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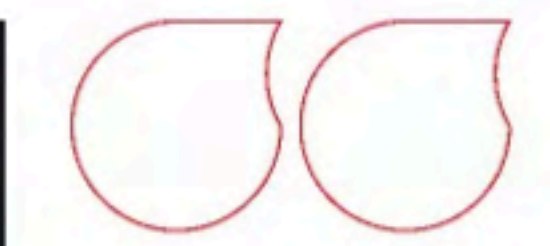
The large format world of Altered Carbon

THREE BILLBOARDS NEWS! THE DATA STORY FROM EBBING, MISSOURI SEE PAGE 38

Carbon Dating

In *Altered Carbon*, Netflix is adding to its rich vein of sci-fi where most of the budget is on screen and most of the VFX are in-camera

WORDS JULIAN MITCHELL IMAGES NETFLIX / MARTIN AHLGREN



THE INVOLVEMENT OF NETFLIX WITH ALTERED CARBON TOOK IT OUT OF ITS GRINDING DEVELOPMENT

Altered Carbon started life as a book by British sci-fi writer, Richard Morgan. In 2002, not long after it was published, the book was optioned for feature film development; little did Richard know, but development hell had just started. If you want an example of how the Hollywood studio system is being disrupted look no further than how the involvement of Netflix with *Altered Carbon* took it out of its grinding development and assigned it a huge budget without years of painful analysis of its commercial worth.

The Netflix show has just aired with ten hour-long episodes and has already been commissioned for another season. The rumoured \$7 million per episode arguably initiated other development, more social this time, with the creation of a huge studio complex on the grounds of an old print works in the city of Surrey, part of the Metro area of Vancouver. The new Skydance Media studios now consist of five sound stages and for *Altered Carbon* that meant the use of one of the longest and tallest sound stages in the world, 500 feet long, 50 feet high and 50 feet wide. This is where the world of *Altered Carbon* is centred, with a huge San Francisco streetscape circa 2516.

Altered Carbon tells the story of a future where those who can afford to copy and paste themselves in to younger bodies or 'sleeves' to basically live forever, 'making death a mere inconvenience' as the evil Psychasec Corporation puts it. A typical tale of 'haves' and 'have-nots' that plays out with the cyberpunk feeling of *Blade Runner* but in ten one-hour episodes. Such a huge visual undertaking needed two cinematographers, Neville Kidd and Martin Ahlgren, and six different directors. Martin Ahlgren noted how ironic it was working in such a huge 'old Hollywood'-style studio complex where all the departments were housed including editing and stunt rehearsal. "If

ABOVE The world of *Altered Carbon* was created in a 500 foot long super studio in Vancouver.

you wanted to speak to any of the departments they were all there, you just had to walk to their offices. It's like you'd imagine a Hollywood lot would be back in the day. It was great, as if you were prepping an episode in between blocks you could speak with the art department for instance and just walk over there. The producers and writers were also there talking about things coming up."

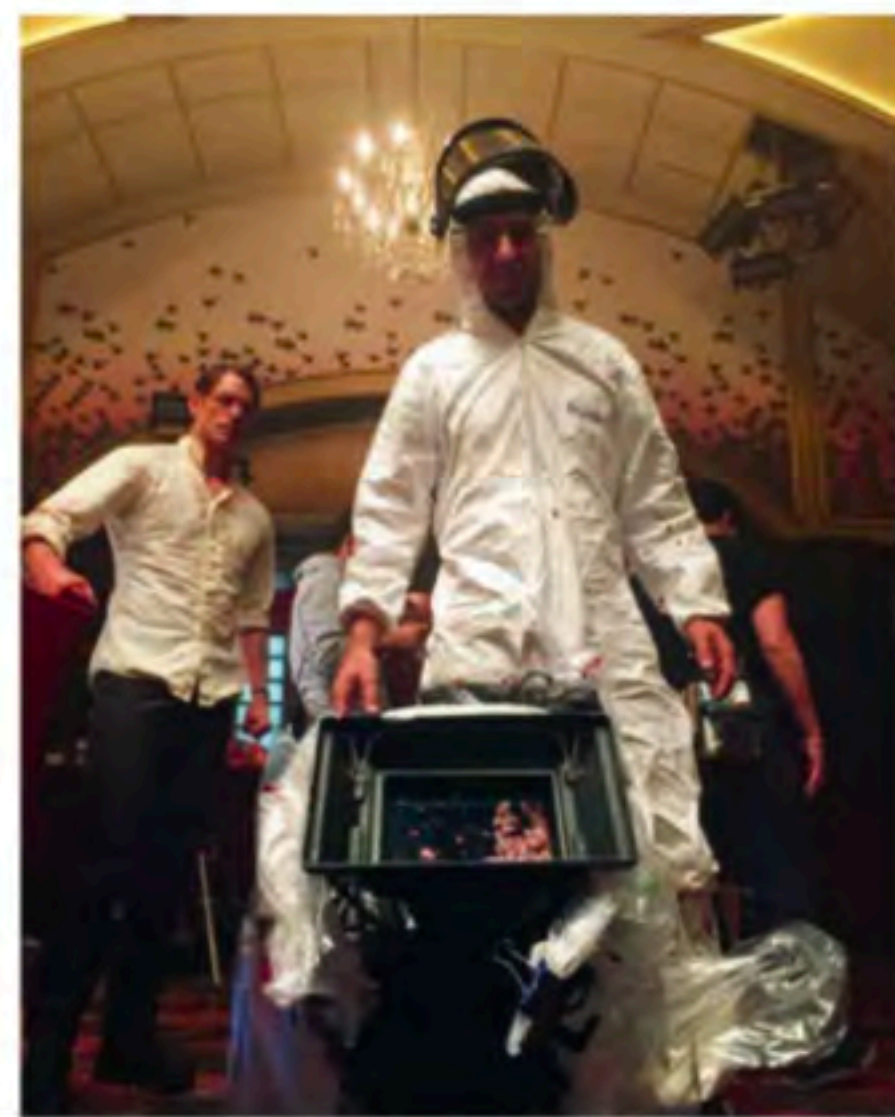
The really big sound stage for the street set was a great asset, as unless you pointed the camera very high up all you could see was the built set. They could even push through the walls and build restaurants with fronts to continue a shot or knock out a wall on the second level and it could be a balcony to a hotel. The downside was that when they weren't shooting they had to tear the lighting down as they couldn't afford to have it in place permanently. The Netflix production model does have downsides.

FIRST TIME

We spoke to both shooters about how they shared the load and how they shot over the 11 months at Skydance. The two got very close (even carpooling to work) and bounced ideas off each other to the extent that



LEFT Actor Joel Kinnaman and B-camera operator Sasha Proctor, ready for more action.



BELOW Actors Lisa Chandler and Dichen Lachman with director (Episode 2 and 3) Executive Producer Nick Hurran.



they didn't need a dedicated second unit as they shot each other's episodes (they moved to three units near the end of production when it was busier). Martin talked about the choice of the ARRI ALEXA 65 as the main camera. "We were the first episodic to use the camera, now it's relatively commonplace. We needed the camera for the main unit and the second unit and we were very grateful to ARRI for letting us use so many of the 65s so it was exclusive to the show. Eventually we had five ALEXA 65 bodies at a time where there weren't that many in the world. There was also an ALEXA Mini camera on both units which initially we thought of for tight corners or maybe as a crash cam. Netflix is very firm on its 4K mandate and the Mini is around 3.4K so we got very specific guidelines on its use, it had to be used less than 10% of the show but also it couldn't be used when you're holding on the shot; so if you're doing a dialogue scene where someone is doing a long monologue it definitely has to be the ALEXA 65. A quick action scene could be the Mini."

As it turned out nearly 99% of the show was shot using the 65 with the Mini being used if they wanted

more than 60fps. Most of the pre-production talk however was about the huge data rate that a full-sensored ALEXA 65 outputs at 6.5K when the mandate is only for 4K. Both Neville and Martin really wanted to use the bigger part of the sensor; part of the look is the large-format 70mm photography that you can't get with a S35mm sensor. Neville and Martin asked another Netflix show, *Okja*, also shooting in Vancouver about their ALEXA 65 data strategy. It turned out the difference in price for LTO tapes alone with 6.5 and 5K was around \$100,000. They shot occasionally on the full sensor but only when post needed the extra resolution to play around with. Some of the lenses started to vignette but post still needed everything available. ☑



NETFLIX IS VERY FIRM ON ITS 4K MANDATE AND THE MINI IS AROUND 3.4K⁰⁰



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Neville explains the camera choice further: "We used one of the largest sensed digital cinematography cameras and before we started shooting we went into a long period of testing which lenses would suit. The camera can shoot 6.5K images which results in a lot of data to deal with; we decided to bring that down to 5K so it would be cheaper to post-produce. We then had a problem with close focus using some lenses, but we looked at the Canon Cinema lenses and realised that they would cover the cropped sensor perfectly and give us the range we really needed.

"The only problem was we needed XPL lens mounts and the Cine Primes up to now have only been available in Canon EF mount," Neville continues. But luckily, and because of their popularity, the excellent 35mm full-frame Canon CN-E Primes will work on just about any PL mount camera with a simple modification that can be returned to factory spec with the OEM Canon EF mount if needed.

"We ended up with two sets of the lenses from the CN-E14mm T3 to the CN-E85mm T1.3. These are great fast lenses which is what you need in these types of episodics – everything has to be quick. We thought about using vintage glass but they are just not fast enough. Now we used the primes for most of the shooting; we did use other character glass but the Canon lenses match up beautifully in the grade. We were really happy with the performance; we got nice flares out of them and they match the other lenses beautifully. When we saw that, we knew we were up and running. Now they are our go-to lenses.

"We tested so many lenses for AC and because we weren't going down the 6.5K route, we looked at vintage primes, the old VistaVision lenses



which are fantastic but a bit slow. A lot of those are like T4, working on a TV schedule in episodic mode, you kind of need faster lenses. You can't have lenses that jump around too much. The Canon's vary from 1.3 to 1.5 depending on the focal length. The main priority was the coverage of the sensor, but we were really happy with the performance.

"ARRI had converted them through Duclos for the XPL lens mount. They had to get a second set for our third unit as well. We used the Canons from 14 to 85 then started using the Cookes. The advantage of the Cookes is when you get to the longer lens you don't need the coverage as much and we had the short focus ability; so we had the 65, 100, 135, 150. The Cookes have got that Cooke look and the Canons are a little bit more contrasty, bit more crunchy. We managed to match the lenses and



TOP *Altered Carbon* goes on location.

ABOVE Director (Episode 1) and Executive Producer Miguel Sapochnik gets hands on with the car gimbal.

actually just to complicate things even more we've used a few Zeiss compact primes as well. Basically all the lenses that were made for large sensor DSLRs that have been reborn for the ALEXA 65. I certainly loved the Cookes and the 65mm was the one we used a tremendous amount; it's also great for close focus."

They used the Cooke S5s from 65mm and up because the longer lenses and a bigger image circle projected back towards the sensor, so the 65mm, 75mm, 100mm and 150mm big enough to cover the VistaVision sensor. Then they moved to the Cooke S4s for the really long ones like the 150mm and 180mm, they also carried a Hawk 100-400mm zoom.

VISTAVISION

Originally the plan was to shoot widescreen like a 2.39 format but after long discussions Netflix didn't agree to it, basically because of the way customers watch their content



65mm Reborn



ALEXA 65



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which could be on smartphones. Martin explains the aspect ratio thinking: "The widest they would allow was 2:1. At 6.5K, 2:1 is the native sensor size but when you go to 5K the capture image is 16:9. We cropped in the 16:9 to 2:1 so a fairly small crop at the top and bottom but post told us it was enormously helpful in terms of tracking images with a little extra space they wouldn't have had otherwise."

"The size of the ALEXA 65 sensor when you're shooting 5K is similar to VistaVision which is a slightly more workable format in terms of lens choice. These were lenses that opened up to a 1.4 or even 1.3 where the lenses for a 6.5K start at around 2.8 and go up. This gave us a tremendous benefit when we were shooting in low-light situations and we calculated that we were getting a shallower depth-of-field than we would have got with 6.5K because our aperture was so open. Hard on the focus pullers but it was an amazing look especially for your wider shots, you're shooting a wide shot so your characters are fairly small in frame but you could still do a very selective focus and with a very beautiful large format photography look to it."



WHITE AND BLACK LIGHTING

For *Altered Carbon*'s main street set the DOPs put up huge softboxes full of ARRI SkyPanels as they knew that every time a camera tilted up those shots would be replaced by digital set extensions. The boxes could come down and articulate into key lights and back lights and other set-ups which was a very flexible way of organising rental stock. Perhaps more interesting was the use of 'black light'. Martin explains, "Our production designer Carey Meyer had this idea that at each end of this huge street set we needed translights to continue the look, like a never-ending street."

"The idea was to use ultraviolet paint on the front of this translight and then light it with black light (UV light) from the front and it would pick up very intensely and shine back towards the camera. These translights became intricate but in a good way because we didn't have to do green screen or CG afterwards. It was basically a front-lit cityscape lit by a continuous normal light then it would have things like neons and street lights or anything that needed to look like a light source painted with the UV paint. There would also be translucent parts of the backing and we would use a 40K (lumens) projector on the back, shooting through with a projected video pattern of the mass transit system in the city. So you're seeing trains passing through tubes with the other elements of translights and back lighting on both sides of the street. This all meant that 90% of the shooting was in-camera, lessening



ALTERED CARBON IS A TEN-HOUR MOVIE, NOT A 90-MINUTE ONE

ABOVE Stills from *Altered Carbon*, top one looking like a shot from *Ghost In The Shell*.

LEFT ALEXA 65 with Hawk 100-400mm and rain cover.

the need for CG effects. Although there was an extensive post budget, *Altered Carbon* is a ten-hour movie, not a 90-minute one so VFX for that amount of time is too cost prohibitive.

"This led to me and Neville using video projection onto netting and plastic, just to do things to the background that would give it movement and look like a futuristic light source without calling for a visual effect. The agenda was to capture as much in-camera as possible. Shots on green screen were actually no more than ten in the whole show."

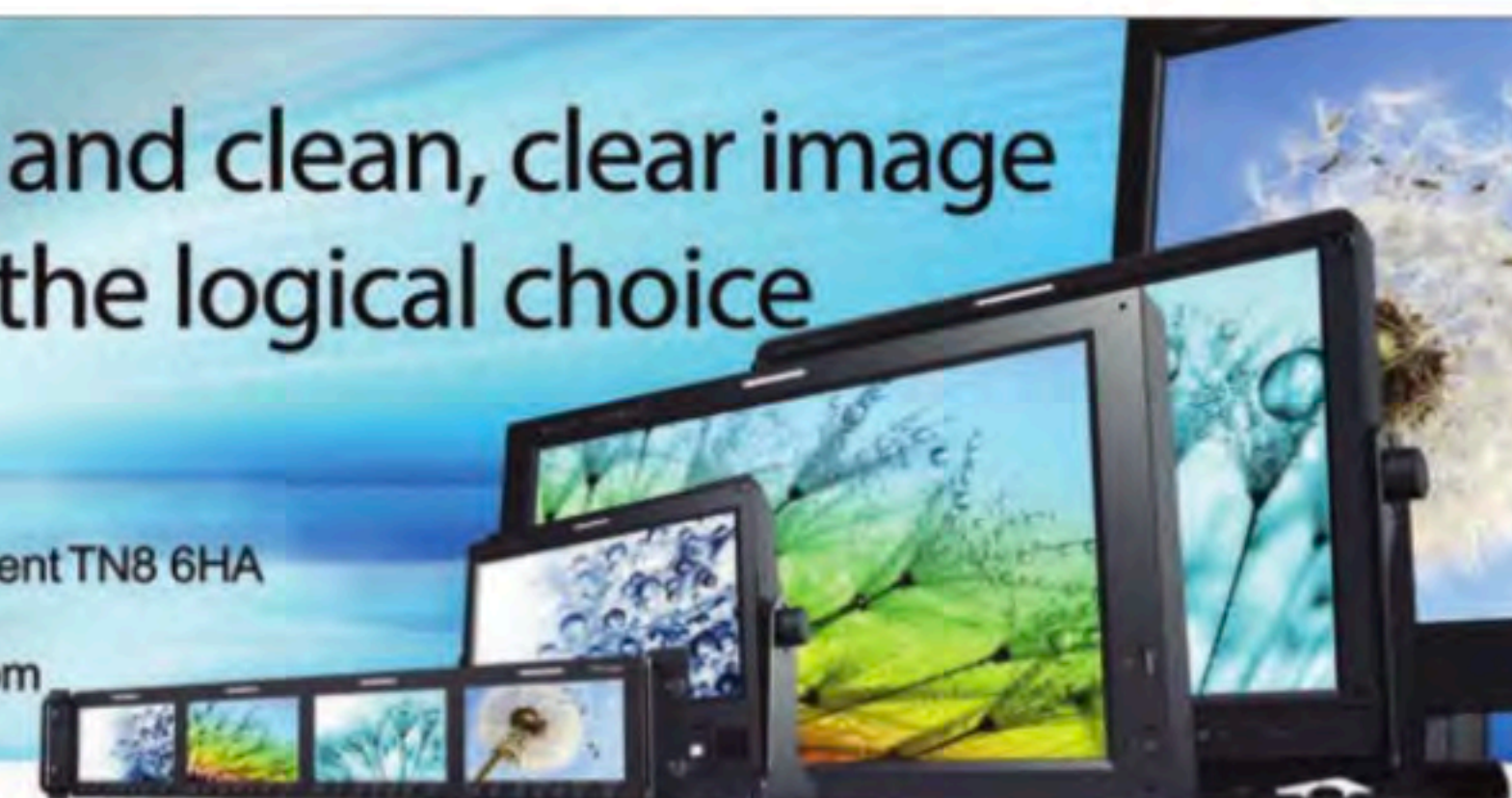
"The ARRI SkyPanels were our workhorse light because of their reliability when you're shooting off speed and their colour range. All our lights were worked through a dimmer board so we could create sequences of movement through the lights. Something I enjoyed doing was to programme the lights to slowly go from one colour to another; it gives another dimension to the scene." □

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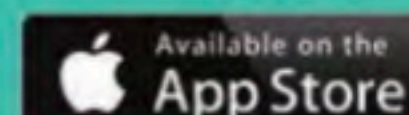
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