

4 amazing magicians. 3 impossible heists.
1 billion dollars. This is no illusion.

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CAINE

FROM THE DIRECTOR OF 'THE TRANSPORTER' AND 'CLASH OF THE TITANS'

NOW YOU SEE ME



2013



TECHNICAL ASPECTS :

Runtime	1 hr 55 min (115 min) 2 hr 5 min (125 min) (extended edition)
Sound Mix	Dolby Digital Datasat
Color	Color
Aspect Ratio	2.35 : 1
Camera	Arriflex 235, Panavision C-Series Lenses Panavision Panaflex Gold II, Panavision Primo, C- and G-Series Lenses Panavision Panaflex Lightweight, Panavision C- and G-Series Lenses Panavision Panaflex Millennium XL2, Panavision Primo, C- and G-Series Lenses Panavision Panaflex Platinum, Panavision Primo, C- and G-Series Lenses
Laboratory	DeLuxe, Hollywood (CA), USA (also prints)
Film Length	3,164 m (Spain)
Negative Format	35 mm (Kodak Vision3 250D 5207, Vision3 200T 5213, Vision3 500T 5219)
Cinematographic Process	Digital Intermediate (2K) (master format) Panavision (anamorphic) (source format)
Printed Film Format	35 mm D-Cinema



Wayne Brinton, visual effects supervisor,
Modus FX

Now You See Me was shot in Quebec, which has a pretty aggressive tax credit for visual effects work. That was an incentive to come to Quebec, but I believe Modus FX was awarded the job because of our reputation, which includes *This is the End*, *The Avengers* and numerous other films. A lot of movies want to find smaller VFX vendors to work on their movies, and that's what happened with *Now You See Me*. The other major VFX house that worked on the film was Rodeo FX, which did 350 shots on the movie. ILM did a couple of shots as did Make in Los Angeles.

5 POINTZ GATHERING

Modus FX did a lot of crowd and traffic simulation in *Source Code*, and that's one of the reasons why we got the 5Pointz sequence of *Now You See Me*. In this scene, towards the end of the movie, thousands of people congregate at the 5Pointz building in Queens, to see the latest appearance of the Four Horseman/magicians and, they hope, collect money that the magicians rain down from the sky. In several aerial shots, helicopters, police cars and a huge crowd fill every frame, all of which are CG.

The production filmed the empty building and surrounding streets, and our first step was to remove the lights, film crew and cranes from the plates. We then used Massive Crowd Simulation software to put CG people on the roof, courtyard, streets and sidewalks along with CG traffic jams and four CG helicopters.

The crowds on the ground, the close-up shots, were live. But every single aerial shot was 100 percent digital. We built our own motion capture system at the back of our office to capture cycles to use for the crowd. We had three males and three females and had them do

various actions such as clapping, cheering, pointing, and we applied these motions to all our crowds in Massive. We made a series of CG dummies and created multiple jackets, and hats in multiple colors so we could randomize all of that for each individual object in Massive.

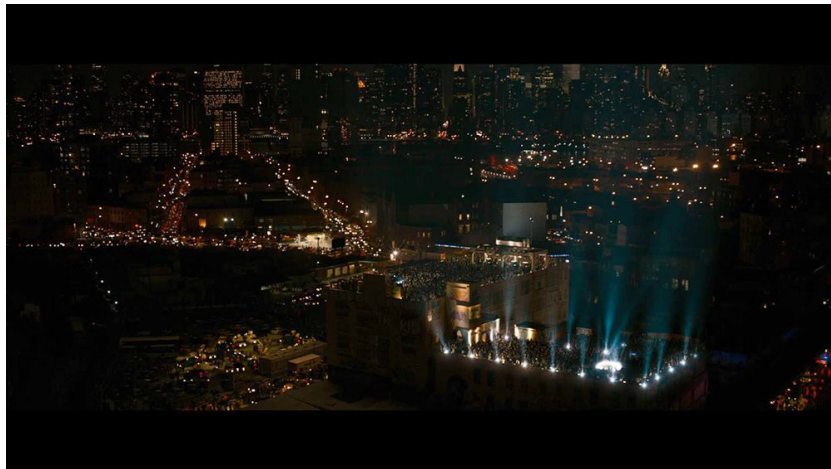


With Massive, you can control the overall action but not the specifics. As an example, in the scene in which Isla Fisher is in the water tank with piranhas, the piranhas were all CG. We started out using Massive to control them but the director Louis Leterrier wanted to art direct individual piranhas. So we had to pull them out of the simulation and animate them by hand.

But Massive was perfect for animating the crowds in the 5Pointz sequence. The filmmakers wanted a crowd of thousands and we didn't need to individually animate the CG dummies. In this sequence there are three stages, for the three acts the Four Horsemen are presenting. In the first act, a beam of light reveals a circular stage with people supposed to be the Horsemen, who turn out to be mannequins. In this sequence, the director asked for a few people to be a bit more aggressive as they pushed towards the stage in one of the aerial shots, so we did have to do a bit of art direction to get a few of the CG people to push past the stage. Stage 2 is where they give their speech

and Stage 3 is when they jump off the building.

For most of the aerial shots, actually, the director wanted the people to try to make their way to the front entrance so the crowd wasn't walking around randomly. For some of the crane shots, the camera is panning up and you can see people at the tops of the building. They were CG and we had to make sure they were looking out towards the camera and down at the building wall; there was no specifics for each individual but we had to maintain the overall integrity of the general flow.



MELTING MONEY

The melting money shot was very challenging -- one of the most difficult shots in the movie. The sequence shows the disappearance of a stack of money in a sealed stainless steel vault. The digital camera shot starts with a macro close-up of an origami rabbit catching fire, then orbits around the stack of burning money as it disappears, without leaving any trace of smoke or ash. Then the camera pulls back to show a playing card and the entire, empty vault. It's an entire CG environment and the final 500-frame shot involved simulation, camera animation, modeling and lighting.

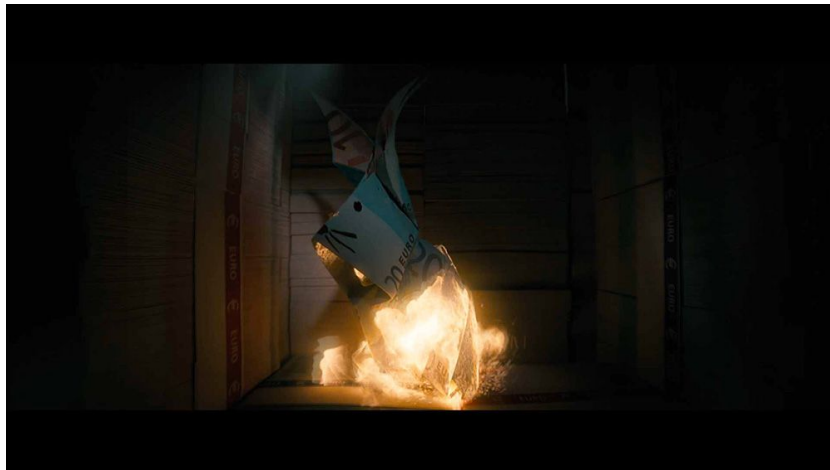


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The challenge was this big camera move plus all CG fire inside an environment that was stainless steel and highly reflective, which is the worse case scenario when you're doing CG fire. We used Maya and Houdini for the simulation, XSI for the camera work and the modeling of the asset, and the final composite was done with a combination of Nuke and Flame; we threw everything at that shot!

When they first gave us the previsualization and told us what they wanted us to do, I freaked out for a few minutes. My first concern is that it's supposed to be flash paper, which burns leaving no ash, smoke or any evidence it ever existed. Second, in the previs, there was a timer that threw off a spark to start the fire. Our question was, what would happen to the timer if the magicians wanted to leave no evidence? We all sat down with a couple of artists to figure it out. We talked about electronic paper with circuit codes embedded but it was too complex. Then we realized, you have potassium and water mixed together which creates fire, so we came up with the idea that if we put the potassium inside the paper, it would absorb and start to leak into the pool of water below. Since they're magicians, they could figure out the exact timing of how long the potassium would take to leak out of the paper.

Then we came up with a novel idea. I know a 13-year old girl who's heavily into origami, so I asked her to make me an origami rabbit. We chose the rabbit, as a symbol of the magician's rabbit-in-the-hat trick. She did, and I brought her origami rabbits into work and modeled them into CG. The origami rabbit would hold the water that would leak out to ignite the potassium. Ultimately, this process took too many seconds of screen time, so they used flash paper to ignite the rabbit, which then burns the money.



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We ultimately decided that it would take too long to show the rabbit leaking water, and then following the water to potassium to set off a flare that would burn the paper. That whole process took too many seconds. But the director loved the rabbit so we kept that. They used flash paper to ignite the rabbit, which then burns the money. It was magic. We're not trying to make it ultra photoreal, but rather ultra cool-looking to tell the story.

PROJECTILE PLAYING CARDS

In the extended fight scene between FBI agent Rhodes (Mark Ruffalo) and sleight-of-hand specialist Jack (Dave Franco), Jack hurls burning

money and playing cards at Rhodes, distracting him enough so that's he's able to escape 80-feet down a garbage chute. The scene is full of CG imagery. The actor, Dave Franco, was just pretending to throw the flash paper and the playing cards. In creating the CG, therefore, we were limited to his actions. We bought flash paper and threw it at cameras to see how it would look, but the director hated it. It's actually not very practical to throw flash paper and expect it to land a certain way.

At the end of the day, we went all out and started creating almost fireballs. It was flashy and did exactly what it was supposed to do. We wanted a flashy popping action in Dylan's face, not to hurt him but to distract him. Filling up the frame with embers was a very stylistic choice; it looked nice, even though flash paper doesn't create any embers. So the integrity of the flash paper is lost in favor of a nice looking shot. You do have to make those kinds of calls. You can try to make something look as real as possible, but if it doesn't look nice, the shot doesn't serve its purpose. This was all done in 2D in compositing and hand-animated inside Nuke.

With the playing cards, it was a matter of trying to make those look real. We looked at a lot of video of magicians throwing cards hard enough that they would stick into drywall. It's incredible to watch -- they're throwing the cards so hard that they warp. We made it look as real as possible, although some of them needed their weight changed a bit to work. At the end of the day, it was pretty accurate with how cards fly across a room.

The third part of this scene was a mock-up piece of the chute that Jack and Dylan go down. They had a short three-sided prop on set so they could place the camera towards them as they went down. We had to extend it down and up so it went seven floors. We extracted the actors and what was close to them, and then replaced the prop chute with a digital chute to show the actors sliding down. This was hand-tracked in Nuke and was a 2.5 D effect.

THE MIRROR SHATTERS

Using a mirror in a box is a classic magician's trick that is used to hide objects and is something we see early on in *Now You See Me*. Later on in the movie, the Four Horsemen use this same trick on a grand scale. They build a room-sized mirror box, with a 40-foot by 28-foot mirror that can be lowered at an angle to reflect the ground below, which hides the entire room behind it that houses the vault containing millions of dollars. Eventually one of them throws a sledgehammer at the wall, which shatters the mirror into billions of pieces, revealing the vault behind it. The actor threw the hammer from a distance so the mirror wouldn't shatter on top of him. We started our work at this point, removing the shattered glass and structure on the ground from the shot, and then adding dust and the reflection from the ground. At the end of the whole process, the only thing live in that entire shot is the actor.



The Four Horsemen build a room-sized mirror box, with a 40-foot by 28-foot mirror that can be lowered at an angle to reflect the ground below, which hides the entire room behind it that houses the vault containing millions of dollars. Photo by Barry Wetcher, SMPSP.



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The filmmakers referenced the shot in *Contact* when Jodie Foster character's father is dying and she runs up the stairs in slow motion and into the bathroom. At some point, you realize you've been watching her run in the reflection of the medicine cabinet mirror. So in this scene, you follow the hammer up and all the way through -- you think you're following the real hammer -- and then you see another hammer, they touch and the mirror is shattered.

We had to completely replace the environment with a CG environment, and we did a camera take-over from real to CG where we follow it up to the roof and then backwards towards the mirror, then it cuts to the next shot of the mirror shattering. Both those two shots is a complete CG environment, the camera moves are completely done by us. We had to go through multiple iterations to get the mirror to shatter exactly the way the director wanted. The key word of the show was 'percussive'. We had a reference shot in which a hammer is thrown at a mirror and we used that as best we could. The director wanted it not shatter all at once, but rather from the center to the edges, and then everything had to drop to the floor in a believable way.

It was a difficult shot because we had such a high polygon count on the shattered glass, and the mirror reflected the entire environment. One issue was that the environment was white, with no detail, so it

took some back-and-forth to make the mirror look visually convincing. The effect of the mirror shattering was also difficult. We wanted to get glint and lens flare from the mirror catching the light and we had to make our own lights that you didn't see. The practical set wasn't very visually pleasing and our challenge was to make the whole scene look nice. We used a combination of Houdini, Maya and XSI and all the compositing for these shots was done in Nuke. We also had practical anamorphic lens flares because it was an anamorphic film. The director loved lens flares -- not to the level of J.J. Abrams but he does love them. I actually had a note on one shot that said: "Go J.J. on this shot." It's becoming in the industry almost a term for lens flare. I always made sure we found a source that the lens flare was coming from, to make it as practical as possible.

CONCLUSION

This film had a real style to it. The whole movie is one big magic act, and the director wanted the audience to feel, throughout the movie, that it was a show. That's the look in the movie itself. And it was fun to use CGI -- which is a kind of visual magic itself -- to make all the practical magic come alive