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Gilles Ebersolt

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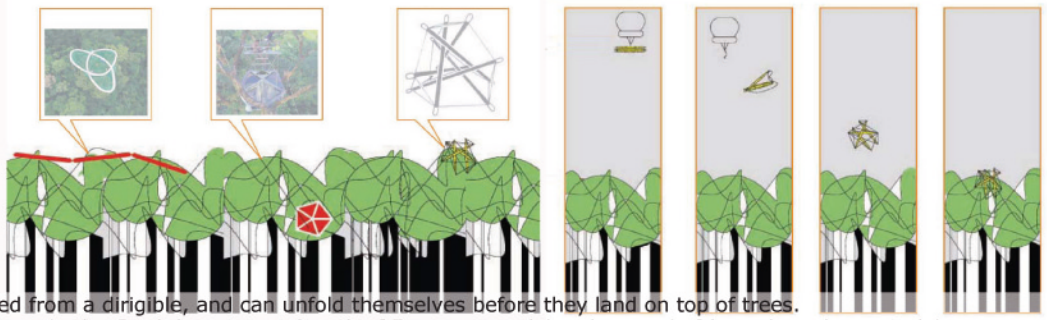
Conception and building: Gilles Ebersolt, Jean-Baptiste Bernet, Perrine Vial, Mathilde Chevalier.

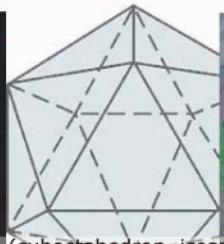
Treetops Anchor.

Principle



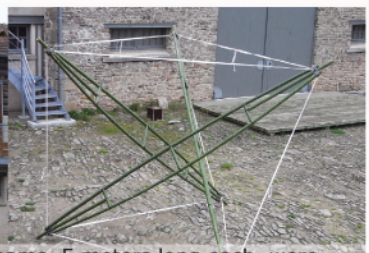
The "Treetops Rafts" series has been designed and built by Gilles Ebersolt during 80's and 90's, in order to provide temporary observation platforms for scientific teams. It offered a pioneer obsevation technique, for several scientific expedtions, each one dedicated to wildlife and flora observations, on top of tropical forests. Treetops Rafts are lightweight structures, of various sizes and shapes. They are dropped from a dirigible, and can unfold themselves before they land on top of trees.
In a partnership with la Bambouseraie d'Anduze, in the Gard department (south of France, www.labambouseraie.fr), we have been studying a new prototype: the Treetops Anchor, using floating compression (tensegrity) structure, the main characteristics of which are lightweight and foldability.

Geometry and design



We studied at first different tensegrity geometries (cuboctahedron, icosahedron), that focussed our attention, finally choosing the icosahedra, the symmetry of which best fitted with a folding constraint. Then, with bamboos supplied by the Bambouseraie d'Anduze, we have been able to build a tensegrity icosahedron, at the scale of 1/2, with 2,5 to 5 meters long bamboo rods, and we finally achieved a 3D computer drawing of our project

Experimentation



Compression bars were then built at a scale of 1/1, during a workshop stage, where bi-dimensional bamboo beams, 5 meters long each, were profiled. This step allowed us to test structural behaviour (with resin reinforcing at the end of bars, and metallic assemblies for cable links). A tensegrity tripod could then be erected, (with nylon tape for industrial packaging as tension elements), its resistance was tested for a few days outdoor.

Rising up, furnishing and positionnig of the structure.

Last step of the project led us to create an easily foldable system, using its symmetrical and regular shape.It was then suspended in mid-air, in order to have it shown in a public exhibition in a position close from its real use .
Its enveloppe (fabric roofing, net on the bottom), and inside fittings (hammocks, shelves, water drain), have been set up after unfolding it and before lifting up the structure. Treetop Anchor has been exhibited during year 2008 opening season at the Bambouseraie, and shall remain for the 2009 season.