



Tornado's cup
17.324 cm x 20.062 cm x 19.202 cm
Printer 3D in white strong & flexible.
2014

The 3d works of art that I present are intended to show the surprising and amazing results that are achieved using mathematics, computer programs elaborated for this purpose and professional 3D printers. As Galileo said: "Philosophy (and Art) is written in this grand book - I mean universe - which stands continuously open to our gaze, but which cannot be understood unless one first learns to comprehend the language in which it is written. It is written in the language of mathematics, and its characters are triangles, circles and other geometric figures..." This time what I use are circles to represent Tornado's cup, equations for Typhoons and L-Systems for Granada.

Tornado's cup • My first encounter with tornadoes in mathematics took place in 1982, in a course of UMI in Cortona (Arezzo), taught by Dr. Serrin. The present work now reminds tornadoes and typhoons that are created with air masses in circular or elliptical rotations in the z axis and at an angle or shear. The image looks like a torus, but it is not, its fibers touch at one point, inclined with respect to the plane of the torus. The cup: here merely suggested by curves, is defining an open cup inside, and therefore there are certain types of cups that are generated by circles. Do you know all the surfaces generated by circles?

Typhoon equation • On the other hand, it is possible to see a tornado in equation form. There are infinite possible unbelievable and beautiful three-dimensional curves and some of them are approximations of natural phenomena such as tornadoes or magnetic fields. The fact of finding partial differential equations that fit could help to easily find control methods. This is a representation of a curve with parametric equations with sines and cosines and, as happens in a phenomenon governed by these equations, it has a nuclear point at the junction of the different curves that compose it. We can also see the shape of a cup suggested in this artwork, drawn with elements extracted from the curves.

Granada • This artwork, created in Granada in the summer of 2013, turns out to be full of Islamic stars, located at the end of each of the fourteen towers that follow so many directions in space. It raises more questions than answers: Why fourteen towers and not twelve? Why the towers? Why Islamic stars? What is the relationship between the L-system equations and the result product? Certainly I do not know, what I can tell is that these problems are related to the theme of the book of Adrian Bejan "Design in Nature", in which it is said that everything in the Universe is governed by dynamical Flow Laws, like the trees. In short, L-systems are in the midst of more mysteries than an artwork.



Typhoon equation
10.374 cm x 10.144 cm x 10.39 cm
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Granada
6.198cm x 6.2 cm x 6.2 cm
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2013