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BRANCHING TOPOLOGY: THE AESTHETICS
AND SYMBOLISM OF
GLASS TREES

Michael L. Tracy

19 Pages

This thesis discusses my glass artwork which I make to help me understand the world. Trees, specifically bonsai trees, are used as inspirational imagery. The work explores the physical and symbolic aspects of the trees and the relationships that develop between the maker, the object, and the viewer. The series of work split into two distinct styles and the relationships of the styles as they relate to aspects of my personality are explored.

KEYWORDS: Bonsai, Communications, Drawing, Foliage, Glass, Lampworking, Mirror, Network, Non-representational, Representational, Tree

BRANCHING TOPOLOGY: THE AESTHETICS
AND SYMBOLISM OF
GLASS TREES

MICHAEL L. TRACY

A Thesis Supportive Statement Submitted in Partial
Fulfillment of the Requirements
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BRANCHING TOPOLOGY: THE AESTHETICS
AND SYMBOLISM OF
GLASS TREES

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M. L. T.

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CHAPTER I

INTRODUCTION

My work is a way for me to explore and satisfy my curiosity of the world and how the things in it work. In another life, I may have been a scientific researcher or a computer programmer. Creating artwork is a proxy that I use in place of these technical fields to satisfy my inquisitiveness and creativity. Each new piece acts as an experiment for a different technique or design. I currently make glass work using trees, specifically bonsai trees, as the foundational inspiration. The work is a way to explore the physical and symbolic aspects of the trees but has also become a way to explore the process of building networks. Using the tree as a consistent image, the work explores the relationships between the materials, the maker, and the viewer.

CHAPTER II

MATERIALS AND MEDIA

As a maker, I have a tendency to fixate on the technical aspects of creating objects. I focus on the process and mastering the skills associated with a medium. I desire to be in complete control of the material but I will let it dictate the composition — I will drip paint, smear graphite, or make completely gestural drawings. The key is that I want to be in control of the material before I loosen up. When making the work, everything that happens is because I did it myself or I gave it permission to happen.

I choose the materials to work with based on a combination of their working properties and visual appearance. I like a material that gives me the ability to work meticulously, to focus on a specific area at a time, and have pleasing visual qualities. I initially fixated on drawing, specifically with graphite, but after working with glass for the first time, it became my focus. The physical properties amaze me — glass flows like a liquid when it is hot but it is firm and solid when cool, it can be almost perfectly transparent or completely opaque. The colors can be vibrant, especially the transparent colors that seem to glow when light passes through them. The process is also exciting and unpredictable. Glass is in excess of 2000 °F when molten and it might be only a few inches away from your body. It is easy to lose control and have the piece turn into a misshapen, amorphous blob. Working the material requires focus — it requires attention to heat, gravity, and chemistry.

I have tried numerous ways of working glass and have gravitated to a method called lampworking in which one uses manufactured glass tubes and rods and melts them directly in the flame of a bench mounted torch. Lampworking appealed to me for the same reasons I was initially attracted to drawing — it is generally a solitary activity and gives a great amount of control, allowing one to work methodically. I am able take my time and obsess over details while still have the excitement and unpredictability of working with fire and molten glass.

CHAPTER III

TREES AND THEIR RELATIONSHIPS

My work is primarily influenced by my interest in science and technology including aspects of physics, chemistry, math, insects, drafting, schematics, technical drawings, computers and programming, models and dioramas, and science fiction to name a few. My curiosity has been the dominant motivation to create work, regardless of the medium. My artwork is a way of studying the subject and to learn about its physical attributes and minute details.

Trees serve as the inspiration for my current work and offer many facets to explore. They are made up of multiple, connected networked structures — the veins in the leaves form a web in the surface, the leaves connect to a forking network that is the branches, and the whole system is anchored by the roots that spread out similarly to the branches. Trees are solitary but they depend on insects and birds for pollination. The way they grow is reactionary to wind, light, and other physical stimuli. There is both a fragility and hardiness to the plants. The tree is also an image that is familiar and accessible to all viewers allowing their personal relationship play a role in their interpretation.

Bonsai trees are a specific form that is referenced in the work. Historically, what we refer to as bonsai comes from Japan but in fact originated in China. The act of growing and grooming miniature trees was originally practiced by Buddhist monks.

They had a strong reverence for nature and created complete landscapes in pots with trees as a dominant element as a way to bring nature indoors. It was a spiritual practice for them — the grooming of the trees paralleled the way they managed their lives to achieve spiritual perfection. When Buddhism spread to Japan the practice came with it. The Japanese altered it to suit their aesthetics; they got rid of the other landscape elements and focused solely on the tree. The Chinese trees were rougher and unpredictable, mimicking a natural weathered tree, whereas the Japanese refined the designs, striving for an almost fantastical perfection. This gave us the current form of bonsai — to make plants that look like miniature versions of an idealized tree.

The history of bonsai is one of the reasons the form is used. Bonsai have a distinct visual style and it is a practice that many viewers will already be familiar with. For those that are familiar with its religious history, it may also bring associations outside of the visual form. The viewer may be able to relate their own experience and see the work as a symbol of personal and spiritual growth. The creation of the work can also be seen as a manifestation of growth. Whereas a living bonsai grows as a biological plant, the glass form grows through its birth as a design and then its physical manifestation as glass is melted, shaped, and bent into its final form.

For me the meaning of the work is rooted in the act of its creation. Originally the process was linear and static — I would make detailed drawings and then work meticulously to make the glass match the predetermined design. As the series progressed, the process evolved and became more fluid. A relationship developed between me and the work, and the tree began dictating the final form. An initial design is

still undertaken, but it serves only as a guide of what can be made and not what will be made. As the tree is taking shape, the form itself makes me readdress and alter the design. The process started with me as the engineer and fabricator, but has led to me being the facilitator to what the tree desires.

Growing a real bonsai is a long term commitment, requiring regular pruning, watering, and feeding. A living bonsai is not a static system and every year of growth will bring about new changes to the tree. There is a permanence to glass — it does not move, it does not grow. If kept in the proper conditions, the colors and surface will remain unchanged indefinitely. The glass trees represent a moment frozen in time, an unchanging manifestation of the idealized tree. Their creation is like condensing a lifetime of grooming to make a bonsai that exists in perpetuity.

The nature of the glass trees also calls into question of what defines a bonsai. Is a bonsai defined by its physical appearance, the training the plant undergoes, or a combination of both? The glass examples are already a step removed. They are a man-made, inorganic material representing the form of a living tree. The living specimens only become a bonsai through the training and grooming they are subjected to. The design and creation of the glass works can be seen as analogous to the training of the plants. Does the physical appearance allow them to serve as a bonsai? Does changing the medium to glass cause them to function as a model of the bonsai form? Or is the work something different altogether?

The relationships between the creator, the creation, and the act of creation are other ambiguous areas of understanding left for the viewer to create their own

interpretation. I initially take on the role of creator through the act of making the tree. Viewers naturally create their own meaning based on their personal relationship with any image presented. Once each piece is finished, my role as a creator changes, and the viewer takes over as the creator through their personal interpretation. The work has its own role in creation as it influences its final design and the viewers interpretation. There is not a clear delineation about who the creator is, when creation ends, or if it even does. These problems about the definition of bonsai and creation are presented to the viewer and numerous interpretations of the relationships remain possible.

CHAPTER IV

THE BRANCH.FORK SERIES

Drawing was my first love and still serves as a dominant influence in how I treat all other media. I normally draw exclusively in graphite, doing meticulous, clean, representational works inspired by super-realism. The *Grid* series of drawings were a departure from that way of working; they were completely non-representational works



Figure 1: Grid #2

with color. For these non-representational drawings, I would initially make some marks on the paper and then start adding to it based on what I intuitively felt the composition needed. Many of them feature grid-like line work that was inspired by schematics and mechanical drafting. The process and design elements used in the *Grid* drawings inspired a similar departure within my glass work.

Branch.Fork is a related but divergent series to the representational trees. The two series each represent different aspects of what a tree is. The representational series takes a literal approach and depicts the visual form of a tree accurately. The *Branch.Fork* series is not concerned with the visual form but rather is an visual interpretation of the function of the different components of a tree such as roots, branches and leaves. I follow the same process that I used when doing the *Grid* drawings in the past — I create a glass component and then build off of it in a reactionary way. Like the non-representational drawing, there is never a specific design in mind — I let the form dictate the composition. Unlike the drawings though, I considered what the function of each component might be. A certain part may act as roots whereas another may be adding support to what could be considered branches. The work developed intuitively based on compositional design principles and the perceived function of the the elements involved. I would never know how the finished piece would look when I began, but I did intuitively know when it was done.



Figure 2: Branch.Fork.001

Similar to the drawing series, my interests in schematics, drafting blueprints, and other technical diagrams remain an influence on certain elements. Straight lines, reminiscent of the wire paths in schematics or dimensional lines in drafting, and little spheres of glass acting as vertices connecting the lines are common design elements. The lines seem to act as a structure holding the piece together, or as pathways, allowing different sections to communicate. The spheres reflect the environment around them, incorporating multiple environments within the piece. The work behaves as a biological model or an engineering prototype of a complex, networked system.

The concepts and design elements used in the *Branch.Fork* series also informed what could be done with a representational tree. The results are a hybrid piece — its origins are more recognizable, but the purpose remains ambiguous. There are easily identifiable components; it is clear what part is the trunk, branches, and foliage. Any functional purpose of other parts is not as clear. There is a framework of straight lines that seems to be scaffolding to hold the branch up. Or is the branch holding the framework up? The purpose of elements such as these is left ambiguous. The viewer becomes the creator of the purpose through their personal impression or narrative that they create for it.



Figure 3: *Branch.Fork.Merge*

CHAPTER V

DETAILS OF DESIGN: TECHNICAL DISCUSSION

My history with drawing directly inspired the *Branch.Fork* series, but that is not where its influence ends. The way I treat certain elements in the designs takes direct inspiration from techniques used in drawing. On a technical level, creating the trunk of a tree is fairly simple; emulating the look of the foliage is more challenging. There is a technique in drawing and painting that when you render certain textures that are created by many small elements, such as hair or leaves on a tree, you treat it as large mass instead of trying to render each leaf or hair individually. I adapt this principle to glass to create the design for the foliage.

I have different methods to achieve this, each with their own unique aesthetic. One method uses piles of glass shards that are melted together. The texture replicates the look of tight, dense foliage. The way that the foliage has to be placed on the tree gives the appearance that they are almost like little islands, a little world of their own within the tree.

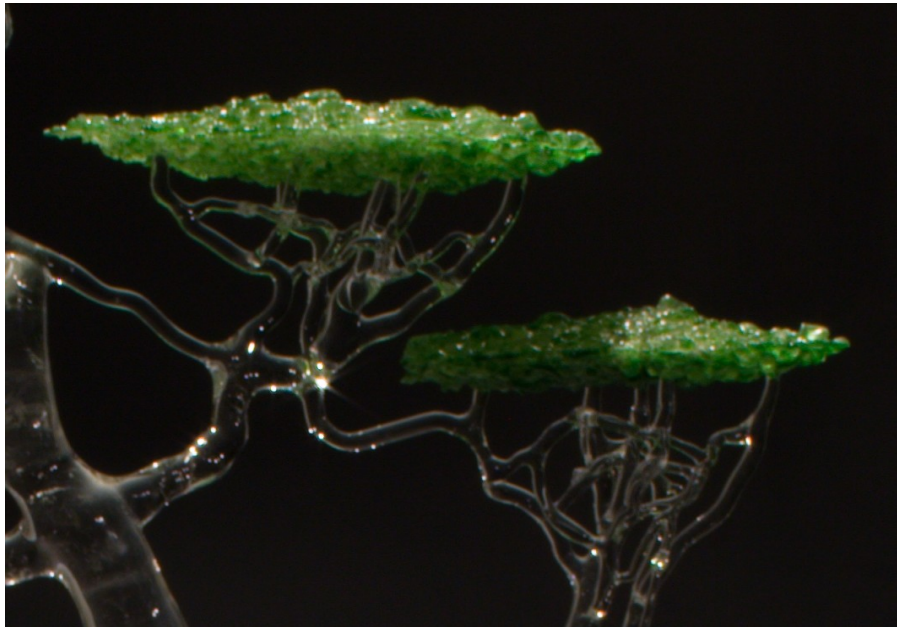


Figure 4: Close-up of Glass Shard Foliage

Another method utilizes hollow pieces of glass to represent the foliage masses. This mimics larger, bushier foliage found on many trees. The forms take on the appearance of clouds, an unintentional but welcome relationship. There is not a strong sense of weight within the forms; they seem light as if they want to float away. They do not seem to weigh down the branches, but rather it is like the branches are anchors, keeping them from floating away.



Figure 5: Piece Made With Hollow Foliage

The last method takes a much more direct inspiration from drawing. I frequently use a pen when doing quick sketching, and when sketching trees, I use masses of scribbles to represent foliage since you can not blend or shade with ink the way you can with graphite. For the glass trees, this effect is translated by using thin glass rods bent around the branches. The rods are attached to the branches and are looped around to fill the area the foliage occupies but never make a distinctly defined outline. The lines mimic the continuous gestural line used in the sketches. When color glass is used, lines of clear glass is layered within it to mimic the look of fainter layers of ink. The clear glass



Figure 6: Close-up of Glass Rod Foliage

reflects and refracts the color, interacting with the lines, creating a subtle modulation, especially as the viewer moves around the piece. Unlike the other methods, the line-work more accurately depicts a sense of weight in the foliage. The lines can loop down, seemingly drooping off the branch as if its being pulled down under its weight.

Some of the pieces feature sections, usually trunks and branches, that have the reflective surface of a mirror. Visually, the color of the mirror complements and enhances the simple, monochromatic color schemes used on most of the pieces. A mirror mostly reflects light but some of the color of the metals shows through. For a silver mirror, this is generally a gray tone, but it can also oxidize to a much warmer yellow-gray. This both contrasts and reinforces the rest of the colors. The clear and colored glass both have a sterile quality because of how consistent they are. The mirror complements this through its own form of sterility. When the mirror yellows it adds an aged quality, similar to how paper yellows after many years. It adds a random element of degradation to the works that contrasts with the cleanliness of the other components.

The mirroring also allows the work react to its environment. The mirrors reflect the world around them, completely changing the appearance of the tree relative to where it exists. The tree's foliage gets reflected in the trunk, adding layers of complexity to an already chaotic arrangement. The viewer's own reflection also becomes part of the work, distorted by the curves of the mirror. The viewers role as the creator, through their personal interpretation, becomes expanded as their own image is integrated as part of the work.



Figure 7: Piece With a Mirrored Trunk

The color palette of the trees also takes direct inspiration from drawing. While I may sketch with pen, I prefer doing finished drawings with just graphite, creating monochromatic works in shades of gray. When I do work with color it tends to be with a minimal color palette usually combined with graphite. This was a personal decision based on how color affects the work as it can be very influential to the works interpretation and emotive qualities. Grayscale has its own associations, but it is more neutral and allows the viewer to focus on the imagery presented. By using color

judiciously, attention can be drawn to specific elements to guide the viewer.

For the trees, I adopted a similar minimal color palette with a focus on clear and black. The black glass, for me, is analogous to the lines and strokes that could be made with charcoal, graphite, or ink. Clear glass, while it is technically devoid of color, does refract and reflect light. The environment around it gets distorted and bent — some areas get completely washed out by bright white highlights. I saw this in the same way charcoal can be smudged and blended, or an eraser can be used to bring out highlights. By keeping the colors limited and unnatural, numerous associations become possible. The transparent glass has a crystalline quality, as if it grew naturally but through an unconventional occurrence. The trees recall relations to biological models or fantastical trees from science fiction.

CHAPTER VI

CONCLUSION

The work combines the different elements of my personality. There is the dominant component of my personality that is logical and analytical. It is not without emotion, but is pleased by order and formality. There is another part of me that began to emerge as the work progressed. It could be described as a poet or a dreamer. It is not as interested in logic or organized structures. It is more amused by the lyrical, flowing lines of the trunks and branches or how the shadows that the tree casts interact and become forms of their own. It is the part of me that became more dominant as the series progressed and gave up control, allowing the tree to dictate its own design. It added new dimensions to the forms that the strict designs I was creating would not allow.

When I started the *Branch.Fork* series, I saw it as a divergence of the representational trees, but the two are actually different aspects of the same series. One part allows me to be a scientist and engineer. I analyze individual components and make pieces informed by their function. The other part explores the meaning of a tree; they become sonnets or songs using the tree as a metaphor. The forms are representational but they capture a personality or an emotion. The two series coexist, but are asking different questions — one asks, "How does it work?" and the other, "What does it want to say?"