

SF-SIGGRAPH 2003 Halloween Pirate Bootie Bash

Industrial Light and Magic and Hal Hickel , Animation Director and Visual Effects Supervisor showcase Disney's *Pirates of the Caribbean*

By John Locke

Emeryville, CA - The night after Halloween freaks, fiends and friends of San Francisco SF-SIGGRAPH gathered for the first annual Halloween Bootie Bash and Costume Party hosted by the Expressions Center for New Media in their state of the art, \$40+ million educational facility. The celebration drew over 200 guests from the Bay Area's elite and up and coming in the visual effects, computer graphics and animation industries for dinner, dancing to the music of "Hot Buttered Rum" and a featured presentation by Industrial Light + Magic.

A special keynote was presented by Hal Hickel, Animation Director for ILM and Animation Supervisor for Disney's *Pirates of the Caribbean*, produced by Jerry Bruckheimer. Production of *Pirates* represents the latest and most extensive use of visual effects and streamlined production techniques in recent times and was a topic of great interest to attending SF-SIGGRAPH members and students from the Expressions Center.

Pirates of the Caribbean- The Curse of the Black Pearl, centers around the story of Rogue Pirate Jack Sparrow (Johnny Depp) who must rescue the daughter of a governor who was kidnapped by the cursed Pirate Barbosa (Geoffrey Rush) and his crew. In his presentation, Hickel detailed ILM's role in the production of more than 325 visual effects shots involving Computer Generated (CG) ships, mattes, composites and skeletal animations.

"When we got a first look at the script for bid, we were surprised there were no skeletons involved. Skeletons are a natural for pirate movies and animators alike, and we thought it would be cool to bring skeletons alive in the context of a pirate film," notes Hickel. "So when we saw the later rewrite with its curse and skeleton crew, (in which Barbosa and his crew turn into living skeletons on moonlit nights), we knew we were excited; we were going to have fun on this one."



ILMs Magic

While no particularly groundbreaking special effects were developed for *Pirates*, ILM continued to push the envelope of what could be done within a short period of time. With only 9 months from production through post, the professionals at Jerry Bruckheimer Films, ILM, Laser Pacific, Technique and several other

boutique special effects houses pulled together over 700 visual effects shots, posting and digitally mastering the film in a record 11.5 weeks.

"The important thing in a film like this is to serve the directors vision first" notes Hickel. Director Gore Verbinski and Director of Photography Dariusz Wolski had a vision of several distinct environments involving nighttime, moon lit nights, Skull Island, fog laden seas and a skeleton crew. ILM worked closely with the producers to develop realistic lighting and environments, mattes, ship miniatures, skeleton animations and transitions that could convey this vision.

Pirate Ship Ahoy

Meanwhile, back at the ranch while filming was under way, ILM was busy developing miniatures, CG environments and conducting animation tests. Scale models and digital representations of the pirate ships Interceptor and the Black Pearl were developed, modeled in RHINO CG from copies of the original shipbuilders' blueprints and laser cut into wood. Sea worthy miniatures were shot in tanks and interspersed with footage from a full scale mock up built in the Caribbean for live action filming. A CG version of the ship's hull was also modeled from the blueprints and leveraged in underwater shots from the bottom of the sea.

The accuracy and realism of the physical models, miniatures and CG ships added an extra degree of reality to a film. To create convincing effects and composites live action footage, key frame animations, motion capture, match moves and transitions were intertwined, often in the same shot, seamlessly transitioning from miniature to live action to animated composite with the same look and feel as if it were filmed onboard and at sea.



The Black Pearl, the notorious 'ghost ship,' looms on the dark ocean in "Pirates of the Caribbean: The Curse of the Black Pearl"

[Image of Modeled Ship - request from Hal Hickel]

Skeleton Crew

Key to the storyline of *Pirates* was the powerful curse transitioning Pirate Barbosa and his mates from human to skeleton crew. Hickel, VFX Supervisor John Knoll (creator of Photohop), a crew of 35 animators and 35 Technical Directors took the lead in creating and bringing to life skeleton characters for more than 135 VFX shots incorporating the cursed crew. "We wanted creepy cool skeletons for this film", notes Hickel, "skeletons that looked like you could touch them. We felt it would be creepier if you knew what it would feel like if you touched it."

Painstaking renditions of skeletons laden with layers of simulated skin and rags were drawn by hand and modeled to a look and feel of the living dead. Hickel explained, "What made it difficult, was that the skeleton characters had to be recognizable... we experimented extensively with how much skin and features could we take away and still recognize the human character." To achieve this goal, headshots of each actor were provided and a skeleton treatment was developed for each character which could be recognized for the actor it was representing. "What we learned was that the eyes had to seem accurate to keep a sense of life and connectedness to the original character. In many scenes the audience is looking into the eyes when a transition begins..." ILM took advantage of the realism communicated by the eyes to bring a creepy realism and life to the CG skeleton crew as each of the characters transformed.

Once the look and feel of each character's skeletal remains was nailed down, clean plates of the actors at work were provided as a reference or live action blueprint for animated transitions from live to CG double. In scenes where the *Pirates* were exposed to the moonlight, filmed plates of the real actors provided key character references [figure 1-reference plate], and clean plates were provided for atmospheric and environmental consistency [Figure 2-Clean Plate]. CG skeleton models were then matched to the actor's face and body as reference for animated match moves or "matchimations" [figure 3 - Models]. To complete the transitions from living to dead and the rest of the shot, key frame animations (for accuracy) and motion capture data (for realism) were added to the skeletal CG characters, composited back to the clean plate and rendered out for integration into the final edit [Figure 4 - rendered final].



[4 Plate Series with Geoffrey Rush Transition into the Moonlight
- request from Hal Hickel]

"We wanted creepy cool skeletons for this film, skeletons that looked like you could touch them... We felt it would be creepier if you almost knew what it would feel like if you touched it."
Hal Hickel - Animation Supervisor for Disney's Pirates of the Caribbean

ILM used an entire arsenal of techniques and tools to complete the required 325 special effects shots for *Pirates of the Caribbean*, including key frame animations (Maya), motion capture, rotoscoping, match moves, compositing, fluid dynamics, patches, cloth simulations (CARI) matte painting and environments and scale miniatures. Final scenes were composited using proprietary ILM software (Comptime), rendered (iRender) and delivered for Post in both film and digital D5 formats. Throughout the process digital dailies were Telecined to HD for improved turnaround times and rapid integration of CG and live action footage. "It's nice to work on something that turns out to be a lot of fun... commented Hickel, "audiences liked it, critics liked it; *Pirates* was a great film to work on."

Advice for SF-SIGGRAPH Members

When asked what advice he had for those interested or starting out in the field of special effects and animation, Hickel suggested artists "Try to focus on a skill that is useful. It is OK to be generalist, but it is helpful to be real good at one thing: modeling, animation, shaders or procedures. The key is to display a strong talent that will make you a more valuable hire."

Special thanks to Hal Hickel of Industrial Light and Magic, The Expression Center for New Media, Expression's Rose Duignan, SF-SF-SIGGRAPH Program Chair Martha Reynard, Membership Chair Diane Shapiro and all others who made this event possible. SF-SIGGRAPH volunteers: Shiew Yeu Loh, Chris Wang, Jose Perez, Star La Land, Alfredo Ramirez, Randy? Ryan Murphy, Simone Stone, Karen Farley, Frank Lin, Jenny Liu, Maria ?, Derek Brady, Jennifer Serota, Joanna Tai, Eric Carlberg, Annie Irias, Sylvia Lim, Enoch Chuang, Amy Wu, Justin Frechette, Daniel Ebuehi, Dan Kunz, Mike Renta, Patrick Biesemans, Renee Keithley, Stephen Bishop, Liz Wendell, John Locke

Speakers Bio

Hal Hickel, Animation Director Industrial Light and Magic

Education: Cal Arts

Early Credits: California Raisins, Toy Story

ILM Credits:

- Animator, Jurassic Park, The Lost World
- Lead Animator, Star Wars, The Phantom Menace
- Animation Supervisor, AI
- Animation Co Supervisor, Star Wars - Attack of the Clones
- Animation Supervisor, Dream Catcher
- Animation Supervisor, Pirates of the Caribbean

Inspiration:

Ray Harryhausen - Stop motion animation pioneer for Mighty Joe Young and the Voyage of Sinbad.

About the Author:

John Locke is a media and entertainment professional with over 15 years experience in production, digital systems R&D and marketing. He has worked on over 20 motion picture, music and interactive media productions and designed systems for digital dailies, IPTV and high definition DVD-on-Demand environments. A former Digital Media Scientist with Walt Disney Imagineering and Professor/Director of the Digital Media Arts and Technology Program at MSU, he is currently based in the bay area and seeking new opportunities in post production management for the digital film and visual effects markets. He can be reached at dr_j_locke@yahoo.com

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