



Creators



VFX

How 'Ghost in the Shell' VFX Artists Brought Manga to the Big Screen



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Creators talks to MPC, the visual effects company behind 'Ghost in the Shell,' about bringing the seminal anime story to life.

Courtesy of Paramount.

When Masamune Shirow released the original *Ghost in the Shell* manga back in 1989, it stood out as much for its ambitious futuristic visuals as it did for its narrative, which explored technology, biopolitics, and philosophy, amongst other themes. The 1995 anime film adaptation, directed by Mamoru Oshii, was equally groundbreaking, throwing gender and sexual identity into the mix, and in the process becoming a major influence on *The Matrix* series. Almost 20 years on, *Ghost in the Shell* continues its cutting edge storytelling and visuals. This time as a live action feature starring Scarlett Johansson as The Major and Michael Pitt as villain Kuze, it reimagines New Port City with a breathtaking degree of computer-generated three-dimensional physicality.

MPC, the visual effects company behind *Ghost in the Shell*—not to mention the Goosebumps movie, VR horror film Catatonic, and Ralph Lauren's "4D" cinematic fashion show—did a lot of heavy lifting in bringing the series to the screen. As MPC's VFX supervisor on the film, Guillaume Rocheron, tells Creators, it required a massive number of people, rendering power, and a brand new camera system to create the holographic augmented reality visuals seen in New Port City.

"One of the initial conversations I had with the director Rupert Sanders and Jess Hall, the director photography on the film, is that the original anime film is very iconic for its colors, frames, and the bold choices of its rendition," Rocheron says. "But, I think more importantly than anything it is the creation of a certain version of the future that is not really predictive. It's really an angle on what the future may be."

"So, the film is about taking the manga and the anime as source material, where technology is really becoming invasive, where it's everywhere in our environment and our surroundings, and it challenges the idea of what remains human," he adds. "It's a rendition of a world with cyber-enhancements of people, showing the world of New Port City and showcasing it by translating the manga through the frames of the film."



Courtesy of Paramount.

While Rocheron says that a lot of the film was shot with actors and sound stages, to really pull off the sense of immersion that Sanders envisioned, there was a need for quite a bit of VFX. The way Sanders had MPC approach the VFX process was to

enhance the sets, but also build a New Port City out of the skyscraper-heavy panorama of Hong Kong. Sanders shot in Hong Kong to capture the sense of scale and grittiness that New Port City, set in the year 2035, demanded—a city that isn't clean or polished, but dirty and lived-in.

"The idea to shoot in Hong Kong was based on this idea of the old versus the new," says Rocheron, mentioning how old skyscrapers stand by gleaming new ones. "If you look at the original anime there is always traditional markets and new buildings, or cyber-enhanced cops versus traditional cops. So, that's why we wanted to use Hong Kong and blend futuristic development on top of it."



Courtesy of Paramount.

To capture New Port City's sense of scale on film, Rocheron says the city's design had to be expanded for the adaptation. Since it is an island, much like Hong Kong and Manhattan, New Port City needed to expand vertically instead of horizontally. This resulted in buildings that are over 200 stories high, as well as layers upon layers of highways. Rocheron describes New Port City as suffering from over-development

with technology, and it's a metropolis that is busier than ever. All of these qualities are reflected in the effects created by MPC, as well as by the other VFX companies that worked on the film.

But the VFX aren't meant to simply stun viewers with artistry and spectacle. They were, as Rocheron says, designed with a sense of immersion in mind.

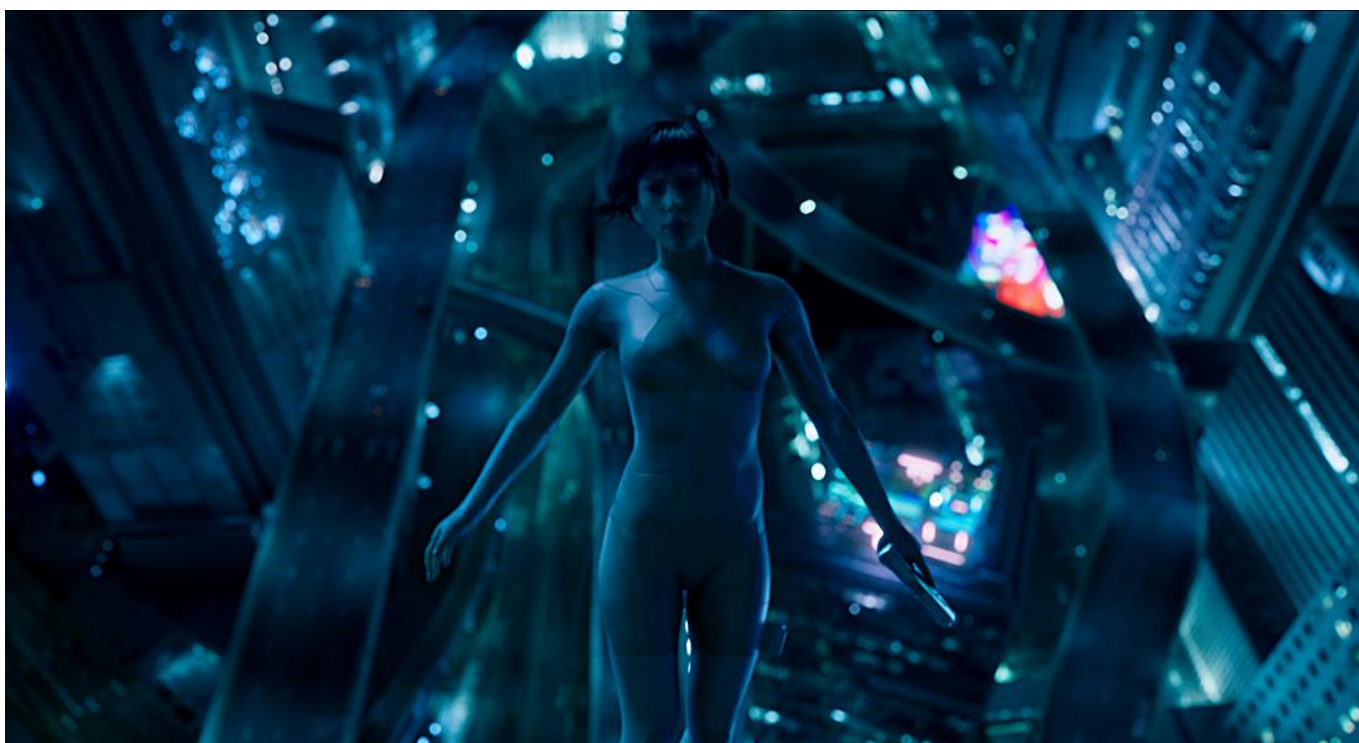
A varied cityscape that would present viewers with a world that could be entered, one where they would believe that cyber-terrorists can hack the mind, and humans can enhance their bodies cybernetically.



Courtesy of Paramount.

"A lot of the work on the city went into creating the overflow of advertising with the giant holograms," says Rocheron. "Rupert's concept was, 'Well, maybe we have this technology that can project holograms as big as a skyscraper so that it kind of mixes in with reality.' It's a type of technology that makes you believe that it is actually there and really in the space, and it's how advertising is being used instead of billboards."

"It was a big visual effects task for us because we had to invent a new camera system," he adds, noting that the VFX team used motion photogrammetry to 3D scan the actors at 24 times per second. The 4D camera system was designed and operated by Digital Air. "To capture this volumetric advertising we designed a system with 80 cameras. We would put the actors in a dome and film them, and then MPC, which had done a few months of research and development into software and techniques [with Digital Air], turn them into volumetric advertisements so that we could see the actors from any point of view, and place them anywhere in the city—big as skyscrapers or small, day or night."

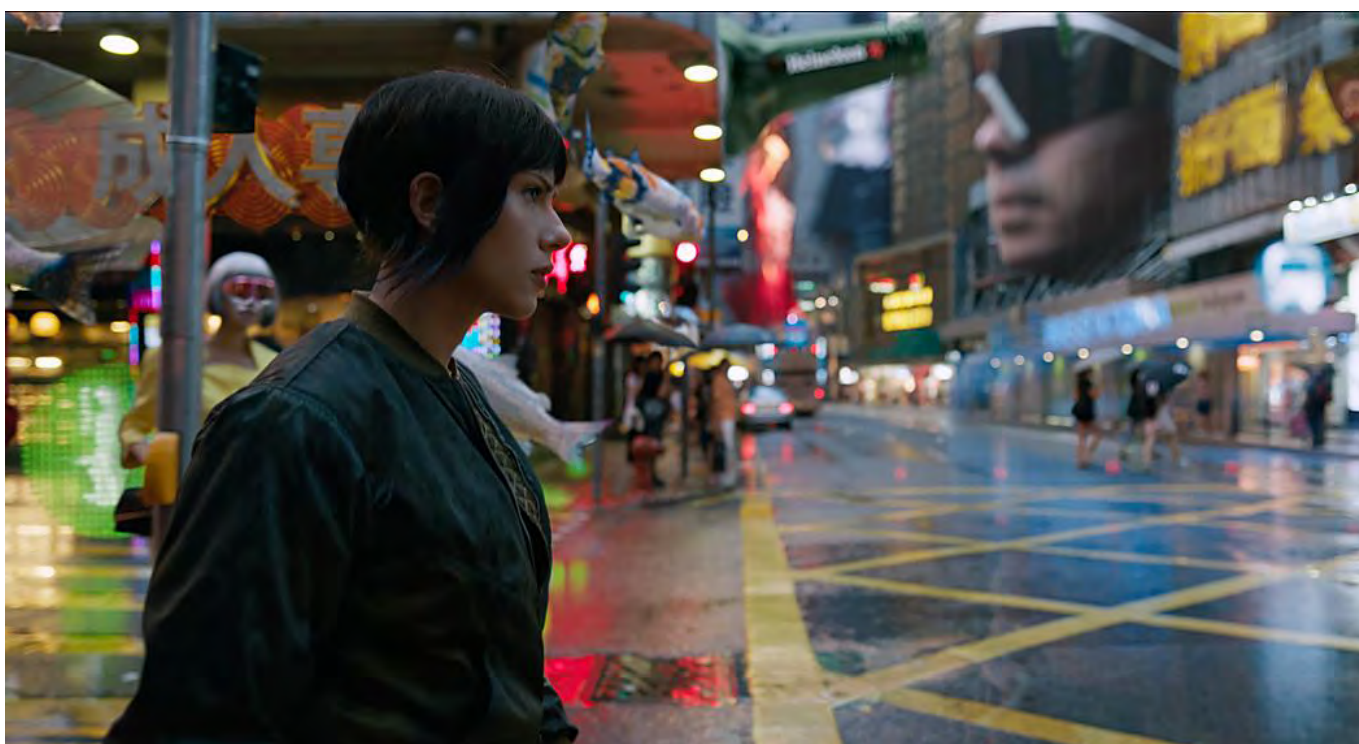


Courtesy of Paramount.

A lot of VFX and special effects work also went into characters. The most visible instances, at least in the trailer, are Michael Pitt's cybernetic body and the robotic geisha assassin that The Major fights. Weta Workshop created the geisha's porcelain doll-like facial prosthetics worn by actors, but MPC enhanced Kuze, who shares a common origin with The Major: a total fusion of the human mind with a cybernetic body.

"We knew that Kuze is an unsuccessful experiment, where he escaped instead of being discarded and being killed," says Rocheron, referencing the character's origins. "We knew that he escaped to an underground world and assembled himself in pieces. It's a really interesting hybrid of CG and live action performances. He basically doesn't have a fully-formed body—his cybernetic muscle and skeleton is exposed."

To create Kuze's distinctive look, Sanders and the MPC team filmed Pitt as a motion capture performance. They kept Pitt's eyes and mouth as well as the outline of his face, but from the neck down he is completely digital. Rocheron said they really wanted to blur the lines between what was real and artificial, just as it would be in the film's fictional reality.



Courtesy of Paramount.

Other scenes featuring VFX-heavy shots involve those where The Major engages and disengages her invisibility or camouflage suit. Sanders wanted this to be a big nod to the iconic scene in original anime, where The Major fights a character in a

huge, flooded slum courtyard.

"We really designed that scene as being a ballet with water trails, so obviously that was a pretty heavy VFX sequence," says Rocheron. "The only way to register touches and kicks is by these arcs of water."

From a VFX standpoint, they shot the scene on a green screen stage where there was some water. MPC then digitally built up the scene around the balletic fight.



Courtesy of Paramount.

MPC and Jess Hall, the cinematographer, also worked on more subtle nods to the anime and manga originals. To give New Port City and the characters the right look, they sampled colors from the previous *Ghost in the Shell* incarnations, creating a palette of 32 colors for the city's lights and lighting. These colors were then used by Hall during the shoot, but also down the line in the VFX process.

"We were working with the same creative intention and the same goals," says Rocheron. "We didn't tweak the colors of the principal photography because it was

all there, it was all part of the design... We used the same concepts, colors and palettes—it's all uniform and a coherent rendition of what we wanted to do."



Courtesy of Paramount.

To pull it all off, MPC and the other VFX teams used Maya, Nuke, and Renderman as the base software package. They also used custom software to manage the volume and new type of images the team was generating.

"VFX is a loose collaboration," Rocheron says. "I think there could be 800 to 900 artists that worked to create the visual effects of the movie. You need a tremendous amount of artists and computer power to do this."



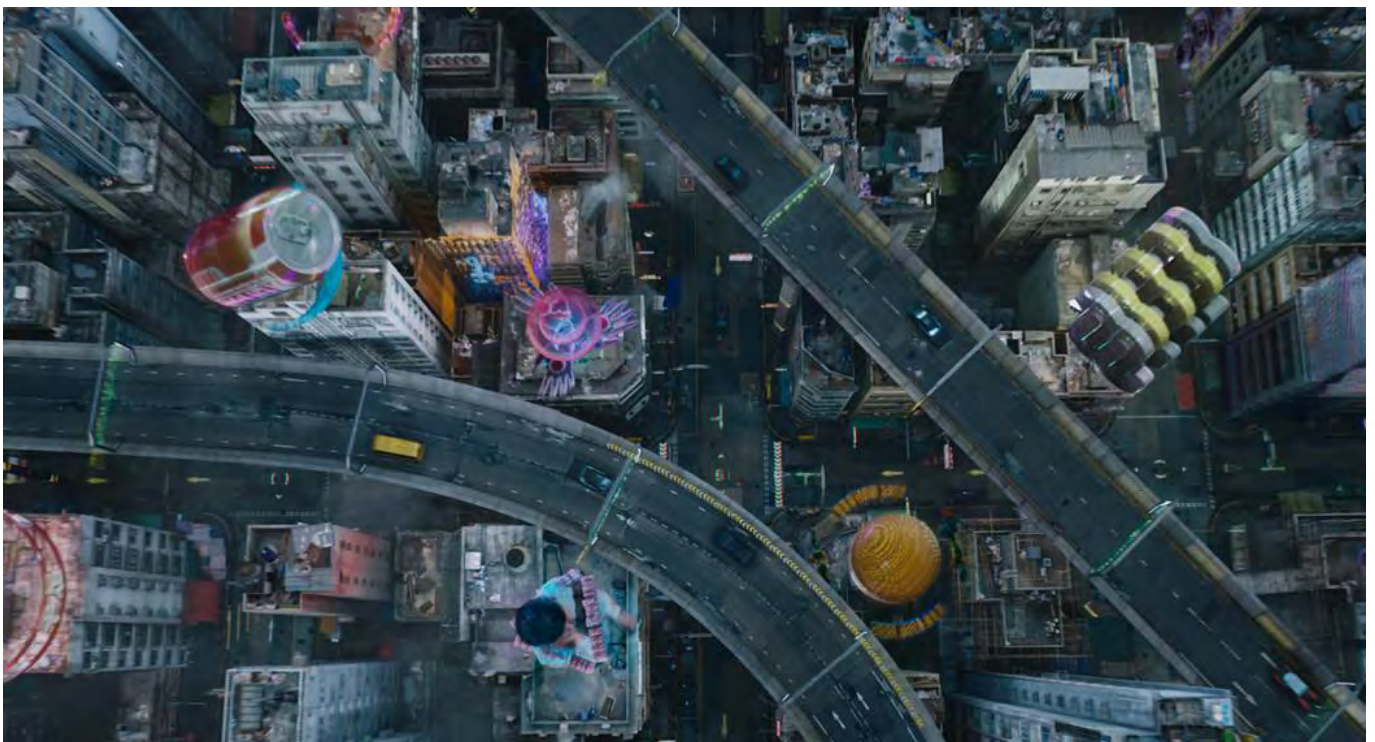
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