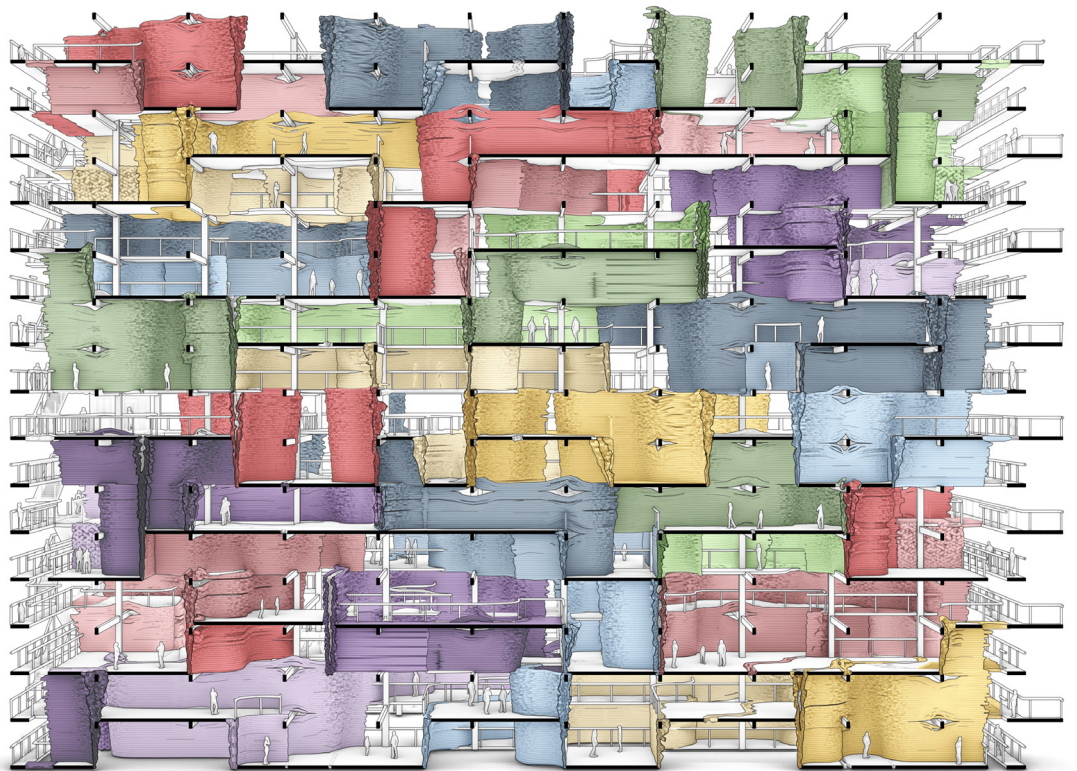


MATTHEW TANG

JITTER

The Humanization of Digital Manufacturing



The digital age is currently evolving to a point where fabrication is making a seamless leap from digital data to physical objects, made possible through applications such as additive manufacturing and autonomous robots. In this beta period of Industry 4.0 where efficiency and low cost is prioritised, it may be easy to lose sight and relevance of the individual and the biology, which is perhaps not represented in the final manufactured object.

This thesis explores the convergence between human and machine through a series of experiments, with the intent to increase autonomous customisability within the process of digital manufacturing. By digitally simulating the imperfection and randomness inherent in the hand-crafted object, the 3D printer is able to fabricate unique objects, employing the computer as a predictive tool that imitates handcraft. Exploiting this method enables new design possibilities where architectural elements reveal themselves through the process of manufacturing.

The explored method is applied in the context of mass production, where pre-cast fabrication techniques currently used in

public housing, particularly in Singapore, imposes monotony and anonymity in the living typology. In developing the method and exploring possible design components, a catalogue of spaces is formed resulting in a strategy that reinterprets the backyard into high-rise structures.

This thesis therefore responds to evolving manufacturing technologies by proposing a new method involving digital manufacturing while offering customised elements in place of pre-cast fabrication.

Key words: 3D printing, customization, mass production, digital manufacturing

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