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VISUAL EFFECTS FOR FILM

IMAGE ENGINE CONCEPT ART BY PETER PACE

IMMORTALS

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VISUAL EFFECTS FOR FILM

“Immortals is now my third film with Image Engine, and as always I am extremely proud of their work. Their deep breadth of creative talent matched with industry leading technologies allowed us to once again produce something that compels audiences. Thank you to all the artists and management for your efforts and support over what proved to be a challenging design process. I will very much look forward to working with you in the future.”

- Raymond Gieringer, Visual Effects Supervisor, “Immortals”

mortals

Image Engine Builds Epic Environments for Immortals

Digital Environments, Effects Animation, Matte Painting & Compositing

Image Engine provided over 130 visual effects shots for 'Immortals' (2011), the epic mythological tale from the producers of *300*, directed by Tarsem Singh (*The Fall*, *The Cell*). The film tells the story of Theseus (Henry Cavill), whose destiny is to save his people from the evil King Hyperion (Mickey Rourke) and his bloodthirsty army.

The project represents the largest digital environment build to have taken place at Image Engine to date.

Image Engine was awarded the work on Immortals in the Spring of 2010. Work began with Simon Hughes (Visual Effects Supervisor) providing on-set supervision in Montréal, and entailed well over a year of dedication from the Image Engine crew.

REALIZING THE DIRECTOR'S VISION

Under the direction of Tarsem Singh the film had a uniquely rich and painterly visual style. Image Engine's crew drew heavily on their artistic capabilities to realize this creative vision within a photo-real digital environment.

"Our central task as a feature film visual effects house is to integrate effects in as seamless a way as possible" said Shawn Walsh (Visual Effects Executive Producer), "which presented a key challenge for us with such a stylized film and took some very careful compositing and color management to achieve."

In addition, other stylistic challenges involved the long, locked-off camera positions within each shot: “Often our environments could take up to three quarters of the screen in a static position over an extended period of time,” explained Hughes. “We knew from the start that this was a very artistic endeavor that needed to be of a very high standard to hold up to such scrutiny.”

ENVIRONMENTS

The digital environments built by Image Engine included the giant cliff face, which contained the stage sets known as The Village, Tree Bluff and Check Point, which feature throughout the film.

The cliff was a multi-faceted challenge that consumed over 6 months of planning, setup, sculpting, rendering, matte painting and compositing. It towered several hundred meters above sea level and stretched for several kilometers, requiring a huge area of computer generated rock face.

The initial cliff was built entirely in 3D, which allowed the flexibility to cope with an evolving slate of shots; later on down the line projected matte painting was integrated for a more nimble approach to handling last minute changes, and to create more realistic detail in the rock surface for the mid and wide-angle shots.

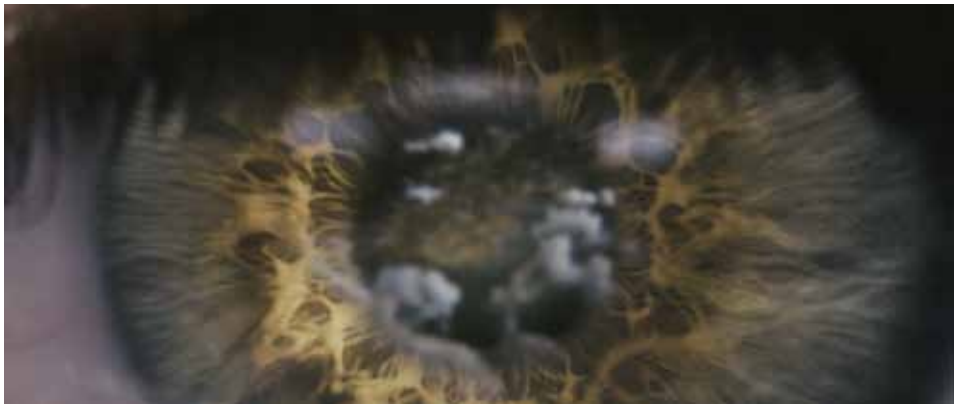
Gus Yamin, lead CG artist, with Jason Gross as CG Supervisor, initially built the environment in Maya, with Body paint and Photoshop, which was then broken into manageable divisions and taken into Z brush. From there, Yamin meticulously sculpted rock definition into the sharp geometry.

The village extension, which extended a practical set of 3 storeys to 25, was a very creative task, in which the challenge was to create a sense of life and organic growth, as well as scale. Jacob Miller, the lead artist for the village, built a direct CG extension up from the real village, adding deformations and texture to the blocks to match the actual sets. There were several generic pieces called the “gak pack” that were built - lights, rails, door frames, curtains etc, which were all derived from the practical set to keep the style the same.

In the same environment, waves crashing on rocks, distant whitecaps, tidal bands and additional elements such as lens flares, birds, distant coastal islands completed the look and delivered visual cues for the emotional register of each scene.

To create the oceans, Image Engine developed a system for generating gentle rippling water, which was then used for real reflections, with displacement.

All of this work is showcased to its fullest extent during a dramatic pullout shot which travels through the pupil of Athena's eye. As this shot pulls out from the village it travels through clouds, overlooking the entire cliff and ocean. This necessitated an extended environment including a distant vista of mountainous terrain. The first plate was shot on a zoom lens, which had to



transition out to a dolly, and then fly up into the heavens. Jordan Benwick, Lead Compositor, was responsible for coming up with the creative solutions to deal with the ensuing parallax, which affected everything from the details on set through to the clouds.

In this shot, 50% of the clouds were volumetric setups in nuke, using a method devised by Benwick, alongside the giant hero thunderhead clouds, which were cooked up by Greg Massie in the fx dept, using Houdini. For the cloud setups in Nuke, a way of creating deformed and detailed cloud structures that could hold up to stereo conversion was also created. Read more about this on the Art of VFX Blog.

WEAPONS

Alongside many other CG weapons, Image Engine was tasked with creating the effects that brought the Epirus Bow to life and showed its magical power. This included the way in which the arrow of the bow materialized and fired. The arrow effects were largely handled by treatments in Nuke that were applied to a CG arrow. To create additional force, power trails were also

added, which disturbed the environment as they flew towards the gates. The FX simulations were created in Houdini and rendered in 3delight.

In the hero 'fly-by' shot, the camera follows the arrows fired by Theseus through the environment, before nailing their Heraklion target. Read more about this on the Art of VFX Blog.

ARTFUL GORE

In addition to the weapons, CG limbs and arms were created where they are chopped off as Theseus fights his way through the battle scene towards King Hyperion, which involved significant digital gore.

As Walsh explained: "In many instances the kind of 'artful gore' that Tarsem was looking for in the final frames of the film was simply not possible to achieve within the shooting schedule. Image Engine was tasked with augmenting live action plates featuring all manner of violent events such as stabbing, spearing, decapitation, slashing, severing of limbs, etc. literally raining a fountain of digital blood and gore down on the film!"

CHARACTERS & TRANSITIONS

Hughes concluded: "Our best work for *Immortals* is largely within the environment but is also present in smaller details that we contributed throughout the film. Overall, this was challenging and rewarding show for everyone. I'd like to thank the crew, who tackled all the creative hurdles and came through in a big way for *Immortals*."

"We are really proud of what our crew accomplished across the board, and we look forward to new and exciting digital environment work in the future." - Shawn Walsh

before & after

before & after

before & after

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VISUAL EFFECTS FOR FILM

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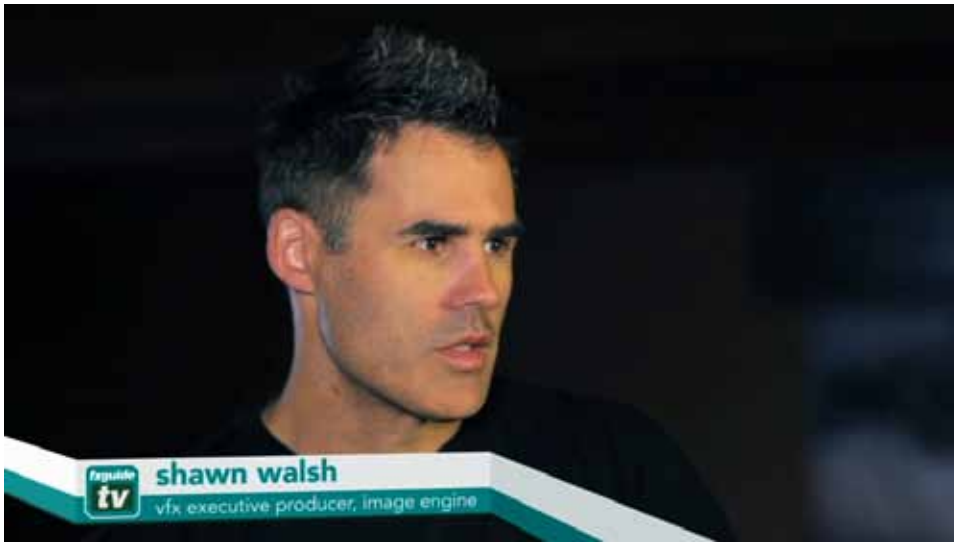
Immortals - fxguidetv #126

FX GUIDE | OCTOBER 26, 2011
To watch the podcast, click here.

Immortals

CGW - Online Exclusives | DECMBER 12, 2011

The gods can be a fickle bunch, too secure in their authority and position. And the humans they reign over can be an unappreciable lot, always looking for more power. But, oh, when these two groups face off, it is a war for the ages.



The latest epic battle between the gods and mortals plays out in the stylized action/adventure film Immortals, directed by Tarsem Singh (The Cell, The Fall). In the movie, the ruthless power-hungry King Hyperion (Mickey Rourke) and his murderous Heraklion army razes one ancient Greek city after another in search of a legendary bow that could destroy the gods of Olympus—and mankind in the process. The only person who can stop the king's madness and keep the delicate balance of power between the gods and the mortals in check lies on the shoulders of a stonemason named Theseus (Henry Cavill).

Bent on avenging his mother's death after she is killed during one of the king's bloody raids, Theseus is empowered by the Oracle Phaedra (Freida Pinto), whose visions foretell a far more important role for the stonemason. With the Oracle's help, Theseus embraces his destiny as he and a small band of loyal followers fight to save civilization.

Rather than setting the story in an actual historical epic, Singh and his designers created an original world for Immortals. "It's not the Minoan Age or the Bronze Age," says Charley Parlapanides, who, along with his brother Vlas, penned the script. "This is the Tarsem Age. It uses the Olympian gods and the Titans, but it has a unique point of view. It's not a world you will necessarily recognize. For the most part, it is straight out of Tarsem's mind. He's made something new and breathtaking, and yet dark and brutal at the same time."

Immortals is loaded with visual effects, action, and adventure. To make the creation of Singh's imaginary world easier technically and logistically, the producers housed the production offices, special effects, art department, and visual effects all under one roof at Cité du Cinéma Studios in Montréal. Singh worked with his longtime colleagues: Director of Photography, Brendan Galvin and Production Designer, Tom Foden. Jack Geist, VFX Producer, and Raymond Gieringer, VFX Ssupervising Producer, were added to the team to oversee *Immortals'* visual effects.

"Just taking the environments into account, we had a large-scale effects show," says Gieringer. "Then within the environments we had a lot of effects: enormous battle scenes, mountains collapsing, gods and Titans battling. There are over 100 shots that involve special effects."

A number of visual effects companies helped tell this epic tale, including: Image Engine, Prime Focus Film VFX, Tippett Studio, Scanline VFX, Proof In, ReThink VFX, BarXseven, Rodeo FX, The Third Flood, and NeoReel, and others.

On A Cliff

One of the largest digital environments in the film is the vast cliff-face environment. Initially shot on greenscreen in Montréal, this location was then expanded digitally by Image Engine and linked three of the feature's major stage sets: the village, tree bluff, and checkpoint. More than 20 shots occurred here, encompassing both the main angle and a reverse. A handful of shots were in the checkpoint looking down the cliff face toward the village, with the tree bluff beneath, then the reverse angle. In addition, there were shots within the village looking back at either the tree bluff or up at the checkpoint and out to sea. For the tree bluff, there are shots looking across the cliff face at the village or out to sea. Collectively, this was one extensive environment built as three stages with multiple views from within.

"The cliff was a design challenge, as it was such a vast structure," says Simon Hughes, Visual Effects Supervisor at Image Engine. "The cliff towered several hundred meters above sea level, which meant a huge area of rock-face to create. The cliffs had to avoid being just a mass of similar-looking rock textures, and it had to include lots of detail." Hughes doesn't think twice when asked which part of the project posed the most difficulty: "Easily the environment, from the initial planning, through management, to the techniques that challenged all the departments involved," he adds.

Using a Mo-Sys system on set, the production team conducted a basic build of the cliff, which provided Image Engine with a concept of the overall layout. The production crew also conducted Lidar scans of the sets, which Image Engine then simplified so they could be used to form a base structure, to which the artists added the three environments (village, tree bluff, checkpoint), building the environment out from there.

As Hughes explains, the expansive virtual set had to be both simple and complex at the same time—complex enough in scope to hold up in camera, and simple enough so that artists could make changes when necessary during production. The sets and cliff initially were built using Autodesk's Maya, with CG artist Gus Yamin meticulously sculpting the rock detail within Pixologic's ZBrush. The group also incorporated matte paintings in Adobe's Photoshop, with a touch of Maxon's Cinema 4D. The matte paintings were derived from images of the Aran Islands. While a large portion of the imagery comprised a photography-based matte painting, the style and lighting used made it more stylistic.

According to Hughes, it was imperative that the team be smart about how it handled the build of the cliff, to plan what could be handled in the final composites. At the start, the group initiated a thorough build, but not all the shots had been planned out at that point. Later, the artists integrated the projected matte paintings, which provided the rock detail for the medium and wide-angle shots. To bring the environments to life, the artists added waves crashing on rocks, distant whitecaps, tidal bands, and so forth. "This contributed to a believable ocean element, along with additional elements, such as lens flares and distant coastal islands, which helped complete the scene."

The village extension, which expanded a three-story practical set to 25 stories, posed a large creative challenge. "We had to find a way to demonstrate depth and scale, and for people to be able to travel between the levels," notes Hughes. "We also wanted to create a sense of life and organic growth that you see in medieval towns and cities throughout history, where structures grow around and spread around one another over time. The trick was scale, how to make these things appear vast."

The responsibility for constructing the village extension fell to Jacob Miller, who used 3D assets. After starting with the digital scans of the set, he built atop them, incorporating basic geometry; Miller also projected set photography and the relevant sections onto the base structure within Maya and Maxon's BodyPaint. For this latter task, the artists used a "gak pack" to fill out the structure—a collection of generic pieces from the set dressing (such as lights, rails, door frames, curtains, and so on) derived from the practical set. Ultimately, though, the 25 CG stories seemed to get lost in all the detail work. As a result, the group built just several stories of detailed CG, then augmented the remaining levels with matte paintings.

The cliff models, in fact, are quite large. This particular section of the cliff spans approximately a third of a mile, allowing for extreme close-ups of the environment to sweeping cameras that show vast areas. For one hero shot, the group panned all the way up to Mount Olympus, revealing a view of the cliff that was much farther into the distance and included mountain ranges in the background.

According to Hughes, it was up to the compositing team—mainly Jordan Benwick, Janeen Elliott, and Virginie Goulet—to bring all the imagery together. This was done using The Foundry's Nuke; tracking was accomplished throughout the project using 2d3's Boujou and The Pixel Farm's PFTrack.

"We pushed the projection abilities far and had to find ways to deform and improve on the geometry to accommodate the matte paintings and have them fit in with the CG," Hughes says. "It was almost a full modeling job, but not quite."

Using arbitrary output variables (AOVs) from the renders of the cliff and oceans, the artists were able to create reflections from the matte paintings, skies projected onto domes in Nuke, and create visual interest in the ocean, manipulating ripples to create the kind of tidal variations seen in vast areas of the ocean. The renders and AOVs were made with DNA Research's 3Delight, which is set up in Image Engine's pipeline to supply nearly 40 AOVs. "The amount of control this can offer a compositor is fairly staggering," says Hughes.

There was also a large physical component that supported the effects. About 20 sets were built, each containing a different virtual world, some with 360-degree views. Gieringer says the departments worked hand in hand to make sure things ran smoothly. "Their world is practical, and they're going to build these sets. We needed to take those sets and build the environments

around them. Tom Foden and art director Michael Manson worked with us to make the process seamless," he says.

No strangers to building realistic CG backdrops, the Image Engine team found the work for Immortals to be the largest environment they had ever constructed. "Even though we had developed many techniques from previous environment work, it was a challenge to fulfill Tarsem's creative vision." As Hughes notes, he had completed similar work on other projects before arriving at Image Engine, but the work had been very specific to each film. "It's not just a simple case of create terrain and then populate it," he says. "It involves a lot of creative interpretation. At the end of the day, the environments can take up the majority of the frame, so they drive the scenes within the film—they are the scenes. That's not something to be underestimated."

While the entire project was fraught with challenges, one persistent issue was achieving Singh's unique visual style within a photoreal digital environment. "We were tasked with developing a rich and painterly approach for the visual effects, which had to be integrated as seamlessly as possible," explains Hughes. "We knew from the start that this was a very artistic endeavor that needed to be of a very high standard."

In addition to the environment, Image Engine created interiors for the monastery, extended several corridor shots, and added soldiers to give the appearance of a massive battle, designed the concept of the magic arrow, integrated gore in a number of shots (from simpler blood spatters to severing limbs), built various CG weapons, and created a handful of CG hawks and birds. The artists also created shots of Athena, requiring them to project set photography onto BodyPaint to create the appearance that Athena was blended into the set, with the projections changing depending on the viewing angle. For the final reveal, she pulls a magic cloak (initially invisible) from the ground, and then is revealed with a spray of gold dust. These shots culminate with a painted projection of the set dissolving into her flesh, revealing Athena in her human form.

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Building Massive Environments for Immortals

STUDIODAILY | Bryant Frazer | DECEMBER 2, 2011

How Image Engine's VFX Process Kept Up with Tarsem's Visual Imagination

Gods, mortals, titans, and Mickey Rourke, all at each other's throats – the latest film from director Tarsem Singh Dhandwar depicts a bloody, broad-ranging battle royal inspired by Greek mythology. That meant VFX aplenty.

The film's VFX supervisor, Raymond Gieringer, organized the work of a raft of facilities in North America, Europe, and India: Image Engine, Prime Focus Film VFX, Mikros Image, Tippett Studios, Scanline VFX, Rodeo FX, BarXSeven, Fake Digital Entertainment, Modus FX, Christov Effects and Design, and Technicolor, and previs houses The Third Floor and NeoReel. The task for Vancouver's Image Engine was to create the vast cliff-face environment linking three of the film's major settings.

The virtual environment had to be detailed in all the right places, so that it would stand up to camera scrutiny in shots where it took up the majority of the frame, simple enough on the whole to allow quick fixes during production, and massive enough to make sense as the camera pulls back to a literal god's-eye view of earthly affairs. The CG build was done in Autodesk Maya and Pixologic Zbrush; matte paintings were executed mainly in Photoshop, with a little bit of Maxon BodyPaint 3D in the mix; and compositing happened in Nuke. Simon Hughes, Image Engine's VFX supervisor on the show, leveraged experience he had gained working on Inkheart at Rainmaker in London to manage the task. "I had a good taste for how long a process this can turn out to be," he says. Hughes filled us in on the process for Immortals, Image Engine's largest environment build to date.

SD: What were the first steps in the process?

SH: First, I went on set with Raymond [Gieringer, overall VFX Supervisor] to partially supervise the work. The three sets were the checkpoint, the tree bluff, and the village, all shot on green screen in a studio in Montreal. The production had a Mo-Sys system, so they did a basic build of the cliff as a Maya scene with very simplified geometry, just to help us visualize it. They created a digital camera – a direct mimic of the actual camera – and pulled a quick key of the green screen using that simple model so that Tarsem and Raymond and I were able to see the overall layout. So while they were shooting, we were visualizing what it might look like, and we had those scene files to start with.

In addition, the three sets were all LIDAR-scanned. That gave us a massive, very heavy Maya scene as a point cloud. We took those three sets in and stripped them down to a minimum so we could build and project onto them using the basic cliff model as the underlying structure. We made a new, higher-res but undetailed, version and projected geometric shapes onto it as reference material. Next, we took the cliff and the stripped-down LIDAR sets and fit all the

pieces together, putting the checkpoint, the tree bluff, and the village into the model. That gave us a solid foundation for our build, and it also allowed us to do quick renders as we started to get plates from production.

SD: Were you just adding environments, or were you doing some touch-up and adding elements to the live-action scenes, as well?

SH: The biggest problem is the nature of the rock surfaces themselves. In a couple of these shots, a third of the frame might be a rock surface. As you get farther into it, things get moved around and you try out different surfaces until you get a very good build. But to get away from the feeling that your foreground was shot in a studio, you need to augment what was in the set. So we didn't really do builds, but we augmented with matte painting and projecting [in the live-action sets] to marry them into what we were building for the environment.

SD: How did your workflow progress during production?

SH: We didn't have complete visibility on what our footage was going to be from day one. To cover our backs, we took the CG build really far. We brought the design and shapes into Zbrush, where Gustavo Yamin, our main CG artist for the cliffs, meticulously sculpted rock-surface detail into the cliff. He would start off with rigid shapes, blocks and cubes, and break that into manageable chunks and carve in the detail. We focused that work around the main set. That way, if we had to do something drastic with the camera, like flying across the sets or moving in really close, we would have a believable rock surface instead of just a projection. As we went through the show, we had matte painters working in unison, doing broad strokes and painting up what the overall look could be.

There was a crossover point where we said that's enough for Zbrush sculpting and focused on matte painting. It's hard to nail the look from day one. Between us and the other VFX facilities and Raymond, we were all trying to work out what Tarsem wanted. A lot of that was happening late in the day, so it became more about matte painting, which allowed us to move fast when Tarsem said, "Let's change this area." You needed to move away from sculpting by that point, because that's too meticulous and too long a process.

SD: So you had to pick and choose where all that visible detail was necessary as opposed to speed and flexibility.

SH: Yes. The village itself was built out of 3D assets, but there was a cut-off. We extended it up to 25 stories. We blocked it out with basic geometry – cubes and geometrical shapes that extended directly up from the original village. We took bars, windows, curtains, and lanterns from the photographed village and created a whole collection of set dressing that could be used in a general way. And then we started putting in windows, moving elements around, and just getting a feel for it. We followed the brief, but as we got further into the show and pulled the

camera back it was quite hard to read that there were 25 stories in all that detail. So we did a cutoff for the CG build. Based on where the camera would be, we decided we only needed to build up to the 7th or 8th floor at a higher resolution. After that point we did matte paintings again. We carved in different pathways, shifted buildings around quickly and easily, changed rooftops. A lot of creative decisions were being made to help the story, so we had to remain open to creative changes. It wasn't bad, by any means. We just had to adjust quickly.

SD: You created the arrows for the Epirus Bow recovered by Theseus. How was that accomplished?

SH: We built a CG arrow that went through various iterations, with a lot of back-and-forth between us and Raymond. At one point, we had a giant spinning mechanical head on it. We called it the Iron Maiden version – it was much more rock and roll. But the underlying arrow is a solid form, a metallic silver structure with a feathered tip and a chrome-like head. We sculpted a lot of nicks and detailing into the actual body of the arrow. When we rendered the arrow in the scene using 3Delight, that gave us a large selection of AOVs for the compositor to play with. We did previs it and try out different, much more fluid, treatments – things that looked like fire as we pulled back, or different extremes – but we went back to the original bow, which looked quite different from what's in the film. It was a silver bow that had little diamonds on it. We wanted to have an arrow that starts to reveal with a vapor, and then starts to glisten. The longer you hold the arrow, the stronger its power gets. Using AOVs, and having that detailing carved into the arrow itself, the compositor could fine-tune the effect and get small, sharp, crisp details in the arrow. He could isolate the detailing, applying lens treatments like chromatic aberrations and glows. The depth passes allowed us to control the brightness, from the tail of the arrow to the head, and animate that. We had different controls on the glistening effect we created from the specular pass. Finally, we were able to apply overall lensing and track it to environments using a pref pass, which actually gives you numerical values for where you are in a 3D environment.

SD: What was the most challenging shot in the film?

SH: Really, it was two shots, and they are the most obvious ones. One is where we fly through the sets, following the four arrows that Theseus lets fly toward four soldiers. And then the other one is where we fly back through the sky and end up in Athena's eye at the end. Those two shots show off the environment in full. They were where everything we had been building got used.

For the pullout shot, we had to go even further still. You don't usually see above the cliff face, except matte paintings of mountains and the horizon. We had to create mountains, make little islands and rocks out in the ocean, and extend the ocean much farther than in previous shots. About 40 percent of the clouds in that shot were CG and the remainder were projected matte paintings. Originally we were going to go with a full CG cloud, but as we moved forward we realized more of a painterly approach was needed, and we again chose a cut-off point where a matte-painted approach worked versus a CG cloud. As we flew through the cloud, obviously, it needed to be CG. The final bit of that pullout shot is as you go through the eye of Athena. We had to create a digital version of her irises, with all the high-res detail you'd see, and create a

chromatic and fluid appearance. As you go through the eye, it becomes more of a reflection of what she's looking at down on the earth. We had to ask, how would this physically work? Are we seeing a reflection or is it a dissolve? It really becomes a happy marriage between dissolve and reflection.

The full environment was done without Zbrush detailing. We designed the terrain in Maya, creating a series of mountains that could be moved around easily, and gave that to the matte painter to paint on top of. That was set up as a projection, with matte-painted clouds way back to the horizon and a matte-painted sky.

SD: And what about the arrow shot?

SH: That was a very dynamic camera move. There was a lot of back and forth between us about how we should fly into the set, how close we should get to the arrows, and whether they should fly below us or above us. Another strange factor has us catch up with all four arrows at the same time. We had to find a way to make that more believable – the longer he holds them in the bow, the faster they come flying through the air. We created trails and tried to create air pockets to make the arrows look like they were disturbing the air around them. At the end of the day, things got simplified, but a shot like that takes a lot of time to work out. For those two shots, we needed to push everything, from the build to the matte paintings, farther than for all the previous shots, either because we saw more or got closer to it.

SD: Did the fact that the release was stereo 3D affect your work?

SH: Yes and no. There was a question at the start of the show about how we should manage that. We went in with our eyes open to the fact that it was going to be a stereo show. If we got a last-minute request to do everything in stereo, we would have been able to manage that request. A large amount of the show was filmed in stereo and a large amount wasn't, so there was a conversion process applied and we had to keep in mind that these shots needed to be broken up into as many individual layers as we could supply. But our work was finaled and approved as a mono image. We did that knowing full well we could supply the individual layers to the conversion facility.

SD: Do you think the stereo effect could be better if you were delivering actual stereoscopic assets?

SH: It's arguable. In the shots with big camera moves we did give them, effectively, 3D scenes. We gave them the cameras, so they could have managed it the same way. We might have come up with a slightly better result in some shots, but a lot of the camera moves don't push the stereo effects to the limit.

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SD: What was your collaboration with the director like?

SH: Our overall contact with Tarsem was very sparse. Raymond was our main point of contact, but we had quite a few reviews with him in the initial stages as well as in the later stages. He will give you broad strokes, but we found we were working with quite an open brief at the start. Creatively, we were having to pull it out of the bag. We'd ask, what has he done in previous movies? What are the overall consistencies, stylistically, that we think he would like? One big consistency we saw was how minimal things could be, how labored camera moves could be, and how long the shots could be. You really are creating paintings. It's nice to be left to your own devices and try to come up with the goods – to get into the mindset of the show.

We were trying to speak to Raymond and find out what the other [VFX] facilities were doing. We had some crossover with Scanline VFX, only because we were adding arrows into their environments. We did some [work] with Rodeo FX, as well. But there wasn't a lot of contact between us until late in the game, and the cool thing that seemed to happen is we were all going in the same direction – which was a huge relief, obviously. It was a good sign of how much Raymond was steering us all together. It was a time-consuming process, but it worked.

Original article found here.

press

Immortals: Simon Hughes

VFX Supervisor - Image Engine

THE ART OF VFX | Vincent Frei | DECEMBER 1, 2011

What is your background?

My background was in fine art, and audiovisual technology, but I began working in the industry in London at Cinesite in 1997. I started as a runner, to editorial back in the days when we still cut film, projection and database management for vfx, to scanning and recording where I became the S&R supervisor.

I made a jump to the side after a few years. I had been thoroughly trained in shake during my time in S&R, so I moved over to compositing as I really got the taste for my creative urges again! After just over 6 years I left Cinesite to take a job at Clear Film, which soon became a part of Prime Focus. Myself, and a small team were in charge of setting up the film department and had some great experiences such as working directly with Danny Boyle, and high end productions such as *Kingdom Of Heaven*.

Again after a few years I moved on to Double Negative working on films like *United 93*, *Harry Potter* and *The Reaping*. After this I moved on to Rainmaker UK, where I was again involved in the early days of a startup vfx company and also transitioned into comp supervision.

As I am a Canadian citizen I have always had my eye on the industry in Canada, and after a couple of years at Rainmaker I took a job at Image Engine for two reasons, they had made the complete transition to Nuke and they were due to start on *District 9* which was just an incredible sounding project. Once I finished on *District 9,* I received a VES award for compositing and moved into VFX supervision more or less straight after. Working on *Law Abiding Citizen*, *The Factory*, *The Losers*, *Immortals* and most recently *Safe House* (2012) where I have been the supervisor for the show working directly with Universal.

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How did Image Engine get involved on this show?

Image Engine had worked on a number of shows with Raymond Geiringer. I had worked with him on *Law Abiding Citizen* with Visual Effects Executive Producer Shawn Walsh, and we had developed a good working relationship, which lead Raymond to contact us. Tarsem was also a big fan of *District 9*.

How long have you worked on this film?

We worked on this for around a year. Work began in 2010 when I went on set in Montréal.

How many shots have you done?

There were around 130 shots in total.

How was the collaboration with Director Tarsem?

Working with Tarsem Singh was a fantastic experience; his artistic sensibilities are what drive his films to become the grand spectacles that they are. So it was a real challenge to try to live up to those standards.

What was his approach to VFX?

Tarsem seemed to encourage creative freedom, we were expected to drive the imagery forward ourselves to a point where the film could be viewed holistically, and this is then where he really got involved. This was great, as he understood that the process takes time – allowing us to develop our ideas and techniques first so that he could then direct them further.

How was the collaboration with Production VFX Supervisor Raymond Gieringer?

Working with Raymond has always been a good experience, he is incredibly calm, and focused, and as an ex-facility supervisor he thoroughly understands the challenges that VFX facilities have to overcome to complete high end VFX.

What have you done on this show?

Image Engine provided the full range of visual effects work on *Immortals*, from computer generated characters, character transitions and heavily stylized digital blood and gore, but the main challenge for the company was definitely the digital environment work.

The main environment was the cliff, which stretches for roughly half a kilometer and houses three of the key sets: the village, the tree-bluff and the checkpoint, which are all carved into the rock.

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Can you tell us more about the village and the cliff?

Essentially at the start we did a lot of concept art ourselves; working out how the cliff should look and how the village could conceivably extend from the original 3 stories.

The concepts only got us so far, so essentially became more of a case of pushing it forward and trying to visualize it in broad strokes as we were going along, so we could see it in context. The cliff was a design challenge, as it is such a vast and simplified structure. It was all about rock, and the details within the rock surface, which is a bigger challenge than it may sound.

The village extension was also a very creative challenge. We had to find a way to demonstrate depth and scale, and find a way for people to be able to travel between the levels. We also wanted to create a sense of life and organic growth that you see in medieval towns and cities throughout history, where the structures grow around each other over time.

The trick was scale, how to make these things seem vast.

How did you create the first reveal of Athena?

To start with we created a basic human form in Maya that was used to body track Athena, mainly focused on the head and neck. From this we projected a painted version of her head onto the geo, and also created a selection of ink blot styles images that were also used as a basic texture on the geo. From this we were able to supply comp with a CG head and a selection of alpha channels that they could use to drive the effect.

The lower half of the body was taken from footage of the painted Athena and warped to match the practical in Nuke. The reveal were a combination of displaced roto shapes and the ink blot textures, that gradually reveal the unpainted plate version, the goal was to try to create a fluid transform that looked like it was seeping into her body.

How did you create the Hawk?

This started as a much simpler build as we were only originally expecting to see it far from camera, so over time this was brought closer and closer until it became a hero character. The build was in maya, textures in photoshop and some sculpting in Z brush. The animation was in Maya.

Can you tell us more about your work on gore shots?

The gore work went from the simpler adding of practical gore from an element shoot, to creating CG limbs and arms and chopping them off. In addition to this there was a collection of weapons created which ranged from daggers, to swords, to spears, and in one instance one spear is snapped into three different sections and used to brutally maim soldiers as Theseus rampages through the tunnel.

The gore work was a lot of fun; really it was a case of more more more!!

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Was there a shot or a sequence that prevented you from sleep?

The environment was a challenge, so as a whole this is the part of the show that left it's mark on me, and taught me a lot more about how to do this kind of work. I think it kept us all awake at night dreaming about rock surfaces!

What do you keep from this experience?

How to create something of such a huge scale, but at the same time keep it flexible enough to handle the creative process. We work in an industry that calls more and more for well defined procedural approaches, that don't always lend themselves well to creativity, so it is a difficult balancing act, and *Immortals* taught me a lot about this.

// SPECIFIC SHOTS IN FOCUS BY IMAGE ENGINE ARTISTS // Gustavo Yamin, Senior Digital Artist

Can you tell us how you designed and built the cliff?

I proceeded to build a more detailed "blocked" version of the same volume in Maya and tagged parts of it with real images of rock features that I thought would fit specific parts of the cliff – broader areas and also the ones closer to the actual sets. The initial blocking of the cliff in Maya was done by simply scaling and piling dozens of polygon cubes together. These served as a "volume guide" for the formations that would bridge each set area and matched the 3D model of the cliff used by Tarsem in his shots. The model ended up spanning roughly half a kilometer within Maya, and it was obvious we would need to segment it to be able to manage the high-resolution version. The cliff face alone was broken-up into 20 parts.

Once we decided how the whole cliff should be segmented, I built cages (simple low-resolution geometry) in Maya that surrounded the cubes that formed each cliff chunk and sent both cage parts and blocks to Zbrush. I shrink-wrapped the cages onto the grouped cubes creating a single mesh that matched the intended volume and could be refined further. For each block, I pushed the subdivisions up to anywhere between 2 and 3 million polygons for initial sculpting. For parts that required the highest amount of detail, I would sculpt further using the HD Geometry feature in Zbrush. I would then export 4K 32-bit displacements of each block and reassemble the whole cliff in Maya to be rendered in 3Delight.

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One interesting challenge we had not anticipated, came with the realization that the model used on set as in-camera reference for Tarsem had been deformed and re-arranged almost on a per-shot basis to fit his framing and composition requests. So, our cliff model did not match, initially, any of the reference plates we received from production – even though it had been built based on that same 3D model they used on set! In the end, we had to rig all the 20 cliff parts individually and as a whole to be able to re-shape the entire thing to match the per-shot distortions.

The end result was a clever mix of 3D and matte painting – to tackle the intractable close-ups that were just too extreme for the 3D build to handle (without further cliff segmentation and sculpting); and to handle tweaks and last-minute structural changes requested by the client fast enough to meet the deadlines."

// Jordan Benwick: Lead Compositor

Can you tell us more about the big impressive pull out shot that start at the village and finishes in Athena's eye?

We knew the shot was going to be massive in scope right from the start of the project. We didn't know just how much of the vista we were going to see, how much would be covered by cloud, etc. We did a lot of concepts and back and forth with the clients. In the end not very much stayed the same as the look of the cliff and terrain was still being worked out.

While that was going on we started on the transitions & plate work. The 1st plate of the village set was shot on a zoom lens, pulling out from long to ~18mm. We had to transition from the zoom out to a dolly out which would fly us up into the heavens, with all the parallax that implies. So in Nuke I projected the plate on the village/cliff geo, but had to get roto of all the soldiers to stand them up on little cards all around the set, and a clean plate underneath them.

We did a lot of rounds of cliff shape and look, so there was a full 3D render of the cliff, but in the end the closer parts of the cliff were largely augmented by matte paintings projected onto the geo. Because we started so close and ended seeing the whole near cliff, there were four matte paintings at 4-6k each inset within the next. A matte painting was also needed for the terrain on top of the cliff.

The base for the ocean was a wave pattern displaced 3D plane, which we re-lit in Nuke based on a sky dome. To that was added a lot of 2d elements, many layers of crashing waves, whitecaps, rocky formations, and more paintings (did you see a trend here?), to really amp

up the interest and break up the clean cg feeling. Janeen Elliott did a lot in comp to bring everything up a few levels.

As we were developing the shot, it was clear we would see the same clouds from below as above, which would clearly never work just using photographed clouds on cards. It would also be difficult to find enough aerial views of clouds with the correct lighting and type of cloud. I came up with a method to create clouds using noise patterns and faked lighting, so the shape and lighting could be controlled, and then put them on a stack of cards for each cloud to get a cheap volumetric effect, and even shadows onto the terrain. It was a real hack, and kinda worked! They were limited in that they could only be used for cumulus clouds and not-so-close up.

By far the best clouds were cooked up by Greg Massie in the fx dept, using Houdini. Those are the giant hero thunderhead clouds. The final shot included some of each kind of cloud.

The last piece is the eye transition, which was done in nuke using the plate and, yep, another matte painting. The iris was broken out into several layers and placed in several depths for a bit of parallax to get a sense of overlapping fibers of muscle.

How did you create the set extensions for the tunnel and the monastery?

The monastery shots came to us very late in the production, so we decided we had to be efficient as possible. We came up with a hybrid 3D/matte painting/comp technique, which worked out very well, as we were able to turn around changes quickly, with only 2 artists.

Our 3D artist, Ben Stern, textured and lit the scene as usual, but only rendered 2-5 key frames for each shot that showed the extremes of the camera moves.

In Nuke, I then re-projected the key renders, using the cameras they were rendered through, onto the geo of the monastery. The projections covered all of the monastery that could be seen through the shot camera, so the full frame range could be rendered out of Nuke. It also meant that we could paint and re-texture the monastery in comp. The candelabra flames were 2D elements I shot in the back room of the studio, with some comp tricks to create the light interaction with the candelabras themselves.

press

// Janeen Elliott: Senior Compositor

Can you tell us, in detail, about the creation of the great shot in which we follow 4 arrows in the air?

I began working on the fly-by shot (where we follow the four flying arrows to the village along the cliff) after it had been initially setup by another artist.

One of the first things I had to do was to tweak the original foreground plate of the hero shooting the final arrow from the bow. The camera move was baked into the plate, and we needed the actor (Henry Cavill) to release the arrow sooner than he was in the plate, so the hand needed to be adjusted. We also needed to lower his arm since the trajectory of the arrow needed to be lower than he was aiming in the plate. Once that was accomplished, the majority of the work I focused on was the cliff face.

We were working with a mix of some CG areas along the cliff face, and some matte painting patches and photographic patches which were projected on to 3D geometry in Nuke. This was a bit of a tricky process in that the geometry onto which we projected our textures needed to simulate the cliff face geometry as best as possible in order to avoid pinching and stretching as the camera went past. We found that we couldn't use the full CG geo that 3D had used as it was simply too heavy in Nuke.

Instead, it was more efficient to use cards in areas that we were updating. Also, we had to use higher resolution matte paintings and photographs the closer the camera got to the cliff face, so there were quite a few cards used along the fly-by. Projections in Nuke also helped us where we had notes to adjust the look of the village. Certain buildings needed to be changed for color, or to add fire scorch marks, and we were able to use Nuke's projections with rotoshapes to easily track the rotoshapes to the desired building to make the change quickly.

Also of course, this helped in blending in the CG buildings with the live action ones of the plate where the actors where shot. Projections were used again in the water area as well. We used them to project clips of live action waves crashing along the cliff face, and the rocky outcroppings.

I also applied the established magic arrow look to the four flying arrows as well as created the look for the impact that those arrows would have upon their targets. Of course there was quite a bit of overall adjustment to color to all aspects of the shot, and the final God rays were also applied as a final touch.

Original article found here.

press

Additional Press

CGWorld Japan JANUARY 2012

Cinefex Russia DECEMBER 2011– JANUARY 2012

Eizoshimbun DECEMBER 2011

HISPANIC PRESS VARIOUS

PIXOLOGIC INTERVIEWS IMMORTALS & THE THING

image engine

About Image Engine:

Whatever the scope or size of the production, from pre-visualization through to handling complete feature films, we provide scalable resources, and a wealth of experience and talent. Our skilled teams are integral to our success.

Developing robust production pipelines and pioneering in the area of proprietary software development, Image Engine is fast becoming a leader of innovation in development for visual effects.

History

Image Engine was formed in 1995 in anticipation of the growing strength of the postproduction market in Vancouver.

The founding partners (Greg Holmes, Robin Hackl and Christopher Mossman) began with a simple vision to produce stunning work for the demanding producers and directors who were increasingly flocking to Vancouver as a location for high-end visual effects.

With numerous Emmy, Gemini and Visual Effects Society nominations under its belt, Image Engine went on to seize the growing opportunities in feature film visual effects work.

The success of the film division led to its architects Peter Muyzers and Shawn Walsh being made partners in the business. They remain a driving force building Image Engine into an industry leading feature film visual effects facility, culminating in 2010 with the Academy Award® nomination for *District 9*.

From its first production *Slither* through to the recent high profile productions including *District 9, 2012*, *The Twilight Saga: Eclipse*, *Breaking Dawn*, *The Thing*, *Immortals*, *Safe House* and *Battleship*, Image Engine have built up a notable roster of credits.

Image Engine is based in Vancouver, BC, North America's third largest film production centre - and is in the same time zone as Los Angeles.

International Talent

Our skilled teams are integral to our success. The first-rate supervisors, programmers and artists at Image Engine bring their global expertise, boundless creativity and a shared passion for producing spectacular visual effects to every production – whilst our teams of highly experienced production staff run a seamless operation to ensure that every production is delivered on time and on budget.

Image Engine currently employs individuals who hail from Australia, Austria, Belgium, Brazil, Canada, China, England, France, Germany, Hungary, Iceland, India, Ireland, Italy, Japan, Mexico, Myanmar, Netherlands, Philippines, Poland, Russia, Scotland, Slovakia, Spain, Sweden, South Africa, Taiwan and The United States. The diversity of our crew's backgrounds is paramount in the success of our film projects as we constantly try to see with new eyes. The studio is truly a place where creatively gifted and technically skillful people from all over the world have collected to achieve great results together.

Credits

Battleship
Universal Pictures 77 Shots – Creature Animation, Effects Animation & Compositing

Safe House
Universal Pictures 378 Shots – Crowds, Hard Surface Animation, Matte Painting & Compositing

The Twilight Saga: Breaking Dawn
Summit Entertainment Inc. 60 Shots – Creature Animation, Digital Doubles, Effects Animation, Matte Painting & Compositing

The Thing
Universal Pictures 550 Shots – Creature Animation, Effects Animation, Matte Painting & Compositing

Immortals
Relativity Media 130 Shots – Digital Environments, Matte Painting & Compositing

The Twilight Saga: Eclipse
Summit Entertainment Inc. 389 Shots – Creature Animation, Effects Animation, Matte Painting & Compositing

The Losers
Dark Castle Entertainment & Warner Bros. Pictures 147 Shots – Hard Surface Animation, Effects Animation, Matte Painting & Compositing

The Factory
Dark Castle Entertainment & Warner Bros. Pictures 217 Shots – Matte Painting, Effects Animation & Compositing

Law Abiding Citizen
The Film Department & Overture Films 85 Shots – Effects Animation, Matte Painting & Compositing

District 9
WingNut Films & Sony Pictures Entertainment 311 Shots – Character Animation, Effects Animation & Compositing

Orphan
Dark Castle Entertainment & Warner Bros. Pictures 124 Shots – Effects Animation, Matte Painting & Compositing

The Incredible Hulk
Marvel Entertainment & Universal Pictures 75 Shots – 3D Animation, Matte Painting & Compositing

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VISUAL EFFECTS FOR FILM

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