Glass Weaving:

An Intersection of Line, Light, and Color

A thesis submitted to the College of Art
of Kent State University in partial fulfillment of the
requirements for the degree of
Masters of Fine Arts

by

Nathanael Michael Avery

December 2019

Thesis written by

Nathanael Avery

A.A.A Tidewater Community College 2011

B.A. Virginia Wesleyan University 2015

M.F.A. Kent State University 2019

Approved by

_____

Davin Ebanks, M.F.A., Advisor

_____

Marie Bukowski, M.F.A., Director, School of Art

_____

John R. Crawford-Spinelli, Ed.D., Dean, College of the Arts

TABLE OF CONTENTS

LIST OF FIGURES

FIGURE

In my studio practice, I am currently exploring relationships between the visual language of textiles with the materiality of glass. This work utilizes the line and structure inherent in weaving while capitalizing on the properties of glass, specifically its ability to transmit and refract light. Line, structure, color and light are the genesis of possibility and idea. The marriage of textiles and glass is a fascinating and absorbing exploration for me.

As a glassmaker, with a family background and tradition in textile processes, introduced to the weaving, I was inspired to try and figure out how to combine my love for glass with a newfound fascination for weaving. Through the efforts of trying to incorporate glass in a weaving on the loom, or to create weavings through processes similar to basketry with the glass itself, I have found a method of working with the glass that gives an illusion of the structural connection of a weaving close enough to call it a glass weaving. The process of weaving, with its logic, methods and order provides an ability to plan my work and follow through with a good deal of accuracy. In the standard gridded Tabby pattern, for example, the vertical and horizontal threads weave together to create a balanced weave structure. The Tabby pattern is structurally strong and reliable, while still allowing for artistic and creative freedom in choice of color, scale, material and of how colors react when they intersect. The choices of color are then paramount to the overall pattern, and the resulting mood of the work. There is a defined order of operations to weave and these operations are repeated throughout the process granting the weaver to have a sense of rhythm, structure and time in the work.

Every piece of work created for this exhibition starts as clear liquid glass, the hot glass is rolled through a finely ground colored glass, called “frit” in order to produce the desired color. Once shaped into a cylinder the glass is pulled into long rods approximately forty feet long and no bigger than the diameter of a pencil. Through practice and repetition the artist can consistently pull these glass “canes” to the same diameter and length with some slight variation. The cane is then cut to the desired length, in this case five inches. This process is comparable to how a weaver would create their own yarn or

thread by way of hand spinning and dying the yarn they will be using for their work. It is the process of creating the particular materials before the making of the work actually begins.

Once all the cane has been measured and cut, the process of aligning and layering the cane in a kiln commences. Throughout the exploration of how to create a woven glass object by way of the kiln, I was able to find several methods of manipulating the glass to achieve results through trial and error. While finding that I could create a true woven structure, through a method of bending the glass canes over bars made of a high fire porcelain, I was dissatisfied by the fact that the method would not give me a one to one ratio which would become of great importance to the math, color design and final aesthetic. After experimentation and consultation with other artists with familiarity to kiln processes I was then able to decide on the process of layering the glass to achieve an artifice which would be suitable. The first firing will permanently attach the first two layers of cane which are laid out into a grid with overlapping points on both the X and Y axis to create the base layer of the unit. Once cooled more canes are placed in the negative space in the X axis and then fired again to attach to the initial cane. The process is repeated a third and final time in the Y axis to complete the grid and the illusion of a woven structure. While the glass is firing in the kiln there is always an element of chance that is beyond the control of the maker once the firing process has begun. Due to an inability to have a perfectly level surface, which the canes being round can easily move upon, or the imperfect nature of a kiln to not heat the glass in an even manner which would cause the glass to bend or move in unanticipated instances. The fact that pieces of glass cane can shift in unexpected and undesired ways can be frustrating. But sometimes a fortuitous fluke will create new and exciting ideas. The introduction of chance provides new and unthought-of possibilities.

Due to the construction of the work for this exhibition, it became clear that the grid would be the basis upon which my work is built. The grid can be seen, in art, as a foundation in which creativity can be set, discovered, explored, re-discovered, and measured against. It allows for the artist to begin

on a solid groundwork being ripe with creative possibilities. The grid can be formed and then stacked, exploded or diminished to aid the artist in the creation of order or chaos, depending on how the artist reacts to the grid itself. The form can also change the way that the grid is seen or how it functions. The grid being formed by an intersection of lines, creating either square or elongated rectangular gaps between the lines, gives the artist freedom within the parameters that the grid and the artist sets. From the individual modular pieces to the overall design of the finished instillation, the grid informed the math necessary to produce each design, which would then inform the next piece in each individual sequence, square, and work as a whole. Geometry also revealed the steps which could be taken towards future works, meaning that the grid is self-propagating and that there are an endless amount of possibilities for the work to expand, and that the production of one piece can and will be instrumental in the production of new works which themselves will inform the production of the next. These number systems would also be instrumental in how the colors would be utilized.

The final pieces are assembled according to the desired color, pattern and movement and then mounted in a unique way so that they are suspended 2 inches from the surface of the wall. Using clear glass posts at the top and bottom of the composition the pieces are attached then hung off the wall. A monofilament thread attached at the top post, which weaves in and out of the glass squares, is pulled taut and finally anchored at the bottom post. The spacing of the posts, to that of the glass squares, is measured to give a gap of approximately an inch and a half between the columns. Since the individual glass pieces can slide up and down the monofilament, the spacing between the glass pieces in a column can be matched to create negative space to form the final grid. This permits the glass to hang off the wall and references a type of loom called a frame loom. This type of display grants a sense of airy lightness to the heavy glass, so that it seems to defy gravity. The primary benefit of this hanging system is that, being off the wall, the glass has the chance to transmit light. The choice of distance from the wall is specific to the glass pieces, how they cast a shadow on the wall and the level of distortion or detail

that the shadow has. By having the glass hang two inches from the wall, it creates a crisp shadow which reveals the grid. This shadow would then invite curiosity to see the shadows more clearly, as it is interrupted by the glass in a front on view. The viewer is encouraged to investigate the work at different angles and distances. This inquiry would reveal frustration at not being able to fully view the back of the work as it is too close to the wall for proper examination, moving around the work gives the viewer a chance at discovery, specifically the transmission of the filtered colored light into the shadows. This frustration at not being able to fully walk around the work also causes slight unease or frustrating tension. The glass with its loose pattern and seemingly frayed edges gives a contrast to the hanging mechanism, which is pulled tight and woven through the glass. This tension is necessary during all processes of weaving, and to bring that tension into the final work through the display mechanism provides a subtle relationship to traditional weaving practices.

Throughout this work I have dealt primarily with tertiary colors that are close hues of the primary and secondary colors. The transparency of the colored glass allows for light to pass through the colors, creating a variegated hue shadow on the wall behind the squares. These shadows aid in reinforcing the colors in the glass themselves by creating a darker background against which the glass is seen. The shadows also add a depth to the work from their intensity or lightness. The use of color engages the audience and allows for two types of experiences. When viewed from a distance the eye will see the patterns and design as one piece. When viewed as a whole the colors themselves begin to mix, through optical blending. The second type is being up close to the work and seeing the structure in the design. This intimate inspection of the work reveals the processes by which the work was created, while simultaneously allowing the viewer to see the individual colors used, and how multiple colors can be blended by the eye. This is analogous to how a computer uses individual color pixels to create an overall image, or the same way that pointillist painters would rely on the ability of the mind to combine

multiple color dots to create value and image, the colors act upon the mind and the eye to allow us to see the design.

Gradated Spectrum[1], is composed of a 5-color spectrum as well as a 5-point gradation using glass canes layered to be in reference to a standard woven structure. By starting with clear glass on the left most side of the work and over a 5-panel sequence to the right of the composition, colored glass cane is introduced until it completely overtakes the clear glass in each square, and then the entirety of the square. Canes of varying hue are introduced according to a mathematical system to create the desired spectrum. The grid structure allows me to form relationships between the individual canes of glass as well as creating a cohesion for the overall composition. Working within transition, each module of 8x8 canes creates a grid within a grid. The Modularity of the work also allows for a sense of play, with the ability to rearrange the individual finished squares, which would eventually develop into more work with the first piece propagating into the second and the third and so on. The idea to create a color gradient is the most straight forward method found of experimenting with the glass both colored and clear to find the strengths of using either or both. By harnessing the transparency of the glass both the process and material are accentuated.

The second work of the exhibition *Grayscale*[2] is another gradient, though this one is devoid of bright colors, and instead expands the gradient of a single very warm gray color to clear across the entire field. Using a similar method of mathematical progression, the design begins with a completely clear square and ends with a completely gray square in the opposite corner. This transition would prove to show a full value fade within both the glass pieces as well as a full gradation in the shadow, where the completely gray square would have a much deeper shadow and the completely clear square having a much lighter one. This direct play and interaction with the shadow in this piece enforces the gradient

[1] See Figure 1
[2] See Figure 2

even further. Instead of the work being read purely horizontally or vertically the pattern is seen from a diagonal basis by having the only entirely grey and entirely clear squares anchoring the gradation in the bottom right and top left corners of the grid.

These two works, *Gradated Spectrum* and *Grayscale*, are similar not just because they deal with a mathematical gradation, but also because both of these works can be continuous and the viewer is met with what can be described as a single swatch of each of their overall design. If desired both pieces could be duplicated completely and flipped to create a mirror image diptych which could then be duplicated again and flipped to create a four panel grouping which would create a new whole. This duplication process can in theory be repeated infinitely. This is akin to the works of Frank Stella, Jasper Johns and Agnes Martin, their works utilizing the grid and number systems give them the freedom of choice to where the design will stop to be showed, whether incorporating a single canvas or several in a modular system.

The third work in this series, *Blending*[3], follows through with the logic inherent in weaving on the loom. Each column in this work has the vertical colors passing through each square and the color changes from clear to blue to yellow to red and finally to grey. Each row also follows the same logic and pattern, so this would mean the squares leading from the right topmost square to the bottom leftmost square would all be intersections which would create a pure color square while the rest of the squares are blends of the column and row colors. This piece shows exactly how the colors blend together and how the colors can overpower, wash out, or enhance each other. The other benefit to this pattern is that within the entirety of the work the eye is able to view several squares within squares and the mind creates divisions or groupings in the squares by way of the colors themselves. Within the center column and row, where the yellow glass resides, a cross is formed and revealed. The design is similar to the

[3] See Figure 3

works of Ad Reinhardt, in particular his *Black Paintings*. Due to the surrounding colors the cross is not immediately visible, but after the eyes of the viewer are allowed time to adjust the cross becomes apparent. When viewed from the side the colors also become more vibrant due to the fact that glass viewed through depth will often reveal a much deeper color, and when the viewer moves to the side the colors of the shadows become revealed. The discovery of the tinted shadow is the revelation for the viewer, the payoff for their curiosity. This interaction with the work makes it less a stagnant piece and more like a sculpture to be experienced from multiple angles.

The Fourth and Fifth pieces, *BYG*[4] and *RYO*[5], though separate individual pieces, are best described as familial pieces as they follow the same logic as far as placement of colors go, but the color changes makes them unique. The center squares follow a balanced set of lines in both the X and Y axis, which have the overlapping colors to create pure color intersections as well as blended color intersections. In the inner ring surrounding the center square the design is of a color split in either the X or Y axis depending upon the placement of the square, with a color overlap happening in the corner pieces to create pure hues of the colors used. This created four pure color corners which help to anchor the grid while also giving points which draw the eye. The outer ring is an expansion of the second row which informs the viewer that the pattern can continue. For these pieces it felt necessary to continue with the standard color theories by working with sudo-primaries and sudo-secondaries, specifically using the same yellow in both pieces to show how a color can be perceived differently based on the color it is placed next to and how the eye and mind can be fooled into thinking that one thing is two. This methodology logically suggested one piece be made from the warm side of the spectrum while the companion piece be on the cool end. These pieces are most reminiscent to the works of Josef Albers, in particular his series *Homage to the square.* The way in which he creates works which are self-referential

[4] See Figure 4
[5] See Figure 5

through his choice in colors, as well as the decision to hang several of the series with color similarity next to each other, acts upon the eye of the viewer and creates tension where the viewer is fooled into believing the identical colors are different.

A commonality between all the pieces in this exhibition is that they can all be perceived as part of larger continuous pieces. Due to the modular nature of the panels as well as the mathematical systems used, the progression of each piece would determine how the design would continue. In the works that start from the center and move outward, such as *RYO* and *BYG,* the continuation would be to make square after square surrounding the work currently made. The ability of this work to be replicated and turned and replicated again means that just as the grid is infinite and self-propagating so is the work.

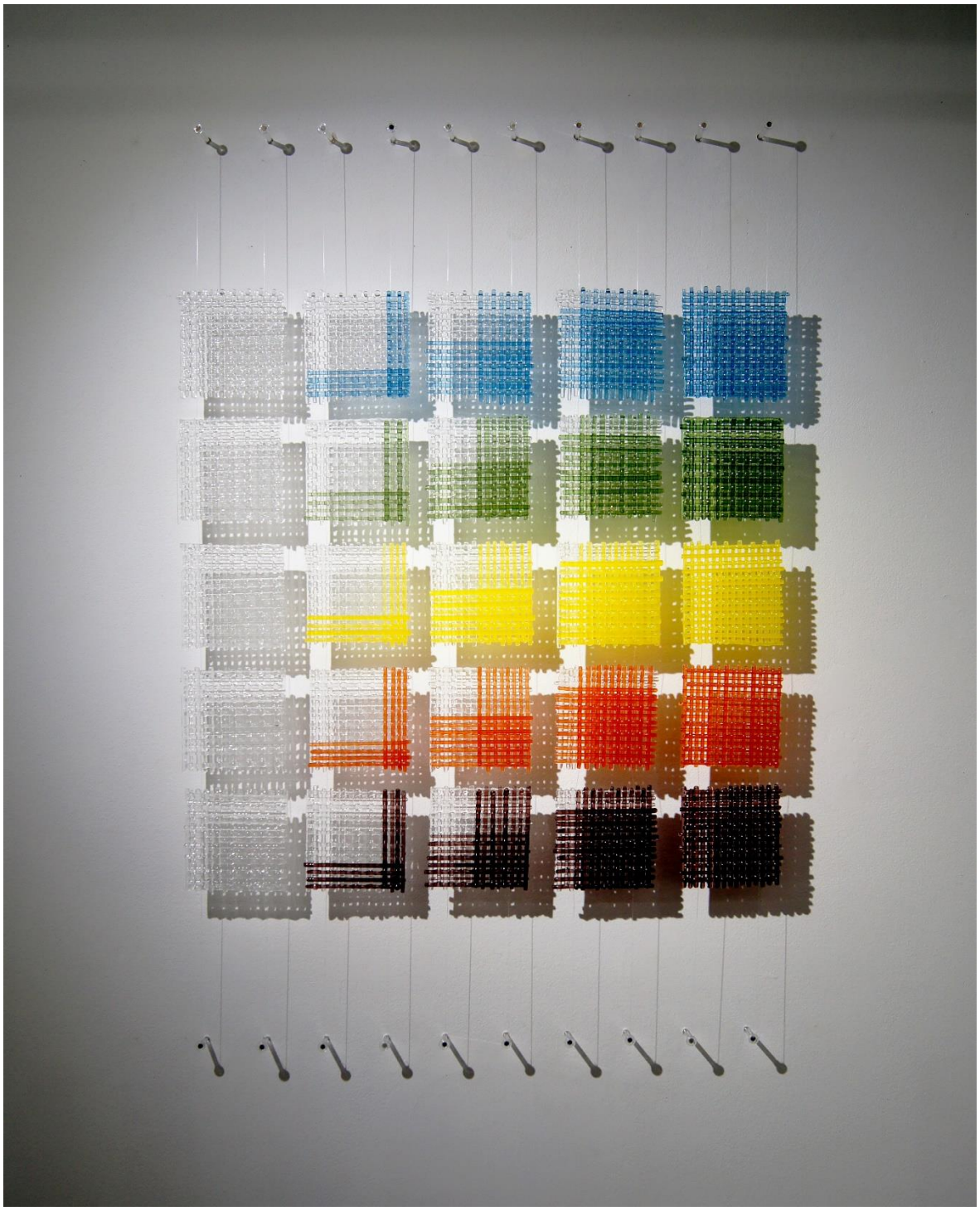

Figure 1
Gradated Spectrum
Kiln formed glass and monofilament
43 in x 29 in

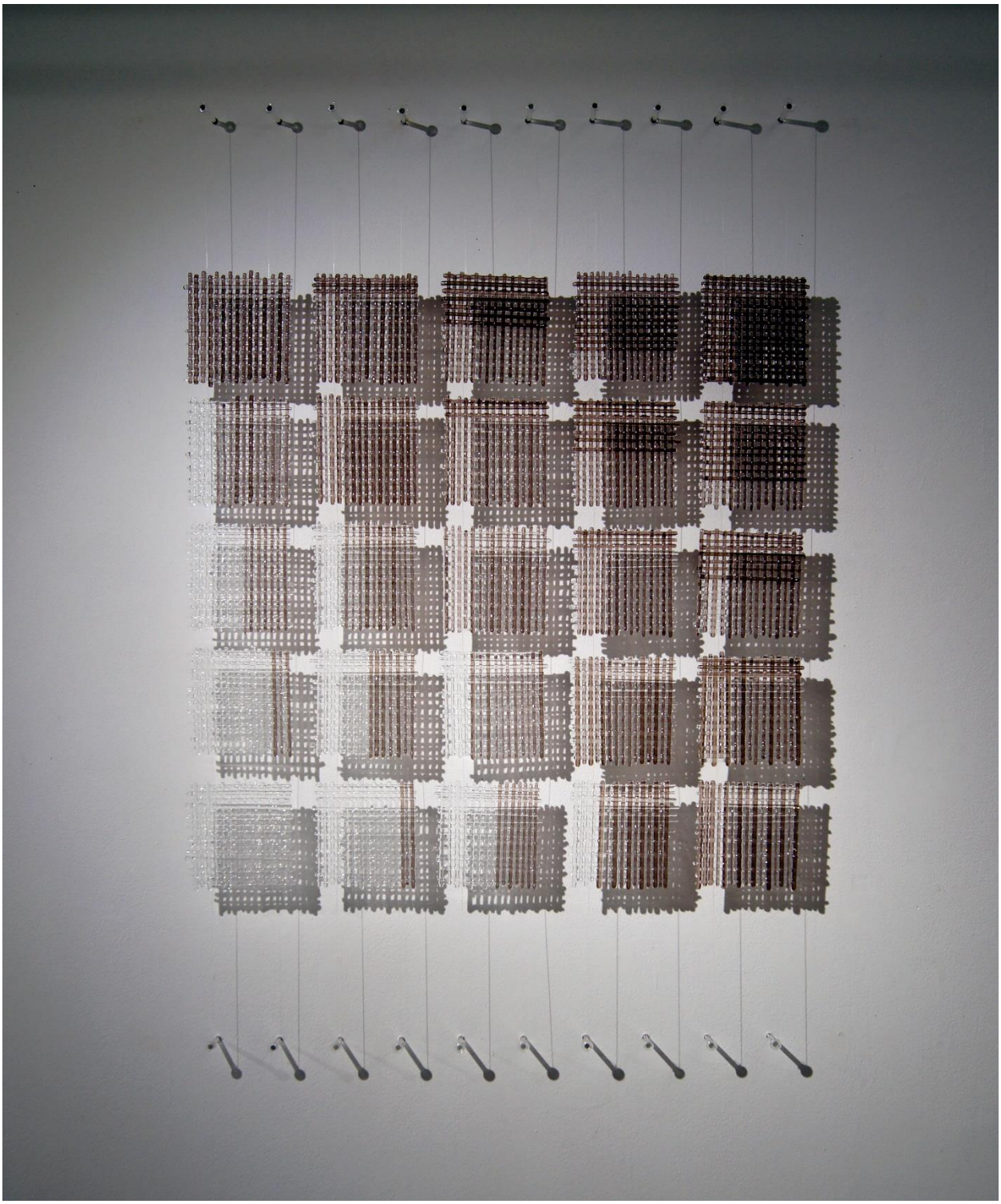

Figure 2
Grayscale
Kiln formed glass and monofilament
43 in x 29 in

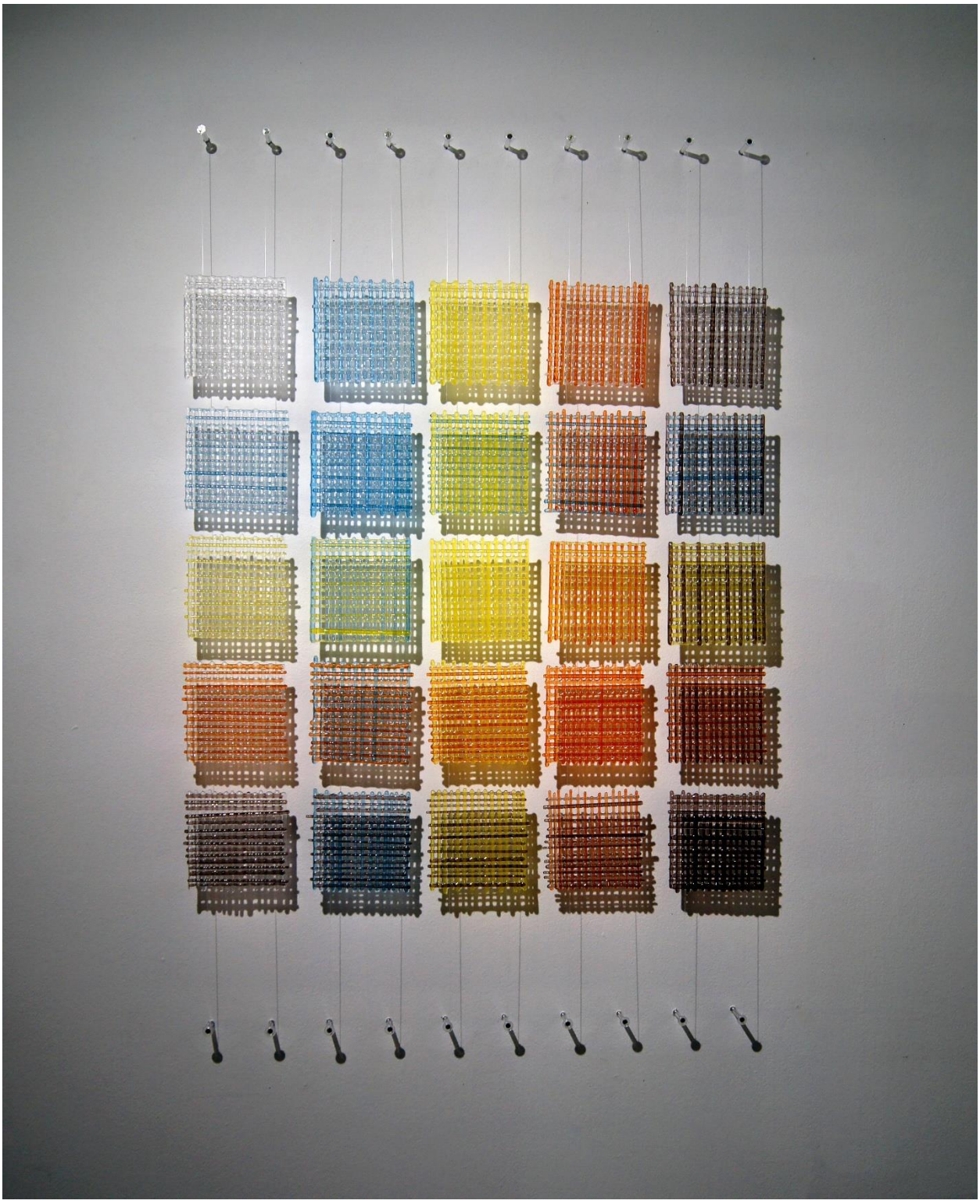

Figure 3
Blending
Kiln formed glass and monofilament
43 in x 29 in

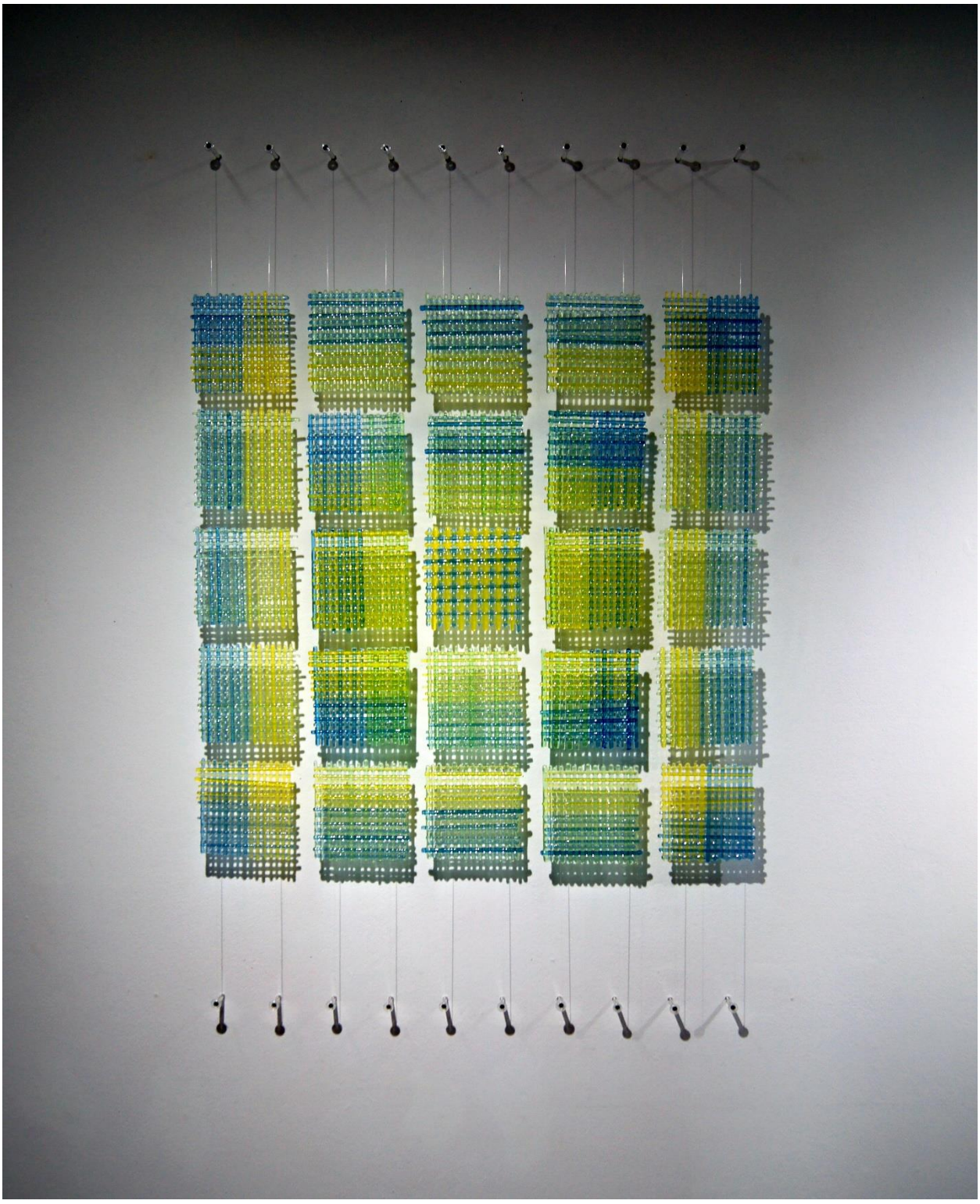

Figure 4
BYG
Kiln formed glass and monofilament
43 in x 29 in

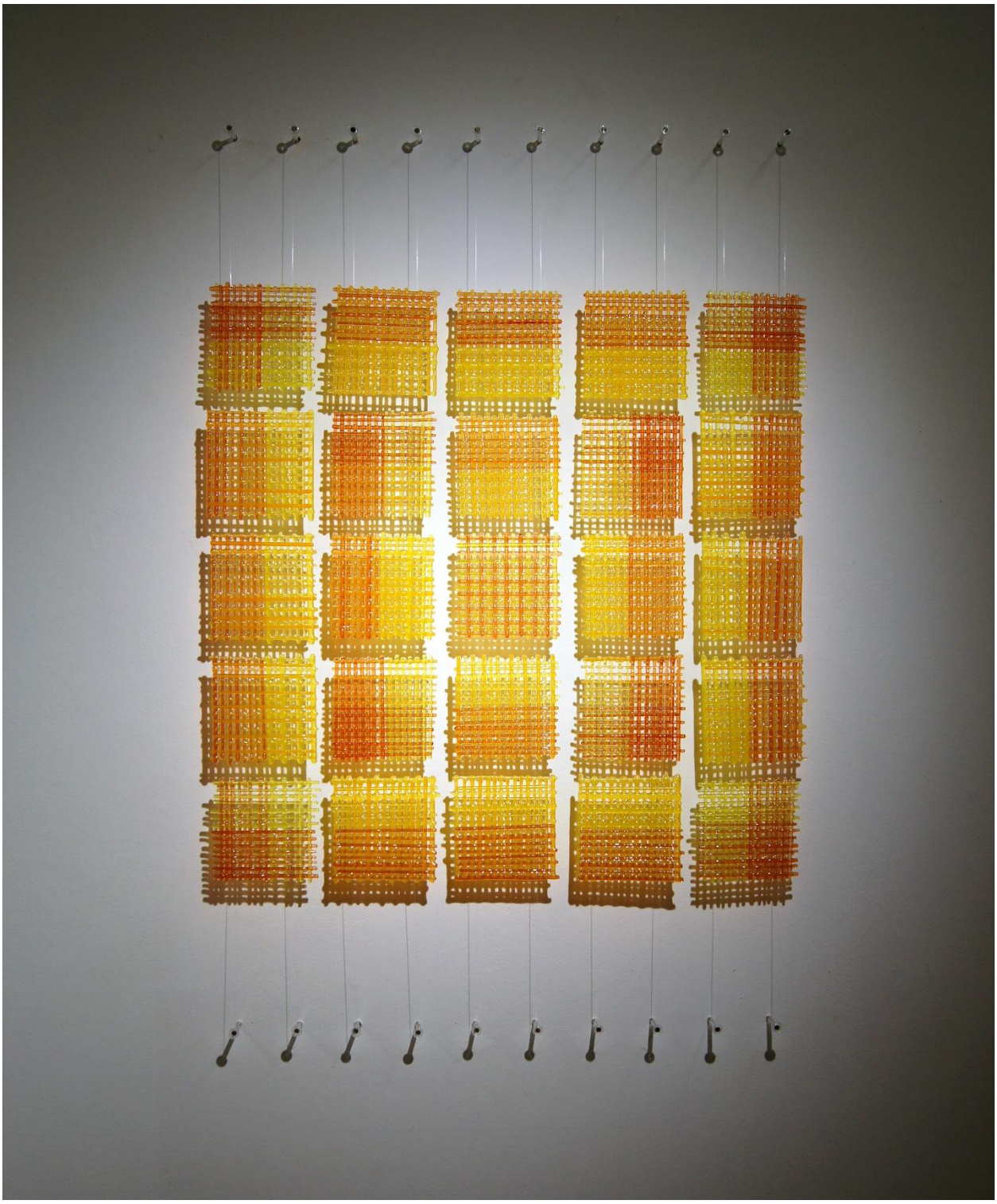

Figure 5
RYO
Kiln formed glass and monofilament
43 in x 29 in

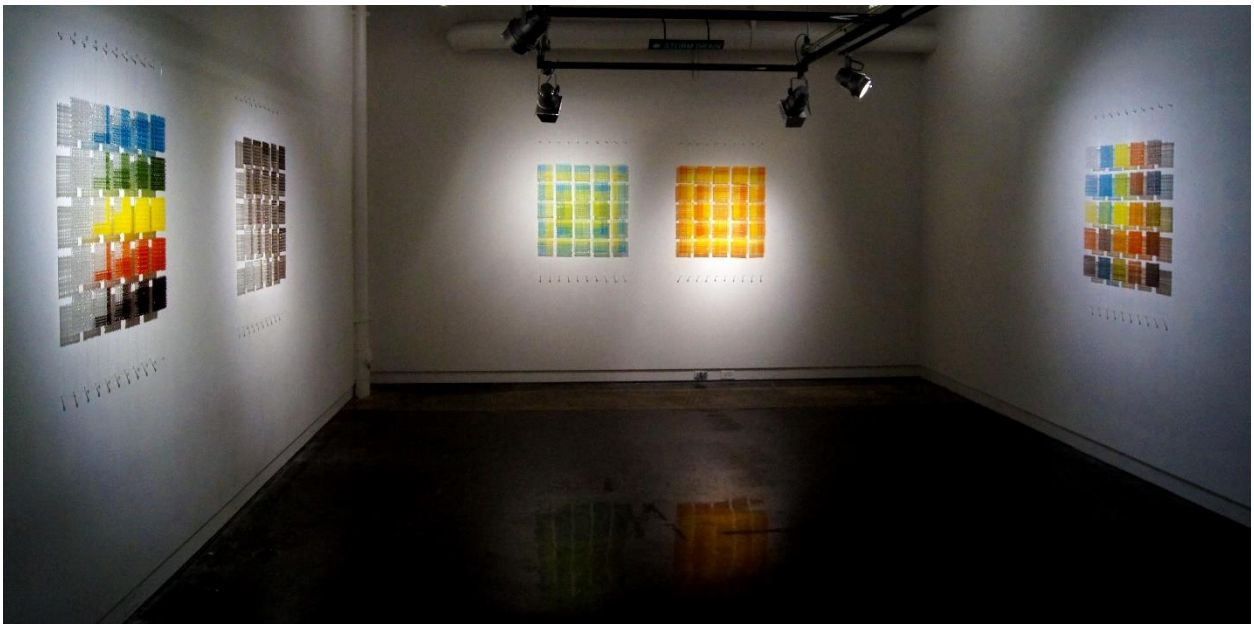

Figure 6
Gallery