an inherently sustainable material, was an obvious choice to build it with.

'Timber also has great flexibility and we knew we could bend it into shape and its low carbon footprint fitted with our ethos,' says Perring. 'We also wanted the skin of the Egg to erode over time and to be a visual record of the power of nature and how this process of decay and destruction is happening around us.'

The Exbury Egg's location also inspired the use of centuries old boatbuilding techniques. The Beaulieu River has a rich tradition in this craft, with many war ships, some used in the Battle of Trafalgar, made in the area using Douglas fir from the New Forest.

Local boatbuilder Paul Baker rose to the challenge of making the Exbury Egg. Baker created a cold-moulded plywood ribbed sheathed frame with Douglas fir stringers notched into it. Two semi-monocoque halves were created forming a 6m-long and 3.7m-diameter shape and were then jointed.

Just like shipbuilding technology, the ribbed frame was clad in two layers of reclaimed timber planking, which came from various sources including an old shed. The outer skin is formed from raw and uniform western red cedar. It was important that the cedar was new and unpreserved as Turner wanted to record the effects of the weather, allowing the timber to degrade naturally. When immersed in water the timber slowly expands to fill any gaps ensuring water tightness.

During the design process, a layer of clear epoxy resin was introduced below the water line to ensure the timber skin was not compromised during its year in the river. Meanwhile, above the water line the structure relied on traditional boatbuilding methods, and the outer skin became a visual record of the year spent in its watery location.

'The timber performed much better than we expected,' says Perring. 'The south-westerly side of the egg was more worn and battered, and the timber lightened more quickly than the northern side because of the prevailing winds and driving rain.'

Controlling buoyancy

As the Egg's development progressed, the project team managed to resolve many of the key technical issues. But Perring says they then encountered

a major hurdle. The team needed critical buoyancy calculations properly checked by a professional.

'This was a very challenging aspect of the project,' says Perring. 'The problem was never going to be the Egg sinking, it was getting the Egg to sink enough. Boats inherently have a buoyancy because of their curved shape and if the Egg had no buoyancy it would spin off down the river with the artist inside.'

The project team had to devise a way of controlling the ballast and buoyancy, and this is when world-renowned naval architect Stephen Payne became involved. Payne's specialist advice and knowledge meant that a different strategy was adopted. He suggested that two fin keels (two vertical pieces of timber fixed to the boat's underside) should be introduced, and provided detailed advice on such aspects as the keels length, weight and position. He also carried out essential buoyancy and weight calculations.

'I don't think we could have made the Egg a reality without Stephen [Payne] and the generosity he showed to the project,' says Perring. 'It was a very successful three-way dialogue between the boat builder, the architect and the naval architect. SPUD did so well getting a team of people to work collaboratively, which was really necessary to make a project like this happen on such a small budget.'

Reflections

The Exbury Egg is currently 'resting' on land in Exbury Gardens and didn't 'crack' during its year in the water. According to Perring, the Egg experienced some extreme weather conditions and performed well, largely due to its aerodynamic, natural form.

Reflecting on the project, Perring says there were several lessons learnt. The Egg taught the whole team about the flexibility inherent in timber. Perring doesn't believe that the Egg could have been built in any other material on such a restricted budget. Alongside the construction of the Egg, a community engagement programme was instigated involving local schoolchildren.

'When I spoke to the kids about the project,' says Perring, 'I told them that sometimes you can have these mad ideas and you can miss them too easily because they are deemed to be too crazy, too impractical and too expensive, but if you have a team of very dedicated people, then anything can happen. So the other lesson that the Egg taught me, is the art of perseverance and not giving up.'

Project team

Client
SPUD Group

Architect
PAD Studio

Naval Engineer
Stephen Payne

Main contractor
Beau Wood Structures

Project summary

- Giant timber pod floating on the Beaulieu River
- A temporary working and living space
- LEAF Award for 'Best Sustainable Interior 2013'; shortlisted, Wood Awards 2013

Figure 1.6 (top)
Douglas fir stringers are fixed into notches cut in the frames

Photograph
PAD Studio

Figure 1.7 (middle)
The first layer of recycled red cedar strips is nailed onto the stringers

Photograph
PAD Studio

Figure 1.8 (bottom)
Two layers of cedar strips plus a fibreglass/epoxy interlayer ensure rigidity

Photograph
PAD Studio