Carolyn Whitebread
Arts & Sciences Symposium

Math to Art: an Indefinite Ratio

When I declared my double major in Studio Art and Mathematics, I didn't envision the two disciplines crossing paths at all during my college career. However, I've always been fascinated with the different graphs and function-based pictures that I've come across in my math textbooks, and I decided that I wanted to try to combine the beauty and precision of these forms with the free and flowing art form of painting.

I was especially taken with the three dimensional graphs that I had to draw in my multivariate calculus class. Some of the shapes were so elegant-looking and had so much character, and I loved the fact that I could draw them just by looking at an equation. So, I decided to work exclusively with these 3D continuous functions along with some 2D continuous functions.

Although I was working with precise functions, I didn't want my artwork to become too rigid. In general, I prefer to work freely when creating art; I like to let my ideas grow and change during the process of drawing or painting. Thus, my paintings are not precise renderings of functions so much as they are explorations in the beauty of math. I see them as *liberated* visual representations of mathematical functions.

The more I worked with the shapes, the more I saw them as dynamic beings, and I began to think of them as people. Some of my paintings consist just of one function or shape; I think of these as "portraits." In these paintings, the focus is only on the shape. The others feature repetitions of one or more shapes; I think of these "candids." The focus in these paintings is on multiple shapes and also on the space that they occupy.

The process of creating the work was fairly direct for the "portrait" paintings: I picked a shape and painted it. It turned out that for each of these paintings, I used four different colors. For the "candid" paintings, I started with a shape or two in mind; sometimes I sketched different compositions involving the shapes before painting, but most of the time I would just picture a vague composition in my head and go straight to the canvas. Either way, once I began painting, the piece seemed to grow on its own.

However, sometimes the paintings stopped growing on their own - that is, I got stuck. When this happened, I simply worked on or started another painting. This seemed to get my ideas moving in different directions again, and I would be able to go back to the first piece and continue working.

I like shapes that have an elegance about them and also a sense of movement in their structure. I picked some fairly standard shapes for these pieces in hopes that some viewers might have seen them before. I did not follow any rules or patterns to choose my colors; I picked them entirely based on intuition.

In general, all of these paintings aim to capture the beauty of mathematics. Beyond that, I didn't attach specific meanings to the pieces. None of the pieces had a particular meaning to me when I started painting. Sometimes, by the time I completed a painting, it conveyed certain emotions or ideas to me, but I don't expect other people to see the same things in them as I do. The important issue that I want people to realize is that the paintings are based on equations, which they can see from the titles if the shapes themselves are not enough of an indication. From there, viewers can supply their own meanings to the paintings.

The compositions of the paintings are not created by using math, nor are the colors picked by using math; both of these processes are intuitive and unrestricted. Yet the subjects of these paintings are these precise, mathematical forms. There is a tension between structure and flexibility in the paintings; the amount of math found in the midst of this tension is dependent on the viewer. Therefore, the ratio of math to art in my paintings is indefinite.