
September 2016

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Recommended Citation

Gordon, Ryan (2016) "Virtual Actors Are Taking Hollywood by Storm," *The Idea of an Essay*. Vol. 3 , Article 37.

Available at: https://digitalcommons.cedarville.edu/idea_of_an_essay/vol3/iss1/37

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Virtual Actors Are Taking Hollywood by Storm

Ryan Gordon

Many of the actors moviegoers see in films are nothing more than digital deception. Virtual actors are replacing human actors. These virtual actors are, as described in AI Magazine's article "Towards Virtual Humans," "software artifacts that look like, act like, and interact with humans but exist in virtual environments" (Swartout et al. 1). Experts in the field also have other names for these constructs, such as "digital actor" or "virtual human" and they are used interchangeably (Smith Reality 1). Although some people believe that virtual actors detract from the realism in films, drive up the cost of movies and cause people to lose their jobs, the reality is that virtual actors increase realism, help reduce the cost of movies and even create new jobs for the industry.

A good place to start on the topic of virtual actors is their extensive history in the film industry. The idea of virtual actors has been around ever since computers were able to help with movie production. The first attempt at making a digital human was in the 1986 film *Young Sherlock Holmes*. In this film, a digitally animated knight crashes through a glass window. Even though the knight's part was small, it proved that digital actors could be integrated into movies (Bath Timeline 1). From that point on, digital actors have been a fascination of Hollywood directors. Virtual actors have evolved alongside computers in their roles in movies. As digital actors were used in notable films such as *Terminator 2: Judgment Day* and *The Crow*, the technology advanced even further. In *Terminator 2: Judgment Day*, the main antagonist of the film, a shape shifting terminator, was played by a human actor, but every time it transformed, a virtual actor filled in (Bath Timeline 1). This is the first time a virtual actor switched places with a real actor during a scene. During the filming of *The Crow*, Brandon Lee, the star of the film, died before his part was completed. In order to finish the film, the script was changed slightly and a virtual copy of the actor was used when necessary. This

is significant because it was the first use of a digital human to replace an actor for an entire scene (Bath Timeline 1).

Virtual actors are bringing movies to a new level of realism. They accomplish this through different applications ranging from massive crowd scenes to replacing an actor during a stunt. This leads to increased variety in the types of movies that directors can make. Before the use of virtual actors, directors were limited to what could be achieved through the use of only human extras and stunt personnel. Now though, digital actors have removed traditional limitations and have allowed directors to create truly larger-than-life films. Some examples include *The Lord of the Rings* and the *Harry Potter* films. In *The Lord of the Rings* films, there are numerous times in which virtual actors are used to create otherwise impossible shots, such as the epic battle scene at the end of the third movie or any of the nonhuman extras. In the *Harry Potter* films, the use of digital actors is more subtle, but still present. In those movies, usually when you see an incredibly large crowd or extremely dangerous stunt, virtual actors were involved in making it more realistic than traditionally possible.

Those opposed to virtual actors are not impressed by their realism because of the phenomenon called “the uncanny valley,” which has a huge impact on how effective digital humans are. When most people watch a virtual actor that is almost humanlike, there is a sense of revulsion at seeing something that looks human but lacks true humanity. This phenomenon was given the name “the uncanny valley” by robotics professor Masahiro Mori during his study of how humans react to lifelike robots (M. Masahiro 1). This is a problem for virtual actors because it is difficult to sympathize with a virtual actor while constantly feeling disconcerted by their appearance. The best example of the uncanny valley is the movie *The Polar Express*. This movie was one of the first films to have digital actors that were lifelike enough to trigger a dislike in the audience. Though the movie was well received, moviegoers still felt unsettled watching it (M. Masahiro 1). Despite the fact that some critics think that the uncanny valley is a problem for virtual actors, it is actually a blessing. Since virtual actors elicit this reaction in most humans, it is quite easy to determine if the designer has spent enough time making the digital human realistic enough. Without this phenomenon, the advances in digital actors would be much slower because there would be no

need for super realistic virtual humans. Also, the uncanny valley only affects a handful of virtual humans at most. It is only when the digital actor looks 80 to 90 percent humanlike that the effect is a problem (M. Masahiro 1). Cartoon characters can still be produced and star in films without experiencing the effects of the uncanny valley. The effects of this phenomenon have even been put to good use in films by producing digital actors that are intentionally creepy. An excellent example is the character Gollum from *The Lord of the Rings* movies. Gollum is a small, grotesque, barely dressed human. The uncanny valley does wonders for this character because each time an audience member sees him on screen, he or she feels like there is something not quite right, but they cannot place it (Bath Digital 3). This effect makes Gollum appear even more disturbing than he really is and it adds to the character's credibility, which contributes to the films' realism.

The other aspect that critics claim takes away from virtual actors' realism is their apparent lack of a soul. When you stare into a digital actor's eyes, all you get back is a blank stare. Many people have noticed this effect in movies with a large or fully digital cast. Movies such as *The Polar Express* or even *The Adventures of Tintin: The Secret of the Unicorn* possess this flaw (Perry 3). The lack of soul negates any advantage that virtual actors may bring to the realism in films. Even George Lucas, the director of *Star Wars*, agrees that digital humans detract from the humanity in films. George Lucas said in an interview about virtual actors that "Acting is a human endeavor and the amount of talent and craft that goes into it is massive - and can a composite reproduce that" ("George Lucas" 1). It may be true that virtual actors lack a soul currently, but in the future this problem will likely be solved. The ways that digital humans are used now mitigates the chance that viewers will notice the lack of soul in digital actors' eyes. In most cases, the virtual human is not close enough to the camera or stays still long enough for the viewer to notice any imperfections. The problem should be solved by future advancements in computing power and increased understanding of human physiology. Virtual actors have already come so far as to fool the average moviegoer into thinking they are real, thus it is not that far of a leap to imagine a day in the near future when digital humans will overcome this "soul" challenge as well.

The advancements that are being made in virtual actor technology is contributing to the reduction of movie costs and allowing directors to use more digital actors. Back when movies were

just beginning to embrace the addition of digital actors, the cost of the tools alone could total over five hundred thousand dollars. As advances were made in both the speed of computers and their size, the cost of tools went down dramatically. In most productions today, the cost of the required tools for one artist may only cost as little as two thousand dollars for both a good computer and the software (Tyler 2). With the increased availability of the tools, it is easier to find experienced digital artists. The large amount of qualified artists allows directors to get a production up and running quickly, thus reducing the overhead costs of the film.

Opponents of virtual actors counter by acknowledging that the tools for making digital actors are decreasing in cost, but the expectations of both audiences and directors have become greater (Smith Digital 2). When digital humans were just getting their start, filmmakers could get away with only employing one or two people to create their effects. This was fine at the time because everyone gave digital actors some leeway in terms of how realistic they looked. Today though, large Hollywood movies employ teams of twenty to fifty people in order to make each virtual actor as realistic as possible. Smaller studios do not have this kind of money to pay for hyper-realistic digital humans and yet are still held to the same standard by moviegoers. Even though the amount of money large Hollywood studios are spending on the creation of super lifelike digital humans is quite extravagant, the reality of the situation is that they are paying for more than just the digital actors. While they are paying for the creation of virtual humans, they are also paying for the development of the technology. This means that as a blockbuster movie is produced, it is also pioneering new technology for digital actors. An example of this is how James Cameron, the director of *Titanic* and *Avatar*, creates his films. He begins with an idea of what his movie should look like and then starts producing the movie and the required technology at the same time (Thompson 2). As larger studios pioneer the latest technology, the older technology becomes cheaper and thus allows smaller studios to make increasingly realistic movies on a tighter budget, which helps the movie industry overall.

Because of their sheer complexity, virtual actors are creating new job opportunities in the movie industry. The process of creating virtual humans is an intensive process that requires expertise in many different areas such as animation, modeling, shading and rigging. Each of these areas contributes to the overall success of a virtual

human and none can be neglected or the result will be unrealistic. In today's movies, many people are required to make each of these areas successful. As more virtual actors are being made, the need for these technical jobs increases.

Detractors, in particular stunt people, would not agree that the expanding job industry for virtual actors is a good thing, because people are losing their jobs. An example of this is *The Matrix*. During countless scenes, normal stunt actors could have been used, but because virtual actors were a more efficient option, the director chose to go with them (Bath Digital 2). Some stunt actors may be losing their jobs to digital humans, but overall the job market is growing and former stunt people have a chance to participate in the industry in new ways. Numerous stunt personnel have become consultants for the production of virtual stunts. In addition, many people do not hear about the fatalities or injuries stunt people receive on the job, they only see the final product on the screen. Digital humans may be putting some stunt people out of work, but they are also saving them from serious injuries and may even be saving their lives. A couple of examples are *The Matrix* and *Mission: Impossible II*. Near the end of *The Matrix*, there is a scene in which the main character jumps into a moving helicopter from the top of a skyscraper (Bath 1). Due to the difficulty and danger of the stunt, the director decided that the stunt would be done by a digital actor. In *Mission: Impossible II*, many different stunts were turned over to virtual actors, including falling from large heights and taking bullets (Smith Reality 2).

Virtual actors have been around for quite some time and they are not going to go away just because some people have issues with them. When it comes to realism, the negative effect of the uncanny valley is only a problem for a few digital actors, and directors now use it to their benefit. Although there is a current issue with digital humans' lack of soul, future advances should take care of that. Experts agree that movies can reach a higher level of realism with the many things that virtual actors can perform, such as large battle scenes and death-defying stunts. Critics have the mistaken belief that virtual actors increase the cost of movie production, when in fact technological advances have driven the cost down. One can sympathize with a stunt person who is displaced from his job, but overall safety of stunt personnel is better and more technical jobs are being created. It is amazing what digital humans have been able to accomplish in the movie industry in two short decades. As the present

trend of enhancement continues, moviegoers will have a lot to look forward to thanks to virtual actors. Grab some popcorn and enjoy!

Works Cited

- Bath, Matthew. "Digital Actors Swing into Hollywood." *Digital Arts*. 7 Jun. 2004. Digital. 6 Nov. 2014.
- Bath, Matthew. "Timeline: Virtual Actors." *Digital Arts*. 7 Jun. 2004. Digital. 23 Oct. 2014.
- Geigel, Joe. Marla Schewpe. "Motion Capture for Real-time Control of Virtual Actors in Live, Distributed, Theatrical Performances." *IEEE International Conference on Automatic Face & Gesture Recognition and Workshops*. Santa Barbara: IEEE, 21-25 Mar. 2011. 774-779. Print.
- "George Lucas - Speaks Out About Digital Actors." *Motion Capture Society*. 2014. Web. 14 Oct. 2014.
- Mori, Larissa. "The Masters of VFX Weta Digital." *3D Artist* 70. Jul. 2014: 32-38. Print.
- Mori, Masahiro. "The Uncanny Valley." *IEEE Robotics & Automation Magazine* June. 2012: 98- 100. Print.
- Perry, Tekla. "Leaving The Uncanny Valley Behind." *IEEE Spectrum* Jun. 2014: 48-53. Print.
- Silva, Rogerio. Ido, Iurgel. Manuel, dos Santos. Pedro, Branco. Nelson, Zagalo. "Understanding Virtual Actors." *Games and Digital Entertainment (SBGAMES)*. Florianopolis: IEEE, 8-10 Nov. 2010. 220-229. Print.
- Silva, Rogerio. Manuel, dos Santos. Ido, Iurgel. "Developing Virtual Actors Inspired by Real Actors' Practice." *Workshop on Digital Media and Digital Content Management*. Hangzhou: IEEE, 15-16 May. 2011. 146-149. Print.
- Smith, Alvy. "Digital Humans Wait in the Wings." *Scientific American* Nov. 2000: 72-76. Digital.
- Smith, Alvy. "The Reality of Simulated Actors." *Communications of the ACM* 45.7 (2002): 37-39. Print.
- Swartout, William. Jonathan, Gratch. Randall, Hill. Eduard, Hovy. Stacy, Narsekka. Jeff, Rickel. David, Traum. "Toward Virtual Humans." *AI Magazine* 27.2 (2006): 96-108. Digital.
- Thompson, Anne. "How James Cameron's Innovative New 3D Tech Created Avatar." *Popular Mechanics* Jan. 1, (2010) Web. 6 Nov. 2014.
- Tyler, Kelly. "Virtual Humans." *NOVA Online*. Nov. (2000) Web. 6 Nov. 2014.