

Exploring Exoplanets (Without CGI)



EVERY TIME NASA OR THE ESA announces the discovery of a new exoplanet, the response is the same: freelance CGI artists churn out beautiful “what if” images of these distant worlds. Because a mysterious, strangely-textured orb engages public attention much more effectively than a tiny, fuzzy blip. Back in the old days though, visualising alien worlds took a bit more effort. The kind of effort that US photographer Adam Makarenko still goes to today, to create award-winning dioramas in miniature. Back in 2007, he built visualisations of bee colonies. Today, he creates fantastical - but scientifically plausible - landscapes.

So why build miniatures, rather than just use CGI like everyone else?

It’s what I started doing originally for music videos, and other photography projects. I am a very tactile person, so making things with my hands is natural for me, versus CGI.

There is also something special about making miniatures, and having people think that it could be a real place. The miniature has a tactile feel, because it is a real 3D object that is being lit with a real light. Sometimes CGI can look absolutely real, but when it’s not done very well it looks very fake.

How long does it take to build a complex scene, like this probe on an icy world?

The ice probe took me about 4-6 months. The round spherical part took the longest because I actually had to [design] it on the computer (I wanted lines/panels etched into it). I found it too hard and inaccurate to do by hand.

I got the ‘sphere’ part 3D-printed. From that 3D casting I made a mould, and then cast the top in plaster, for texture.

Typically after I sketch the probe, I use a 2D program (similar to Illustrator) and make all the parts of the probe in 2D. Afterwards, I cut out all the parts with my Silhouette Cameo, which is a CNC-style machine. I then assemble those parts into a 3D model.

The sets can take a lot of time as well, because I basically sculpt and shape them as I go along. There is a lot of brooding over the look of the scene in my mind. There is also a lot of waiting around for things to dry. Glue, paint, spray foam!

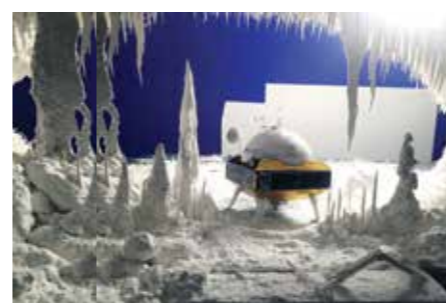
The planets are spheres that I paint. They are typically made from plaster and Styrofoam. Those can take a day or two to make and then photograph.



⇒ A Thousand Worlds

Along with his set-based scenes, Makarenko has also challenged himself to build 1000 exoplanets. Not 100, a thousand. To celebrate the recent announcement of the Trappist-1 system, which appears to contain up to seven Earth-like rocky worlds, Makarenko has made this poster-sized image (below) free at www.adammakarenko.com. Many of his other projects are there too.

Why build and paint a *thousand* exoplanets? Makarenko says it's partly for the artistic challenge, but also to give himself a real sense of the immensity of the universe. “We’ve discovered well over 3000 exoplanets so far,” he says. (The precise number, as of March 2017, is 3,572.) “We are in a golden age of space exploration, and at the point where we are just able to reach out.”



◀ **World Builder**
Makarenko uses cardboard cut-outs, 3D-printed parts and dried glue, improvising as he goes. Each scene can take months to complete.

