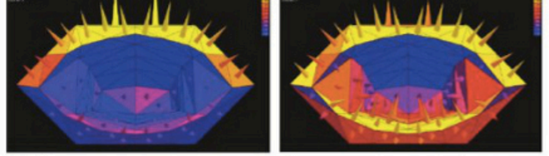

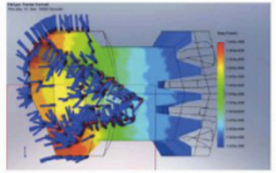

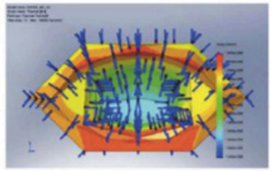

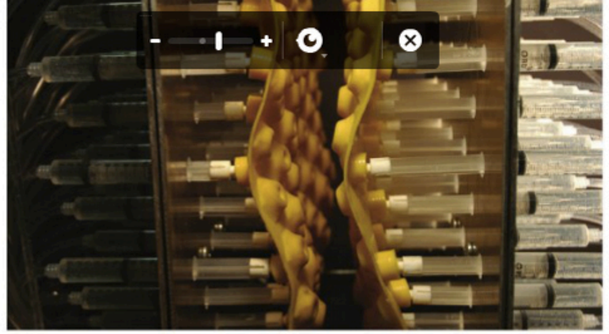

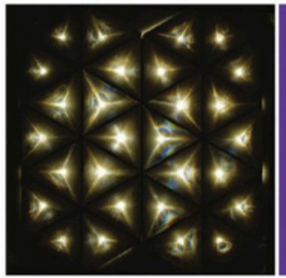

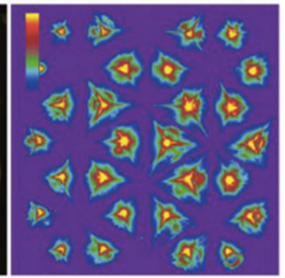

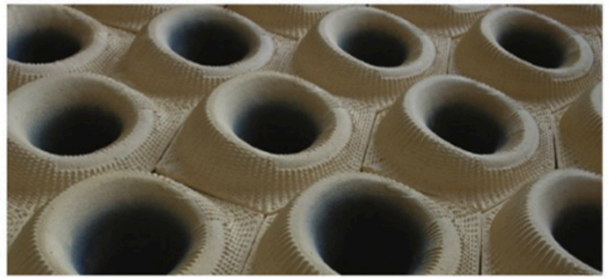

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ACSA Creative Achievement

Thompson describes the form of an organism as the result of intrinsic and extrinsic forces – a plastic, regenerative and evolutionary medium that is in continual transaction between genetic coding and environmental conditions. Orthopedic researcher, theorist, and surgeon, Harold Frost, observed that adaptive bone generation, known as remodeling, does not occur according to static loading; this process requires flexural loading as the result of dynamic bio-mechanical forces. Following years of observed data from empiric experimentation he described the process of remodeling in which force induced mechanical signaling is the stimulus that triggers biological response. Thompson, looking through the lens of evolutionary biology, and Frost, looking at biomechanical forces at the cellular level, fused observation, instrumentation, and mathematical modeling to develop theories for biotic systems that form the modern foundation for the next generation of performance based morphologies for the built environment.

Seeking to engage the built environment in similar bio-mechanical transactions, the Emerging Material Technologies (EMT) Program views the intrinsic and extrinsic forces on and in materials and processes as fluid and dynamic, able to fluctuate freely with advances in the imagination producing an alliance of physical and intellectual dexterity.

The pedagogical process and resultant work produced at the EMT program had purpose to establish a dual protocol of precise observation and imaginative experimentation, where material becomes plastic in the laboratory, and thus available to the free and ordered play of invention, where a conservation of force as well as a conservation of material is realized, obtaining a true economy of production – a transaction that is conceptual, ethical, aesthetical and effective.

[1] Thompson, D.W., On Growth and Form. 1992 Dover reprint of 1942 2nd ed. (1st ed., 1917).
[2] Frost M.D., H. M, Bone Remodelling Dynamics. The Henry Ford Hospital surgical monographs, Thomas (Springfield, Ill.), 1963, pg. 66

Students & Additional Recognitions: Matt Gindlesparger, Eddie Hall, Wayne Jenski, Jed Laver, Matan Mayer, Robert Leyan, Brent VanderWerf & Kelly Winn

Juror Comments: This submission situates emergent materials analysis, testing, and building integration within the realm of creative design thinking. Within this context, faculty and students elevate performance based-design as a sustainable vocabulary, not only as a formal ordering system that demonstrates applied materiality, but also, how those flows could ultimately become integrated products with embedded material intelligence. The range of scales from simulation to fabrication is particularly noteworthy when viewed through the lens of creative innovation and invention.