PUFF’D prototype explores plasticity of composite construction and the role of the seam and joint in architecture. Inspired by Japanese joinery, puffy jackets and jet fighter airplanes, PUFF’D proposes a novel construction technique for full scale architecture. Instead of following parametric paneling and module-based logics, PUFF’D employs large monolithic building components or “mega panels” suggesting new ways of full scale assembly on site. The project follows up on our previous explorations with mega-panels, joinery and robotic assembly. The previous prototype used the language of stitching and wood joinery to study how composite mega-panels may come together as assembly. The current proposal scales up and develops an inflatable composite sandwich technique to minimize waste and explore new formal and structural possibilities. Instead of milling a foam block and laying up fiberglass, we propose sewing two sheets of uncured “pre-preg” fiberglass and injecting spray foam inside. The form of the prototype is a folded envelope with hyperbolic surfaces. Structural analysis was run on the form and stress gradients were identified. That information was then used as a template to parametrically develop structural reinforcement in the surface. The thickening of the surface took place by inflating the regions that needed more resistance to stresses. Inflation produced interesting effects, beginning to resemble a puffy jacket or lush baroque furniture. Where there was little stress in the shell, no foam is needed and the surface becomes very thin and transparent, producing effect of multi-materiality. The interior of the shell became highly articulated and the exterior remained smooth and simple. Seams and joints were then introduced to break up the shell with a real/fake joint language. While the puffy interior expressed only the real assembly joints, the smooth exterior surface began to have fake seams running off and around the real seams to give articulation to the exterior.

IMAGE CREDITS
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BRENNEN HULLER is an M.Arch graduate and recipient of the AIA School Medal and the Certificate of Merit from (USF) The University of South Florida. During his studies he relocated to China partnering with Moving Cities and Tongji University developing urban design initiatives in Dujianyngan, Beijing, and Shanghai. In agreement with urban design inventiveness, Brennen is the co-founder of The Urban Conga which focuses on activating public space through interactive installations and has since won “The Deconstruction” international design competition. Currently, he is pursuing a post professional (MDes.R) Master’s in design research at (SCI-Arc) The Southern California Institute of Architecture’s (EST|m) Emerging Systems and Technological Media program.

NELS LONG had the opportunity during his undergraduate studies to interact with many different cultures and methodologies through an exchange program in Izmir, Turkey, an internship with the Center for Maximum Potential Buildings Systems, and the Austin chapter of Architects Without Borders, among others. These experiences come together in his work through a passion for the use of games and play as creative tools. Extreme low-tech and the cutting-edge juxtapose in the development of his method. This results in virtual reality software alongside trading card suites with the intent to stimulate communities towards positive change while simultaneously mitigating psychological strain. The potential of his work has been recognized through lectures given at the Technical University of Berlin and the Architectural Association’s visiting school hosted by Art Academy University in 2014.