

Testing the Dalsa Origin

Digital images with dynamic range and resolution lead to the “catchy” idea of making a short film shot simultaneously on 35mm film and in digital 4K

Back in 2003, having agreed to organize a professional workshop on digital cameras for the Festival International Nouveau Cinéma Nouveaux Médias de Montréal, I was looking for a local counterpoint to balance the Thomson Viper tests our French colleagues from the AFC had already agreed to premiere in Montreal. I came upon a document talking about a company called Dalsa Corp. in Waterloo Ont., which was working on a prototype

ultra high-definition 4K camera called the Origin.

By Daniel Vincelette csc

did helped secure the partners we needed to produce our 7 1/2-minute

I contacted the company, a world leader in digital imaging components and specialized semiconductor manufacturing, and arranged to meet in Waterloo with John Coghill, manager of the digital cinema department at Dalsa. I was shown images shot with the Origin prototype and was incredibly surprised by what I saw. Coghill and Lucian Ion, designer of the camera, agreed to come to Montreal to present the camera and some test images that had been shot by students.

film, called *Le Gant/The Glove*. The idea to have a short film shot simultaneously on 35mm film and in digital 4K images was “catchy.” It seemed an ideal testing board for a lot of people working at designing new production as well as post-production tools, and who were looking for a “light” vehicle (compared with a feature film, for instance) to try their toys on. It was in this way, at a meeting at Discreet Logic (now Autodesk) in Montreal, that our friends from Éclair Laboratories in Paris found out about the project and got involved, to our great satisfaction. In fact, we had been looking for a post house in Montreal (and elsewhere in North America) that could handle the whole post chain in the quite new “data heavy” 4K technology. Technicolor Montreal and Studios Meteor, who were involved in different aspects of the project, could not assure us they could complete the work. Éclair's involvement really took a weight off our shoulders.

At the Montreal festival workshop, the French Viper tests were fascinating and showed us the immense possibilities of a high-end digital camera. Then it was Dalsa's turn. With more than 200 film and video professionals from all sectors of the business, including many DOPs, in the screening room, the images shot with the prototype Origin camera were shown. A moment of awed silence fell over the audience. Never had any digital images been seen with such dynamic range and resolution.

The shoot took place in February, 2004, under a variety of situations (integrated in the script), and really put the camera to the test. We had hoped to use a newer version of the Origin with a faster chip, but unforeseen delays at Dalsa forced us to shoot with the prototype they had. So we were handed a not-so-good-looking camera, employing 35mm lenses, with an optical reflex viewfinder. The single CCD chip was slightly larger than a regular 35mm frame, but the existing electronics did not permit real-time screening of the 4K images.

Everyone present felt the impact this technology could have on our future, so I persuaded my new friends at Dalsa to let me and some collaborators field test the Origin the way the French had tested the Viper.

The prototype also had a slightly unstable mechanical shutter that caused flickering with HMIs. There was no time-code generator and the sensitivity of the CCD was much slower than we had hoped for (around 64 ISO with a blue filter for tungsten shooting because the sensor was daylight balanced).

My plan evolved into shooting a scripted short film, with actors and all, in a normal production context -- not only to test the camera but also to have a presentable document at the end of the process. My friends, producer François Leclerc of Zicatela Films, Kim Nguyen, the director I worked with on the acclaimed Quebec feature *Le Marais*, and René Villeneuve, a post-production wizard, agreed enthusiastically to embark with me on this adventure.

SODEC (Société de développement des entreprises culturelles), Telefilm Canada, and both sectors (film and video) of the Quebec union AQTIS supported our project from the start, and the pertinence of the research work we

DOP Daniel Vincelette csc, listening to his director, is at the helm of the two-camera rig used for shooting the Dalsa Origin test film *Le Gant/The Glove*.

Lead actor Silvio Orvieto and DOP Eric Cayla csc.

DOPs and collaborators gather round Lucian Ion, head of development at Dalsa Corp., on the first day of shooting *Le Gant*. Left to right: DOP Daniel Vincelette csc, DOP John Berrie csc, DOP Pierre Mignot, director Kim Nguyen, DOP Serge Desrosiers csc, and post-production supervisor René Villeneuve (with glasses and scarf).



Photo: Philippe Bossé/AQTIS



Photo: Philippe Bossé/AQTIS



Photo: Philippe Bossé/AQTIS

Nevertheless, it was still exhilarating to be the first production ever to shoot a film in 4K.

We all knew about the problems, which have since been resolved with the final released production unit of the Origin, but decided that the experiment was well worth trying anyway. As I hope you will soon be able to see for yourself, the pictorial quality of these digital images is breathtaking; we are on the eve of a revolution of the way we consider digital. When you see our films, you will also note that negative has not had its last word either. There is a magnificent richness to the images shot in 35mm and transferred at 4K, a texture rarely shown by conventional laboratory techniques.

As for the DOPs who joined us for the shoot, most of them had seen the first Origin images we had presented earlier at FCMM, and all of them were eager to have a chance to "practise" this new medium. John Berrie csc, Eric Cayla csc, Serge Desrosiers csc and Pierre Mignot teamed with me to shoot *Le Gant*, each one of us being responsible for one of the five days. The only drawback for all of us was the slowness of the sensor, especially for night shoots, but everyone said they would be more than happy to try out the new and faster camera.

The biggest challenge was in post-production. It was the first time that the best of 35mm (the then-new 100 ISO Kodak Vision2 5212 in an Arriflex 435) was compared face to face with the first digital camera able to capture a similar resolution and dynamic range.

As Philippe Soeiro, our incredibly able collaborator from Éclair, said, it was a very "high-end" project, as never before had the camera *negative* been used as a measure of quality. In the photochemical chain, where the negative is the highest possible quality but is never screened for obvious reasons, all previous comparisons were made between the digital image and a third-generation positive print. It is only in this context that the electronic image could rival silver-halide based media up to now. Because *Le Gant* was a real film with different "ambiances" and some special effects, it was the whole post-production process that would be put to the test of very high resolution.

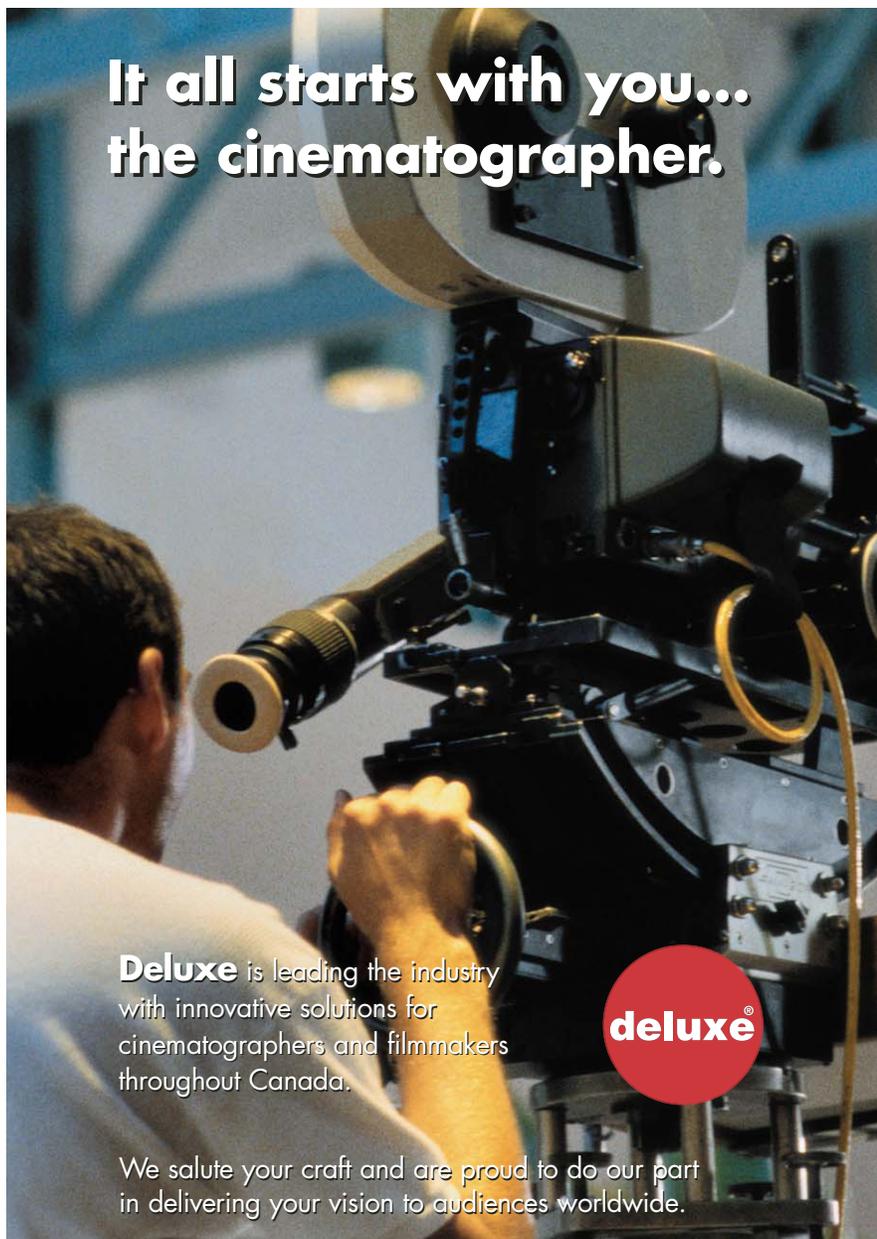
The negative was scanned at 4K,

retaining most, if not all, of its original qualities, and run through the chain side by side with the 4K images generated by the Origin. Last year's state-of-the-art technology could handle 2K quite easily, but 4K was a different matter and proved to be a real technological challenge. So our friends at Éclair, helped by the software creators from Discreet, developed and tested beta versions of software to store and process all this data. The effects were created on Discreet's Inferno and the timing on

Discreet's Lustre through proxies. The final result was later rendered, and from this we generated a digital 4K original (down-converted to 2K for presentation). A 4K-originated internegative was then produced through an Arri Laser to make prints for projection. The whole process took more than a year.

Le Gant has been screened three times for cinematographers in Montreal, in Paris during an event hosted by the CST (Commission supérieure technique

• see page 14



**It all starts with you...
the cinematographer.**

Deluxe is leading the industry with innovative solutions for cinematographers and filmmakers throughout Canada.

We salute your craft and are proud to do our part in delivering your vision to audiences worldwide.

35mm Laboratory Services | HD/SD Telecine and Editorial
Digital Intermediates
P: 416.364.4321 | www.bydeluxe.com

CAMERA CLASSIFIEDS

FOR SALE: Canon XL1, mic, two 4-hr. batteries & custom mount, Light Wave shotgun mount, Micro Lux camera light. \$1,500 or best offer. lvar at 416-410-7636 or ivar@mnsi.net

FOR SALE: Steadicam - Hollywood Lite, excellent condition, configured for Aaton; Bauer batteries, high-resolution LCD display. Supports 4 to 16 lb camera, comes with carrying case, \$3500. IDX Delta 4 NP1 charger - charges four NP1 batteries at a time. Great condition. One NP1 Battery - still holds a good charge, \$100. Pictures available by email: hd24p@johnbanovich.net 604-726-5646

FOR SALE: Paillard Bolex H16 Reflex, excellent condition, recently checked; comes with Pizar 1:1.5 -F+25mm carrying case, instruction book, cable release. \$1,400 obo. Contact Marc Strange, 416-405-8583 or e-mail roark@rogers.com

FOR SALE: Cameraman's own Moviecam Superamerica 35mm camera body w/short viewfinder, PL mount (1.85/TV ground glass); mount & body covers; transport case. Panavision Moviecam long magnification viewfinder MCLF-807. Panavision viewfinder levelling device EPLUK-805. Panavision Moviecam video assist accessory MSTC-0144; Panavision black & white monitor M73BE-803. Panavision Moviespeed control box MSSC-0132 (6-36 fwd / 12-32 rev). Panavision Moviecam Superamerica Synco-box MSSB-0141 w/60Hz-24fps stick-in module; North American 3-pin female to English 3-pin male adapter cable; 50Hz-25fps stick-in module; transport case. Panavision on/off pistol grip MCRHG-821; 42" power cable; 48" power cable. Moviecam 500' / 150m magazine MCSM5-50280 (w/loop protector) & transport case. Moviecam 500' / 150m magazine MCSM5-50315 (w/loop protector) & transport case. Moviecam 1000' / 300m magazine MCSM10-10160 (w/loop protector) & transport case. Panavision top mount magazine adapter MCSAMA-803. Panavision bridge plate BP-3ABT-853; sliding base plate CH88N7; set

of 12" / 30cm bracing rods. Moviecam bridge plate w/tripod adapter (black); set of short (9 _" / 24cm) bracing rods. Moviecam bridge plate w/slot for bracing rods (for hand-held work); Shoulder rest (for hand-held work). Moviecam Super users guide. Moviecam Combtool. 3 - Moviecam spare circuit boards; Pelican carrying case. Contact Barry Lank csc (204) 452-9422 or barry@lankbeach.com

FOR SALE: Back-mount Steadicam vest for sale. Swiss-made ACTIONCAM: Fully size adjustable - no fitting required; reversible and height adjustable arm mounting bracket; tool-less adjustable socket-block (Steadicam); lightweight (8 lbs.); mounts and dismounts quickly with two ratcheting buckles; 9 months old - used less than a dozen shooting days (excellent condition). Allows for easier weight distribution - you can put all the rig weight on your hips, for example. I found it much easier to breathe and move than with my Illa vest. Also makes "push-away" moves much easier to hold than with a standard vest. Can also be rigged for "body-cam" actor-mount applications. C\$3500. Contact Ian Kerr 604-307-4198, ian@stormfilms.com

FOR SALE: Arri 35/Super35 35BL Evolution camera package. Original camera before the Evolution upgrade was a BL4 with a BL3 finder. Camera is easily switched to regular 35mm from super 35mm in just minutes. Package includes Evolution optics, extension eyepiece, super wide angle eyepiece, video tap with Sony XC-999 camera, 4x1000' mags, 2x400' mags, Media Logic Digitach, base and bridgeplate and many other extras. Also included is a Steadicam low mode bracket for use with the 35Evolution system. All items come in heavy-duty Clydesdale cases. The camera is in excellent working order. It has been privately owned since new and has been serviced regularly by Arri Canada. Asking price is \$45,000. Details on the Evolution system are available at www.pstechnik.de/ Questions or requests for photos can be sent to photosonic@sympatico.ca or (416) 604-4696.

Camera Classifieds is a FREE service to CSC members. If you have items you'd like to buy or sell, please e-mail your list to editor@csc.ca

• from page 13

de l'image et du son), in Cannes during the International Digital Film Forum (IDIFF 2005), and at the ASC in Los Angeles through Dalsa Corp.

The quality of the images? The Origin material surprised us with its potential as it can effectively withstand comparison with 35mm. As I have said, the problems with the prototype version of the camera have been solved now, as I witnessed first hand in April when they released the production version of the Origin, and the designers are still working to make it better. It is the closest thing to a digital negative we can get. The film-based positive images resulting from a 4K-scanned negative are equally surprising and of a different texture; film retains a physical structure that digital images do not have.

The whole experience tells me that 4K seems to be the way of the future, whatever medium you originate from. Although it is not readily accessible due to the lack of availability of affordable storage networks and fast enough pipelines to handle it, 4K offers incredible quality that should please all of us who will finally get a chance to visualize our work the way we intended it to be (as long as the screens we present it on can cope with it); 2K and later 4K digital projection are the keys to achieving this.

We DOPs now have a new tool in the digital world than can at last really compare with the results we are used to getting from 35mm film, even though it has its own nature. I am trying hard to get the chance to shoot a complete feature film with the new Origin. I love challenges.

Useful information on the Origin used on *Le Gant*:
Sensor: single chip CCD,
8.2 million pixels
Resolution: 4096 (H) x 2048 (V) in RGB
Sensitivity: 100 ISO
Format: 2 x 1
Optical finder: P+S Technik
Lens mount: PL 35mm
Lenses: Zeiss VP vari-primes
Camera/encoder link: 0.6mm fiber optic of a maximum length of 300 metres
On set encoder: 16 hard drives (1.5 terabytes), storage capacity of 50 minutes or 6 terabytes. •