Part II

Structural Innovation
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Structural Innovations often occur at the intersection of several aspects of construction: technology, form, structure, materials, and forces. For example, Felix Candela associated a specific form (The Hypar which is a doubly ruled surface) with a specific technology (formwork constructed with straight boards) to design and construct innovative thin shell structures with an economy of means. On the other hand, Frei Otto associated a specific type of form (anticlastic doubly curved surfaces) with a specific method to find the equilibrium of forces (The Force Density Method) to generate innovative tensile structures. In contemporary practice, numerical parametric tools provide designers a deeper understanding of the interplay between all of these critical design issues and allow for rapid exploration and testing of a multidimensional design space. Modern design methods such as computational graphical static, grammar-based design, and construction aware design also provide insight to help the designer to explore complex design scenarios. These continuously evolving methods and computational tools are promising, and they provide a rich paradigm to facilitate structural innovation in the future.

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