

Annie Locke

Concrete Form[ing]work

Traditionally in the realm of computational design and digital fabrication, the final form is envisioned and then a material is chosen to best suit its construction needs. Concrete has been used for centuries in traditional construction projects, often with laborious and costly formwork. Most construction techniques aim at constraining the material's inherent qualities, doing their best to minimize the hydrostatic forces and slumping of concrete.

But what if these materials were not avoided, and instead used as a design driver? Concrete Form[ing]work takes advantage of the rheology and unpredictability of concrete, in conjunction with flexible and adaptive formwork to create a new method of construction - where materiality propels the final form. This consequently re-envision the traditional concrete casting process, rethinking working with concrete as a process, rather than simply a material.

Concrete Form[ing]work explores the integration of smocking and cast concrete to investigate novel techniques for creating architectural elements. While traditional formwork for custom or sinuous concrete structures is often costly or impossible to fabricate, this research looks at numerous techniques to custom-tailor fabric for casting. These include traditional hand smocking as well as more recent research into custom knit structures that can react and transform in response to heat, water, or electrical currents.

The integration of such methods advances new possibilities of design research and fabrication techniques in regard to what can be achieved with state-of-the-art fabric formwork. It also speculates on additional research that could introduce robotics and sensors to further explore issues of repeatability, scale, and economy.