

# Artwork Critique

Title: Fluid Simulation

Artist: Niranjan Kalyanasundaram

Medium: 3D Animation

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The piece of visual artwork Fluid Simulation is concerned with demonstrating technical proficiency in, as the name suggests, the dynamic simulation of fluids. This video clip portrays a small, deserted street with the compound wall of a gated community on the right and high-rise buildings on the left. The gated community contains a series of uniform houses set against the background of distant skyscrapers. The empty street creates a sense of open space amidst an otherwise cramped city.

The lines are visibly straight, angular, and mostly vertical. The roofs of houses form small triangles against the long vertical rectangles of the buildings surrounding it. The line of sight is set around the height of a one-story building, making the tops of these houses visible. The camera is positioned closer toward the buildings on the left, such that the street and compound wall guide the viewer's eye toward the center of the image at somewhat of an angle, where an advertisement placed along the right of the road serves as the point of focus. As the video plays, a large body of water flows out onto the road from in between two buildings, crashing into the wall behind the advertisement, creating a massive splash, before rushing down the street, toward the camera. The fluid motion of the water forms a strong juxtaposition with the hard, straight lines in the rest of the composition.

The colors are predominantly formed from a palette of bluish-grey shades, with red-orange brick houses serving as a secondary color. The dull, light value of orange serves as a complementary offset to the various hues of bluish-grey present in the rest of the scene. The lighting of this video is cool, subdued, and does not make itself known. However, as the video plays, the light draws attention toward the small droplets of water, brightening them as the water splashes into the wall. The reflective texture of the flood water serves as a secondary light source, subtly illuminating the scene from below and casting patterns onto the buildings on the left.

This video clip was created to serve as a proof of concept for a larger virtual reality project for which I was bidding during my freelancing days. I had to submit a write-up for a VR experience, which would then be subjected to review and, if deemed acceptable, proceeded as a full-fledged project. The concept that I came up with was to create a virtual reality experience involving the breach of an unstable dam on the outskirts of a recently evacuated city. I felt that this had the elements required to showcase the massive potential of VR technology.

The most important technical consideration at that time was to simulate and render the water in photorealistic quality and to confirm that this endeavor was technically and financially feasible. This also provided a testing ground to verify whether any extra hardware was needed to handle the massive computational requirements. The simulation was created using Maya's Bifröst plugin, which, interestingly, uses a particle-based approach to fluid simulation, rather than a voxel-based approach. Once the particle emissions were tweaked, a polygonal mesh was constructed using each of the particles as a vertex. This approach made Bifröst simulations much easier to control than the traditional voxel-based process.

To achieve photorealistic renders, a considerable amount of time had to be spent applying and tweaking the material shaders along with the corresponding Mental Ray lighting. The water needed to look, for the lack of a better word, clean and pristine. In the end, it was decided to give the shaders a slight nudge toward an extra bluish tint, to evoke a more ethereal feeling, and to avoid falling into the uncanny valley.

Looking back on this piece of work from a critical artistic perspective, I would have to concede that the aesthetic decision to push for a more bluish tint on the water was not the best choice for the given subject matter. If a dam breaks flooding the adjacent city, the flood water would inevitably accumulate a considerable amount of dirt and dust. The texture of the flood water should have reflected this, providing a murkier look. I also feel that the camera could have been positioned closer to the street floor for a more cinematic line of sight. This would have allowed the viewers to submerge within the water, rather than viewing it from above.

On a technical level, I feel that more effort could have been put into the buildings surrounding the flood. The overall appearance of the video would have been much better were the buildings modeled photo-realistically to accompany the quality of the fluid simulation. However, increasing the polycount beyond its already skyrocketing number would have required the availability of exponentially more powerful hardware to combat the disproportionate increase of simulation and render times, ultimately making the project unfeasible for the given budget. From a critical perspective, I would have liked to see better quality models, but from a practical point of view, it wouldn't have been possible at the time.

In conclusion, I proudly state that, despite its shortcomings, this video does indeed embody the pinnacle of my technical and artistic prowess, while still being pragmatic enough to accept and adhere to the financial limitations at hand. This combination of rationality and practicality, while still pushing my skills beyond their current limit, is what makes this project serve as a powerful addendum to my demo reel.