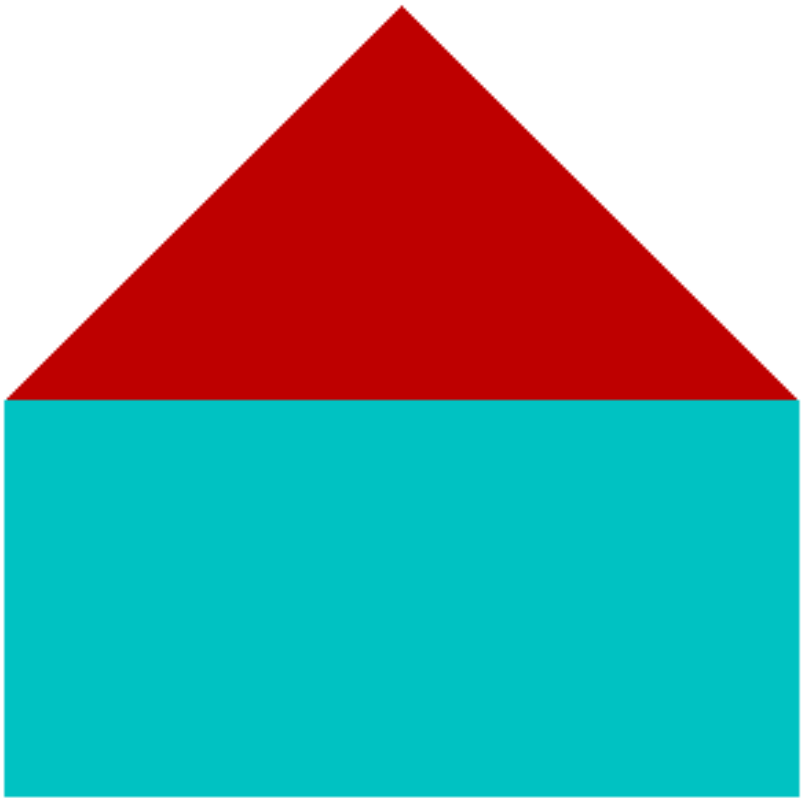
GENERATIONS
OF A HOUSE

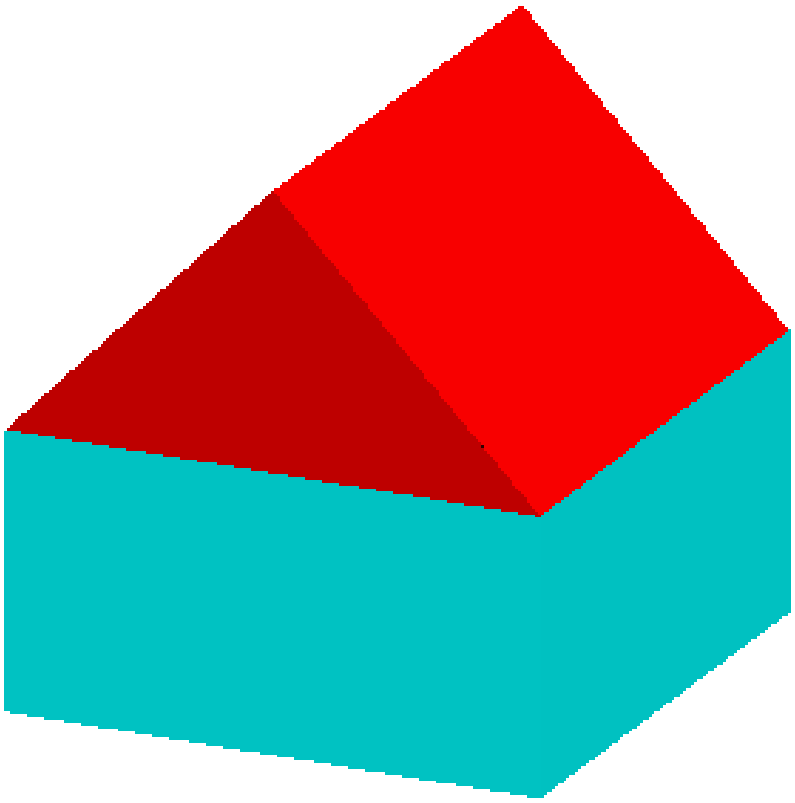
A VISUAL ESSAY ON THE NATURE OF GENERATIVE RULES OF GEOMETRY USING THE THEME OF THE HOUSE SYMBOL AS A STARTING POINT:

TOGETHER WITH SOME VERBAL MUSINGS AND RUMINATIONS, NOT ALTOGETHER SERIOUS, CONTAINING A LARGE NUMBER OF PUNS, SOME NOT ENTIRELY UNINTENTIONAL, BUT, NEVERTHELESS, NOT WITHOUT SOME INTENDED COMMENTS, BOTH EPISTEMOLOGICAL AND ONTOLOGICAL IN NATURE ON THE STRUCTURES OF LANGUAGE AND SPACE.

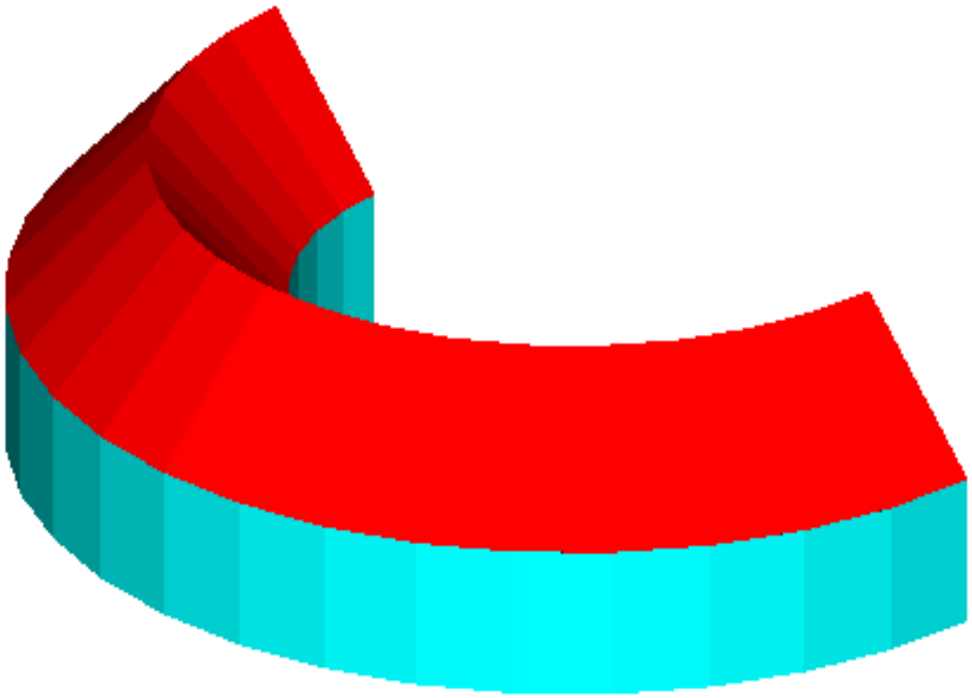
by MICHAEL MAHAN
29 MARCH 1997



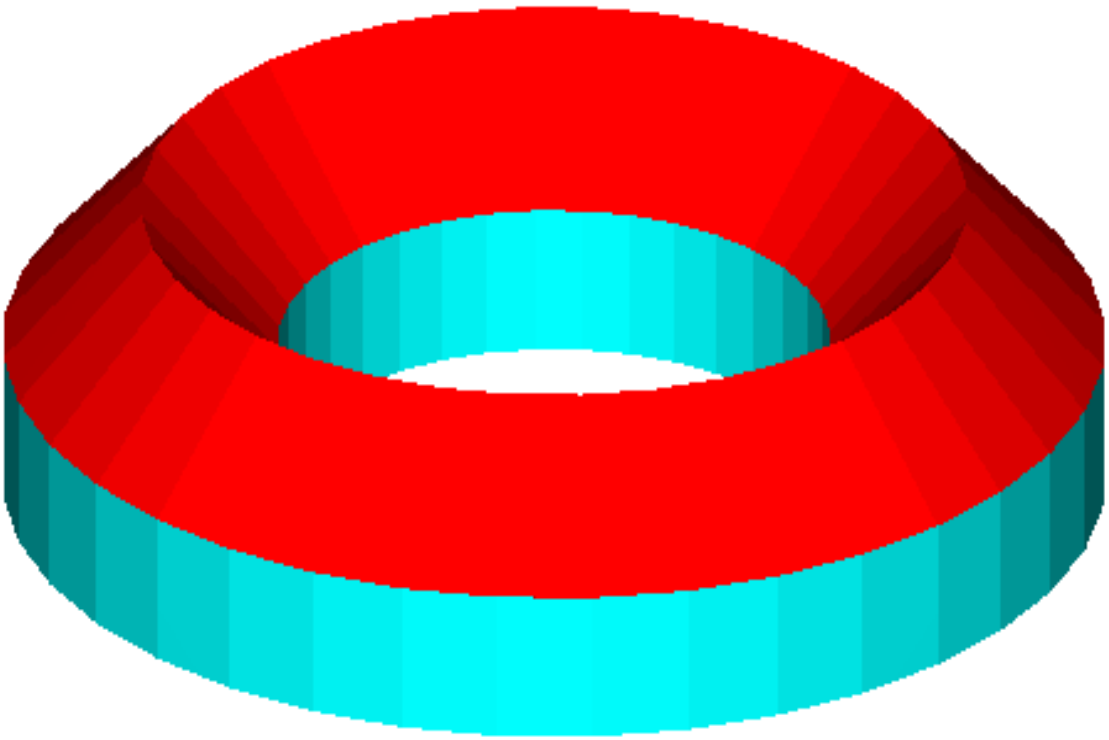
We start with a house. A simple house that a child might draw. A gable roof. A Cape Cod house. But this is the end of the house, not the front. Perhaps it is a Cubist house seen from two places. I'm pulling your leg. This is not a house, it has only two dimensions. You'll have to take my word for that because it is presented here in two dimensions. You can't see behind it. It is not a house seen in elevation, it is only an elevation, like a Hollywood set. It is a symbol for a house. A triangle on a rectangle.



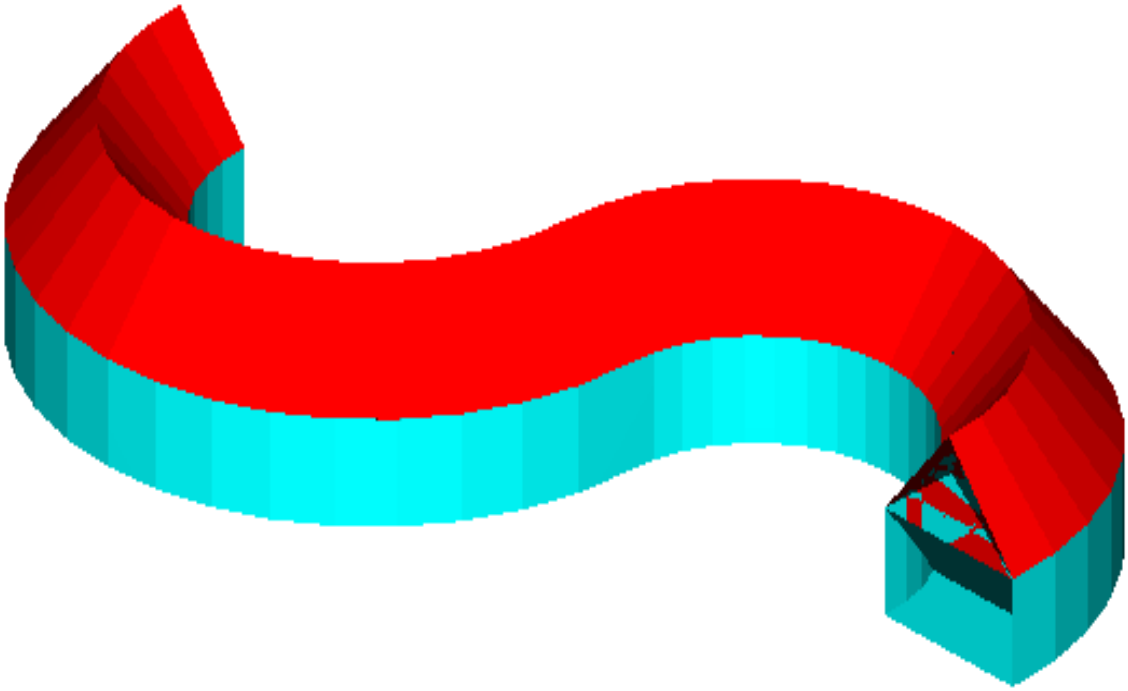
Now I've made it three dimensional. I've extruded the elevation back into space. You'll have to take my word for that, too. It really was flat before. Now its not. I didn't just turn it. Its a prism on a box. A more complex form. A house that exists in 3-space. You can't live there -- it has no mass. To say nothing of a door, but it still exists. I can easily make it more complex. Want to see?



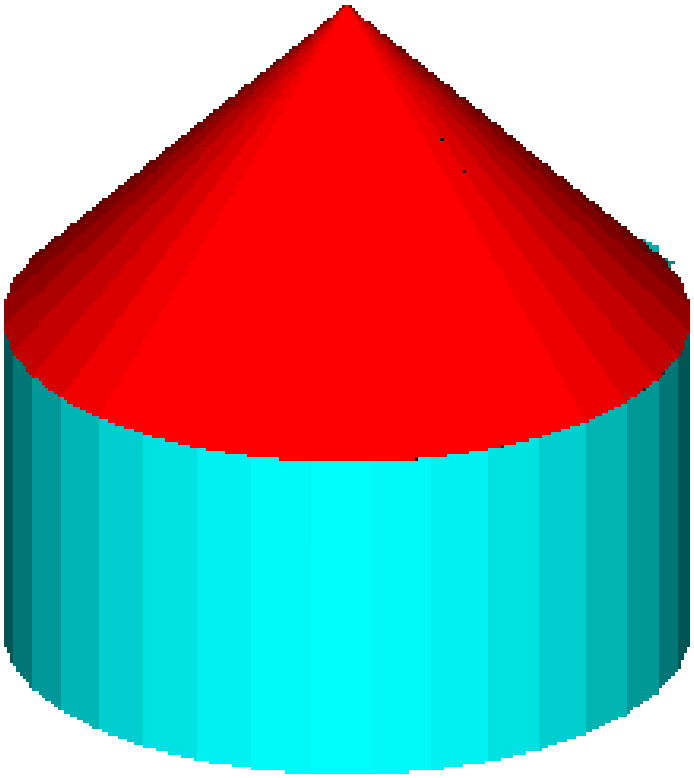
Just for fun I changed the color. But you can't see that because of this printer. I've extruded it in a semicircle. See how quickly things get complex. We have lost words to describe its form. Half a donut with a hat? A semicylinder with a hole and a whatchacallit?



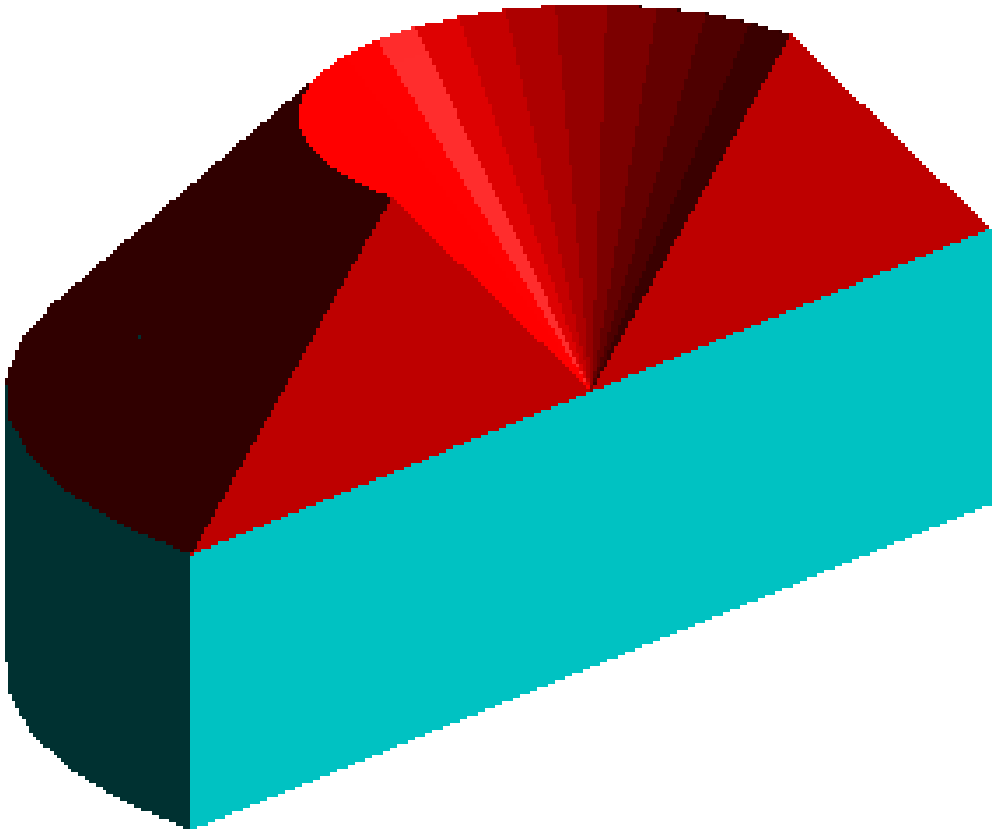
Now I've extruded it around a full circle. There's a court yard in the middle. But still no door. I haven't told you how big it is, have I? Its 20 x 20. 20 what? I don't know. Just 20. Make it as big as you want.



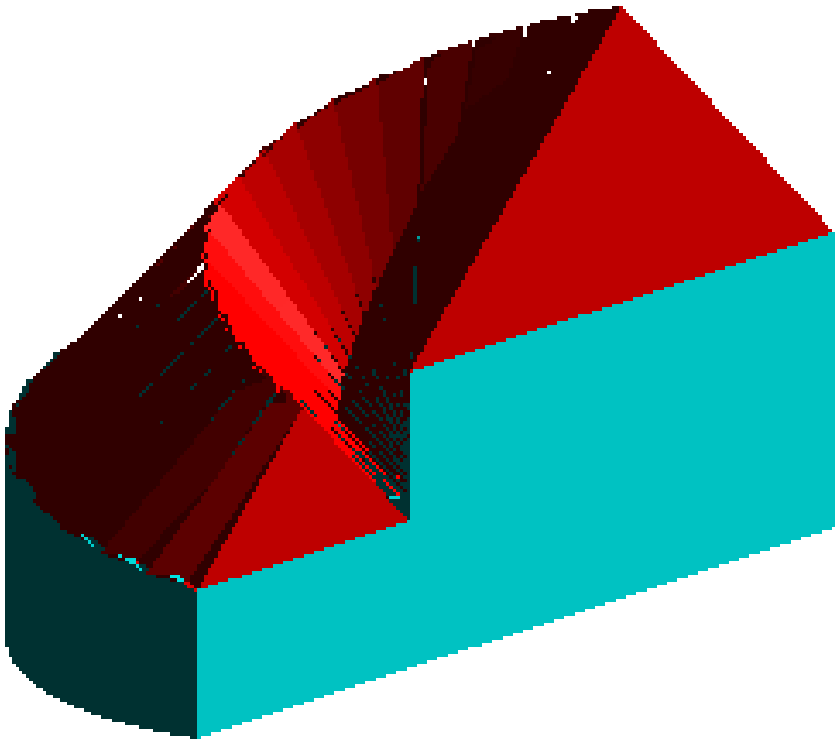
Well, I cut it in half and moved one half. Now it's an S-house. Maybe a snake house. No that's at the zoo. And it's not shaped like a snake. This is a snake like house. But since you don't know how big it is it could be a snake's house. Notice it has an opening -- maybe not a door, but??



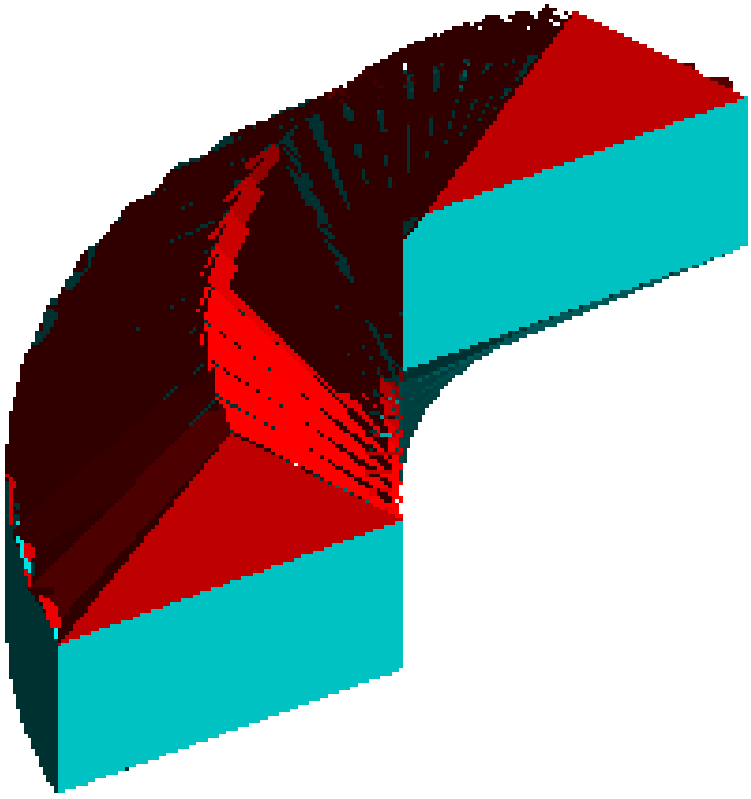
I've made it simple again. I spun it around its middle. Words return. A cylinder and a cone. A round house. It can still sit on the ground. In architectural space the three dimensions are not equal. Right is the same as left is the same as back is the same as forth. But up is not the same as down. *That* <u>is</u> the law of gravity



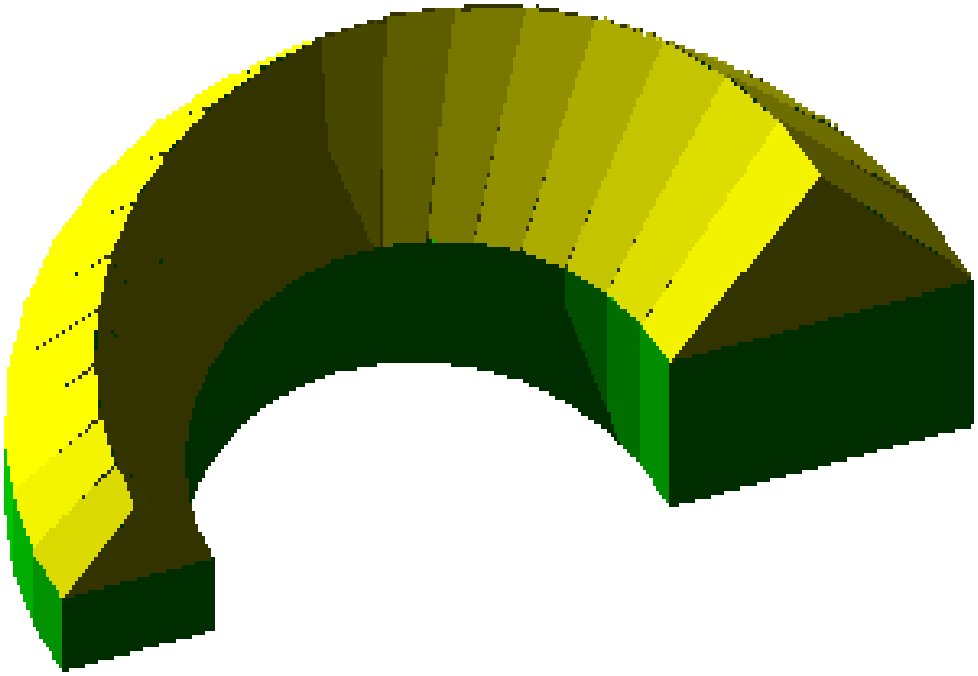
I’ve spun it half way around on one edge. The bottom is half a cylinder. But what is the roof? A cone with a cone shaped hole cut in half. A volcano? (I would have spun it all the way around, but the roof would have collected water then.) Now let’s get complex.



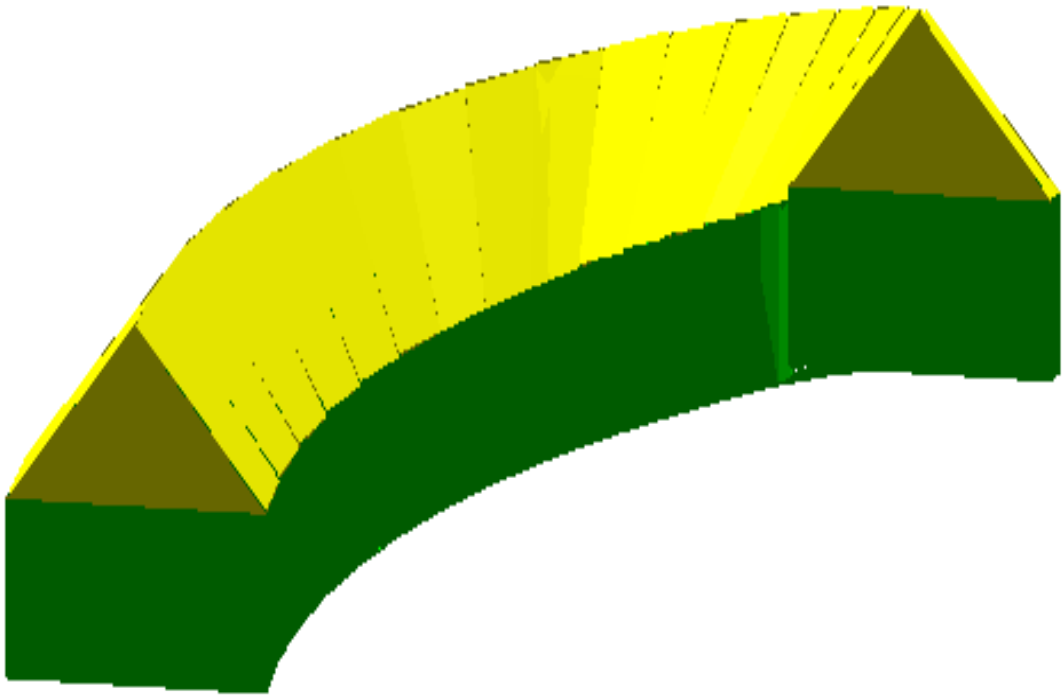
What have I done? I've spun it the same as the last time, but I've changed the dimensions at the same time. It's twice as big at the end as the start. (You'll have to take my word that it's not half as big at the end as the start. Because you don't know end from start or vice versa.)



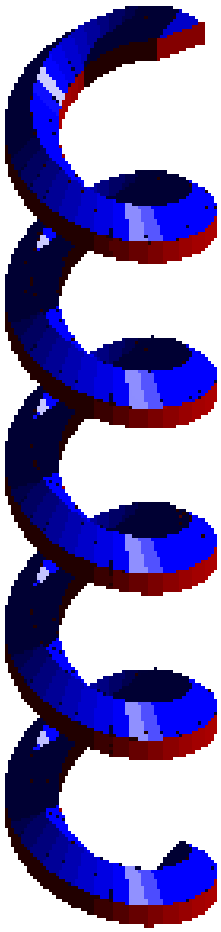
Now I've made it spiral up. But what about the law of gravity? It doesn't apply. Remember I told you the house has no mass. Everyone wonders how the Egyptians built the pyramids. It was easy. They did it before Newton invented gravity. Or before Archimedes invented mass.



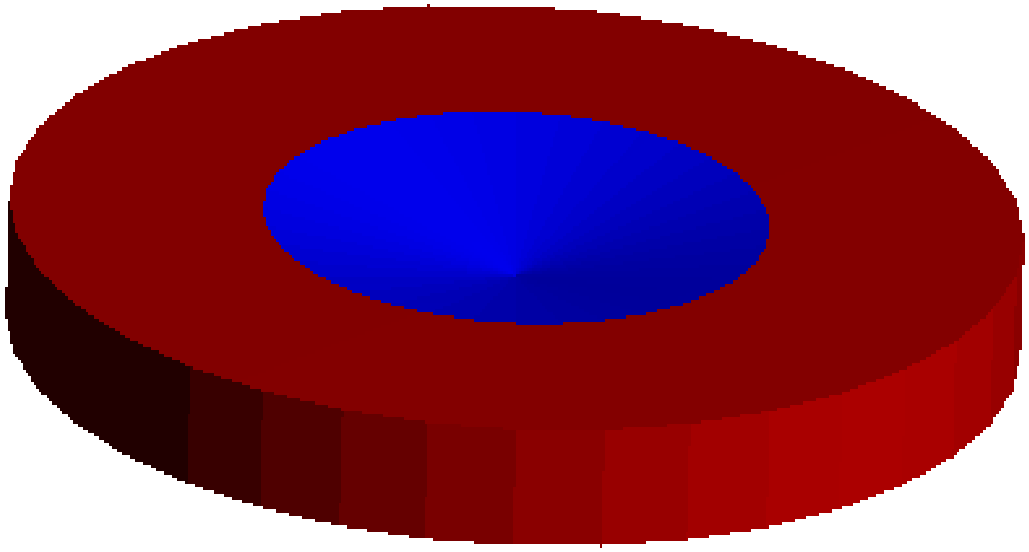
Do you think that's silly? It would be if I were serious. But since I'm not, it illustrates the point that gravity cannot simply be deconstructed. But what of our house? It's back on the ground for now and spiraled around an external point so that the end is twice as big as the start.



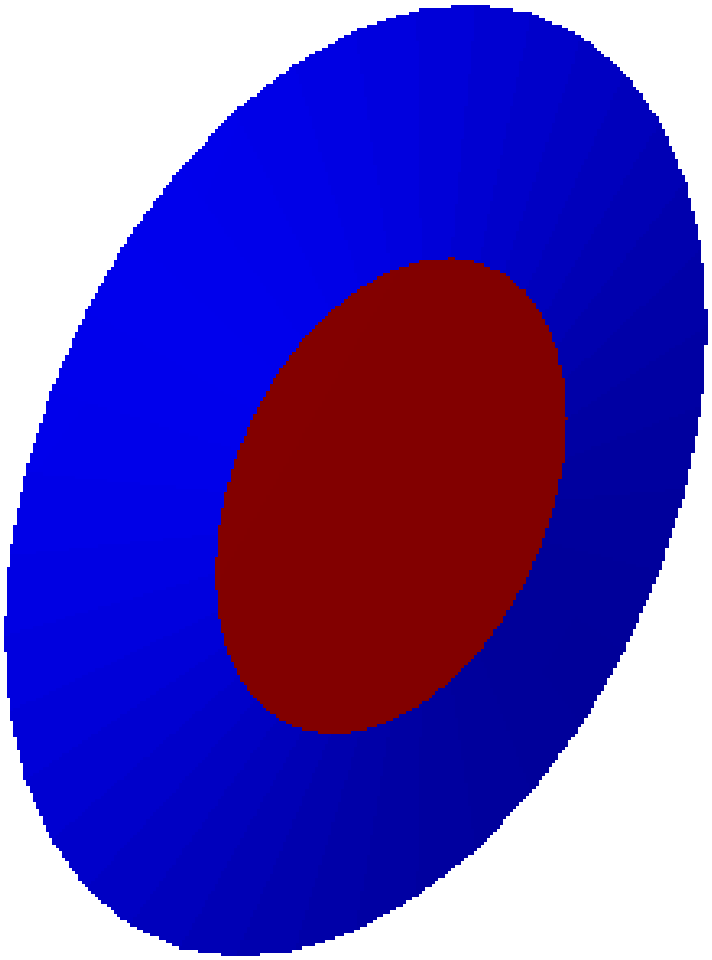
Or it’s spiraled off the ground around a point so that the end is twice as high as the start. So, as long as we’re off the ground let’s forget the up-down dichotomy of gravity and...as the saying goes “you ain’t seen nothin’ yet.”



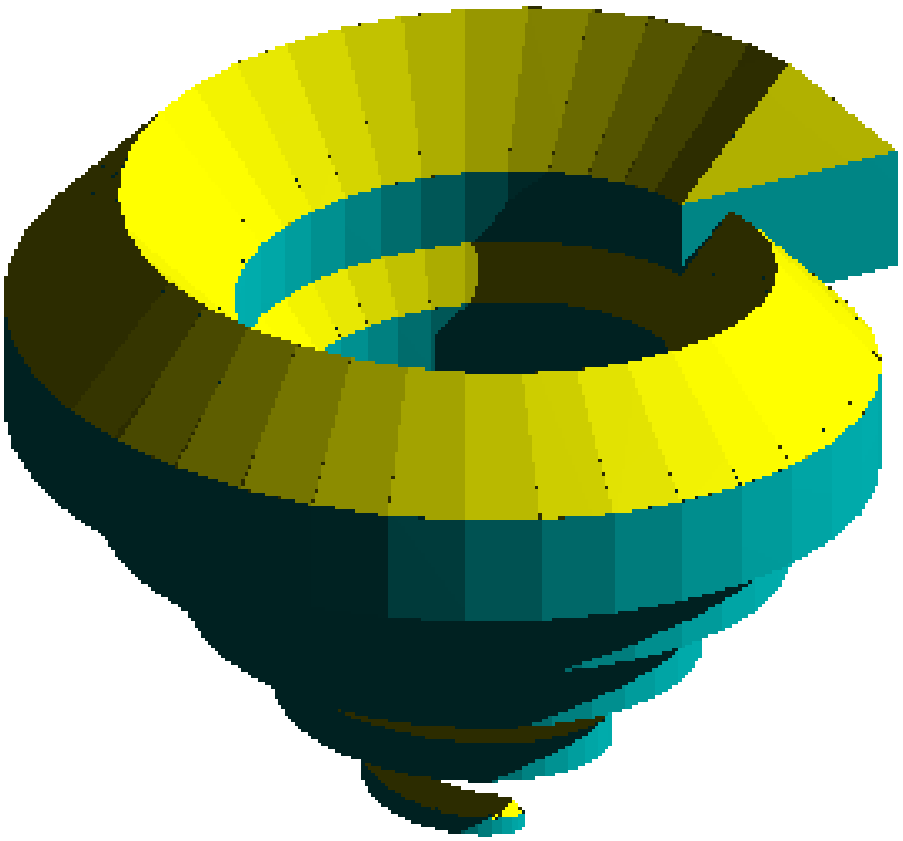
Can we use our house to open wine? Or perhaps convey genetic information? Without gravity it can be a space house for astronauts. But with no up or down why have a gable roof?



I spun it around its point so that the roof's in the middle. It becomes a UFO. A flying saucer. The house of a space alien. But why would our visitor free of the constraints of gravity and time (we can presume that she/he would be free of these or she/he would not be our visitor) always orient the "saucer" parallel to the ground

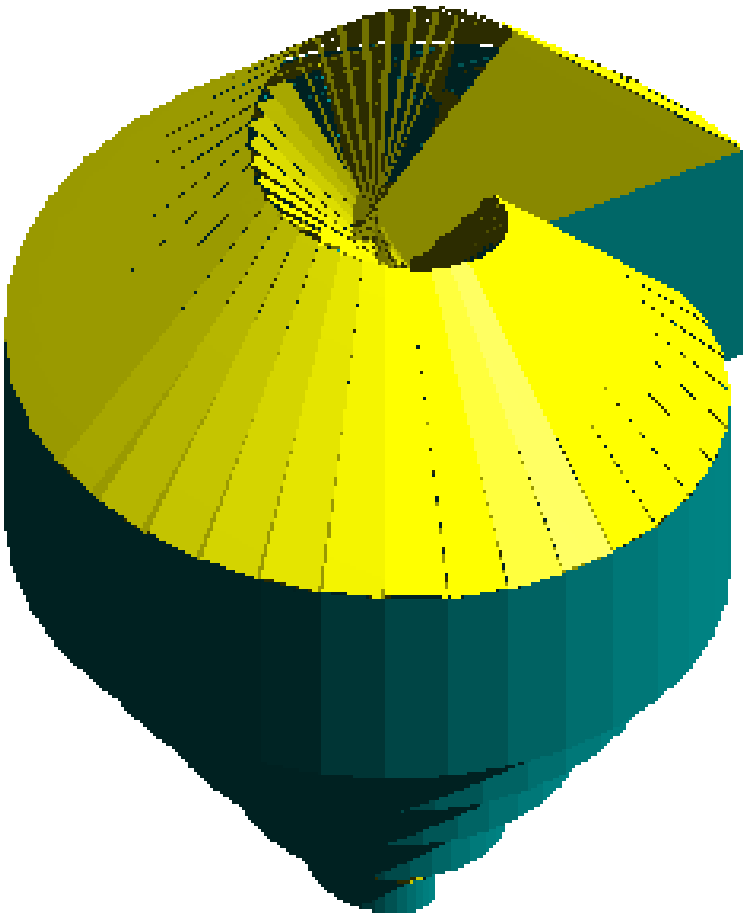


Spun around its base our house becomes a wheel instead of a saucer. But without gravity wheels loose their point, and even with gravity we seldom find pointed wheels.

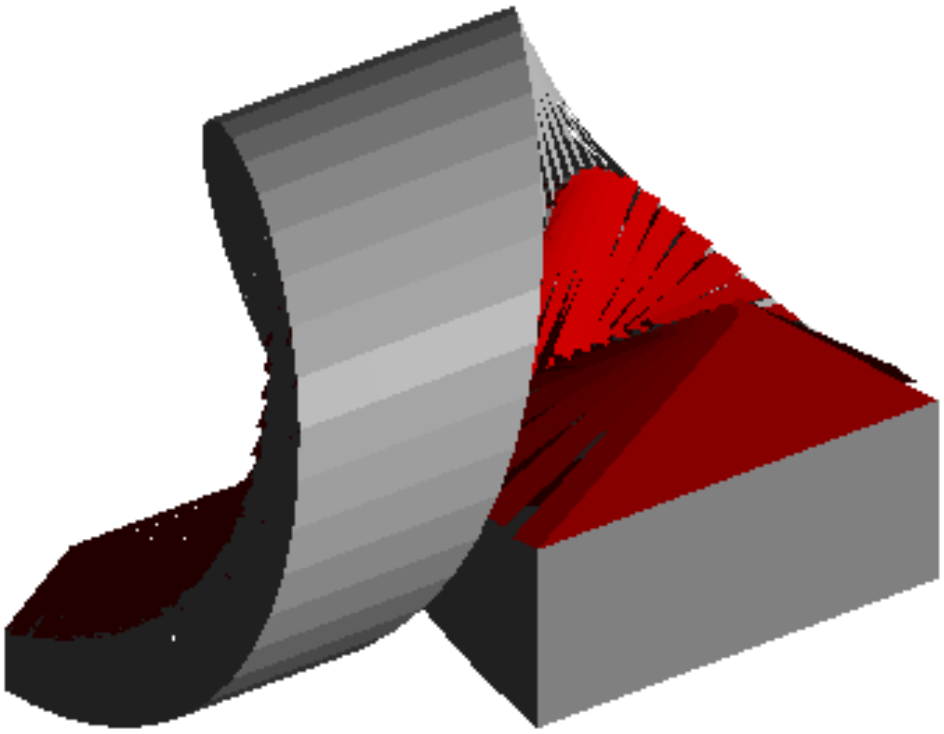


So let's spiral our house around like Jack's bean stalk, from Jack's little house at the bottom (is this the house that Jack built?) to the giant's giant house at the top. If Dorothy's house were this shape would she have needed a tornado?

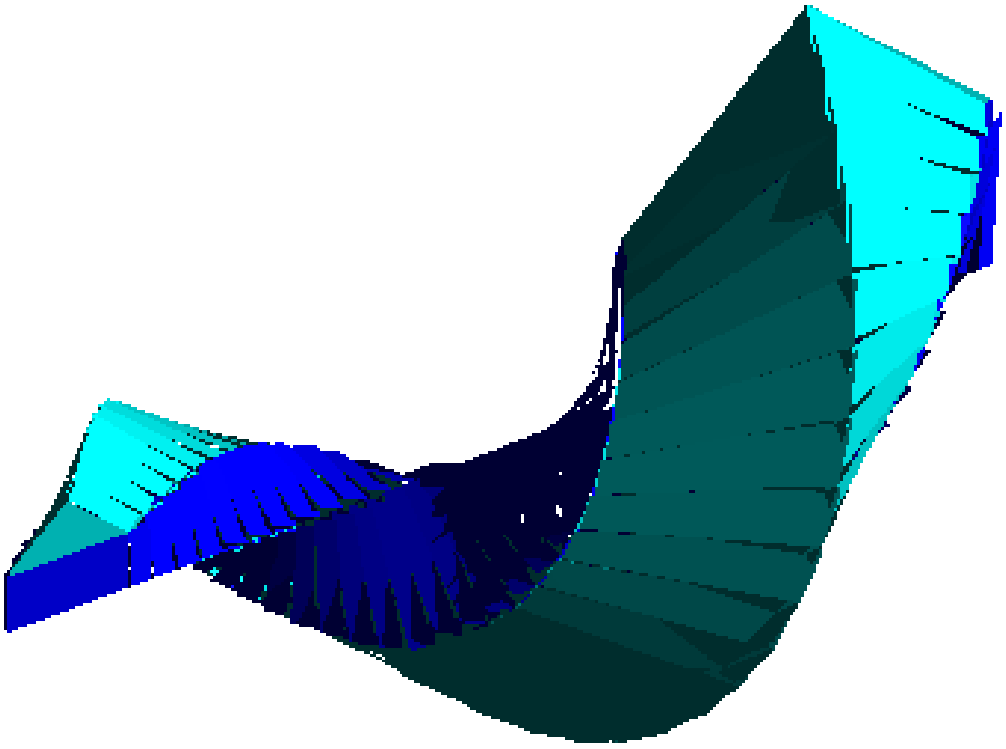
I cut it in half just to prove to you that it's still a variation on our original house and that it's hollow. See.



Spiraled up from its own base our house becomes a sea shell, the house of a mollusk, *fruit de mer*, repository of René Descartes' logarithmic spiral, $r = ae^{\theta}$.

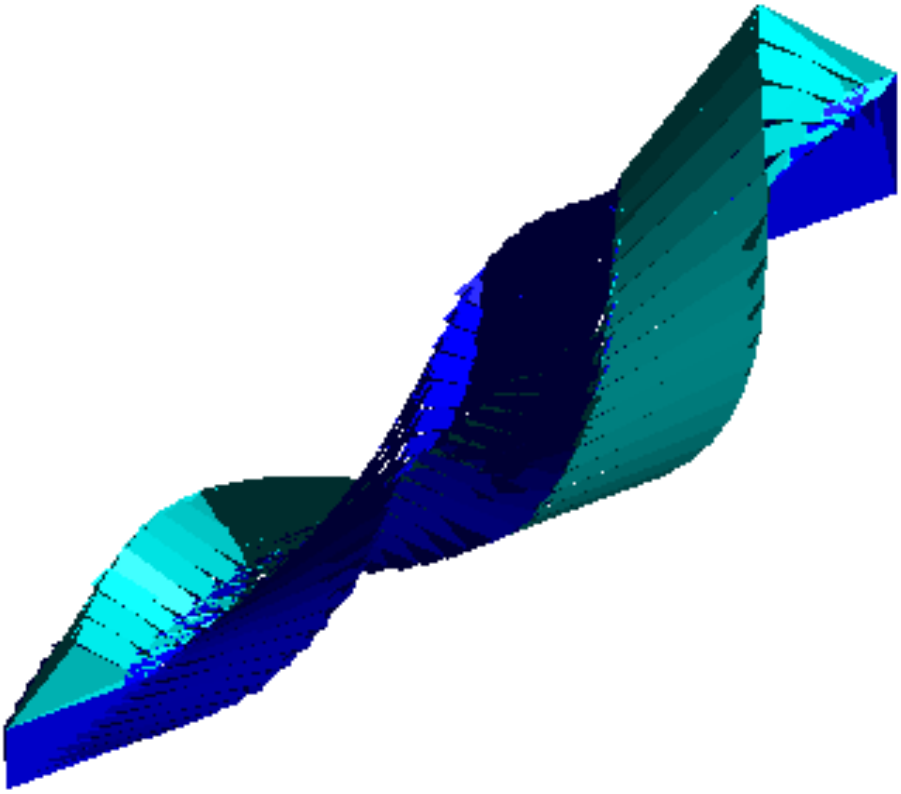


With no up and down, our spiral need not turn up, down or around a vertical axis. It can turn horizontally along its base to become a worm house. Or it can take another twist....

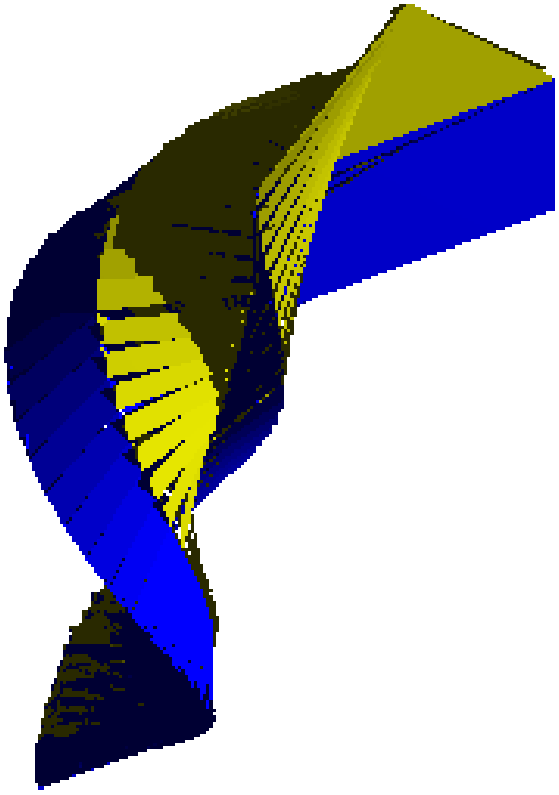


...off into space like some mutant life form. Complex structures generated from our simple house by simple rules.

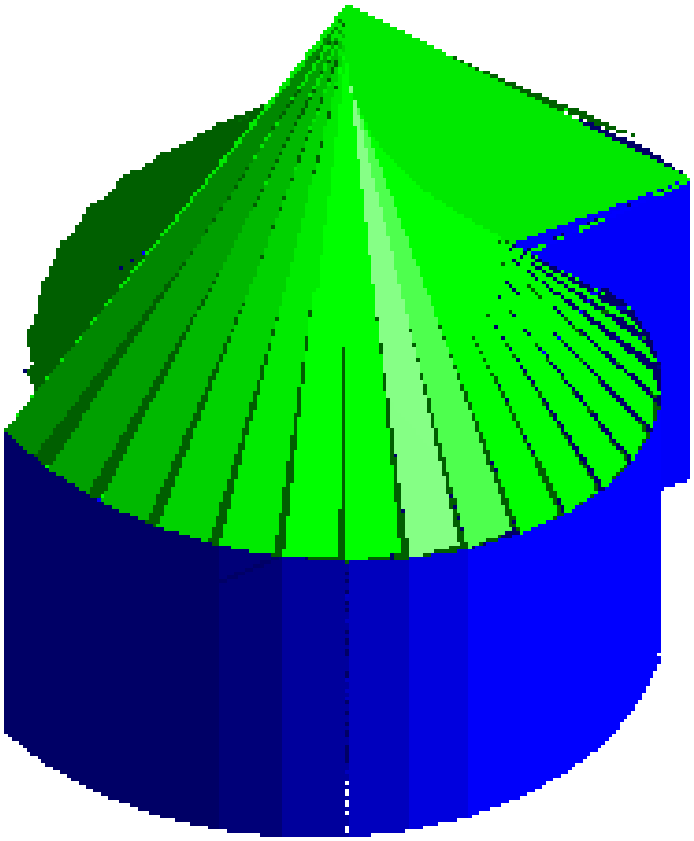
House rules?



Minor changes in the generative formulas give major changes of form.

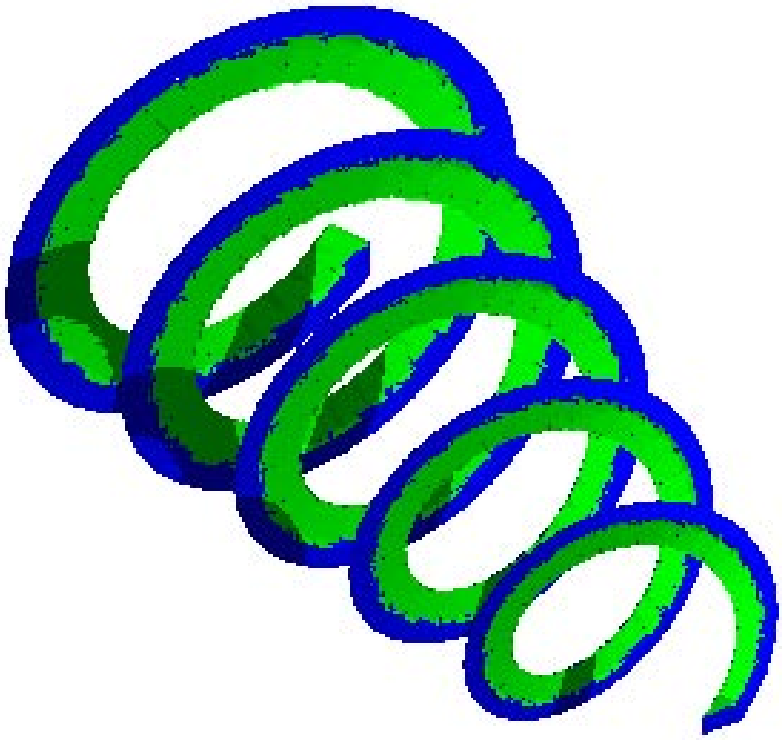


I’ve tricked you here. This is not a house. It was generated by moving our triangle on a rectangle through space, but it has no volume. It’s only a surface in space.

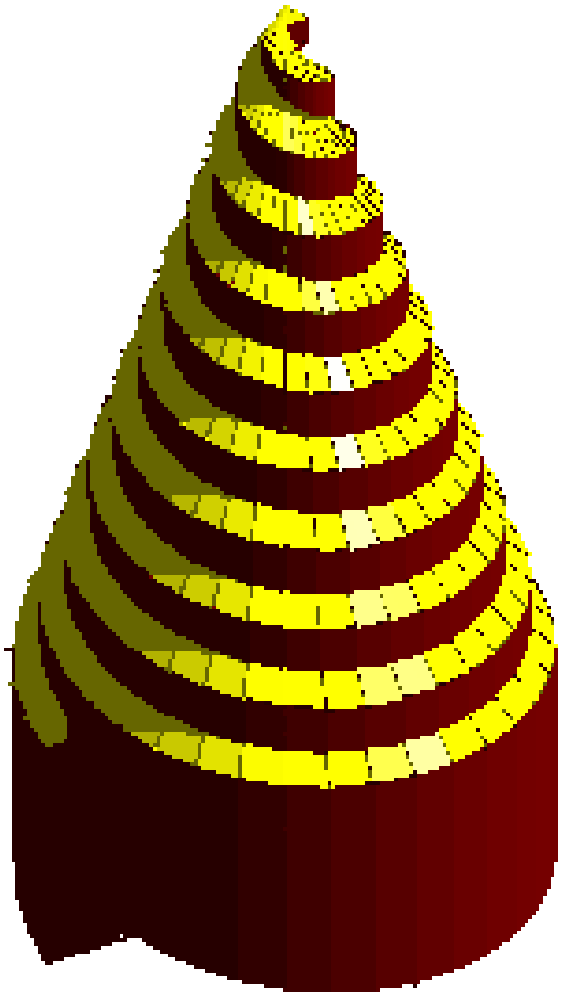


We can spin our house into architectural forms, grounded in reality. Forms conceivably possible.

Or without the constraints of gravity into architectural fantasies, barely conceivable...

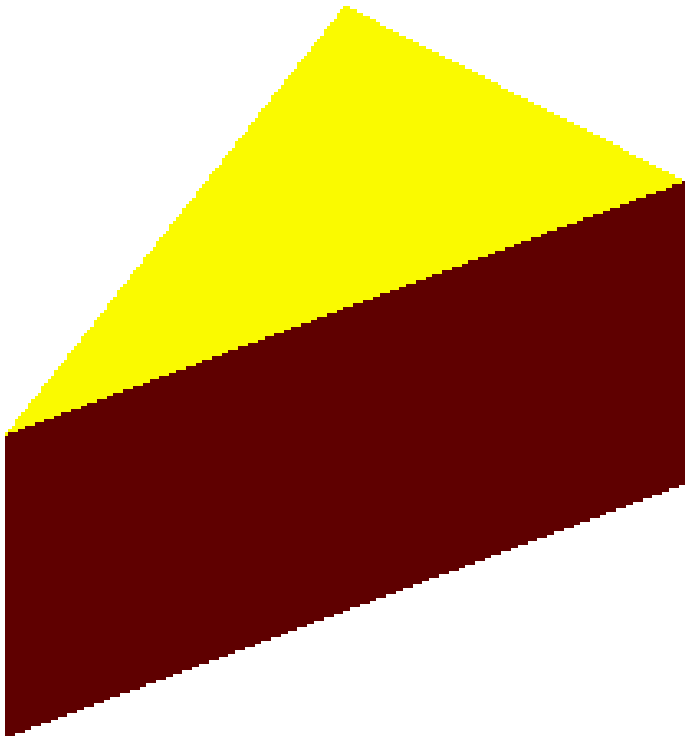


...limited only in the imagination.



Or into a mythical place of other times. Which we could call the tower of Babel.

We now return to our beginning with one final twist.



“What might that be?” you ask.

“Is it that the color has changed?”

No.

“Has it become a wedge of cheese?”

Now you’re being silly.

“It has turned slightly?”

I did that so you could see that there was nothing hidden behind it. You will not see this twist even when I tell you because the image is symmetrical. You are now looking at it from the other side. It is its own mirror image. It has undergone a Möbius twist.