

Dennis Edelmann

“Like Alice in Wonderland”: Special Effects in *The Matrix*

A great deal has been written on *The Matrix* (and its sequels), both in popular literature, as well as in academic research, ranging from complete book volumes of several hundred pages to essays of just a few pages. The majority of texts on *The Matrix* lay their focus on the numerous allusions to (popular) culture like, for example, *Alice in Wonderland*, religion, and, above all, philosophical works like Jean Baudrillard's *Simulacra and Simulation*. In this context, scholars often anatomize the movie, and interpret every character's name, their utterances and even the slightest details in props in order to make them into symbols for their particular thesis. By doing so, they often neglect the film's very unique look and visual content, and no credit is given to the groundbreaking special effects that were used and their impact on the movie industry.

Since the beginning of science fiction film, special effects have played an important role because special effects are a visual technique of showing the audience something they have never seen before, or by making ordinary things appear in a strange and unfamiliar way. As special effects rely heavily on technology and technological progress, the extent to which special effects have been used in science fiction films has increased significantly over the past decades. Naturally, the quality of these special effects has constantly increased over the course of the history

of science fiction film, just as (especially computer) technology is advancing on an almost daily basis.

The undergraduate course “Of Body Snatchers and Cyberpunks: American Science Fiction Films from the 1950s to the Present” focused on different science fiction movies from various decades. Each single film has been of significant influence on the science fiction genre, both concerning their plots and ideas, as well as the usage of special effects. In Stanley Kubrick’s *2001: A Space Odyssey* and Ridley Scott’s *Blade Runner* the use of special effects was particularly revolutionary for the (science fiction) film genre. But in none of the movies which the course made a subject of discussion special effects and their twisting of reality played an equally important role as in the Wachowski brother’s *The Matrix*.

This chapter thus focuses on exactly this aspect because the special effects in *The Matrix* deconstruct reality on the visual level and have significantly influenced the display of action in (science fiction) movies. “Reality” in this context is “the state of things as they actually exist” outside the movie theater (“Reality”). In support of this thesis, I will first cover the deconstruction of reality by special effects within the movie. Secondly, I will take a closer look at the so called bullet time effect and its relation to pace. The third part of this article will then focus on the influences of *The Matrix* on the science fiction film and the movie industry in general.

The Deconstruction of Reality by Special Effects

It can be said that as early as in the first scene of *The Matrix*, the viewer experiences a reality which is very much different from an everyday perception of reality. Police cars with flashing sirens arrive in front of a hotel for a raid, which in itself is not yet something special or unfamiliar. But right from the start, the atmosphere of the film is very dark, with little to no lighting, and everything is kept in a strange grayish-green tone. This sense of unfamiliarity peaks when the female protagonist Trinity has her first appearance on screen. When approached by the police officers, she jumps up and seems to freeze in her movement. Meanwhile, the camera rotates around her horizontally. After the camera has completed a 180 degree spin, Trinity’s movements continue: she kicks one of the police officers and sends him flying through the room against a wall. She effortlessly battles off the rest of them and then miraculously flees over the rooftops, exercising sheer impossible jumps, to finally disappear into a telephone. Clearly, the audience is immediately thrown into the alternative world of the matrix, in which certain physical rules do not seem to apply.

But in the following sequences, in which the movie’s male protagonist Neo is introduced, the reality we are shown seems very much familiar to our own contemporary reality outside of the movie theater, except for an unfamiliar green filter that has been laid over the camera. Also, little by little we again begin to doubt

what we see to be real, because scenes like the interrogation of Neo by Agent Smith imply that reality here is different. As Neo, whom we have only known as Thomas Anderson so far, is being questioned by Smith and two other agents, he refuses to cooperate, resulting in his mouth nightmarishly growing shut, leaving him unable to speak (or scream). In addition, Neo is literary being “bugged” as Smith inserts an electronic device into his navel which then turns into a giant bug.

It is to a certain relief that what follows is a drastic and sudden cut to Neo waking up. Has all we have seen so far then merely been a dream? The answer seems to be yes, although the atmosphere created by little lighting, menacing sound and the confusing plot continues to uphold a certain mysteriousness. However, when Neo rides in the car with Trinity and the others, the excretion of the bug makes us realize that what has happened so far was in fact real. But how can this be real? The world portrayed looks very much like reality, yet the gradually dispersed special effects indicate that this place is of another origin. Just like Neo, the audience hopes to find an answer in Morpheus. He seems to know the answer as to what the matrix is, so maybe he can finally clarify what is happening here. Unfortunately, the sequence in which Morpheus gives Neo the choice as to either learning the truth about the matrix or waking up in his bed from a strange dream offers quite the opposite. The strange green tone remains and the menacing lighting does not change either. In addition, a mirror Neo touches simply liquefies.

What is even more confusing for the audience, however, is the following scene in which Neo is freed from the matrix, which turns out to be a computer animated illusion created by machines in order to control humans while exploiting them. Again, he wakes up, this time inside a tank filled with an unspecified pink liquid. As we have learned by now, he finds himself in what is supposed to be the “real world” of the movie. For no apparent reason though, his surrounding does not look at all like reality as we would expect it. The camera shows us huge towers with countless tanks just like the one Neo has just awoken in, and suddenly an insect-like robot grabs him and unplugs various cables that are attached to his body. Even for a science fiction movie, this scene is special, as this first scene of the movie set in the supposedly “real” world is a scene in which the protagonist is the only thing that is not a computer animation.

As we notice in the following scenes, also the strange green filter is gone, only to have been replaced by a strange blue touch. Morpheus and his crew fly around in an (obviously computer animated) hovercraft and the idea of the matrix as it is described by Morpheus over the following sequences does not only evoke Neo to vomit, but also shocks the audience. After all, they cannot be absolutely sure about the fact that their reality is nothing but a “computer animated dream world” just like the matrix.

That the matrix is not real could be accepted more or less, considering Morpheus’ repeated demonstrations of the fact that certain aspects such as strength, speed and physical rules can easily be bent inside the matrix. But why is it, then,

that the matrix seems a lot more familiar to our understanding of reality than the world portrayed as the “real” world? In the “real” world of the movie, there are also numerous aspects which make it very unappealing as an actual concept of reality. The atmosphere stays frightfully dark, and just as inside the matrix there is little to no lighting, a blue filter is used and most of the surroundings have obviously been created digitally. Of course, most of all the idea of human beings being no longer born, but “grown” as batteries for the machines (which is repeatedly shown in an utterly realistic array of special effects), is what renders this “real” world so unappealing.

How come, then, that all the technical instruments, weapons, the ship, clothing and other ordinary items still look somehow familiar, just the way you would find them in the real world outside the movie theater? Is this reality after all? What is reality, and what is just a dream?

Up to this point in the movie, the viewer cannot find a clear answer to these questions. Both in the matrix and in the “real” world there are things that make them seem unreal, be it people jumping from one skyscraper to another, or flying hovercrafts. Yet the matrix features everything we know from our own society and civilization. While the “real” world is portrayed as an utterly sad and dark place, it still features all the things that we would expect to find when believing what Morpheus told us about the war between men and the machines as a consequence of which the few remaining free humans have to live in the sewers of the machine world. The question therefore is whether there are facts/incidents that indicate that one of the two worlds is “more real” than the other?

The lobby scene provides us with a first answer. Here it becomes quite clear that the reality of the matrix is definitely not real. In this scene, the idea that speed and rules of gravity do not apply inside the matrix (as was suggested by Morpheus when explaining the matrix to Neo) is very obvious. Neo and Trinity effortlessly battle numerous police officers by shooting hundreds of bullets from every position one could (or could not) imagine. The whole scene is shown in slow motion and some of the camera angles that are used resemble any given ego-shooter perspective of popular computer games, resulting in what John Stratton calls “a pornography of stylish and stylized violence” (38). The scene ends with Neo and Trinity escaping via the escalator blowing up the lobby in a highly digitally animated explosion. Reality here has become more like a video game in which everything is designed to look spectacular and aesthetic.

This concept is further developed in the following scenes in which Neo frees Morpheus. The fights look and sound sensational and the excessive use of special effects goes to show that the reality of the matrix cannot be taken for granted. As Andrew Shail writes, “the matrix is the place where a body can move with total freedom in three dimensions, dress cool, possess all the equipment it needs, fight bloodlessly, communicate without limitations, and be both omnipotent and extremely graceful” (23).

This questioning of reality in the matrix reaches its peak in the scene in which Neo stops the bullets because here it is finally clear that the portrayed reality is no longer bound to any rules whatsoever. It can easily be altered by Neo in any desirable way, while we as the audience “see the world through his eyes, eyes that create a freeze-frame effect out of ‘bullet-time’ speed” (Ndalianis 5).

But what about the “real world” as opposed to the matrix? It is full of special effects, but in contrast to the matrix, in which the effects de-familiarize the familiar, they serve to give all things an ordinary look. Cinematographer Bill Pope admits that “the future world is cold, dark, and riddled with lighting” and that “lighting [was left] a bit bluer and [was] made ... dark as hell,” resulting in “the future reality [to look] very grimy” (qtd. in Lutzka 122). Nevertheless, (computer animated) special effects still make everything look ordinary, as the ship and clothing, for example, have a strikingly used look, making even the most science fictional apparatuses like hovercrafts floating on electromagnetic fields seem part of everyday life in this (future) world. The otherwise perfectly real-looking world of the matrix is only made unappealing to the audience by the (grayish-)green filter and by the excessive use of computer animated special effects in amazingly spectacular-looking fight scenes.

Yet the one question that remains is whether the “real world” of the movie is just another computer animated reality like the matrix and as such merely another form of control by the machines. Especially the two sequels offer a lot of support for such a thesis since Neo, for example, is eventually not only able to exercise his “superpowers” inside the matrix but also outside of it, in the supposedly “real” world. Furthermore, already *The Matrix*, the first movie of the trilogy “frequently undermines the idea that the Real World is anything other than an illusion as potent as the Matrix” (Wood 121) by an excessive use of special effects, special colors and lighting as I have described above. Unfortunately, neither the first *Matrix* movie nor the two sequels provide a clear answer to this highly interesting question. Despite the fact that special effects play a much more obvious role inside the matrix, the “real” world is also full of them. As Avlish Wood has pointed out, until the very end of the whole trilogy, “the Real World and the Matrix are no more or less real than each other” (125).

Bullet Time and Its Relation to Pace

While *The Matrix* in general features an excessive use of special effects, there is one single effect that stands out due to its revolutionary character. This effect is called bullet time. I do not want to elaborate on the history of this special effect but would like to point out that it originated in Japanese manga comics. This fact is important because it accounts for the basic idea behind bullet time, which is its central technique to capture movement not with one movie camera, but with many by putting together still images made by picture cameras. In doing so, this

effect very much resembles the creation of any given cartoon as “it takes the attributes of full-cell animation, only with people, not characters” (Gaeta, “What is Bullet Time?”).

The creation of a scene in bullet time is a complex procedure. The first step is to make a fully digital computer animation of the whole scene that is to be shown. Just like a regular storyboard, this animation helps to visualize the character’s actions and the movement of the camera and camera angles. In a second step, 120 picture cameras and two motion picture cameras are set up in a circle (or any other desired form) with a green-screen surrounding them. The two motion picture cameras, placed on opposing sides, mark the start and the end of the movement. Each picture camera captures a single frame, which is mixed with supporting digital frames in the next step. Together, all the single frames form the whole movement, and make it look as if there was just one single motion picture camera circling around the action.¹

The actors who perform their movements within the green-screen surrounding held by wires are thus captured frame by frame, and everything is then put together on the computer. As every frame exists separately, there is significant freedom as to how the particular scene or movement is presented virtually. Just as in cartoons, you can freeze the action by simply staying on one frame, go back and forth in time between frames, and of course slow down time. The latter is the technique mostly used in *The Matrix*, since, as special effects supervisor John Gaeta has stated “the aim of bullet time was slowing down time to such an extent that you really see everything around you as clearly as you possibly could” (“What is Bullet Time?”). The result of this effect, then, is a never-before-seen focus on the aesthetics of movements and fight scenes. Usually, the bullet times in *The Matrix* appear within otherwise fast-cut, fast-(camera) moving scenes or sequences and disrupt the narrative flow quite openly. By using this effect, the directors lay the focus not on the narrative aspect of the particular scene but on the aesthetics of the movements themselves. The results are spectacular looking fight scenes in which every bullet fired or punch dealt seems to be part of a well-planned choreography, which at times very much resembles classical ballet. Just as in ballet, the characters in *The Matrix* are able to move in ways beyond the regular moviegoer’s physical abilities. Taking place in near silence because the pounding music present in most of the fight scenes is interrupted in the bullet time sequences, this audiovisual spectacular of bullet time leaves the audience marveling at the sheer beauty of otherwise dull and brutal action scenes.

There is an ongoing discussion about the question whether or not the makers of *The Matrix* simply copied already existing ideas and techniques for creating their bullet time effect. Some critics (who unfortunately pose their criticism any-

¹ Apparently, the original plan was to strap a rocket onto a motion picture camera and so be able to capture the whole movement as well, but for obvious reasons this approach has been neglected (Gaeta, “VFX Supervisor”).

mously in online chat rooms) say that the effect existed long before *The Matrix* and that the Wachowski brothers merely named it differently (although again a similar effect had already been used in the computer game *Max Payne*, in which it had already been called bullet time). Whichever way one puts it, though, the bullet time effect in *The Matrix* was revolutionary to cinematography since it offered a variety of new possibilities to display certain scenes. And actually even Gaeta himself does not claim that it was an invention. Rather, he insists on the fact that for *The Matrix* already existing ideas and techniques were optimized in order to create a “method for capturing ultra slow motion” (“VFX Supervisor”). In this context, he further explains that “bullet time is a concept created by Larry and Andy W. which basically means ‘Mind Over Matrix’ and is not the name of a technique which uses still cameras to make virtual camera paths” (“VFX Supervisor”). Regardless of its name, even Gaeta himself claimed that as a filmic technique the effect would “be as revolutionary as cameras coming from cranes to steady cams ...,” because “cameras are [now] broken from the subject matter, virtual” (“What is Bullet Time?”). Most significantly, Gaeta adds that “computers brought the next step to cinematography” (“What is Bullet Time?”). This is a fact that is definitely verifiable and thus will be the focus of the next part of my paper.

Influences of *The Matrix* on Science Fiction Films and the Movie Industry

As I have initially stated, science fiction films often rely on special effects. Technological advancements hence allow for a constant evolving of the quality and complexity of these special effects. It is always people like John Gaeta and his associates who push the limits of movies’ visuals and cinematography.

Of course, any new technology or filmic technique relies heavily on preceding movies, since it is always the case that certain procedures are adapted or optimized. Thus, one could argue that if *The Matrix* had not been made, there would have been some other movie pushing digital effects and film-making to the next level. But the fact that *The Matrix* beat *Star Wars Episode 1: The Phantom Menace*, which was released in the same year, in the race for the Oscar for best visual effects, strongly suggests that the effects used in *The Matrix* were indeed special and groundbreaking.

The Matrix is situated within a long tradition and constant evolution of digitally animated surroundings, characters and movements. However, it was the first movie to work with camera angles that are not dependent on a fixed point but allow for an independent, digitally constructed movement of the camera giving the audience a much more intense experience of being inside the action as well as making supposedly unrealistic movements look authentic. In doing so, *The Matrix* gave way to a flood of film adaptations of superhero comics such as *Spider Man*

(2002/2004/2007), *Hellboy* (2004) or *Van Helsing* (2004). As an example, think of the way Spider-Man is flying through the skyscraper canyons of New York City and how realistic his movements and the camera angle following him look. Upon watching the scene, one could be inclined to believe that a “Spider-Man” could actually exist and exercise such movements.

In addition, *The Matrix* has pushed the science fiction film into a whole new direction with – as Marvin Keith Booker describes it – “its combination of a thoughtful science fiction premise with high action sequences” (252). Since action is not a requirement for a science fiction film, it becomes quite clear that such an excessive use of brutal and yet aesthetic-looking action scenes as is the case in *The Matrix* is special and that it takes the subgenre of “action science fiction” to a new level. An example for this is the movie *The Island* (2005), in which there is a free-way-action scene that resembles *The Matrix*’s action scenes to almost a hundred percent.

But this significantly aesthetic portrayal of action also affected other (action) movies. The single special effect which has been used and parodied the most is of course bullet time. Movies such as *Scary Movie* (2000) and *Shrek* (2001), as well as cartoon series like *The Simpsons* or *Family Guy* have made fun of bullet time. Also, the idea of bullet time showing high action in an exceedingly aesthetic manner has become quite ordinary in action movies today. Some of the movies which actually use a classic bullet time sequence include *Blade 1+2* (1998/2002), *Charlie’s Angels* (2000/2003), *Password Swordfish* (2001) and *Bad Boys 2* (2003).

In addition, the bullet time effect “crossed formal boundaries into TV ads, music videos and computer games” (Rehak 28). Examples include BMW commercials, and the *Resident Evil* computer game series. In this context again, however, Bob Rehak claims that “once detached from the narrative, characters, and mise en scene of the original Matrix, bullet time no longer seemed astonishing but hackneyed” (46). This adaptation of the bullet time effect by science fiction and action films presented the makers of the *Matrix Trilogy* with difficulties, because bullet time now had to become even more spectacular in order to achieve the same kind of reaction in the moviegoers.

The Matrix Reloaded and *The Matrix Revolutions* both were released in 2003 and again took the idea of an aesthetic display of action to a new dimension. The bullet time effect had been optimized by making it even more digital, allowing for the realization of even more unfamiliar camera movements as well as character’s actions, peaking in a full-out digital “super battle” between Neo and Smith at the end of the trilogy. Naturally, this evolution of special effects again marked the next step in cinematography, with fight scenes now becoming more and more fully digitally animated. But the two sequels nevertheless failed to provoke the same kind of cultural impact. Both fans and scholars saw the increased digitalization of the bullet time effect and other action scenes as rather negative, since “the sequels’ visual effects, whose abstraction, excess, and artificial cleanliness left au-

diences confused and unsatisfied” (Rehak 46). What had worked so brilliantly with bullet time in the first *Matrix* movie now just seemed to be too much, because “by taking effects to the next level, *The Matrix* makers were outdone by their own success” (Rehak 46).

Conclusion

The Matrix makes use of special effects in a way that no (science fiction) movie had done before. On the visual (and narrative) level, the gradually dispersed computer-generated effects together with certain film techniques (color filter, cutting and lighting) lead the viewer to doubt the reality presented in the movie. Once the idea of the matrix is established, reality in it becomes surreal, with effects like bullet time constantly disrupting the natural relation of time and action, while at the same time special effects serve to familiarize the unfamiliar in the “real world” of the movie. According to Dan North, the result is that “spectators are not asked to marvel at an independent simulacrum, but at the discrepancy between the real and its mimic” (49). Inside the matrix, however, it is mostly the bullet time effect that is responsible for a revolutionary glorification of action scenes. For the first time in a (science fiction) movie, action is portrayed as highly aesthetic and almost ballet-like in nature. This concept has been parodied increasingly and ultimately could not even be topped appropriately by the makers in the two *Matrix* sequels. Nevertheless, what remained is the idea of portraying even the most brutal action scenes as aesthetic as possible, an approach which not only tipped the science fiction film into a whole new direction, but as of today has become a standard in (action) films in general.

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