

two-and-a-half-dimensional

ABIGAIL COOVER

Pratt Institute

If we still further add to design in the third dimension, a consideration of weight, pressure, resistance, movement, as distinguished from motion, we arrive at what may legitimately be called design in the fourth dimension, or the harmonic use of what may arbitrarily be called volume.

—Morton Livingston Schamberg 1910

Flickering lines dance in constant motion above, below, around and through the richly textured fields of the multilayered drawings of architecture. This proposal seeks to investigate the interplay of geometry, materiality, color, and perception to create unique spatial and volumetric experiences that oscillate in the area between drawing, installation and permanent

structure. Through the transition from the speculative two-dimensional architectural project to that of the project realized in three dimensions, exists a middle ground for investigation. This is the space of the two-and-a-half-dimensional or 2.5D.

In the disciplines of gaming and machining, 2.5D is used as a term to describe a two-dimensional projection in three-dimensional space. The result is an object or space that is simultaneously flat and round - both simulated and real. In gaming, 2.5D literally refers to the construction of three-dimensional space from layers of two-dimensional projections (Figure 01). In the fabrication technique of CNC milling, it is about the axes - full range of motion in the x and y, but only unidirectional in the z. Like the plane of the screen in gaming

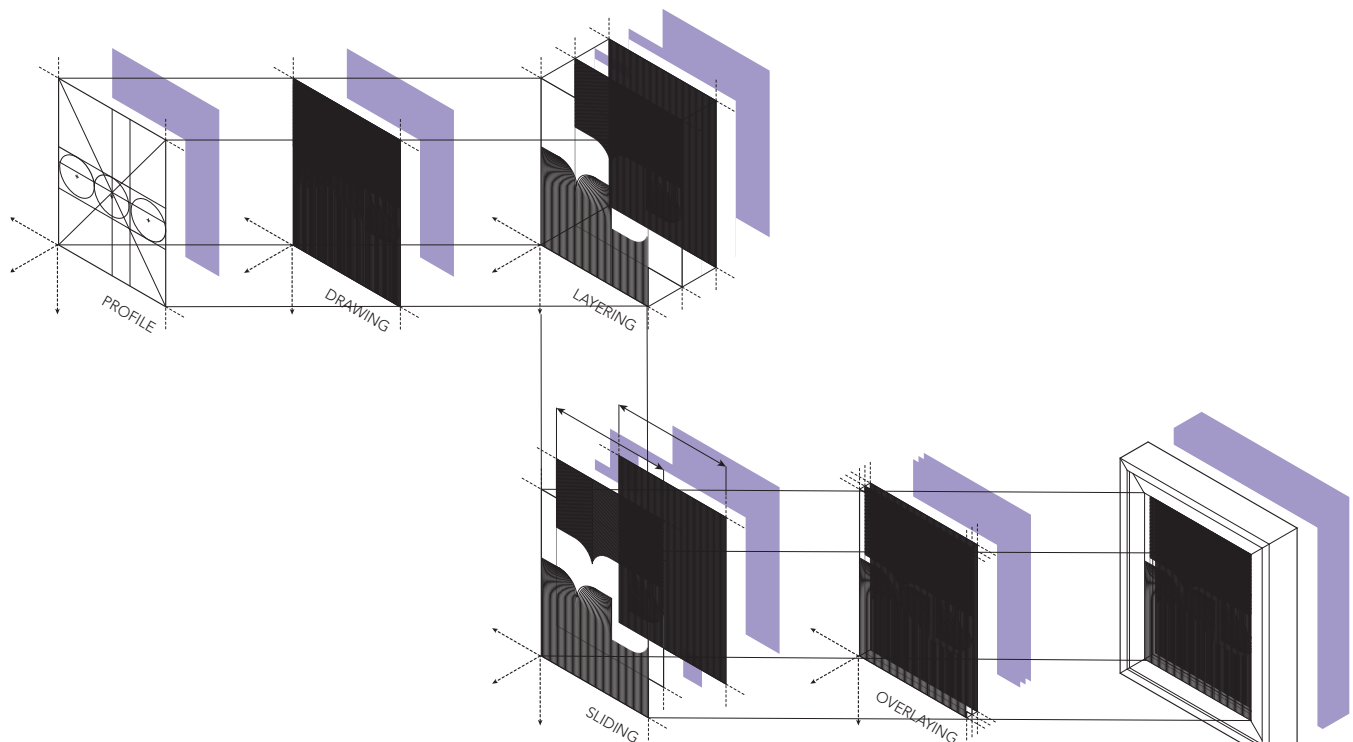


Figure 1. *Bokeh Box Diagrams*. Overlay Office.

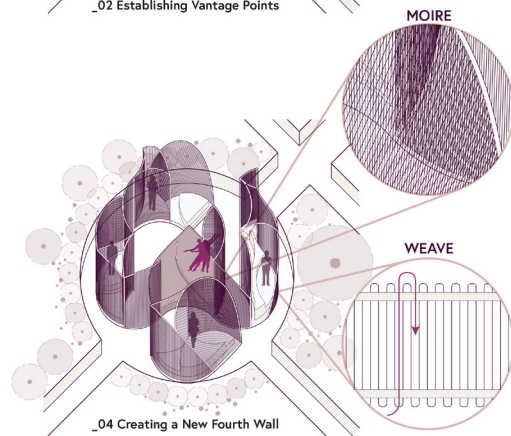
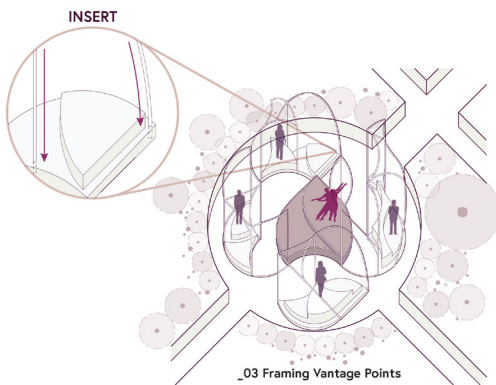
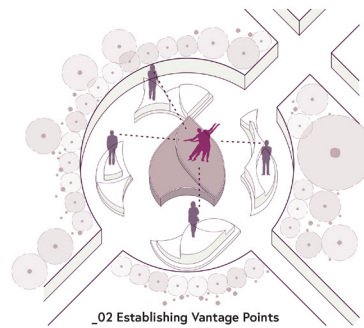
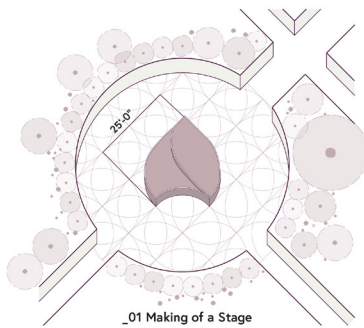


Figure 2. *A Fourth Wall*. Overlay Office.

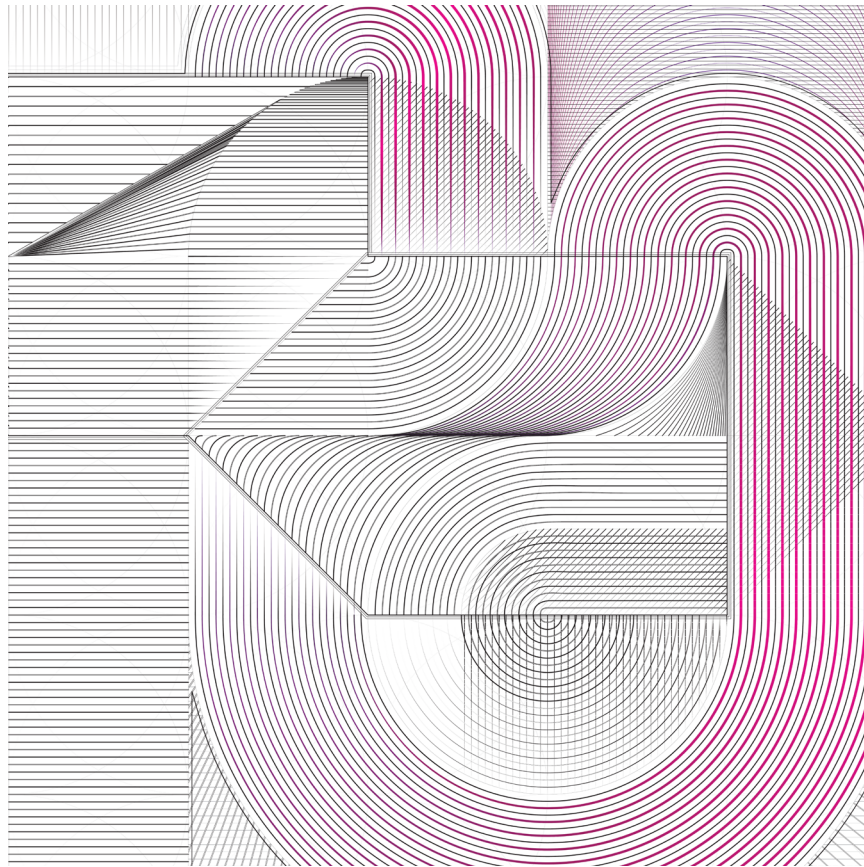


Figure 3. 2.5D 01. Overlay Office.

and the material blank on the bed of a CNC mill, the page in architectural representation is the platform for three-dimensional projection. From this platform, a project emerges as speculation and is then translated into three-dimensions, but what are the potential new spaces that could emerge if it was possible to capture the energy and potential of the in-between dimension? How can architectural speculation go beyond the lineage of the art installation explored from the optical art of the 1960's through the contemporary architecture pavilions of the past ten years (Figure 02)?

This project looks at the use of the visual representational techniques of printmaking, bokeh and moiré as translational architectural devices in the creation of three-dimensional space in the production of three new drawings (Figures 3, 4, 5). These exploratory drawings may seem to remain in the plane of the two-dimensional, but through their physical and digital perception, engage the two-and-a-half dimensional.

Printmaking - from etching, to screen printing, to offset printing, to ubiquitous LED screens - uses a surface or plate that is not fully either two- or three-dimensional. In the case of engraving, a plate is manipulated beyond a flat plane to a two-and-a-half-dimensional surface in the creation of an image. It demands an intensity, density and layering of line. In *Melancholia I* a

masterwork engraving of Albrecht Durer from 1514 (Figure 6), the shifting of line demanded by the technique enables clear delineations of foreground space, middle ground space and background space to emerge. In all three drawings, through changes in the densities of line work akin to those of the etching, the foreground, middle ground and background become interchangeable and this condition causes the viewer to question exactly how they exist in three-dimensional space. This ambiguous dimensional territory gives the drawings movement within their static compositions.

The blurred condition of the layered effects of the bokeh, or the out-of-focus areas of an image, creates a field of depth and implied spatial movement within static compositions. The photograph *Pine Cone 1* by Piotr Szczepankiewicz (Figure 7) increases the perception of depth through the interplay between the portions of the image that are both in and out of focus. This interplay also forces the viewer to contemplate what is in and out of focus and ultimately what is flat and what is round. Previous digital and physical work with separating the material layers of the bokeh (Figures 8, 9) started to produce dynamic effects. This slight spatial separation allowed for shifts of what is in front and what is in back to occur as the viewer's position changes. This project seeks to achieve that shift that is produced by the bokeh technique while maintaining one

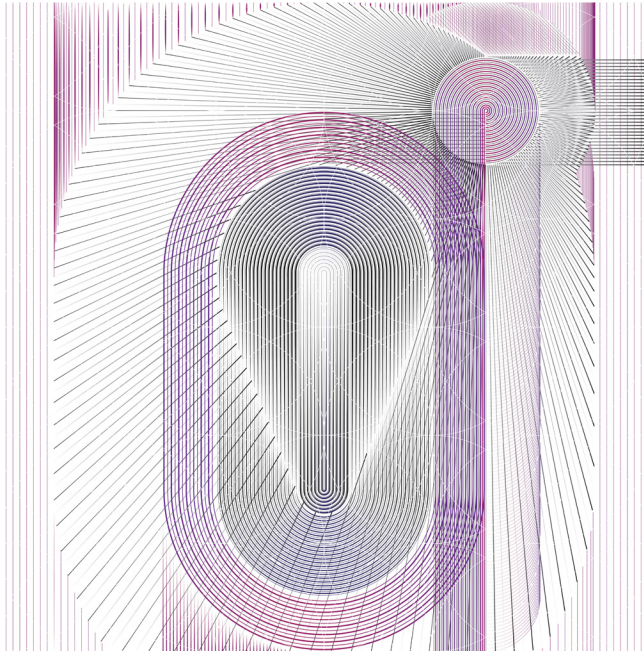


Figure 4. 2.5D 02. Overlay Office.

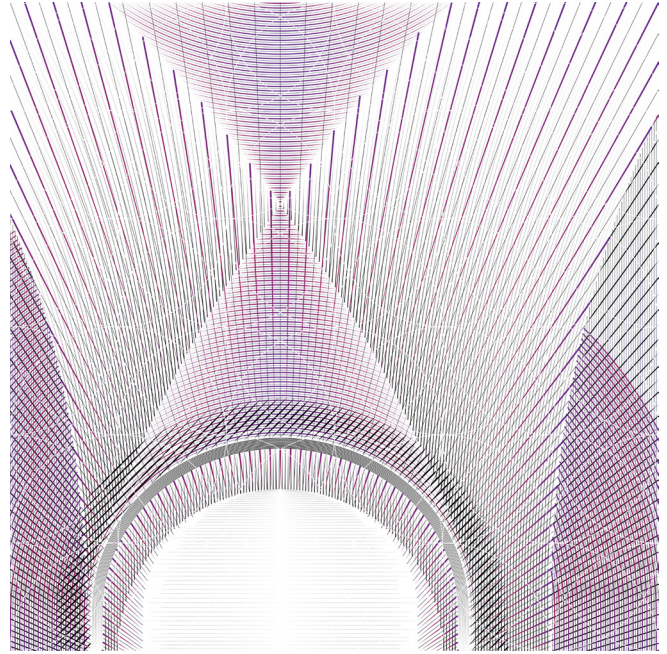


Figure 5. 2.5D 03. Overlay Office.

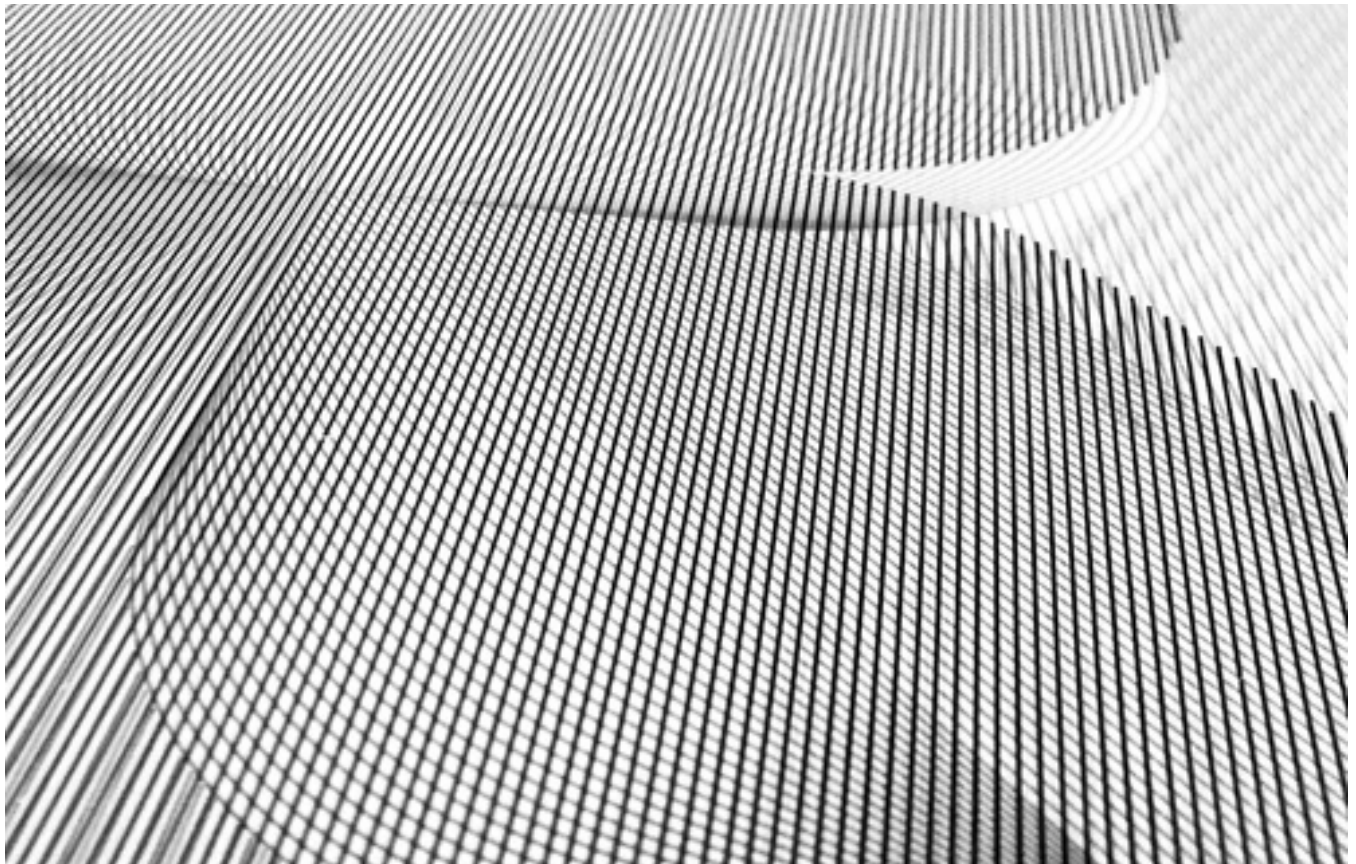


Figure 6. *Bokeh Boxes*, photograph. Overlay Office.

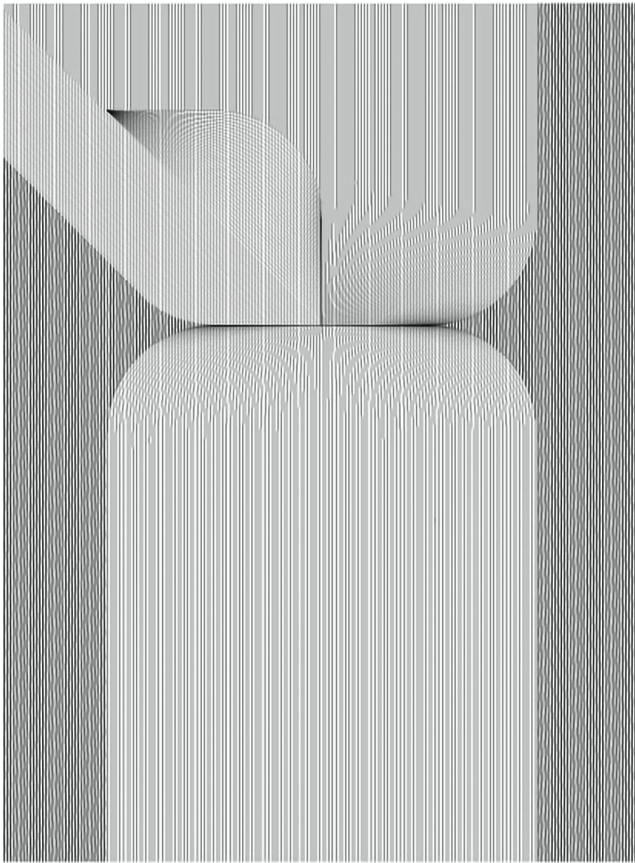


Figure 7. *Bokeh Boxes*, digital image. Overlay Office.

layer. Future explorations will examine how the separation and distinction of these layers can be manipulated in order to create different types of architectural space.

Stationary lines possess the ability to moiré and create shifting surfaces that oscillate, almost imperceptibly, between two and three dimensions. In *Moiré #25*, a photogram by Liz Deschenes (Figure 10), she takes the technique and its method to the third dimension as a photogram. While the above examples of the etching and the bokeh are purely two dimensional, but imply the three-dimensional, *Moiré #25* takes these effects to a physical plane. The investigation of the drawings for this project is challenging that plane and where it exists in space in the 2.5D.

All three of these techniques were used in the drawings created for this project to not only consider another potential dimension, but also as the potential next step in movement within architecture beyond Greg Lynn's animated digital interpretations of Francis Bacon's *Nude Descending a Staircase* in the paperless space of architecture in the 1990s. Through the lenses of these techniques, the drawings for this project have taken both original and reference images through two-and-a-half-dimensional space in order to render visible the ideas of movement and depth within a static means of representation. In so doing, point becomes line, line becomes plane, plane



Figure 8. *Melancholia I*, engraving. Albrecht Dürer.

becomes surface and surface becomes volume. The identities of these elements and their relationships within architectural representation and construction are challenged and reassessed in the search for new spatial potentials. The next step of this project is to move these drawings into a three-dimensional space to see how they can be realized architecturally. The goal is that this translation will move beyond previous explorations of physical layers (Figure 10) to the creation of physical space and volume.



Figure 9. *Pine Cone 1*, photograph. Piotr Szczepankiewicz..



Figure 10. *Moire #25*, photogram. Liz Deschenes.