

The Hip Bone's Connected to ... a Marble

Armed with a copy of Rhino 3D, one designer takes on the big toy manufacturers with his Marbotz toys.

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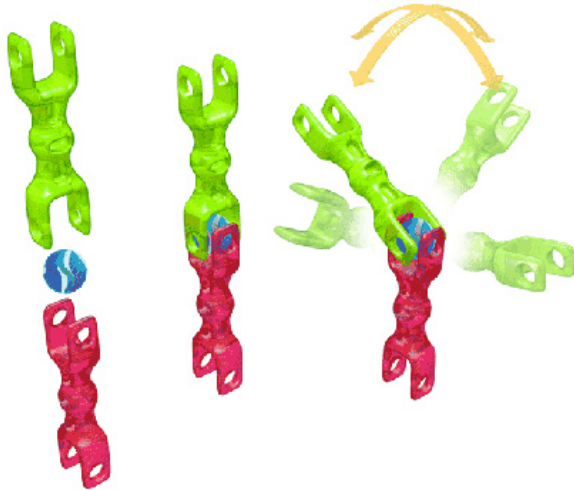
It began, like all creative endeavors, with a simple idea. A bag of marbles -- those classic toys generations of kids have carried around in leather pouches -- provided the inspiration for industrial designer Gil O'Brien's Marbotz toys. A combination of childhood nostalgia and modern design, these robot-like toys are finding a place in the ultracompetitive toy market, thanks to one man's vision, persistence, and discovery of 3D CAD design software.

"There's a lot of cachet, nostalgia, and collectibility with glass marbles," said O'Brien, the founder and sole employee of [Xobotz Toys](#). "Every age has some sort of connection to or memory of marble toys. I was trying to think of something different from marble ramps or marble-shooter games, and I came up with this idea for a construction toy that used marbles."



The Marbotz from Xobotz Toys.

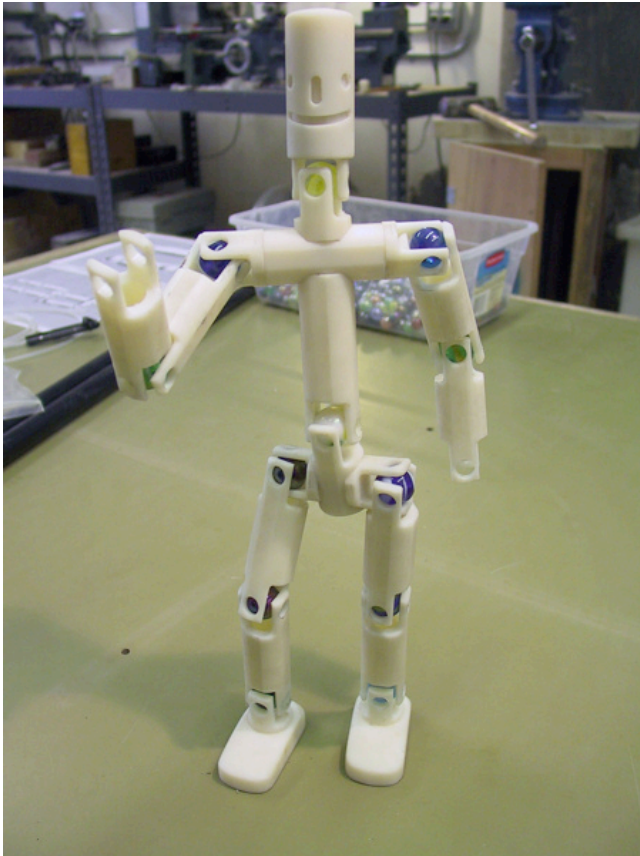
What makes O'Brien's idea different is the simple design that makes the marble a 360-degree linking mechanism for the pieces of the robot. He explained: "The Marbotz concept is based on a pretty basic ball-and-socket joint. I was somewhat surprised that nobody else had ever done a ball-and-socket joint where the ball was independent. Usually ball and sockets on toys come in an integrated piece, like in Bionicals, or any number of ball-joint toys. So Marbotz is unique in that regard."



3D model showing the Marbotz's ball-and-socket joint.

O'Brien, an industrial designer, had previous experience designing for the toy industry as well as other consumer products. Those skills, coupled with the desire to branch out from consulting, sparked his leap from creator to manufacturer. The quest to bring his Marbotz toys to market began in January 2005, when O'Brien began testing his idea by creating trial plastic joints using his personal lathe and Bridgeport mill. In a month he had a prototype that he shared with some contacts in the toy industry.

"The first prototype is very clunky compared to the final product. The features are all very cylindrical," he said.



O'Brien's first prototype, created in his personal machine shop.

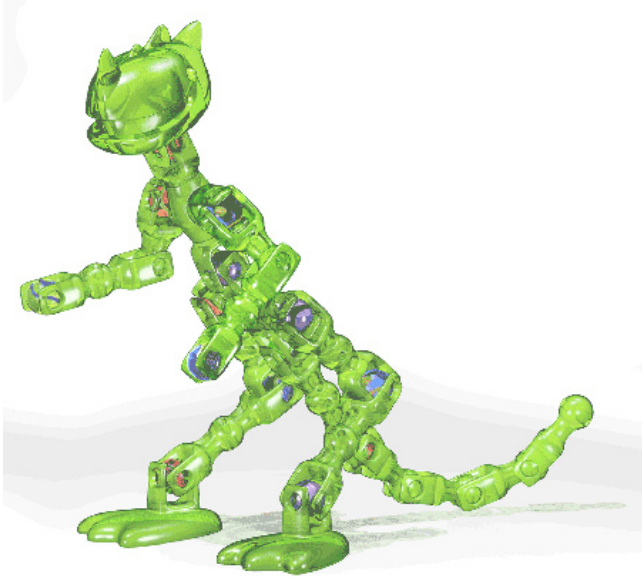
Once he had the basic configuration down, O'Brien picked up the pace by turning to 3D design. To get the look he wanted for Marbotz, O'Brien used [Rhino3D](#) to create and refine the 3D models. Since he was working on his own project at his own pace, he learned the software as he designed.

"My previous CAD experience was limited to a very old copy of Vellum from about 1990," O'Brien said. "Rhino was my first experience with 3D modeling, and I picked it up pretty quickly with no training, a testament to its simplicity. I had the idea to make the Marbotz parts look vaguely organic, like bones. It didn't take very long to get the results I wanted. Over time as I learned more of Rhino's features, I was able to further refine my parts."

3D modeling proved to be the catalyst in transforming the prototype into an actual product. O'Brien explained: "In my physical models from my machine shop, Marble Man looks very tubular. He looks more like the Tin Man from the Wizard of Oz, whereas the 3D model of the final Marbotz Man looks more skeletal, which is more of what I wanted. In fact, I call the pieces *bones*. Without the help of a sculptor, I couldn't have created by hand all these small details that I modeled on the computer. I just couldn't have done this project without the software."

When the time came to move from design to manufacturing, O'Brien found the benefits of 3D modeling compounded exponentially: "It's amazing that you can just email the data to a stereolithography company you find on the Web, and you can have a 3D prototype mailed to you within a week. There are many advantages to the CAD model; you can edit it, change it."

After launching his Marbotz toy line at the 2006 International Toy Fair in New York, O'Brien has acquired a national distributor in the United States and Canada, and his Marbotz toys can be found in about 100 toy stores nationwide.



O'Brien's new product line includes this Marbotz dinosaur.

Like any entrepreneur, O'Brien is working hard on multiple projects at the same time, including expanding his product offerings and finding investors, as well as gearing up to start manufacturing in Asia. Xobotz Toys, his one-man company that started with an idea and a marble, is projected to sell 500,000 units by 2010.