

24: To 3D or not to 3D, no longer the question

D.W. Leitner September 9th, 2010



Large outdoor 3D display at Sony's NAB booth in April.
All photos by D.W. Leitner

Last November I wrote a column, *EX3 x 2 = DIY 3D*, about two talented and resourceful New Jersey filmmakers who fashioned a homebrew 3D rig from two Sony PMW-EX3s in order to film a striking 6-minute paean to Newark in the mold of Paul Strand's classic *Manhatta* (1921) for the Newark Museum. What a difference a year makes.

Avatar hit theaters in December, becoming, in one month, the highest grossing film of all time. April's NAB waxed giddy with 3D fever. Nothing like a box office bonanza to plant dollar signs in the eyes of broadcast manufacturers, consumer electronics giants, Hollywood, anyone seeking the next big thing. A few weeks ago, the business section of *The New York Times* hit the next-big-thing trifecta: 1) The Sofa Wars: Cable Fees Vs. Online Shows; So Far People Would Rather Pay? 2) Crowded Field for Bringing Web Video to TVs? and 3) TV Makers Predicting a Bright Future for 3-D Sets?

Regarding 1) and 2), broadcast and broadband are destined to joust for years—iPad anyone? And it will be fascinating to watch free mobile DTV take hold later this year. But Bright Future for 3-D Sets? signals something else, a broad new product category for gadget makers, one commanding premium prices.



Panasonic's introduction of twin-lens handheld AG-3DA1 3D camcorder at last April's NAB was widely noted. Area of Panasonic booth showcasing AG-3DA1 was jammed.

3D tends to require double the amount of everything: lenses, optical paths, sensors, DSPs, resolution. For 3D production to become routine, new cameras, camera rigs, and camcorders are called for. Ditto, new switchers, displays, and NLE capabilities.

For consumers, 3D means new flat-panel TVs and viewing glasses. If electronic, those glasses won't come cheap. Families whose kids routinely break and lose cell phones can't be thrilled by this prospect. (Kids are probably critical to the success of 3D TV. Let the advertising begin.)

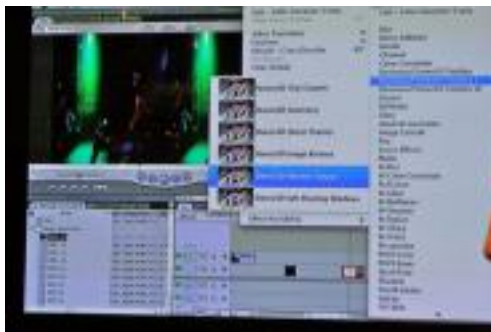
No wonder NAB salivated. And based on the recent raft of IBC press releases in my email inbox—Amsterdam's IBC starts today, Sept. 9th—3D fever is raging there too. Unfortunately I can't attend this year, but if you're at IBC, mark Monday, Sept. 13 as Stereoscopic 3D Day, capped by—what else?—a screening of the new Special Edition of *Avatar*. If you're in Shanghai early November, you also won't want to miss C3D World, the 6th China International 3D World Forum & Exhibition.



How to edit 3D? Beta demo of Tim Dashwood's Stereo3D Toolbox 2.0 for Final Cut Pro at Panasonic's NAB booth.

At the risk of being subtle, my point is that when it comes to digital 3D, we're well past the tipping point. 3D's recent traction with manufacturers and standards organizations alike has created real momentum, enough inertial force for 3D to be considered its own niche industry.

In February I attended Panasonic's sneak-peek in New York of its handheld twin-lens AG-3DA1 AVCHD camcorder. Seemingly cobbled together from $\frac{1}{4}$ -in. CMOS camcorders—six chips!—it was, at that time, a nonfunctional work-in-progress. Working models however soon appeared at NAB, memorably deployed in a semicircle at Panasonic's booth for attendees to test—an area never less than jam-packed. Last week I attended a Panasonic press conference at the US Open in Flushing Meadows, New York, where AG-3DA1s were deployed in 3D broadcast coverage by CBS. That's lightning-fast development, my friends.



Closer look at Dashwood Stereo3D Toolbox 2.0 for Final Cut Pro, which creates paired AG-3DA1 QuickTime clips and enables keyframe adjustment of convergence.

At the US Open, Panasonic also demonstrated an upcoming 3D AVCHD camcorder for consumers, the HDC-SDT750, retail circa \$1400. The camcorder itself is soda-can sized, featuring a vestigial viewfinder, typical flip-out LCD, and 1920×1080 3-CMOS $\frac{1}{4}$ -in. sensors capable of *60 progressive images a second*. When its compact 3D conversion lens is attached, the HDC-SDT750 transforms itself from an ordinary

consumer camcorder into a 3D marvel, using a side-by-side recording scheme (in effect, each eye's view is captured by the equivalent of a 1/8-in. sensor).

Panasonic's chief technology officer Eisuke Tsuyuzaki quipped that Panasonic intends to excel at everything 3D, from camera to couch. While Panasonic touts its own plasma technology for 3D displays, everyone else touts large LCDs. I had a chance in early July to test-drive two 46-in. 3D LCD displays, a Sony Bravia and a JVC, during the Spain-Germany World Cup match (event courtesy of B&H).



Shiro Kitajima, president of Panasonic Consumer Electronics, introduces a 3D consumer camcorder, the HDC-SDT750, at the 2010 US Open.

In a nutshell, the Sony Bravia, which required active shutter glasses, ghosted with each slight tilt of the head, accompanied by a subtle color shift along the blue-yellow axis. Nor was it as bright and saturated as the JVC, which demonstrated neither drawback and required only cheap plastic polarized glasses. Guess which one I spent my game time in front of? Caveat emptor.

With my interest in 3D spiked (also thrilled for Spain), the following week I attended SMPTE's two-day International Conference on Stereoscopic 3D for Media and Entertainment in New York. This was the full monty, with sessions on 3D acquisition, spatial authoring, production, post, transmission, display, dimensionalization of 2D into 3D, and more. I learned all about monocular occlusions and digital artifacts, prospects for holographic TV and 3D motion depth imaging with LIDAR. To give you a taste, the kick-off paper was in Russian, describing a single-lens system on a Vision Research Phantom 65 that produces side-by-side stereo pairs, based on a decades-old Russian 3D 70mm film system popular in the 1960s.



Innovative 3D lens module that converts HDC-SDT750 camcorder body to stereoscopic mode.

But for me, the real revelation at SMPTE's 3D conference was autostereoscopy—*3D without glasses*—specifically the Mitsubishi 3D cell phone demonstrated by Paul Panabaker of MasterImage 3D, based on a technology called Cell Matrix Parallel Barrier invented by his company. Designed to be viewed on-axis and 15-16 inches away—a typical hand-held distance for cell phones—MasterImage's TFT control layer orients itself as the phone is held vertically or sideways, providing an entirely convincing 3D experience in both

viewing positions. I'm here to tell you that it works great. And if I understood correctly, Panabaker said that 300,000 such 3D phones have been produced, mainly for Korea.

So I've grown excited by the potential of 3D—Pixar's recent *Toy Story 3* set a new highwater mark for 3D storytelling, starting with its sublime short, *Day and Night*—but I've noticed a tendency among older, more experienced directors, producers, DPs, camera operators and film/video cognoscenti to dismiss 3D as a passing fad yet again. In other words, those from generations that didn't grow up with 3D. Is this a simple case of old dogs resisting new tricks?



Consumer HDC-SDT750, foreground, compared in size to professional AG-3DA1 introduced at NAB.

It's facile, for instance, to make the case that *Citizen Kane* or *Lawrence of Arabia* would be little improved, if not trivialized, by 3D. (Although work on dimensionalizing *Star Wars* has been underway for several years. I've seen the resulting 3D clips, and they're impressive.)

Or, instead, is there another reason entirely, an underlying reluctance hard to define or give voice to? I've given a lot of thought to my recent 3D viewing experiences and I think I've hit upon an insight.

It's about freedom.

Recorded music and radio didn't require eyeballs. The listener was free to pursue other tasks while enjoying the phonograph or a radio narrative like *The Guiding Light*. One could even be in the next room! When *The Guiding Light* moved to television in 1952, eyes were required, at least from time to time. TV began as a chatterbox, eschewing dramatic silences common in theater and cinema (think Ingmar Bergman) in favor of wall-to-wall dialogue. In fact, early television invented the laugh track—never used in radio—to enhance, absurdly, the viewing experience. The idea being, you could iron and fold your clothes, even drag a hamper into the next room, and not miss a thing. Radio with pictures, it was called.

If television began as a glance-at medium (today's best television delivers the pacing, drive, and spectacle of the best cinema), 3D in all its forms requires rapt, undivided attention. To achieve the 3D effect, glasses lock our gaze to the screen. In so doing, they inadvertently act as blinders, dividing us from the community of viewers in the same room, rendering the 3D experience an intensely personal one.

Ordinarily we rely on peripheral vision, which imperceptibly informs every move our body makes, every step we take. Ordinarily we glance at those around us, to gauge their expressions. In a theater or cinema we

glance sideways at our spouse or date or friend, to see if they're enjoying the show. None of this is possible in an audience of accidental Anna Wintours hiding behind oversized dark shades.

For all of 3D's claims of reproducing a more realistic-looking world, the world it injects into those polarized or flickering glasses could not be more removed from unadorned, ordinary experience. It's a simulacrum of natural vision at best, perhaps all the more disappointing because it claims to be more naturalistic than 2D.

But it's not, really. Although dimensionalized, it's another artifice, one requiring greater viewer restraint.

You're not going to jump up during a commercial break wearing 3D glasses and do a kitchen run or bathroom break (at least, sober). You will have to disengage first, by removing the dark glasses. Disengagement was never necessary with radio or conventional TV.

Is 3D, all things considered, the visual delivery system ideally suited to our solipsistic iPod age? A palliative for ADD?

There was a time, only recently, when proponents of 3D production were starry-eyed impractical dreamers, but by now it's obvious 3D is here to stay and grow. It will never *oetake* over? broadcasting as some claim (TV didn't obsolete radio either, fears to the contrary), nor will it remain an obscure niche. Audiences (younger?) like it too much.

Where human sight needs to be transported, digital stereoscopy is poised to explode: mobile robot control, microsurgery, aerial reconnaissance by drone, underwater exploration—anywhere we wish to see better. For entertainment however, two dimensions or three is no longer a religious question. Just a format choice—for maker and audience alike.