

A 2011 SPACE ODYSSEY

VFX DESIGNER AND DIRECTOR OLIVER ZELLER TAKES US INSIDE THE *IMMERSIVE COCOON*

A BOXX CUSTOMER STORY

In 2008, Oliver Zeller (digital set designer, *Prince of Persia: The Sands of Time*) was approached by production designer Tino Schaedler, who would later become his business partner, about a concept Schaedler had developed with his partners at the design collective NAU. What Schaedler envisioned was a cocoon in which one could escape the bustle of urban life — a new way of interacting with computers, a place where your entire body became the interface and was completely immersed in visual and aural content. Inspired by the concept, Zeller enthusiastically suggested they produce a teaser short film, a faux commercial around the concept.

Oliver Zeller's knowledge of film/video production had been cultivated from his high school days when an interest in computer graphics & visual effects first took root. It was there that he cut his teeth on applications like Pov-Ray, Caligari/trueSpace and Lightwave (on the Amiga Video Toaster). Following college and a brief stint as a technical writer, he ended up at KDLAB, a boutique graphics and architecturally oriented design firm, where he collaborated for several years on 3D computer graphics with Joseph Kosinski,



The NAU partners with their Cocoon: Oliver Zeller (seated) is joined by (from left to right) Michael J. Brown, Tino Schaedler and Jean-Lucien Gay.

the commercial and feature film director who eventually went on to helm *TRON: Legacy*.

Throughout that period and following KDLAB's closure, Zeller worked as a freelance digital artist, eventually acting as the VFX producer on occasional ad agency jobs. However, as time passed, he became

increasingly dissatisfied with what he describes as, "the overly technical grind of visual effects." Having worked alongside so many architects, he began to employ his skills in a pure design capacity, ultimately leading to digital set design in advertising and in the art department on *Prince of Persia*. Following his work on the Disney action/



Reproducing the uplit setting: Keir Dullea filmed on a Steeldeck floor backlit with a dozen Kino-Flo megabanks.

adventure film, Zeller joined NAU as a partner where he has continued to expand his talents to include directing. With Schaedler, he has co-founded adNAU, providing design & direction for advertising, events & entertainment.

Upon seeing the *Immersive Cocoon*, Zeller recognized parallels between the Cocoon and director Stanley Kubrick's landmark science fiction film, *2001: A Space Odyssey*. Similarities, like the shape of the space pod and the black texture of the monoliths, were obvious, but there was also something more. Zeller was captivated by the symbolism and "overall elegance" of design.

"I saw the cocoon representing an evolutionary jump in how we could at times interact with computers; symbolically equivalent to the black monolith's instigating evolutionary jumps in humanity," says Zeller. "Furthermore, the museum style

uplit baroque room from the film seemed ideally suited to showcase this design with its fusion of baroque and futurism, old and new. So with all this in mind, the concept fell into place. Our protagonist would work on a traditional computer and then encounter the Cocoon in a scenario reminiscent of the penultimate scene from the film."

Armed with a concept and the direction they wanted to take it, Zeller bypassed the traditional illustrative phase and moved directly to modeling, (re)designing the set, and determining shots directly in 3D space. Given the ambitious nature of the shoot and a limited budget that came out of his partner's personal finances, the film was fully pre-visualized complete with a rough sound design—a necessity given that several shots were sound driven.

The pre-visualized cameras were brought into a more developed version of the

digital set, frames were rendered and a presentation packet prepared, aided with materials by graphic designer Ken Leung and conceptual illustrator Manuel-Plank Jorge. The presentation was then sent to the agent of actor Keir Dullea, the star of Kubrick's *2001*. Zeller and Schaedler hoped to get Dullea on board, knowing that essentially reprising his role as astronaut Dave Bowman (from what many consider to be the greatest science fiction film of all time) would increase the film's profile, and hopefully thrill fellow fans. To their delight, Dullea generously accepted their offer. However, securing an actor of Dullea's stature resulted in some problems. His participation came with certain requirements that didn't bfit the group's shoestring budget. If they wanted Dullea, *Immersive Cocoon* would have to become a Screen Actors Guild signatory production, attain rights clearances, and fulfill additional insurance obligations. Undeterred, Zeller spent two long months engaged in full-time

producing and finalizing props with the aid of his partners (NAU partner Michael Brown even flying in from Germany days before the shoot). It was at that time, Zeller encountered another potential roadblock.

“On the week of the shoot, Warner legal informed me that rights clearances could not be granted in time, nor could we delay as Keir had a play coming up,” says Zeller. “This forced us to film the scenes with a second actor on what was already anticipated to be an overtime day.”

The production was shot in New York City on February 6th, 2010, using a RED camera. From there, the footage was output to 16bit tiff files for tracking, preliminary rotoscoping and keying in After Effects, done in conjunction with composite lighting TD and Co-VFX supervisor Quan Tran (who had joined the project in its nascent stages). This preliminary work was then combined with the evolving 3D shots in order to produce a final edit. The rights clearances bombshell and the limited availability of Dullea resulted in what Zeller diplomatically terms as “a somewhat rushed shoot” which, in turn, would make for a more challenging post production phase.

“Many shots were manipulated,” says Zeller. “Cropped, over scanned, or even retimed to accentuate a reactive facial expression or to attain the desired tension.” In one instance, a camera pullback halted too early, resulting in the pullback being digitally augmented in post. But Zeller readily admits that this wasn’t the most difficult shot requiring digital enhancement.

“On our most technical shot where Keir walks toward the Cocoon door, it was filmed too close, diminishing tension,” says Zeller. “So the shot was over scanned in post to produce added distance. Then the reflection, filmed at a 45 degree angle to avoid over distortion



Oliver Zeller directs Keir Dullea. The green foreground boxes represent the digital set’s hallway.

from the fisheye lens on a 5D Mark II, had to be retimed and perfectly synced to match the RED footage. Rotoscoping was a nightmare, as the backdrop on that side of the room was entirely black with the crew present, conflicting with Keir’s wardrobe. The fisheye lens was also prone to massive flaring, which required considerable balancing in post. Once that was mapped and everything lined up, his foot placement on Plexiglas in the distorted cocoon reflection did not match his steps on the actual floor. As distortions could not be matched, I had to animate the translation of the mapping while avoiding foot slippage, a time consuming process in itself.”

Anticipating the complexities involved with the post production phase, and realizing that his old 8 gig workstation would simply not be up to the task of handling 4K files, Zeller decided early on to purchase a 3DBOXX 8520 workstation specifically for *Immersive Cocoon 2011*. Providing outstanding multitasking performance for 3D design, animation,

rendering, and visualization applications (as well as VFX compositing, video editing and digital intermediate workflows), the 3DBOXX 8520 is available with up to 2 GPUs to help eliminate bottlenecks and accelerate complex production pipelines. Featuring dual six core Intel® Xeon® 5600 series processors for speeds up to 3.46 GHz, the system’s 1TB RAID 0 proved vital as well, as the *Immersive Cocoon*’s data files ate up the entire secondary drive. The stellar performance of the BOXX workstation didn’t come as a surprise to Zeller, who has been a BOXX loyalist for years.

“I believe it was at SIGGRAPH or an ad in one of the CG magazines I wrote for,” recalls Zeller when asked how he first became aware of the record-setting workstations. “Joe (Kosinski) was also using them at KDLAB in 2001, rendering scenes in the very early days of mental ray for (Autodesk) 3ds Max on a renderBOXX setup. I remember the compact form factor, with the small monitor

and rack on wheels setup with dual 1 GHz processors. We really pushed it to its limits in the summer months!”

Prior to converting to BOXX a decade ago, Zeller had used DELL Precision and IBM multiprocessor workstations. And since he started in 3D design, he had experience with numerous renderers, including Pov-Ray, trueSpace, Lightwave, 3ds Max and its native scanline and radiosity renderers, culminating in mental ray, Maxwell and V-Ray. But Zeller’s devotion to BOXX wasn’t earned by the machines’ performance alone.

“I was most impressed with BOXX’s excellent no-wait time customer and technical support,” he says, “and that they specifically catered to the industry, providing superior quotes and offering a solid metal build. I was quickly on board as an early adopter.”

As for his new 3DBOXX 8520, a few design features really stood out. “The metal plate atop the system is terrific,” he says. “I constantly had drives on it backing up data. Brilliant removable front panel and the dual side fan design finally diminished the dust issue. I was particularly thankful that it is truly quiet, in spite of its incredible power—especially as I was sleeping nearby and the system was rendering overnight for several months.”

Immersive Cocoon’s post production workflow involved modeling & design in modo, animation and rendering in 3ds Max with V-Ray, texturing in Photoshop, and compositing via REDCINE output to After Effects and Nuke with editing in Premiere. Numerous other tools were used as well. “The Cocoon was originally modeled in Maya with NURBS and exported and rebuilt in modo,” says Zeller. “VFX collaborator/on-set VFX supervisor Quan Tran developed a y-depth shader and we rendered that out



A second camera equipped with a fisheye lens simultaneously captured the Cocoon’s reflection pass.

of Autodesk Maya, so the complex camera setups & entire geometry also exist in Maya. Mudbox was used to sculpt subtle cushion wrinkles.”

Work continued throughout the summer with Zeller personally handling all the 3D himself. This daunting task, coupled with his other responsibilities, resulted in him working between 70 and 100 plus hours a week. This schedule continued throughout the following year with plenty of challenges along the way. The up lit nature of the room (where the film was actually shot), combined with minimal furniture, made for a relatively flat setting, so the scenes were further imbued with nuance and gradation, increased color variation and subtle reflectivity, complex shaders, subtle dirt maps, fine detail modeling and the addition of design attributes.

Shots were output at 1080HD via floating point multi-channel EXR’s. To consolidate file management and transfer, the EXR’s incorporated close to and even in excess of 100 channels from mattes to ambient

occlusion, reflection, z-depth and motion vector passes. Additional passes for the floor and elsewhere were also rendered. This approach allowed files to be shared more efficiently and passes accessed more readily.

While testing external render farms to augment the renderings he had personally completed, Zeller sought cost subscription packages offered by some render farms. But of the available packages, only one had sufficiently recent systems capable of handling the HD rendering without time-outs. Zeller’s solution was to contact his friend Jan Rybar, owner of imagesFX, a CG/VFX studio in Prague, Czech Republic. Once again, BOXX hardware would figure into the solution. “Rybar had recently installed four renderBOXX modules as the headliners of his render farm,” says Zeller, “and was kind enough to help me as time permitted.”

Featuring dual six core processors (Intel® Xeon® Processor 5600 Series running at up to 3.33GHz) and networked architecture, a renderBOXX dedicated rendering system

is specifically designed for intensive VFX, animation, product design, engineering, and architectural visualization workflows.

Final rendering (at 1080 HD) commenced in September, while Quan Tran continued to handle compositing in Nuke. By the end of December, 2010, all rendering was complete, though Tran's obligations on another project (the 3D animated musical comedy *Rio* produced by Blue Sky Studios for 20th Century Fox) forced Zeller and Schaedler to bring on additional composers Miguel Bautista and Anthony Vu in order to finish. "We ultimately collaborated to finish the compositing in what became a somewhat convoluted pipeline using both Nuke and After Effects," says Zeller.

In the end, some of the painstakingly manipulated shots would hit the cutting room floor, but once the final edit was adjusted, sound designer/composer Steven Chand volunteered his time to complete a compelling sound design and score.

"The project could not have been completed without the 3DBOXX 8520."

Though definitely a nod to Kubrick's masterpiece, it would be short-sighted to simply characterize *Immersive Cocoon* "2011" as a brief homage to *2001*. In reality, *Cocoon* clearly stands on its own as an outstanding example of the creativity of Zeller, Schaedler, and their dedicated group of artists. Lauded on over three hundred blogs, featured in prominent industry online



The Cocoon beckons in the film's most complex visual effects shot.

publications, and watched by over 190,000 viewers on Vimeo alone, *Immersive Cocoon* is a stunning piece of work. And according to Zeller, so is the workstation that helped him bring it to life.

"The project could not have been completed without the 3DBOXX 8520," he says. "I was able to smoothly handle a project that would generally involve a half dozen to a dozen or more CG artists off one system and the improvement in rendering and compositing & editing via Adobe's CS5 software was particularly pronounced. The system served me well!"

He is also quick to point out that his devotion to BOXX solutions remains stronger than ever.

"It's an instrumental part of my creative process in being able to realize the worlds that we design at adNAU and the narratives and visions I seek to impart through various

mediums," says Zeller. "I appreciate the evolution of BOXX products, the personal touch, and the continued commitment to the post industry. BOXX has been my workstation and render node option for a decade now and I don't ever see that changing."

Watch *Immersive Cocoon* "2011"
www.vimeo.com/21465475

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