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## Q&A with Stephan Fleet of Legend 44

2010/01/14, By Andrew Ward

After [Legend 44](#) released its film [Player](#) last year, the company's principals started work on their next film, *Killers* (working title). They decided this feature would be in 3D, and their film would be one of the first to explore the use 3D in a drama. Director Alina Szpak says 3D "brings audiences into the immediacy of the story and events. 3D can be a technique to heighten the sense of human contact, of involvement in the story." With that in mind, Director of Photography David C. Smith and Visual



Effects Artist Stephan Fleet set out to develop techniques for 3D that would be usable by filmmakers who don't have James Cameron's budget. In Part 1, we'll hear from Fleet, a who cofounded [Master Key Visual Effects](#) and now works at [Encore Hollywood](#) as a visual effects supervisor and artist on multiple television shows.

**AW:** You're using [Red Digital Cinema Red One](#) and [Panasonic HVX](#) cameras, could you describe your 3D rigs for these cameras? Did you use off-the-shelf rigs or build your own? If you built your own, are there any unique qualities you included?

**Fleet:** We built our own for two HVX cameras with cinema adaptors. [*Killers* DP] David C. Smith built it, to be specific. For Red cameras, I worked on a movie called *The Hole* directed by Joe Dante. He used two Red cameras with a beam splitter to acquire the image. A beam splitter is necessary for larger lenses and cameras because you can't get the two lenses close enough together to get the proper distance that human eyes would have from each other (about 66mm). So think of a beam splitter as kind of a periscope that helps bring one camera closer to the other.

What's unique about what we did with the HVX cameras, is, well, it's that we did it with two HVX cameras and two cinema adaptors. We took tools that most independent film makers invested in a few years ago and repurposed them for a new medium. We're saying that any two people that have HVX or Sony EX cameras can get together and make a 3D movie, with all the equipment costs already covered, save the mount and a little bit of work to make a trigger that signals both cameras to start and stop at the same time.

I just saw at CES that Panasonic is releasing a two-lens camera for stereo shooting later this year. That camera will retail for \$20,000, and it doesn't even have detachable lenses. So the next price jump, be it Red or anything else, is very significant.

**AW:** *Could you describe your production workflow? What problems have you overcome so far?*

**Fleet:** This is very much in beta testing right now. We plan on shooting a short film first quarter of this year to really nail down the workflow. In laymen's terms, the main additions to a traditional shoot would be the extra step of making sure your cameras are set properly in relation to each other, choosing what plane you will focus on, your interaxial separation, etc.

So the best idea is to add a 3D AC to the camera crew, someone whose whole job is to understand, monitor, and configure the 3D elements of the shoot. From then on, it's very similar to a 2D camera shoot.

**AW:** *Could 3D become ubiquitous? What are its downsides compared to traditional 2D filmmaking?*

**Fleet:** This is a subjective question. I know that the tech/film industries would like it to be, as would James Cameron. It opens up creative possibilities, and more important, sales possibilities. The TV industry made a boom with SD to HD, but that is peaking. No one wants to go buy a new HDTV that doesn't do anything significantly different. So maybe people will buy a TV that supports Real3D stereo technology, or some other polar or frame-shutter 3D technology.

On the artistic side, I think 3D will work in addition to traditional films but not replace them. There's always the spectacle angle, but the real appeal (for me) is the idea of some other types of cinema exploring new horizons with stereoscopic filmmaking. Dramas, comedies, etc. If anything, the movement now is to make stereoscopic a respectable tool in the artist's box.

There are, of course, downsides: People have to wear glasses. It involves more technical know-how. You have to be responsible or you can hurt peoples eyes, quickly making your project a "fail." Things breaking frame, especially if they are in front of the screen, can look very bad.

**AW:** *Compared to 2D, are you able to convey different emotions and feelings using 3D camera techniques? 3D seems well-suited to conveying large, voluminous spaces. How does it hold up in tight quarters?*

**Fleet:** Well the human eye is somewhere around a 50mm lens on a 35mm camera. We can't zoom in or out. So if you are trying to recreate what the human eye sees, verbatim, then you'd be locked into a stagnant, wider world of shooting. But a lot of the times we go and see movies to escape reality. That's why the most interesting shots are usually on extreme long or wide lenses. 3D can absolutely hold up in tight quarters—it may be that you have to redefine what "tight quarters" are, taking into account depth and the space of a room, not just the length of a lens, but you can do it.

*Avatar* had a lot of tight shots at the head of the film. He did some interesting things with

racking focus in 3D space to make us have to refocus back and forth. He also broke some "rules" by breaking frame. But that's what rules are there for.

Just like everything else in the creative world, things will evolve, tastes will change, new techniques will be discovered, and within that I am sure every emotion and feeling that creators can possibly harness will be explored with 3D cameras.

**AW:** *Could you describe your post process and equipment?*

**Fleet:** That's very simple. To get an HD master on Blu-Ray that is both normal 2D and anaglyph (the red/blue glasses kind of 3D) stereoscopic I need:

- One [Apple Mac Pro](#)
- [Apple Final Cut Studio](#)
- [Adobe After Effects](#) (AE), or [The Foundry Nuke](#). (I use Nuke, but you can get AE to do it just the same)
- [Adobe Encore](#)
- About 1TB of hard disk space (or whatever you need for your project, you'll have about four times the data storage requirements of your standard 1080p shoot)
- One set of red/blue glasses
- One Blu-ray burner (about \$200 last time I checked)
- Some Blu-ray Discs

And actually, the Mac Pro is optional. Really, any professional speed Mac from the last year or two will work.

If you want to do 3D titling or visual effects, then you can either fake it in After Effects or you need [Autodesk Maya](#), [Autodesk 3ds Max](#), [Maxon Cinema 4D](#), or the like. Maya has the best built-in stereo rig, but I'm sure you could rebuild that rig in any popular 3D program.

I did the end titles for *The Hole* going from Maya to Nuke. Stereo all the way.

Now, if you want to finish in Real3D or something other than anaglyph, you're going to have to save your money and go to a house that uses some bigger gear, like [Autodesk Lustre](#) or [Assimilate Scratch](#). The good news is, to make your anaglyph master, you've also already created the components you need to take to a big house. So if you did all the sweetening at home, you can curb your costs by just having them do a transfer. Also, some houses are interested in getting some stereo experience and projects under your belt, so they may be interested in helping you out.

As of now, anaglyph is the only thing you can throw on a DVD, give someone a cheap pair of glasses for, and mass distribute. But it lacks in color and quality over the other options. The other options, however, are less accessible (right now). So plan for the future, but don't pull the trigger on the expenses just yet.

The Process (in beta):

- Acquire both streams of footage
- Line everything up and make a multicam project in Final Cut Pro
- Edit in 2D, using your 'A' camera as the hero camera

- When you are picture locked, dupe your locked sequence, make one sequence 'A' cam, one sequence 'B' cam
- Cut out every 'A' and 'B' shot as image sequences (yep, gonna take some time, organization, and a good naming scheme)
- Then you go into Nuke or AE and you bring in the 'A' and 'B' cameras as the left and right eye, and use those programs' respective tools to make your anaglyph and 3D masters. Nuke is a lot better for this. Stereo is built in, it's highly scriptable, and you'll be able to sweeten a lot of stuff, fixing keystone issues, depth issues, etc.

**AW:** *How much extra power do you need to process 3D in post?*

**Fleet:** Not much. Again, any higher-end Mac will do it. I'm a visual effects artist, so basically any Mac that can handle 1080p visual effects will handle stereo. Invest in some RAM.

**AW:** *What are the prospects for 3D indie films? Do arthouse theaters have access to the display technology necessary to show 3D films, or are these films mostly being shown on the festival circuit? Could this be an opening for indie 3D features to enter cinema megaplexes thirsty for 3D content?*

**Fleet:** Because of the buzz from *Avatar*, I'm expecting more 3D content. I think you can break this into three categories (this is all highly speculative by the way):

1) Studio tent pole spectacles. Much like the animated cartoons and *Avatar*, studios are going to keep coming out with a slew of higher-end 3D content every year. This will help facilitate high-end technological advances in 3D, as well as force more theaters to become stereo friendly. It will also unravel a whole next generation of stuff for people to buy for their home theaters.

I don't really expect the small indie filmmakers to be able to distribute their films into the 3D theaters. However, the last part of that statement, the forcing people to buy more stuff thing, that's where people will want to see stuff in 3D at home. I know there is even a 3D cable station coming, so that will be a good market. Oh, and let's toss concert movies in here, too. They seem to be part of this.

2) Semi-indies. Let's face it, the indie world has sort of become the not-so-indie world. There are films, like the one I worked on, *The Hole*, that are technically "indie" but have more backing and money than a home-brewed scheme. For now, this business model really needs to play it safe to make a profit, so they're interested in more traditional 3D draws, i.e. the genre spectacle. Think *My Bloody Valentine*. *The Hole* is actually an exception because Joe Dante never really plays by the rules. He manages to play within the genre game but still make things his own.

3) Garage indies. This is the most interesting part to me. There are a lot of people out there making really good (and not so good) stuff right from home. Technology has allowed people to make things that look just as good as the majors provided they know what they are doing and are clever about it.

I have no idea how much this arena will embrace 3D, but I hope it will. Sometimes the most creative stuff comes out of necessity. Boundaries can really be broken down. Even a clever use of anaglyph 3D for a YouTube video could be significant. The studios spend a lot of

money to try and calculate what we want to see, but we have the ability to just flow and invent.

That's what we want to facilitate. That's why we want to bring 3D down to products that everyone already has access too.

As for distribution., as I mentioned above, there will be more home venues that want content and more interest in seeing that content. Think streaming to Xboxes, Rokus, Playstations, and 3D cable channels.

**AW:** *Are there any tips or tricks you can share with indie filmmakers interested in 3D?*

**Fleet:** I'm going to say the same thing I always say: learn. Learn, learn, learn. I strongly think that people interested in making movies in this day and age need to learn to understand every aspect of the movie making process. The days of partitioning and fragmentation in the industry are dying like the Jay Leno show. Knowledge is power. I'm not saying do it all yourself. By all means, get together the strongest team you can, but don't stop learning.

Anyone reading this, right now, has the ability to make a revolutionary 3D project for almost nothing, provided they learn how to do it. Believe me, it's true.

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