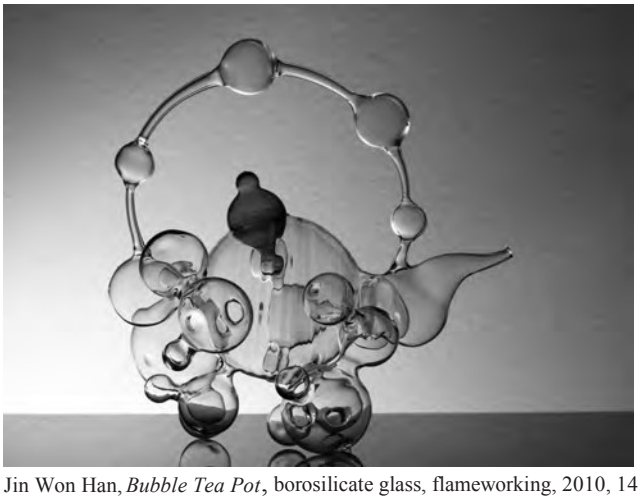
1+1 = 3 UTILIZING 3D RENDERING IN THE DESIGNING PROCESS

Jin Won Han

I decided to be a maker when I was 16 years old, partly because I believed the prophecy that the world would be destroyed in 1999 (it was a popular belief back then.) I thought I would need to know many different skills to build a new civilization. Since then, I have continued to be interested in learning various techniques and creative fields. I not only majored in metal crafts for 6 years in college, I also learned flameworking, glassblowing, wheel throwing, video editing, computer graphics, robotics, and performance art. It was always exciting to learn new techniques and methods. They were tools to express myself – the same as languages. Every medium and technique speaks in a different way. Like languages, each one can express certain things better than the others. For me, learning them is like acquiring more power to free myself.

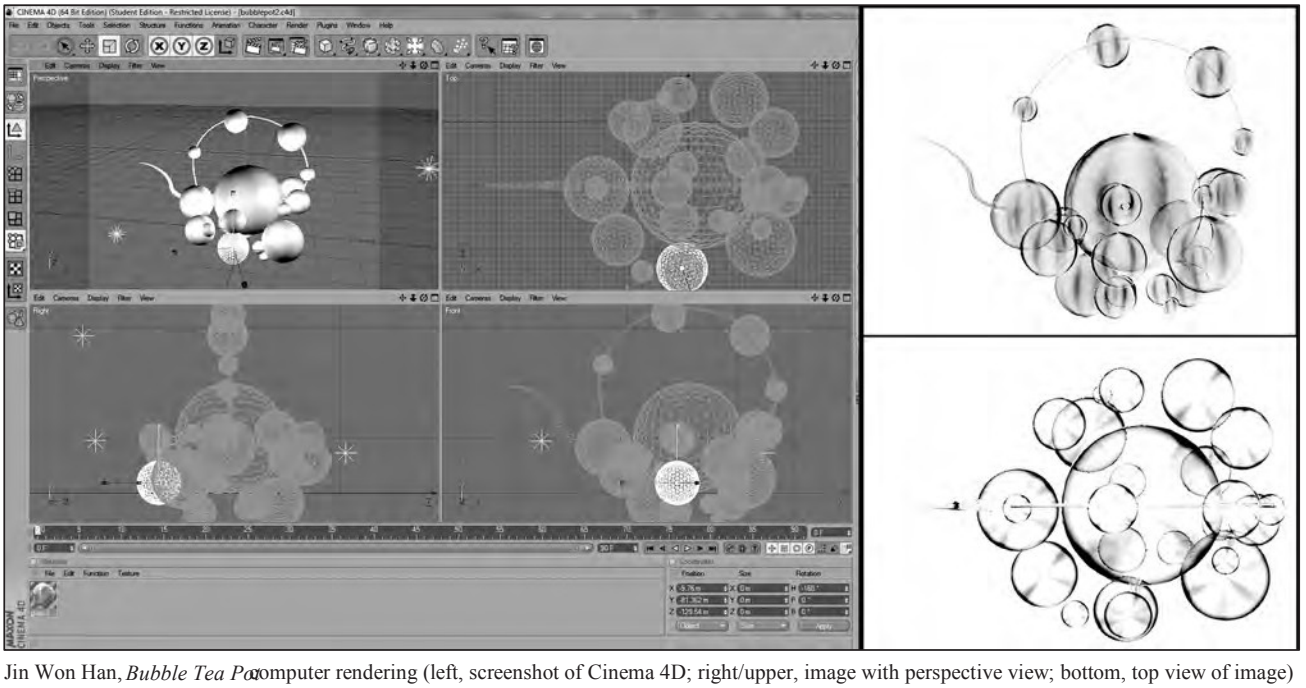
As some linguists argue, language may determine the way we think. Sometimes I found my ideas were overruled and limited by the materials or the techniques I clung to. I have tried to liberate myself by playing around with various methods in different media, merging and/or adapting them to other materials. Those efforts often result in something weird, fun, and unique.

Although I have many interests in the various processes using glass, I am especially attached to flameworking. Compared to other glass techniques, I feel there is so much for me to explore. The invention of new materials (such as borosilicate glass) and advanced tools (like powerful torches), developed in the last century have enabled us to create more sophisticated forms, and those which never before existed. Driven by pure curiosity, I love to design new forms and structures that push the limit of flameworking techniques. For these experiments, I often used three-dimensional computer rendering skills to visualize my ideas. 3D rendering is a helpful tool in the initial and planning stages. Once objects are drawn in the computer program, one can easily modify the shape, size, and position of the each component. Unlike two-dimensional drawings (or sketches), the objects can be easily rotated and observed from every direction, so the viewer has a better understanding of them.

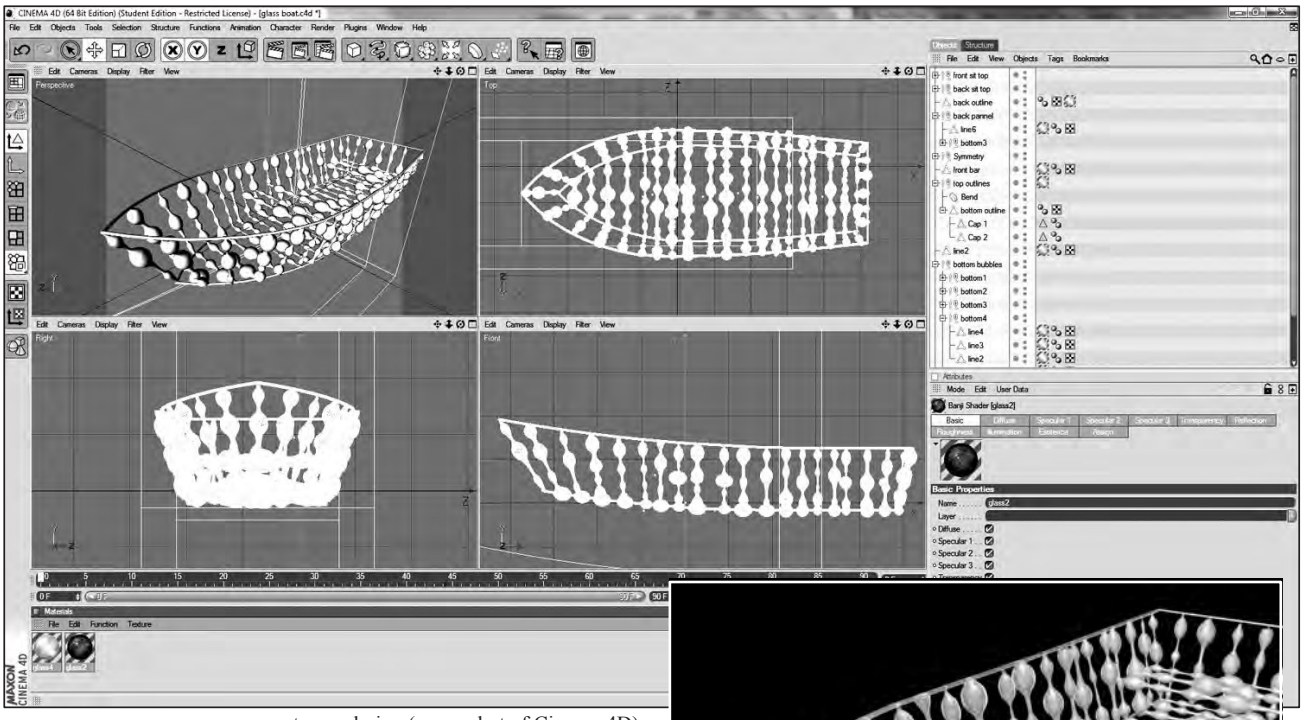


Jin Won Han, *Bubble Tea Pot*, borosilicate glass, flameworking, 2010, 14 x 12 x 7”

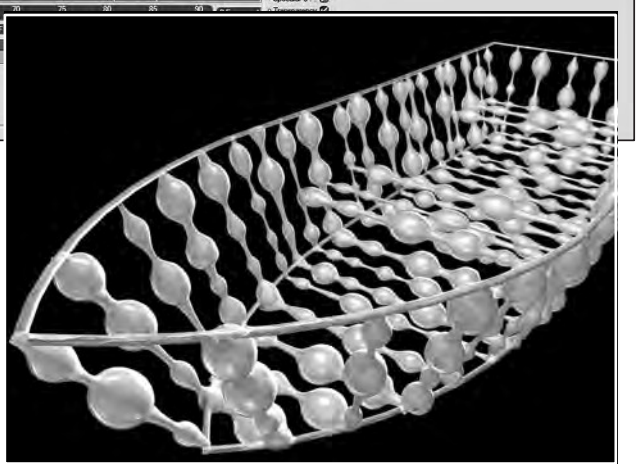
Bubble Tea Pot is an example of a work designed with 3D rendering. My initial plan was to assemble a bundle of clear bubbles to make the shape of a tea pot. Inspired by the emerging air bubbles in the water being boiled



Jin Won Han, *Bubble Tea Pot*, computer rendering (left, screenshot of Cinema 4D; right/upper, image with perspective view; bottom, top view of image)



Jin Won Han, *Glass Boat* computer rendering (screenshot of Cinema 4D)



Jin Won Han, *Glass Boat*, rendered image with applied transparent glass texture for flameworked piece, 94 x 36 x 17"

for tea, I wanted the piece to be clear and ethereal. I thought it should have variety in the size of the bubbles, but the overall form would be fairly rounded all over. 3D rendering was quite handy for the project, because after I drew 24 bubbles in the program, I adjusted the proportions and positions of each bubble by checking them from different angles. By applying transparent glass texture to the bubbles, I was able to better imagine how the clear bubbles would "react" to each other. Once the design was finalized, I printed the top and side views and used them as blueprints. This planning process helped me visualize the object and prepare the steps, so the flameworking process became more predictable and successful.

I think 3D rendering is an excellent tool, not only for visualizing ideas, but also for inspiring new ones. While I draw my rough ideas in the computer program, that is while I translate my artistic language to the language the computer program understands, I see interesting fusions happening between two. When I play around with the program and observe what the computer "says," it sometimes triggers wicked ideas. I will continue these experiments and hope to produce results as exciting hybrids.

The short animation about my work designed with the 3D rendering method, which I showed as an introduction to my demo, can be viewed on Youtube by searching "1+1=3 Rendering Glass."

Jin Won Han(www.jinwonhan.com) has worked with flameworking techniques since 1992. She is currently interested in building large-scale sculptures with borosilicate glass, as well as making mixed media works that combine glass with metals, machines, videos, and graphic images. She has an MFA from Rhode Island School of Design (RISD) has also studied at Pilchuck Glass School, The Studio in Corning, and Železný Brod. She taught at Rhode Island School of Design, Rochester Institute of Technology, and Nam Seoul University in Korea. In addition, she worked as adjunct research faculty at the University of Western Ontario for four years. She has exhibited her work internationally.