

## Submerging the Silent City



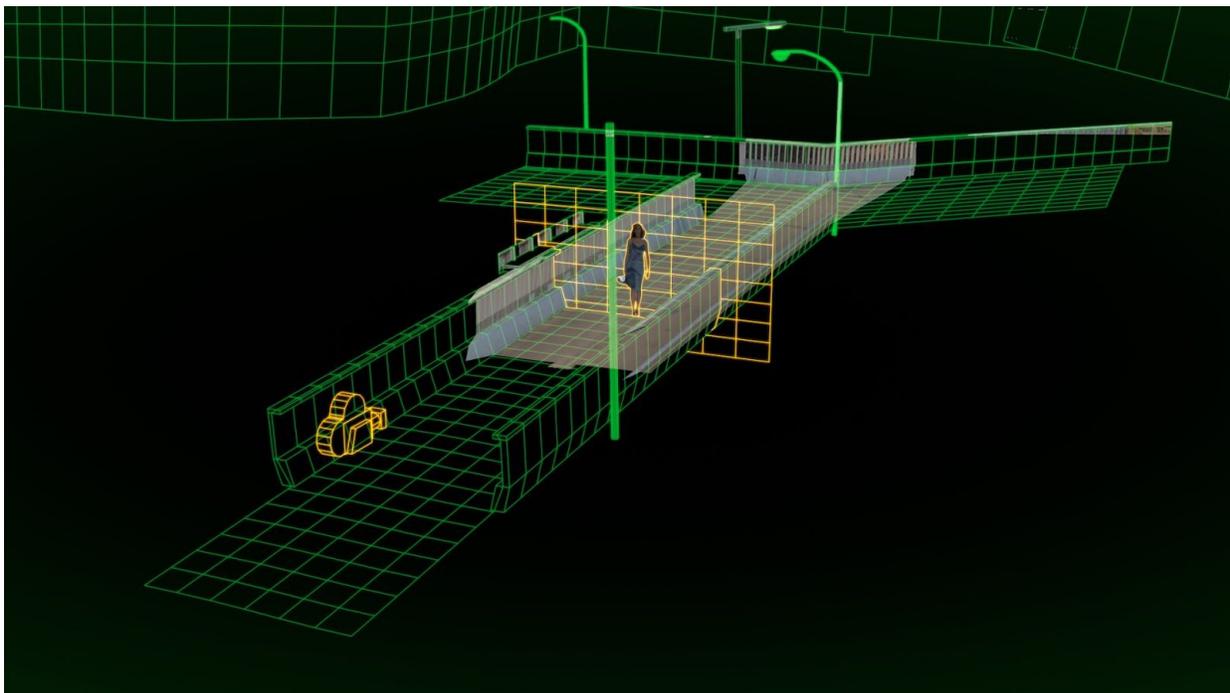
In september 2011 director Threes Anna approached us about a very special visual effects shot for her upcoming feature *Silent City*. The film tells the story of Rosa, a dutch chef who has just moved to Tokyo to learn the art from the world renowned fish chef Master Kon. But instead of learning how to cook Rosa has to clean fish. In a society where no one speaks English, she becomes more and more lonely. The main theme of the film, water, is spun into the story in a very visual manner, culminating in Rosa's final revelation: walking through early morning Tokyo, Rosa and the city around her are submerged in water, suggesting that Rosa becomes the very fish she wants to understand. This, then, was our assignment: to submerge Rosa and Tokyo entirely in water.

The way Threes had described the shot to us Rosa would come walking up to the camera and while she was walking the air around her would subtly, magically turn to water. The camera would then tilt up to reveal the surface of the water high over Tokyo's skyscrapers . In order to make Rosa seem like she was actually underwater we decided to have her walk past several wind machines and film it high speed at 100fps. When we'd play this back at normal speed it would seem like Rosa's hair was flowing in water - a technique we successfully used in 2010 for *Zwart Water (Two Eyes Staring)*. It was also clear early on that we would have to shoot Rosa on a green screen, because we would need to do quite a lot of compositing on the buildings behind Rosa; otherwise we'd have to rotoscope Rosa and her waving hair.



Since motion control was not an option the idea was to just shoot the background in Tokyo and then try to eyematch the camera move as closely as possible in the green screen studio. We

would then bring the footage into compositing and matchmove both shots in 3D and create a new, computer generated (CG) camera that could virtually 'film' both the green screen shot and the background plate. In theory this might seem straightforward, but there was a lot to be considered. Of course the camera moves did not line up as well as we'd hoped. Then there was the problem with the high speed footage: the shots had to start out at normal speed and then ramp into slow motion when the water appears. Both shots had to be retimed differently to sync up and of course we needed to do the 3D matchmoves on the original footage because the retiming was possibly subject to change and we didn't want to have to redo the matchmoves when we were well into compositing. We ended up retiming the animation of the matchmoved CG cameras separately. We used a stabilised version of the background camera to 'film' the final composite.



To create the water effects we needed to create a computer model of the scene. We needed this for a number of things: to extract depth information for the fog effect that simulated the cloudiness of the water, to correctly composite the dirt particles that float through the scene, to project caustic effects from the surface onto the skyscrapers and to relight the scene. We used the matchmoved cameras to project the background plate onto the geometry and created a moving plane to project Rosa on, which placed her on the correct position on the bridge. This way we could composite the water effects over the scene while all the elements were positioned correctly in 3D space. As reference we looked very closely at other shots from the film that were shot in a fish pond. Threes didn't want the water to be this cloudy, but it gave us a great idea of what the cues were to make you believe the underwater world and it helped a lot to match the shot to the overall feel of the film.



While the bubbles coming from Rosa's mouth weren't part of the original plan, we made an early test to see if it would work. We thought it would be a great way to guide the audience away from Rosa to the water surface and it would really add to the underwater experience. Threes loved the idea, but was very careful in directing the bubbles, because there was a real risk that the bubbles would take away attention from Rosa. In fact, the bubbles almost didn't make it into the shot! But, after we made several different versions, we found the right balance between the timing and the amount of bubbles, motivating the tilt without distracting from Rosa.

Lead Composer and CGI: Willem Zwarthoed

Keying: Daniëlle Kempen

Matchmoving and Clean up: Robert van Spanje

Rotoscoping: Matthijs Slijkhuis

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