



## **Analysis and geometry in Textile Architecture**

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### **ABSTRACT**

Textile Architecture can be defined as the one made of textiles. In this sense it can be considered as a very old type of architecture, since textiles and leathers have been used by nomadic tribes since many centuries ago. However what we consider nowadays Tensile Architecture began about mid XX Century. Some pioneers, among them Frei Otto, started to demonstrate how technical knowledge together with empirical research could produce a new paradigm in Architectural Systems.

This new knowledge encompassed two different approaches, both necessary to produce this new type of buildings: Analysis and Geometry or vice versa.

Geometry was necessary in two aspects: form finding and patterning. Empirical research showed how forms could not be decided freely. Nature was the model to follow, and a new term was coined: “Form Finding”, which curiously was translated to Spanish as “Form Search”. Anyway during the decades to the end of the century, this search for forms was one of the main research topics about tensile structures. “Patterning” was the final link of the process. Once the form was found it was necessary to build it and geometry showed how patterning was completely necessary to produce these forms.

Analysis had to adapt to those new parameters: different loads, different deformations, and consequently different approaches. Computers just started to be used and non-linear analysis should be produced. This situation demanded to adapt new analysis approaches: matrix analysis, finite element analysis and dynamic relaxation.

All these knowledge should have been given in our Schools of Architecture. Were teachers and students prepared for it? It was a real challenge that was done in different ways in different cases.

