Well Calculated Serendipity: A Techno-Ceramist's Adventures in Mathematics

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While art is not expected to be logical, many artist and designers start out with a set of simple rules and limitations only to find more freedom for improvisation through multiple iterations and more creativity through constraints. We can see this instinct in the work of contemporary conceptual artists, like Sol leWitt, but also in traditional patterns developed across ages and cultures by weavers, basket makers, beaders and other craft practitioners. The ceramic 3D printer is a novel tool in sculptural additive processes, opening up new ways for the artist to devise, react to or interact with the process. A clay printer is an extruder that holds a certain volume of soft clay paste under pressure, building the object layer by layer. The form it makes is dependent on the interplay between the mathematics of the code and the physics of clay. Through examples of using tilings, cellular automata and sandpile models, reinterpreting periodic surfaces and utilizing of sound data to drive the printer, the talk will give an overview of the joys and pains of collaboration between math and art. The ceramic process leads to tactile and tangible objects with a spatial presence, which relates abstract systems back to the body and the human experience of touch. Clay has a very strong physical nature that responds to gravity, time and many other factors that are often too numerous and unpredictable to account for. The ceramic process is highly susceptible to chance and serendipity, the role of which in all creative practices is the ultimate focus of this talk.