

NAB 2004

- STATE OF HDTV
- NO MORE TAPE?
- FILM/VIDEO HYBRIDS
- AND MORE

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In the year 2000, I reported to IATSE on NAB's convention. It was a significant year for change and there was a lot of excitement about video's new HDTV products. This year, more innovations were on display which will effect the way we work in video production. NAB stands for National Association of Broadcasters and they have a major exhibition of the latest film, video, and broadcasting equipment every April in Las Vegas. This is a mammoth event with 1,500 exhibitors and this year over 97,000 went to see what they had to offer.

DISTRIBUTION FORMATS

First, a quick review of video formats. When talking about video, especially HDTV, it is important to separate consumer usage from production format usage. In a way, distribution drives the advances in production but a producer might shoot in HD now and distribute in the present local standard. This allows for an HD version to be made when there is more demand in the future. In North America, the present local standard is the 525 line NTSC system. This is now referred to as Standard Definition or SDTV. Europe's PAL system has 625 lines of picture. Different countries use either NTSC, PAL or SECAM.

With the new millennium, HDTV has come along to improve our video imagery. A standard was chosen with a 1080 line widescreen picture - more lines - more resolution - more chance to see things blown up REAL good. The widescreen format has been added to emulate and indeed cater to movie distribution. In the States, the FCC has tried to regulate the introduction of HDTV and digital broadcast signals. The planned stages of HD broadcast are now behind schedule and have been extended.

Part of the problem has been that the public has not been going along with the change to HD that quickly. HDTV sets are expensive. There is still limited programming. The Standard Definition TVs are getting better with double line systems and other enhancements. DVD usage has increased SDTV picture quality. I think consumer purchase of HD screens is being held up because there is no consumer format for movies in HD yet (except for Digital VHS courtesy JVC, but I believe that is a format waiting to be superseded by something else, probably a disc system). Europe has decided that their PAL 625 lines are OK for resolution but they support distribution in the widescreen format. This is another obstacle for 1080 HDTV becoming a world standard.

PRODUCTION FORMATS

Today, producers have to decide what format to shoot in. If they shoot Standard Def video now, what happens if TV stations want a higher quality image later? The show might have limited life. That's the advantage of high resolution film - you can transfer to Standard Def now and reconfirm to HDTV later and also adjust framing for TV's present 4x3 or widescreen 16x9. The other option is to shoot HDTV tape and have a flexible product, although there are different formats within HD which can limit the distribution choices.

HDTV IS NOW?

Sony and other video manufacturers were trying to convince the NAB delegates that this year HD is a happening thing. But that's coming from people who are selling HD. I have already touched on some reasons why it's not taken off that quickly in distribution. In general, HD has had less production usage than predicted. Shows with special effects found HDTV video a better and cheaper option to film, but film has held its ground as a origination format, especially in feature films. HDTV cameras have not taken over, in spite of the fact they cater to 24p (a film friendly capture rate) and attempt to offer versions of slow mo and lower FPS rates. Another process which doesn't help HDTV acceptance is post learning curve problems and format option complications compared to proven film post paths.

At NAB, I noticed that Standard Def cameras are getting better. The CCDs have more resolution, the storage mediums are better (more about that in the next paragraph), and 24P is now available. All of a sudden HDTV has more competition rather than compliance. HD systems are adding intermediate quality levels, like Panasonic's 720 lines vs Sony's 1080 lines. So all this is muddling up the clarity we had in 2000 with "NTSC is out - HDTV is in". But I do think that over time, HD will slowly become more accepted in production, especially since many new camera models with intermediate price tags were introduced at NAB this year.

CAMPUTERS ABOUND!

The big development at this year's NAB is eliminating tape as a video format and replacing it with the the same type of data storage we use in our computers and digital cameras. This data storage is in the form of disc drives and solid memory cards. This concept has been around for a few years, but it's kicking in for real this year. There is lots of competition and there are different systems from the key video manufacturers. As usual - nobody can decide on one format. They want their product to be the next format of choice.



Where there was tape - now card slots! Panasonic's PDX800.

Sony has its XDCAM. This is a blue laser disc system that uses a DVD size disc in a protective compartment. Cost is \$40 for a recording time of 45 to 85 minutes, depending on picture quality. There are two Standard Def cameras - one very good at \$27,000 - one really good at \$50,000. These cameras are available now. I have already shot with Sony's XDCAM and I was impressed by an improved picture over existing Standard Def cameras in that price range and the fact that this camera offers slow shutter speeds (and 24p). Panasonic has its DVC PRO P2. This system uses a small card - a big brother to cards you might use in a digital still camera. Cost is \$2000 for 18 minutes, but don't panic - Panasonic says this cost should come down. The Standard Def camera with P2 is the PDX800 at \$28,000 and is available in May. This camera accepts five P2 cards for a total of 80 minutes and picture information will jump from one card to another - even mid-shot. Ikegami is a video manufacturer not seen much in Toronto, but they started this idea a few years ago. They have a disc in a cartridge type drive, the FieldPak2, which they claim could accept other memory devices in the future. It costs \$500 but stores an hour or more depending on picture quality setting with their new Standard Def camera, the DNS-33W. JVC cameras are using an add-on drive called FireStore. With this, you can record on both tape and disc drive. At NAB there were loads of companies on the media storage bandwagon - all trying to make products that are smaller, cheaper and with more capacity - and all trying to make it onto the Fortune 500 list!

So what are some of the advantage to tapeless shooting? First we eliminate tape's transport mechanism which can be noisy and break down or require maintenance. The tape stock is vulnerable to handling damage and drop outs, but these new storage devices are very robust and can handle extremes in temperature and humidity (which can make tape inoperable). But the big change I noticed was the replay and re-cue features. Anybody who has shot tape knows that when you are two thirds through the tape, nobody goes back to check the first or second take, because it takes too long, the tape might get screwed up and you have to be careful to re-cue to the point you left off or you might erase something. With all the digital capture devices, you can go back and check takes instantly (like selecting tracks on a consumer CD player), with no fear of doing damage or erasing anything. So you can look at previous takes, even delete them and then return to shooting at any time, instantly - with no re-cue! These devices can be used over

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and over many times which changes the cost factors compared to using existing videotape (depending on what you use to archive). Other advantages of disc drives are time lapse and replayable freeze frames. There is also a feature called "cache" where the disc or card can be capturing an image even before you ask it to! When you press record, a certain amount of time can be prerecorded. This is useful if you've fallen asleep when the Prime Minister starts his major address! Now that information is in gigabytes, the pictures can be downloaded to computer faster than real time. Tape has always required real time digitizing when loading the images into computers for editing. In 1956, Ampex said film was dead - now is videotape dead? Obviously, it will be around for a while, but these new digital data devices will be a serious replacement option.

Panasonic chose solid state card storage because there are no moving parts, and therefore no maintenance. So Sony has gone out of their way to prove the XDCAM, which has a spinning disc, is reliable and rugged. They had a camera in a deep freezer and during the demo they took it out into the warm Las Vegas environment, and on the spot they proved record and playback was no problem (lens fog was still an issue through!). I asked about vibration interfering with the disc record mode - but this camera actually senses shock and is always using a memory buffer to delay the digitizing if necessary. The blue laser is very narrow and this allows more information on the disc.



Downsides? In spite of all the great idealistic sales pitches, I see some issues. Of course, some systems cost more. Panasonic's P2 cards are pricey, but cost and memory capacity will change. Sony's discs are just a little more expensive than present tape costs. Even though you can reuse them, you can at least keep them as you would videotapes. They are very robust and have much more shelf life than tape. If you want to reuse these devices, you must transfer the images on disc drives, DVDs, or tapes. If you use up your supply of expensive Panasonic P2 cards on location, you will have to download the images onto a laptop to free them up for re-use. Even though downloading is very fast, it would be an issue in the field. Perhaps that's why Panasonic is calling this a news gathering device right now. With Sony XDCAM you would just have a supply of discs on hand as you would with tape.

The other issue (which the manufacturers don't seem at all concerned about) is the many new formats that post production will have to deal with. It's true these cameras can play back in full quality color and can always be used to get the pictures into the computer edit systems, but otherwise, you are looking at playback units to match the format of choice (at least digi data playback seems to be priced lower than previous Beta SP, DVC Pro or Digi Beta units). A specific choice of a certain manufacturer's digi format is OK for some one who has a small company and always uses the same camera with its digi storage format and editing system. This also works for the exclusive equipment domain of a TV station. But in the past, independent producers like to think that their investment in post gear should last beyond one project - and that only happens with a common standard. Freelancers who work with rental companies have been content with Beta or Mini DV formats, well established as common post formats. Now they will have to coordinate with the chosen post format. One thing that held back Panasonic's DVC Pro format in our markets is the rare use of playback units in post. This is a serious issue for freelancers who want to own their camera packages - which one to buy? And all those expensive tape decks out there would now be for archival use only. Rental companies are going to get fragmented or they will only have certain cameras. Maybe rental houses will have to include a deck or playback device with the camera rental. And whose going to pay for those expensive P2 cards? Rental item or producer purchase?

One interesting feature on the new larger cameras is a colour LCD flip out monitor on the side of the cameras similar to Mini DV camcorders. The location is on the top right of the operators side of the cameras and on the Sony, it can be switched to show the time code information. My only problem is that if you want to use this LCD for the director while you use the viewfinder there is little or no room for your head or if you shoot from the hip the LCD is totally blocked. Maybe they should consider locating the LCDs at the top of the camera behind the handle.

Many of these camera systems are still in development and soon this kind of data capture will be used on HDTV and camcorder models. This is a ground breaking NAB year, but a lot of this technology will have to be fine tuned and get user acceptance before they really appear in the field and the edit rooms.

HYBRID - BEST OF FILM WITH VIDEO



Arri's D20 camera
Film gate is CCD!!



The other big development at NAB is film camera design crossing over with video image capture. When video first became portable in the 1980s there was much talk of changing the video camera design, which was so much like a box with a rack of computer boards, to be more like a film camera. They called it "Electronic Cinematography". Now technology has made this more possible. At NAB, Arri showed an experimental prototype of its D20 camera. It uses the front end of a 435 35mm camera with a HD video back end. One big advance (which is what some HD videophiles have been demanding for some time) is a much larger image sensor. They have increased the chip size from the existing 2/3" to the size of a 35mm frame! You automatically get 35mm depth of field and a lot more pixels! Another obvious differences on the Arri D20 is the film style optical reflex viewfinder. The mirror shutter works like a film camera - one moment the image is sent to the operators eye, the next moment to the sensor. So the operator gets a real image, although you might not be able to see beyond the full frame edges as much as a film camera. All this is in prototype mode, but there is a clear indication that it could work, and at a competitive cost with Sony's HD. We'll see what NAB 2005 brings. □

The Dalsa Corp. of Waterloo showed their Origin camera which is a high resolution video camera (4K x 2K) with a specially designed film front. This is also a fledgling prototype. Right now it is very large and heavy with no means of on board data storage or power source. Daniel Vincelette CSC has shot a shakedown test in Montreal with this camera in a side by side comparison with 35mm film.

Way off in a corner of the exhibits, there was one more film/video combo. JDC from England has a unique design using an Arri SR 16mm camera but with no modifications. His video module simply replaces the magazine. Again no onboard data storage or power, but HD quality resolution.

Who knows where this design will go and why? One bonus is that film rental companies would be able to use their existing film lenses and accessories with these cameras. Certainly, large sensors and optical viewfinders are useful and film friendly, but what's stopping Sony from doing the same - they are definitely looking at large chips and they could add the shutter device if they wanted. But this film video combo needs more time to become reality.

So if that's not enough, here are some other new NAB products:

Sony's HDV camera. A HD version of the PD150 for about \$7,000. No idea of availability yet. This camera only shoots a special Mini DV HD format and if you wanted Standard Def, the picture would have to be down converted on another machine.



The Panasonic Varicam camera frame rate interpolation is now built into software rather than requiring a separate frame rate converter box.

Many Mini DV camcorders do not offer widescreen images at normal quality so shooters are using anamorphic adapters. One of the problems with this is the squeezed viewfinder image. Now Century Optics offers a wide screen magnifier for the viewfinder to unsqueeze the image for your eye!

Panasonic's is introducing a smaller (and cheaper!) brother for the DVX100. It's the DVC30 and has an infrared night vision mode. They had the camera in a black box and it was seeing an image in the darkness.

Jadoo power systems offers a 12v battery which is powered by a fuel cell. Weighs 2 pounds and claims to have three times running time of standard ni-cad brick battery.

There are now two higher end tape formats and decks for HD - Sony's HD SR and Panasonic's D5. Not available in cameras but decks will record a feed off the cameras.

Another hi end HD camera we haven't seen in Canada much is Thomson's Viper FilmStream, the first uncompressed 4:4:4 RGB HD camera which has actually been around for a couple of years.

If you want more information or websites on the new products, email me at richard@stringercam.com.