

## **Computer Generated Imagery**

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One of the biggest questions that I have since the CGI boom is this: How can they make such animations look so real? On top of that, and really, the most overriding question in my mind is, can CGI animated films be any real than what it currently is? Ever since Toy Story hit the cinemas, almost all critics seem to give out rave reviews not just to that flick alone, but other fully animated films as well for their surreal quality. It seems for a long while that Hollywood is at a new dawn of CGI phenomenon, in which the stuff of dreams can be made into reality.

My first encounter of OpenGL was when I installed Counter-Strike a good 7 years ago. I remember seeing the file OpenGL32.dll and was told that the file itself is responsible for “creating and rendering” the crosshairs, maps, headshots and those cool guns in the game. Since the phrase creating and rendering was quite alien to me, I had no reason to argue. Then I came across OpenGL again in Quake, Unreal and Doom, proving that this little thing called OpenGL, a computer graphics API, is really central in producing magnificent game experience. I was practically marveled with the effects, quality and realistic scenes these games rendered, and the whole mechanism of generating the state-of-the-art imagery from just a cathode ray tube to fine-looking CGI such as in Final Fantasy is certainly beyond my comprehension. Then came The Matrix, Shrek, The Lord of Rings trilogy and not to mention Jimmy Neutron, all of which are equipped with stunning special FX that brought in millions of dollars into the industry. With the realistic fur effects in Monsters Inc and the chilling Gollum in Lord of the Rings, these achievements are groundbreaking in terms of CGI and embed it firmly on the art of movie-making, I couldn't help but wonder, is it possible to work more magic

with CGI than ever before? Is there a time where we can get rid of human actors and just use voice artistes and computer generated characters?

Let me start off with some basic visual effects. If I wanted to vanish, it'd be quite easy a task. I'd simply shoot the same scene twice, one with and the other without me, and in the end I'd just have to do some mixing job. If I wanted to produce a short video on me being in some place wonderful, like Bora Bora, I could shoot the whole scene in front a green screen. Then it'd be quite easy to just remove the color from the shot, and replace it with a Bora Bora tourism video I found on Youtube. With the same principle, I can shoot two fighter planes having a dog fight and later blend that in with a vintage New York skyline, thus producing one of the scenes from King Kong. What if I'm still not pleased with the scene and there's nothing can be done about it? Or is it?

This is where CGI kicks in. Instead of having to use the real Manhattan skyline, a program can create an entire cityscape according to taste, and added to a backdrop of a scene. In fact, using computers to control the camera movements, it is possible to match the movements of the cameras to the movements of the computer generated backgrounds to create one very deep shot where perspective is maintained. Remember that sort of suspension kung fu kick in the Matrix? Or that famous clip where Spiderman hung on to the top of the building looking all menacing? CGI have made this all possible.

Precisely, it is effects like this that made Joe Letteri a winner of three Oscars for his work in Lord of the Rings and King Kong. As well as the virtual buildings and objects in King Kong's world, he brought to life thousands of CGI warriors for the battle scenes in the Lord of the Rings trilogy. According to him, the secret of making CGI characters life-like lies in artificial intelligence. Joe Letteri says: "The whole reason behind Massive (specially written program to handle characters) is its artificial intelligence. It is the idea that you create these as unique agents. Each agent, each soldier in the battle has its own brain. He can see another agent coming towards him and decide if it is friend or foe, and

he can decide to react, or attack, or flee, or get killed. So, everything you are seeing in there, all those actions, the hundreds of thousands of them, are all unique."

Going back to my question, does CGI signal the end of real actors? Letteri seems to think otherwise, "I don't think so. That was the lesson we learnt on Gollum. Andy Serkis was brought in just to be the voice, but what worked really well was that you had an actor there present in the scene doing all of this. There was no sense of replacing Andy; Andy was the actor behind Gollum. For me, the best way to create a character is to work with an actor. Something like motion capture, where you can put dots on an actor's body, or in the case of Kong when you put dots on the face and use that to translate the actor's physical movement directly to a character, is really important and is a really great step for bringing these things to the screen. But it is actually not the most important step. We also have a team of very good animators who can do the same thing. What is most important is the choices that an actor makes when they are actually performing the character. [It is] those subtle split-second shifts in timings and reactions to other actors that you bring and really give life to the scene."

Ultimately, the threshold mark of the CGI creators is to reproduce Mother Nature itself. Unsurprisingly, fire and water are so infinitesimally intricate to model that animators can only create rough approximations on screen, though I honestly thought that it can't get better than what it is currently. That said, with more experience and more processing ability, simulations of nature are progressing by leaps and bounds. Chief Technology Officer for DreamWorks Animation SKG Ed Leonard says: "Today, things like fur are really complicated and in *Over the Hedge* we have a lot of furry characters with just a tremendous amount of fur, whereas even a few years ago having one character with fur and having that character on screen for a long time was a big technical challenge. All of these things are ultimately about removing the limitations for our film makers and letting them bring to life a film that they want to make."

From my viewpoint, the movie-goers nowadays have acclimatized well with the influence of CGI, where the once lauded CGI-created law enforcement droid, ED-209 in Robocop might not have the same appeal to the fans in current times. I also believe that the demand of creating more unreal and stunning Special FX from the audience has been a catalyst in revolutionizing the CGI industry and maintain the very high standards it skyrocketed since the early 90s. But one thing's for sure, although CGI effects can give a much needed hype to the movie, the computers are yet able to produce great writing, beautiful scripts and not to forget, great performances.

#### References:

[1] Joe Letteri on USATODAY.