

## What is a Superplexus?

### A 3-dimensional pathway

Superplexus began as a solution to a problem given to Michael McGinnis by his 11th grade art instructor. The command, "Design a board game". Instead, Michael sought to create a 3-dimensional labyrinth, and found that he could wrap a pathway around and upon itself so that both front and back surfaces could be utilized. This opened up a world of possibilities.



Over the course of decades, Michael's skills as an artist and designer have grown, and his commercially successful, award winning series of Perplexus® games continue to find new audiences worldwide.

### A work of art

As an artist, Michael creates his interactive Superplexus sculptures to invite participation on levels both visual and tactile. They provide journeys that exercise the mind and hands. Superplexus is an abstract adventure that simulates the world around us, and safely allows us to make discoveries, develop spatial reasoning, and improve dexterity and hand-eye coordination.

When creating a Superplexus, the artist strives to simultaneously solve three interconnected problems: making a sculptural composition, producing a continuous pathway, and designing for structural integrity. All three solutions are of equal importance, and ensure that only essential elements remain. The purest essence of Superplexus is when form and function merge.

Superplexus attracts the eye, and is typically displayed in a place of prominence, making it an accessible work of art that people are encouraged to play with and touch.

As an adventure, Superplexus is quite complex. People are driven to participate and discover the next challenge. The player must physically proceed along the path one step at a time, which allows for ongoing discovery. The complexity of its interconnectedness makes Superplexus exceedingly difficult to grasp as a whole, ensuring its longevity as a fascinating work of art.



Michael enjoys working in both large and small scale, and is equally at home making custom, hand-held creations as well as "static" outdoor works of monumental scale, without gimbals or globe enclosures.

### What is a Gimbal?

Superplexus sculptures are typically enclosed in a sphere, captured in a gimbal, which allows for full 360° rotation on all axes. The gimbal is more complex than a common globe, and akin to a gyroscope. For durability and smooth function, all six pivot positions employ thrust and roller bearings enclosed in various housings of Michael's own design. The housings may be made from machined wood, machined aluminum, 3D-printed metals and nylon, or other unique materials and processes.

# Superplexus Interactive Sculpture

Gimbaled, three-dimensional  
labyrinths by Michael McGinnis

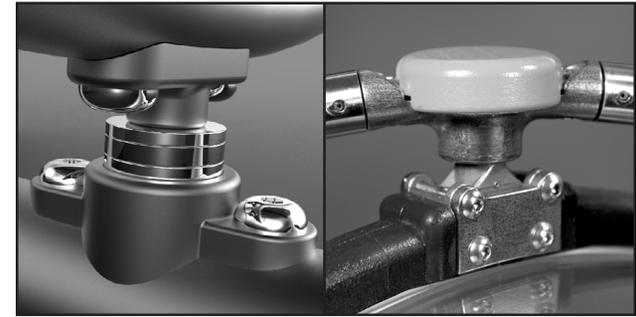
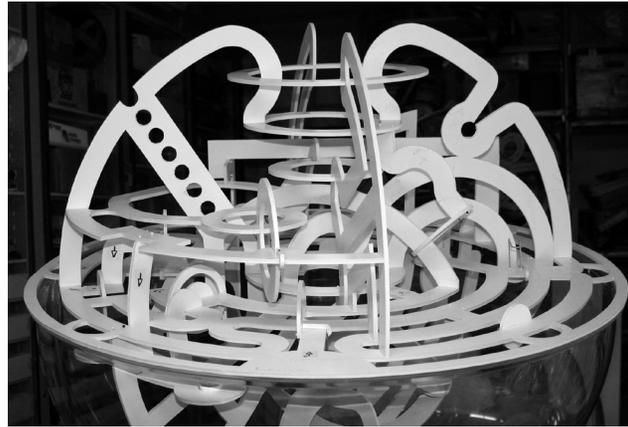


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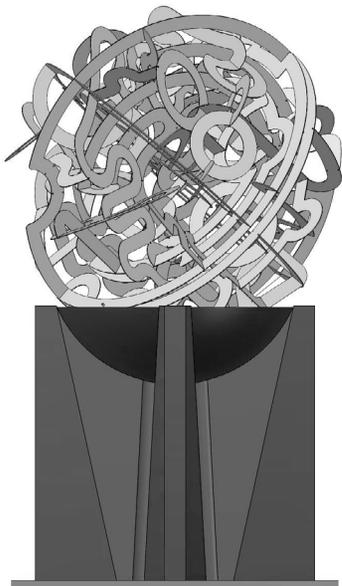
# Making a Superplexus



*Above left, a pivot design with thrust bearings. Above right, one that includes a visco-damper.*

## Designing the structure

Every piece starts out as a kernel, or a spark of an idea. In the case of **Luna**, it was to create a completely open, split-rail pathway. For **Megan's Maze**, a memorial commission, it was the use of colors and forms enjoyed by a little girl who passed away. Every new work is created around its own unique set of problems and solutions. Early on, as with **Circles**, above, Michael's sculptures were worked out in the round using foam board, a knife, and glue. Nowadays, he uses CAD to visualize ideas because it allows him to rotate and view the work in any direction and be more spontaneous.



*To the left is a CAD drawing of **Percorso di Vita**, later made into a 48" diameter stainless steel sculpture. It was the first in Michael's "static" series appropriate for outdoor venues. These static works do not move. Rather, the viewer follows the path with their eyes and hands. The work shown has no beginning or end, just one continuous path.*

## Building the sculpture

Ideas have to be proven, and interactive sculptures as complex as Michael's require full-scale models for testing. A foam board model of **Vortex** is shown above. This model allowed for the discovery of several issues that were resolved before moving forward.

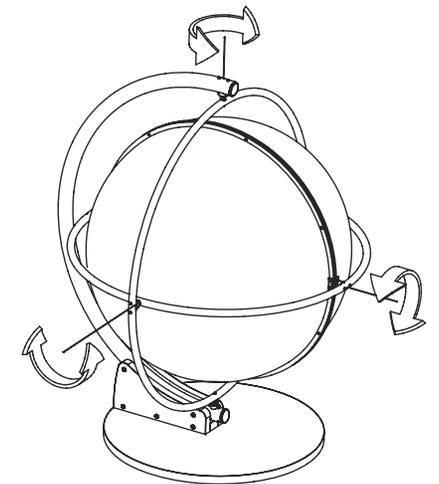
Once the concept is proven, Michael commences construction on the actual sculpture. Below, he is shown attaching a railing to the wooden pathway system of **Vortex**. This process takes many hundreds of hours, and is best done with assistance, as it is a daunting task.



## Making the gimbal and pivots

All sculpture needs to be considered for safe and secure display. Interactive sculpture also has to accommodate touch and movement. Many sculptors throughout history have been inventors, engineers and architects as well as artists. This goes with the territory of building physically demanding works. Superplexus has interesting engineering challenges which are fascinating to solve.

Gimbal designs evolve continually. Upon request, visco-dampers can be employed, which contain silicone oil. This applies spin resistance.



*A gimbal allows for full 360° rotation in all three axes, giving the entire globe freedom of movement in any direction.*