FORM FINDING FOR AN ARCHITECTURE OF THE OBLIQUE

The proposal for the Daegu Gosan Public Library challenges the conventional understanding of the spatial and social experience of a public library as a series of discrete reading rooms with defined thresholds and cluttered stacks. We propose an intelligent, open, and integrated library experience, which supersedes the media storage methods of the past and changes the library space into a hybrid environment through ubiquitous information resources, integrated furnishings and active communal social spaces. The architecture is designed to enable and embody the spirit of open-source exchange and collective knowledge through free-form geometries, open plans and integrated amenities. We have minimized the thresholds between spaces, floors, and functions to consider the library as an active, continuous, and fluid field of social, cultural, and intellectual discourse.
Conceptually and literally, the ground field of the site swells, peels, and multiplies vertically as a continuation of the adjacent park and urban fabric. This constant sectional change is articulated as a smooth vertical gradient which merges floors, ramps, stairs, terraces and furnishings into an inhabitable and ergonomic landscape culminating in an open-air roof-scape lounge and terrace overlooking the city of Daegu. The boundaries between floors are blurred, as the continuously walkable surface, which unifies the many spaces of the library, facilitates circulatory, physical and visual connections both internally within the network of spaces and externally with the surrounding context.

The building is materialized as an in-situ reinforced concrete structure, which, like all other aspects, has been designed to be fully integrated with the geometry of the library. The central core of the building provides its primary structural point of reference connecting vertically through the entire structure. The free-form geometry that defines the walkable surfaces and unifies the building cantilevers out from this central core and is supported by its internal interconnections (ramps), perimeter interconnections (columns) and the lifted ground plane (foundation). The geometric logic of the form has been developed through a computational method known as “dynamic mesh relaxation” which relaxes planar mesh networks to “form-find” a continuously minimal surface. As developed in the 1950’s and 60’s through the seminal work of Frei Otto, minimal surfaces articulate the natural force paths of structural loads thus providing the optimal shape for maximum structural performance with minimal material. The shape of the surface thus allows for relatively thin structure, which in our case is materialized as cast-in-place high performance reinforced concrete. This concrete would be cast on CNC-milled EPS foam formwork, coated with polyurethane. The geometry of the building has been rationalized so that each piece of formwork could be reused at least four times in order to maximize the efficiency and economy of the process.
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ALVIN HUANG, AIA is the Founder and Design Principal of Synthesis Design + Architecture and a Tenure-track Professor at the USC School of Architecture in Los Angeles. He is an award-winning architect, designer, and educator specializing in the integrated application of material performance, emergent design technologies and digital fabrication in contemporary architectural practice. This exploration of “digital craft” is identified as the territory where the exchange between the technology of the digitally conceived and the artisanry of the handmade is explored. His wide ranging international experience includes significant projects of all scales ranging from hi-rise towers and mixed-use developments to bespoke furnishings.