BRANDON CLIFFORD

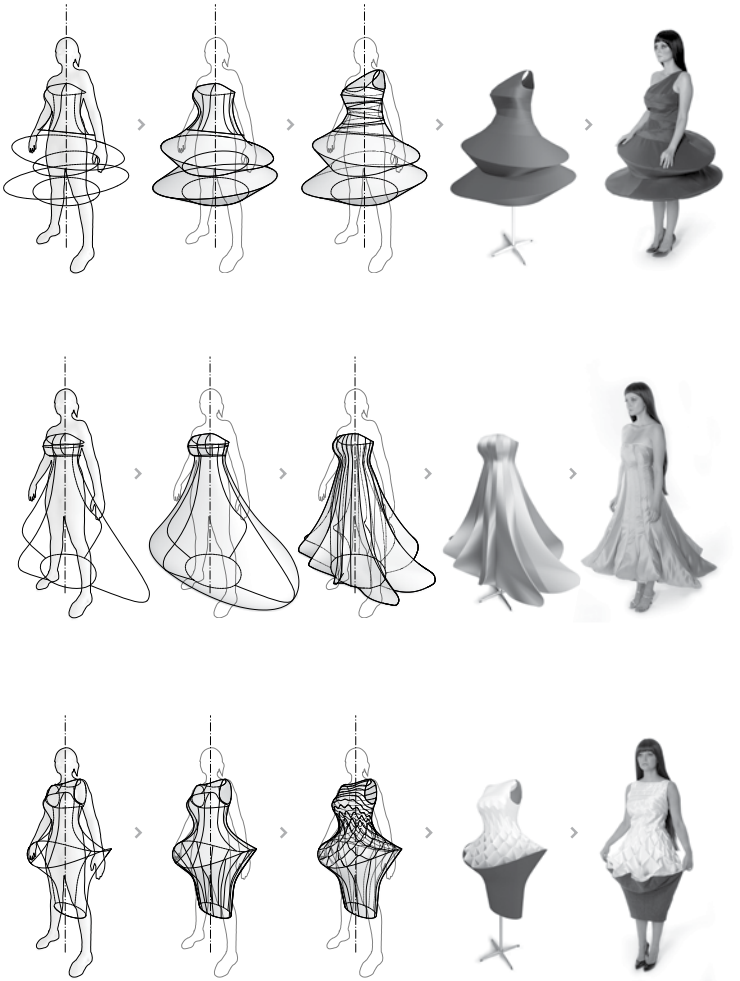
DRAWN DRESS

A DIGITAL PROCESS

Today, the architect dreams of efficient transformations, parametric constraints, and developable surfaces, borrowing, oftentimes recklessly, sartorial techniques and language from the fashion industry - darting, draping, patterning. Why then do architect's contemporaries in fashion design still surround themselves with dress forms and work tables? There is a clear disconnect between the methods of working and the moments of progress within the respective fields. The fashion industry is still split between made to measure couture, and the prêt-a porter *S-M-L-XL* and numerically coded standardized sizes. This architectural reference is ironically better suited for the mass customization boom. Susan Ashdown's research at Cornel University into 3-D body scanning has demonstrated that our conventional understanding of standard sizing for garments is antiquated. When viewed in comparison, the architecture field and the fashion industry have become uniquely successful at processes the alternate field struggles to get right. This potential synergy is seemingly apparent and useful; however, little interaction occurs at the pedagogical level beyond superficial discussions and conceptual leaps. As Architects take this opportunity to reflect on how the digital process has affected their practice, we have the opportunity to engage a similar process that has yet to take the digital leap.

PHASE ONE

Charged with the task of designing, developing, and constructing a digitally drawn dress, this comparative process serves as a catalyst to rarify architectures contribution in the digital era. By selecting the "strapless dress" typology we are able to engage two opposing forces at once: fit and volume. A set of five measurements are first drawn from the client and translated into digital curves. These curves generate the surface of the body, defining the irreducible measurements required for the dress to function. While these steps could be considered automated with a digital body scanner, the act of taking key measurements, either from a digital scan or a physical person, has proved to be an important engagement



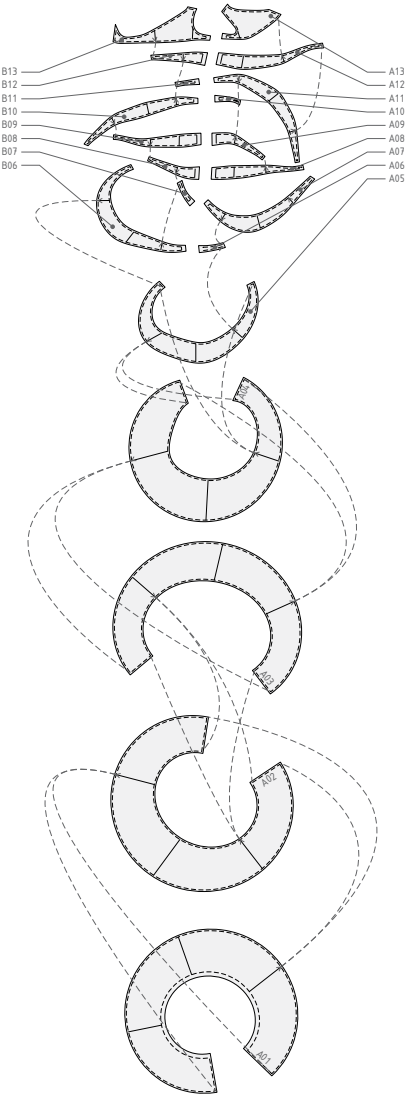
Topologcal process drawings. Hoop dress, point dress, tule dress.

Custom fabric cutter

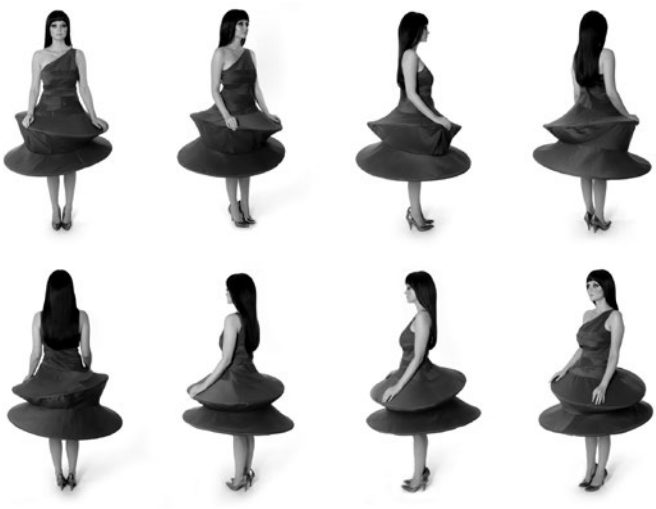
with the history of garment fabrication. This next step, while digital, is anything but automated. Provided with the avatar, the designer models a silhouette surface and constructs a system, decomposing the compounded surface into developable surfaces by extracting the seam locations. In this digital world, seams need not fall in conventional locations or trace the dress form. These darts, seams, and folds are capable of manifesting any design as long as the geometric principles at play are intact. When these surfaces unroll into their 2-D profiles they maintain their potential energy to re-manifest themselves in the 3-D physical form once sewn back in place. As opposed to simply triangulating a body scan, this process embraces a reciprocity between drawing and construction and by doing so pushes processes beyond the sequences found in the currently divided fields of architecture and fashion.

PHASE TWO

Where phase one served as a proof of concept, phase two exercised the technology behind the process. This time, we procured a digital body scan of our model that served to be invaluable. Victoria spent 12 seconds in a room and a digital model arrived via email hours later. With this 3-D model, curves are created directly on the mesh, which serves as the digital representation of our model's flesh. This guaranteed a custom fit without requiring a fitting and alteration period. From this point forward to fabrication, the process remains similar to phase one. Three designs were

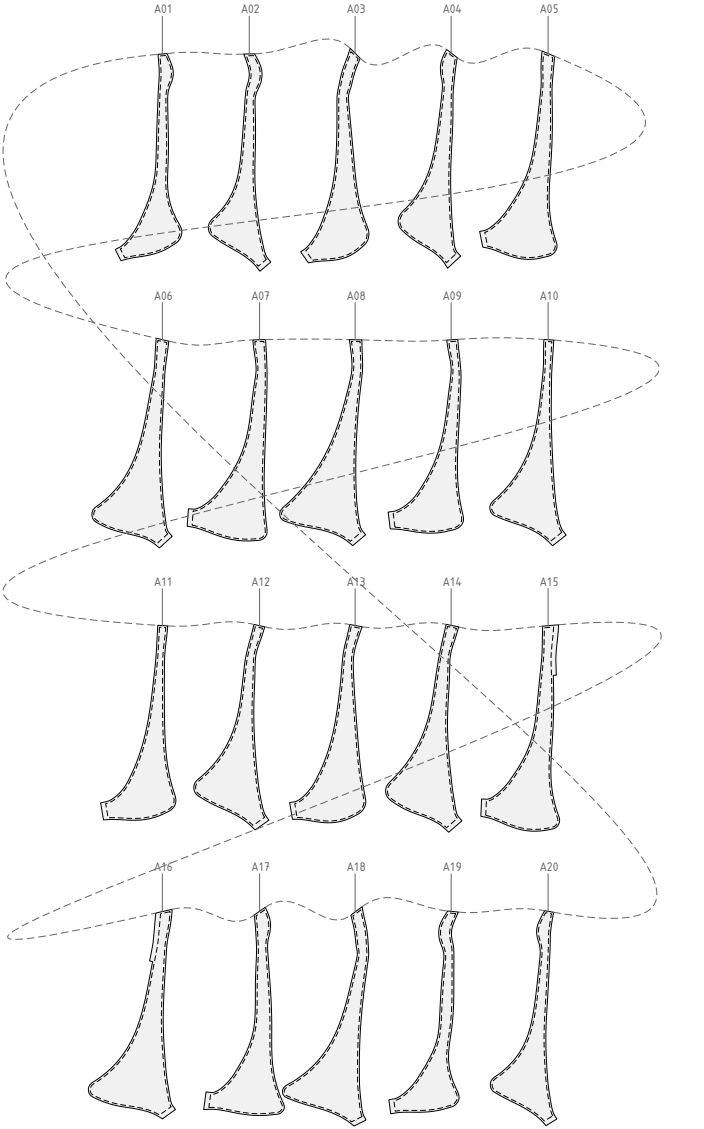


Cutting templates



Hoop dress

selected for fabrication, and our'digital designs' were again projected down to 2-D, then emailed thousands of miles away to the robot. This robotic arm servers as a computer numerically controlled device (CNC), armed with chalk and a fabric cutter. The emailed files are then cut into the unique patterns that constitute each dress. At this point in the process, the digital world is left in return to the physical realm. Still awaiting the invention of the fabric teleporter, we resorted to overnight shipping and began the tedious process of sewing the patterns back into the physical dress. All parties (model, designer, architect, seamstress, and of course dress 01, 02, and 03) met back together for the photo-shoot having only communicated through email (the Robot couldn't make it). Amazingly each dress fit and the question was asked from a bystander 'what size is that dress?' curiously the answer was simply "her".



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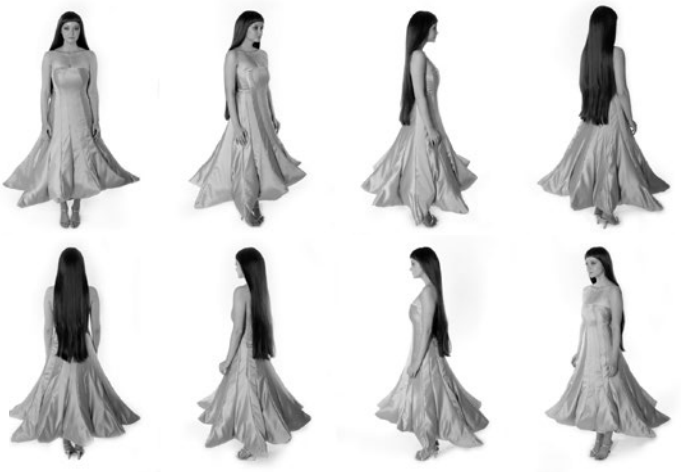
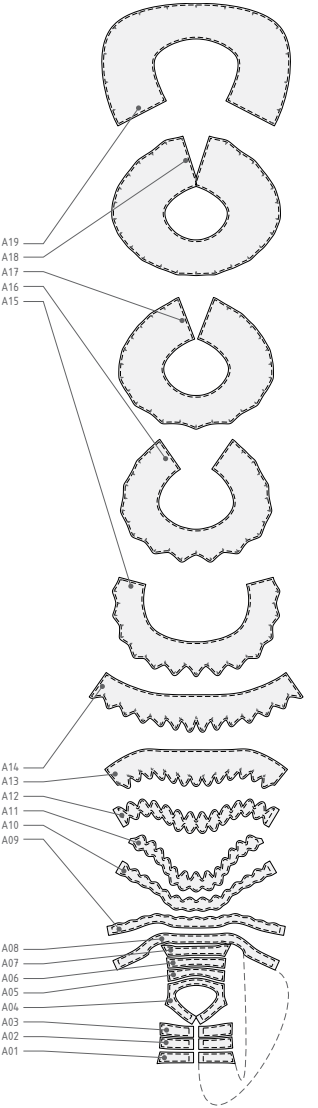


Point dress

The digital modeling process in architecture is generally constructed from known geometric principles. i.e. this material bends like this, this force is diverted here, this geometry is self similar. In our case we applied the rules of the developable surface to a fashion garment, with the intention that what is drawn in the computer can be reconstructed in the material. Inherent in this claim is the notion that the end result will not only resemble the drawing, but should be identical. Ironically, while our process did not change, the malleability of the fabric was relentless. As digital architects, we have promoted complexity and variability, because we claim the computer allows us ease of control and flexibility over the design. Understandably, it's hard for us to see the fabric of a dress fall under gravity more than we had calculated. The dress is modeled on a static 3-D digital model with arms and legs slightly splayed. One would naturally assume the best fit for the dress would be if the physical model were to



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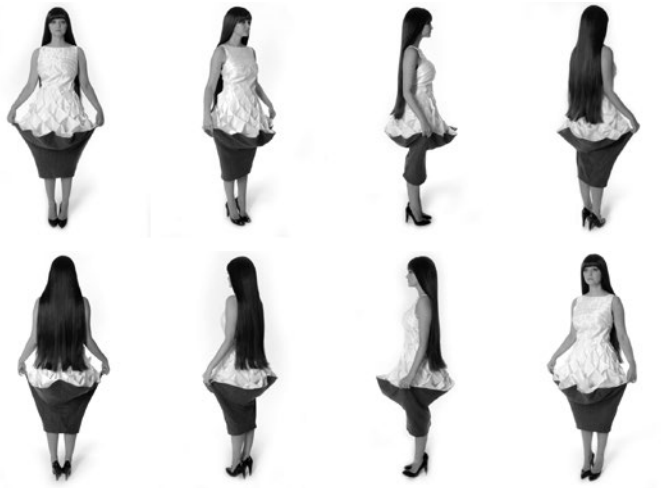
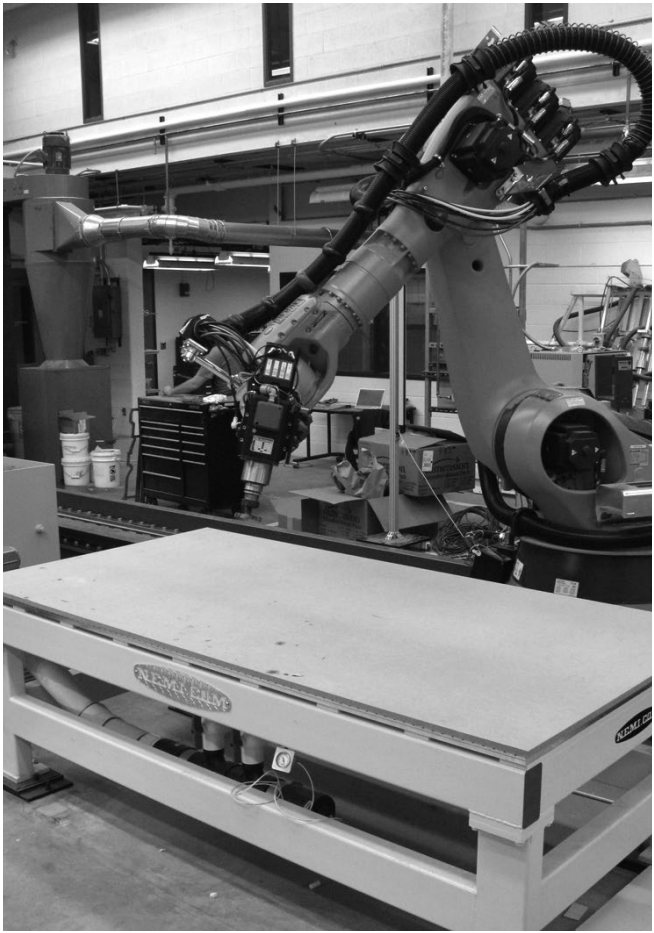


Tule dress

stand as the digital model was created. Once Victoria tried on the dress, she went straight to that position. Our response could only be explained as a void. The dress fit her, it fell correctly, everything worked, but it didn't feel right. Being the model that she is, she immediately began posing. She stretched, lifted, pushed, and twisted the dress for each pose. We created architecture and Victoria made it fashion. We argue that digital manufacturing allows for flexibility in the design, but we do not offer flexibility through time. If Victoria is 'program' and the dress is 'architecture', how do you explain the intermingling of the two? The dress transformed our perception of Victoria and her actions transformed the dress.



Courtesy of University of Michigan

CREDITS

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