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posed

By

Matthew Hewett

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Mark Wamble
Thesis Advisor

Dawn Finley
Committee Chair

Reto Geiser
Committee Member

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Between form and space is a receptacle which receives all information. Defined as surface, this vessel may be articulated as a collection of the instantaneous moments which produce movement. This receptacle is Chora, or “space” in Greek. Through the concept of Chora, the implications of a body in space may be explored as they relate to image and diagram. If diagram is a tool for unearthing new information, then the production of human imprint is reliant on the manifestation of this surface as a collection of intentional and manipulatable instances. In producing a tool by which full human imprint may be received and digitized, this membrane between the actual and virtual becomes in itself a conceptual realization of Chora. Through the digital exploitation of the surface product against a known index of human posture, information which otherwise lies dormant may be made known.
My neighbors (left), each of whom offered their time and unique forms in a difficult period

Thank you
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In the contemporary context, the skill of the craftsman in constructing experience is confronted by new 3D scanning technologies. However, the rate at which this technology is becoming accessible is not necessarily parallel to the outmoding of the skilled craftsman. While both these methods of creating event are valuable in their product, they remain exclusive to one another. When applied to the production of event in reference to the implications of a human body in space, the question becomes – how might one test this ever-thickening membrane in ways which might produce a new outcome, bound by neither the artifactual nor the actuvirtual?

I began my thesis with a vested interest in Platonian theory, which naturally led me to the concept of Chora; a sort of receptacle of all becoming. For the purpose of my work, this receptacle is represented as the surface between human form and the space one occupies. I was intrigued by the potential of this construct, as it presents an opportunity to understand in greater depth the consequences of the occupied field and the greater effect we produce when inhabiting the world around us. In order to articulate this concept further, I initially worked to reproduce fragments of the body, focusing on the boundary between the tangible artifact and space.
The first set of fragments I produced were of moments on the body which I found at the time to be important in defining overall posture. Having taken plaster molds of my neighbors, I applied an objective diagram in the positive to the effect of producing an abstracted grid in the negative of the final cast. These moments on the body included sections of the arms and legs, as well as joints and portions of the torso. The three types of grid – square, triangulated, and radial – act to condense the information-dense conditions of the artifacts and allow us to understand the boundary between form and space as a collection of more generalized conditions. The grids imply an abstracted logic recalling the virtual medium in which they were produced, while the surface of the cast itself is bound by the material constraints of the plaster casting process.
Having completed this brief study, it became necessary to repeat the same process with greater focus on posture. This required an indexing of accepted postures throughout art history, as well as greater attention to the subjectivity of the applied diagram. To do this, I started by narrowing down source material to classical and neo-classical sculpture.

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In these first images, the casts are made in reference to both Classical and Michelangelesque figures. The applied diagram of the first set articulates the positive as having an understood directionality in space. The moment at which the diagram is redirected conveys the static nature of the hip as the torso responds to the rotation. In the second cast, the rotation of the torso mimics the shoulder inclination of David, highlighting the curvature of the spine. The applied diagram once again articulating the directionality of form, but in this instance emphasizing the planar nature of the geometry.
The next two forms reference the exaggerated limb rotation of the Venus de Milo. In the first, the arm is bent at the elbow to imply a rested posture. The grid used in this instance revolves around a radial pattern which implies a secondary grain. In both instances, the artifacts pronounce the elbow as having influence on both the gesture of the artifact as well as the discrete form itself.
The final cast is of a rested leg, expressing the declination of stance in the reference image. The radial pattern in this instance is less subjective but prioritizes the front-facing nature of the form. Once again, the joint dictates both the overall gesture as well as the nuance of impression generated by the posture.
I was then able to reconstruct the forms and accompanying diagrams in the digital through the contour curves on the casts. These digital forms can then be manipulated to create new impressions of the real. Using the top surface of the plaster pour as reference, I employed algorithmic modeling to manipulate these geometries. The deformation of the form is best understood through the distortion of the diagram itself. While the diagram was initially used as a sieve for distilling information, it now becomes the primary device by which the deformation of the impression is understood in the virtual.
These fragments, which were originally understood as discrete in their articulation of posture, may now be utilized in aggregate to compose entire scenes. The artifacts have subsequently moved past their inherent thinghood and are now represented through the properties of form revealed through work. Movement is captured through the distortion of impression on surface, resulting in a dynamic, fluid model of the bodies impression in space. Ultimately, these static postures may be compiled together to construct whole scenes of movement. The goal of these exercises not being accuracy in the reproduction of the human body or its component parts in space. Rather, it is to better understand how we impress ourselves upon space and the implications of the boundary between form and space.
To do this, I began experimenting with the idea of the deformable reference plane presented in my previous explorations in plaster. The idea in essence being a sort of vertical surface which might come to meet the body through individual nodes and produce a three-dimensional diagram of impression. I initiated this proposal by testing different diameters as well as densities of node against the parameters of the reference plane. I chose a triangulated grid to base the placement of the nodes to articulate the impression as a developable surface.

At this point, it is essential to contextualize the next phase of work. Having thus far been able to reproduce fragments of the body in plaster, it was imperative that I be able to work with full-scale human impression within the digital realm. To do this, I explored options which included 3D scanners – a tool which has been in use for years within the context of many vocations, the most notable in Houston being medical professionals. However, these tools are expensive and relatively inaccessible to the humble grad student. Comparing this to the hard-earned skills of the craftsmen, trained in constructing experience through analog means, there must be some sort of middle ground between the two. I have attempted to work within this membrane by constructing a tool which is able to receive impression in the analog, to be translated into the digital through exacting measurement.
The resulting pattern is one of consistently sized nodes of varying densities. Being the most sparse, the red nodes are the primary means by which a posture is set against the surface. These are the nodes which are pressed through the board first. The blue nodes are denser and fill in the gaps between the primary set. This is the layer through which the majority of the impression is captured. The final layer of nodes is yellow and used only in those moments which might be essential to understanding posture. As expected, this includes the articulation of the legs and arms. However, the importance of the orientation of the shoulders and hips is also essential in our grasp of posture.
The final construction is roughly seven feet tall and four feet wide. Ripped 2x4’s and ½” plywood make up the bulk of the structure. A chipboard face is implemented to guide the nodes through the board in a straight fashion, while neoprene washers are placed into milled pockets on the back to provide the appropriate level of resistance. The tool operates with one person posed in front, while another pushes dowels through the back until they meet the body. The whole process is relatively simple and takes around twenty minutes. From there the dowels may be measured and translated into the digital realm via calipers and patience.
These are the exaggerated silhouettes of the tool after an impression is taken. The first three on the left were taken in portrait, while the latter two were taken in profile – all of which having been posed in contrapasso, for the postures relatively neutral and workable properties.
The nodes are each individually measured against the reference surface. Each node on the board corresponds to one within the digital diagram. The result of this process is a convex, triangulated hull. It can be understood first through these diagrams as a web of moments captured on the body which create an information dense construct. While the depth of these bodies is not immediately apparent, it is interesting to note the legibility of the forms through the profile they create. Each can be understood in some capacity as human form, although the negative space which they imply is not as easily assumed.

node network - James, Buyka (profile)
node network - Marissa, Naomi, John (portrait)
For that reason, I believe the best way to understand the raw resultant of the tool to be in the positive. As before, the forms are best identified through the exposed edges, which abstract the silhouette of the subject. However, as with all of the convex hulls when viewed in the positive, one might also begin to understand the depth of subject through the articulation of limbs as well as the curvature of the spine.
Ultimately, these rough forms are not the end-all for this exploration. In order to begin to remove the imprint from the context of the tool, it becomes necessary to construct an average within the point cloud. Through this process, the overall adherence of the average surface in reference to this point cloud may be dictated. One might construe a surface which mildly adheres to the distribution of nodes and produces a more gestural reading, or one might also create a surface that is so strictly bound by the original measurements that it no longer resembles the subject. The resulting forms have no thickness. They are solidary in their existence and produce new ways of understanding a body in space. Through this work, the impossible thinness of these surfaces is revealed. The forms appear fragile and fleeting. The contours of the impressions, although undeniably human, take on new meaning when viewed from different angles.
This next drawing is of an impression taken in profile, viewed from either side in ortho. While both drawings are legible as being derived from human form, certain information might only be divulged from one side or the other – such as the positioning of the arm or the rotation of the shoulder. It is also worth noting that the raw, interior edges produce their own reading of form. The sinuous edges lending themselves to revealing the process by which the impression was captured.
We may then take these constructs, representative of the boundary between human form and space, and begin to manipulate them in a similar way to previous fragments. First, I began working to simulate movement through simple human gestures. In this drawing, the impression is bent at the waist to imply an exaggerated bowing motion.
As before, the deformation of the surface is best understood through the qualities of the original diagram produced through the properties of work through which it was created.
Densities of nodes within the construct articulate the process by which the impression was deformed. Where the surface has been stretched and added to, the nodes become sparser. While moments at which the nodes become denser imply a compression or dilution of the original surface.
We may also analyze the raw edges of the constructs, represented here as a thin blue line, for their properties relating to the orientation of the surface in space. While the original impressions remain strictly tied to the reference plane against which they were taken, the subsequent deformations articulate this relationship as loose and bound only by the portions of the surface which remain stationary. Both of these qualities, including node density and the qualities of the exposed edge, become useful when attempting to reconstruct and analyze static posture with pre-produced image.
To that point, the culmination of this work may be applied to better understanding the relationship between figure and space within reference image. With the following series, I will present three sets of information, each an extension of pre-existing conditions. I hope to communicate this relationship as one would describe characters within a play – each presenting and revealing new characteristics through relevant operations. The first group of drawings will revolve around the photography of Robert Longo - particularly this image of Janet, from Longo's work on Men in the Cities. Longo presents his model as performing a near-impossible stance. The posture is fleeting, and the image captured in a similarly ephemeral instant. The model arches her back opposite the camera, shifting her weight to her right foot while balancing with her left. This moment is heightened by the perspective and angle of the camera. I have distilled the model’s posture to replicate the moments leading up to the image.
Activation of the surface begins in a slightly forward stance. After completing a 15-degree rotation of the torso back against the reference line of the waist, the surface continues to arch backwards another 45 degrees from center. This motion is offset by the sweeping of the left leg forward at the waist, and the relative opposite at the knee – completing a near 23-degree rotation. This operation may be understood as a collection of moments which in aggregate produce the final posture.
As with the previous exercises in plaster, this construct is best understood through its more generalized moments. To achieve these qualities, we must reduce the surface to a collection of no more than 30-or-so individual surfaces. The lines in these drawings representing the edges of each surface as they transform near-instantly to produce an aggregate of unexpectedly dissimilar forms. When these drawings are compiled together, the result is a layered diagram which recalls individual moments within the event. These moments are able to tell us how the body is transforming the space around it as the surface is activated. In this instance, we might ascertain that the bulk of the work is being performed in the torso, which is represented through much larger swaths of uninterrupted surface. However, what is not immediately apparent is the inherent shaping of the surface caused by the shifting of the back leg. This action alone resulting in a sort of densification of information along the waist.
We may take this analysis a step further by applying a materialized grid upon the reduced surface. The rendering of this animation being even more chaotic than the last yet representing new types of information. The quilt-like patterning suggests a secondary grain to each individual surface. The tighter the grid is on a surface; the more work being represented. While the looser the grid; the more generalized the construct has become in those moments. Using this information, it becomes interesting to view the surfaces in aggregate from the top down. While we might presume the impressions and accompanying work to be symmetrical, in reality the constructs are highly irregular and often preference a single side. In this drawing, we might understand that the right side of the impression has become more generalized as it attempts to adapt to the changing conditions of the sweeping leg. You might also notice that as the surface bends backwards, the waist becomes increasingly information-dense and fraught with near-unintelligible angles.
The final animation in this set is a collection of the top-down images from the two previous analyses. Within these two constructs, it is readily apparent the amount of work being performed at the waist through the densification of lines. Also notable is the directionality of lines within the upper half of the torso, which reveal the vectorized nature and momentum of the final posture in space.
The second image for reference is a collage by David Hockney of a Sunday Morning at the Mayflower Hotel. In the collage, Hockey rests on his bed centered within the middle of the room. He sits, panning from side-to-side, up-and-down, scanning and collecting images of the room for collage. His image is just recognizable as a reflection in the mirror opposite the bed. The surface between Hockey and the space he occupies being articulated with both a twisting and bending motion.
Activation of the surface this time finds its origin in the neutral impression generated by the tool. Deformation of the construct begins with a twisting motion 30-degrees opposite of center, and an accompanying rotation of the torso backwards at the waist of 15-degrees. The motion repeats itself in the opposite direction to produce the totalizing gesture required to capture a collage of images.
In this instance, the edges define themselves through the directionality of the shoulders. In the reproduction of events which lead to the fabrication of this collage, it is apparent how the back becomes generalized into one or several large swaths of uninterrupted space, while the finer, more condensed moments of the waist and shoulders are defining the surfaces orientation in space. In the collection and subsequent layering of these drawings, this relationship becomes heightened through the calling out of key moments. The back begins to dematerialize as it is twisted against the right or left axis, and the hips become an extension of these surfaces as it brought in and out of alignment.
This relationship becomes even more apparent when viewing the organization and directionality of the interior grain. Despite the uniform nature of motion from one side to the other, there is an obvious preference of the left portion of the construct, particularly the left shoulder, in defining the overall impact of the surface on its surroundings. This is best demonstrated by comparing either extremes of the motion against one another in aggregate. By calling out both moments, the forward directionality of the left side of either form is revealed. Interestingly enough, the right side of the surface in either case is orientated in the opposite direction. These properties are undoubtedly a result of the characteristics produced through the generation of the original impression with the surface tool.
Again, by comparing the top-down views of either iteration, we are able to obtain a clearer understanding of the key components in this motion. Regardless of which direction the construct is twisting, the densification of lines at the waist reveal the importance of the stationary axis in articulating form. This quality is heightened through the fleeting outer edges produced as the surface twists to the right. Juxtapose this with the consistent re-layering of the left field, and the dissymmetry becomes the most outstanding quality of the event.
The final reference image is by fashion photographer Deborah Turbeville. In it, we see a ballerina captured in an instant of seeming instability, collaged next to some variant of palatial architecture. In this image, the ballerina balances on the tips of her toes while using her arms to counterbalance the posture. In order to better understand the implied space of the arms gesturing away from the body, I utilize an impression taken in profile. As the arm moves away from the body, the surface is stretched to accommodate the changing form.
Within the context of the motion, the arm is swung out incrementally to 60-degrees, while the torso bends inwards 30-degrees. Rather than adding new material, as the arms gestures outwards, the surface is stretched and deformed to produce a reading which in many ways resembles fabric adorning the ballerina's shoulders.
When viewing the reduced edges of this construct, this stretching motion is readily understood through the wrapping motion of the surface across the activated arm. The density of the material in this moment remains relatively unchanged as the geometry of the surface is warped to produce its final positioning. The layering of these drawings reveals much the same information. The forward-edges of the construct remain information-dense throughout and carry on relatively unchanged when compared to the nature of the material enveloping the arm on the left. As the top portion of the surface leans back in response to arm’s motion, the head and shoulders become an extension of the limb, rather than the torso or waist as seen previously.
When viewing the finer grain of this construct, it is worth noting the density of information on the interior of the surface. Juxtaposed with the sparse nature of grain on the exterior of the enveloped limb, the strain within the interior of the construct as it is stretched is revealed. Not only does the top portion of the surface become an extension of the arm, but the interior of the torso also becomes an expression of a gesture which so extremely extends beyond its original bounding conditions. This relationship is more closely revealed through the expression of the surface in aggregate from the top-down. The space between the arm and torso is unchanging in directionality and density. The interior of the construct does not retain this steadfast nature, but instead is shown to be everchanging in both qualities.
Finally, through the viewing of both top-down animations together, we may better understand the permanence of the interior edge against the ever-shifting nature of the space generated between the torso and the arm. The density and repetition of lines on the exterior of the construct provide a boundary against which the form is able to adapt and change while still remaining legible.
I hope this work is able to spark a dialogue regarding the consequence of human form within the built environment, or more generally any condition catered to the human disposition. What we know as the occupant is an enigmatic and often over-generalized character, the nuance of which is vast and ever-changing. Qualities of impression divulged through work may be implemented across the digital veil to reveal a forward-thinking mode for design. Linear operations might become entangled, and their product a result of both what is real and exists, as well as what has been extrapolated. In taking responsibility for the tools which we design through, we may lean into the digital era with grace. Let us design for the architecture of bodies, as well as the body of architecture.


