

Rhizotron and Treetop Walkway, Royal Botanic Gardens, Kew

Exhibition description and goals

In 2007 Engineered Arts were commissioned to provide creative installations for the new Tree Top Walkway, Rhizotron passageway and Plaza at the Royal Botanic Gardens, Kew, London.

When I first started thinking about this exciting project...doodling on the back of envelopes and thinking about trees, I came up with the idea of 'tree as service provider' as a way of delivering our message. Choosing bronze as the main material was a challenge, but it is a fantastic medium and has really worked well. At Engineered Arts we delight in working with artists and the creative team we used on this project really helped pull it all together.

Development process and challenges

Our design for the **Rhizotron passage** way features a bronze sculpture made of 567 cast parts weighing over 1.2 tonnes, an illuminated floor mosaic designed by artist Tracy Rasburn, with over 22,000 hand cut tiles and 40 wooden automata art works made by automatist, Matt Smith (mechanical stag beetles, centipedes and worms) created with timber from the gardens.

<http://www.engineeredarts.co.uk/news/news-mosaic.html>

There are also 8 video displays incorporated into the sculpture, which feature hand drawn animation created specifically for the installation.

The root sculpture in the **Rhizotron** fuses two aesthetics, natural and industrial. I wanted to create the feel of a boiler room made of tree roots. Imagine the pipe work that services a large hotel, providing creature comforts for the guests, when we start to think about trees in the same way, we understand that they are the services providers for our planet, creating oxygen and controlling our climate, they make our planet habitable.

The design for the **Tree Top Walkway** presented a particularly difficult challenge, 18 metres high and exposed to the extremes of weather. We needed something that would age well, again bronze seemed the natural material to choose. We have created 20 bas-relief bronze plaques on a tree-centric theme, the bronzes are very tactile with contrasting textures and raised lettering, they are a joy to touch. Over one million people visit the gardens every year, we anticipate that the bronzes will become polished in places by the passing of many hands, this will only add to their beauty.

For me, one of the most exciting things about this project was the way we were able to manipulate the imagery for the plaques at the design stage. We used a method where virtual three dimensional models of each design were created from hand drawn sketches, these could be manipulated and worked with virtual sculpting tools, allowing for total freedom of creativity, and avoiding costly mistakes.

The resulting virtual models were then cut from urethane blocks using Engineered Arts' especially adapted 3D router, (this piece of equipment really pays for itself!!) the patterns for casting were then finished by skilled hands wielding chisels and knives.

On return from the foundry the bronze parts were refinished by hand (this was quite labour intensive, but the results were great), and a patina was applied which essentially accelerates the natural ageing process of the metal producing the characteristic green Verdigris often found on ancient bronzes.

Finally we continue the concept of 'tree as service provider' into the **Plaza** area, here the mechanical tree form is reminiscent of electricity pylons or mobile telephone masts, a strange irony to create a tree that resembles these icons of modern infrastructure, when mobile masts are being designed to resemble trees.

The Plaza Tree also features audio and animated elements, to create the audio montage Engineered Arts posed a few simple questions and recorded the replies, 'What can I do with a tree?', 'What does a tree do for me?'.
me?'

Lessons learned, mistakes we made (and what we did about it)

Solve the difficult technical issues first – make practical test pieces and use those to calculate the time it will take to complete the project. Converting highly detailed 3D models with Gigabyte file sizes to real objects was a particular challenge we investigated several techniques including stereo lithography and other rapid prototyping techniques.

There was a huge variation in quality and cost that was dependant on making the right technical choices.

The hardest thing to do is work within your budget, when you have an exciting design it's easy to be overly optimistic about what you can achieve.

The price of raw materials – especially the bronze rose sharply during the project and the foundry costs are an expense that happens near the end of the project cycle.

Lesson learned? - be flexible and have a realistic contingency budget set aside.

Keep working with artists - I am thrilled by the strong imagery created by this installation which can be shared on the internet and enjoyed by visitors who don't get to go to the real thing.

Testing, testing and more testing..

Don't put a switch inside the cupboard that turns all the computers off

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