



The Technocrane 22 with Libra head rising above the performance of Romeo and Juliet

# Sex Education

# the second coming

It's fair to say that if *Sex Education's* brashly uncompromising, yet wittily stylistic exploration of the trials and tribulations of teenage life were a date, you might dread the cringe-worthy 'meet the parents' moment. And yet, as many have discovered, once that proverbial ice has been broken, such fears are soon proven unfounded. No friends-with-benefits malarky here, we're talking long-term relationship material and GTC member DoP **Jamie Cairney** was happy to be its significant other.

**S**ex Education, the first season of which I set up and shot in 2018, was a huge success from the get-go, striking a chord with people of all ages and backgrounds right across the globe. I was delighted when Netflix invited me back to shoot the second season in 2019 and I spent 7 months, from prep through to post-production, working with directors Ben Taylor, Sophie Goodhart and Alice Seabright.

## Getting the mood right

The core team and I came together at the start of 2018 and spent the first few months brainstorming what we wanted the first season to be: the style of the show, incorporating choices of locations and colours. Lead director Ben's key idea was to bring an American high-school film feel to a UK setting, while at the same time creating a sense that the show could be set anywhere and at any time within the last 30 years. We were drawn to the work of Richard Linklater and John Hughes, using such films as *Dazed and Confused*, *The Breakfast Club* and *Ferris Bueller's Day Off* for reference, which helped us to formulate our stylistic choices.

Producer Jon Jennings and location manager Midge Ferguson made initial selections of potential locations to create the imaginary town of 'Moordale' where the show is set. This ultimately led us to the Wye Valley, an area rich in natural beauty and awash with many shades of green. Such primary qualities from this location, in conjunction with the bold gamut of colours deployed by costume designer Rosa Dias and production designer Sam Harley, inspired our

heading towards a positive, saturated palette.

When it came to establishing the photographic style, Ben and I felt drawn towards a natural feel. We didn't want it to be too dim and depressing, although we could explore that avenue if the story dictated it. Light would be source driven, from windows and practicals, enhanced by small amounts of smoke.

## Going Steadi

We decided the camera would mainly be mounted on a dolly or Steadicam, giving us a hybrid of strong, static compositions and flowing, energised tracking shots. It worked really well for the first outing, so season 2 largely continued this style, with the occasional dip into other methods where appropriate: handheld; a Ronin 2 deployed where we couldn't get Steadicam; 15, 22 and 50ft Technocranes, expertly operated to convey a sense of scale by top grips Gary Sheppard and Jack Metcalfe; and Phil Arntz and Pete Ayris lensing some stunning shots with drones provided by Emma and Kat at The Helicopter Girls.

## Falling for the Venice

While we were planning the first series, I was approached by Sony to look at what was, at the time, their brand new Venice camera. Its 16-bit depth and wide colour gamut, sensor capture area at 4K, highly efficient X-OCN ST codec, and dual ISO definitely caught my attention. Through extensive testing, I determined that this was a significant leap forward

in digital capture and the perfect choice for us. Jumping in at the deep end with two cameras running v1 beta firmware and no exposure tools, we embarked on a journey that has continued through to season 2. The Venice hasn't let us down once, and I am still regularly blown away by its abilities.

I spent a lot of time mulling over and testing lenses to decide what would fit in with our stylistic choices; there are many factors to consider, not all of them artistic. Ultimately, I chose spherical over anamorphic, utilising Zeiss Master Primes for their paradoxical 'soft but sharp' look and flare quality. They bring character without being distracting, with stunning results at T1.3–T2.0. The engineering of these lenses is second to none so, with us working a long and fast-paced shoot, I knew I could rely on them. Our focus pullers could have confidence in the lens accuracy, regardless of shot; having no focus difficulties avoids frustrating delays for the cast. Furthermore, there is a huge range in this family of lenses that partner very well with the smaller and lighter Ultra

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I felt a sense of pride (and relief!) that Sam, Gary and I were able to design and light this space for 360 and let Ben have a camera wherever and whenever he wanted it.



Left: Jamie Cairney (left) and focus puller Ian Pearce ready for action with the Sony Venice and 10mm Ultra Prime lens; Top right: Grip Steve Pugh and Ian work with Jamie in lining up a shot; Bottom right: On location, camera operator Ilana Garrard lines up a shot of Ncuti Gatwa for director Alice Seabright



## ACES

The Academy Color Encoding System (ACES) is becoming the industry standard for managing colour throughout the life cycle of a motion picture or television production. From image capture through editing, VFX, mastering, public presentation, archiving and future remastering, ACES ensures a consistent colour experience that preserves the filmmaker's creative vision. In addition to the creative benefits, ACES addresses and solves a number of significant production, post-production and archiving problems that have arisen with the increasing variety of digital cameras and formats in use, as well as the surge in the number of productions that rely on worldwide collaboration using shared digital image files.

Source: The Academy of Motion Picture Arts and Sciences website <https://www.oscars.org/science-technology/sci-tech-projects/aces>

Primes, that were perfect for both drone and very wide angle work. Fujinon's brilliant Premier zooms complemented and matched the primes very well, and were used mainly on cranes and during busy two-camera coverage.

## The Netflix effect

Whilst the first series of *Sex Education* was my first production for Netflix, it's been my pleasure to have mostly worked for them since; the company has such a progressive and positive ethos, which makes for a lovely working environment.

When it comes to acquisition, Netflix stipulates precise minimum specifications of 4K capture, post and delivery. This means you have to capture 90% of your production with one of their approved cameras, all of which have a minimum 4K UHD sensor (equal to or greater than 3840 photosites wide) – if you search online for 'Netflix approved cameras' you can get an idea of the specs. Another of their stipulations is the ability to demonstrate your workflow and for this, using a beta version of a camera presented some challenges for post-production during the first series, as we were unable to access the full range of information the camera was capturing, due to a lack of relevant software being available.

Fast forward to season 2 and Netflix were fully supportive and able to supervise my desire to move us on to an ACES pipeline (see sidebar) from camera through to delivery. My main justification for this was to avoid the problems encountered in season 1, and to ensure that at no point would there be any errant conversion of the footage into other codecs or colour spaces. ACES would also allow us to grade with the full 16-bit depth, wide

colour gamut and maximum dynamic range of the Venice. Our wonderful DIT, Shibir Ahmed, was pivotal in smoothing this process for us.

## That all-important spark

I was humbled to once again be joined by gaffer supremo Gary Chaisty for season 2. Gary and his team are pivotal to the success of both the schedule and lighting design of *Sex Education*. I am in awe of their inexhaustible energy and commitment: no task is too difficult or extreme. Big love to Gary, Mark Day, Jamie Venn, Chris Kiley, Will Jones, Joe Deacon and rigger Martin Dunn for putting up with me for hundreds of shooting days and lighting setups.

A great deal of our lighting budget in season 1 was spent on just getting the practical lighting in a moth-balled university building in Newport, Wales, back up and running. The second time round, we were able to improve on this, converting fittings from fluorescent to be LED. Thanks to line producer Simon Morris and Panalux, we were able to amend most of our lighting package to LED, reducing our carbon footprint and gaining significant control over our fixtures. A key action came via our beloved Jamie tapping directly into the university's main power intake and running a three-phase distribution system around the site. As a result we barely had to run our diesel generator, regardless of scale of setup.

Our predominant LED lighting source was the Litepanels Gemini, and I owe John Lawton at Panalux for going the extra mile to supply us with around 100 of these. After testing, I chose to use the Gemini instead of the market leader, largely due to its more advanced RGBWW panel, which can produce white light far more accurately; this is



### CREW LIST

#### 2ND UNIT DOPS:

- Nick Martin
- Matt Wicks
- Sarah Bartles-Smith

#### CAMERA/STEADICAM OPERATORS:

- Ilana Garrard
- Will Lyte

#### FOCUS PULLERS:

- Ian Pearce
- Louise Murphy

#### CLAPPER/LOADERS:

- Natie Davis
- Nick Baker

#### CAMERA TRAINEES:

- Ruby King
- Georgie MacGregor

#### DIT:

- Shihbir Ahmed

#### GRIPS:

- Gary Sheppard
- Jack Metcalfe
- Dom Farquhar

### KIT

#### CAMERA (ABBREVIATED LIST)

- All supplied by Dave Wide/Films @59

#### CAMERAS & ACCESSORIES

- 2x Sony Venice with AXS-R7 (Wooden Camera support and power)
- 2x ARRI LMB4x5 matteboxes
- 2x Preston MDR4 LCS
- 1x ARRI Master zoom control
- 2x CineTapes
- Hawk Woods Mini V-Lock batteries with dual plate
- IDX V-Lock batteries
- Anton Bauer block batteries

#### MONITORING

- 2x Teradek Bolt 3000 TX/RX with array system
- 2x Teradek ServPro
- 2x SmallHD Bolt 703 monitors
- 4x SmallHD 1303 HDR monitors
- 1x TVLogic 24" monitor
- 2x Odyssey 7Q+ recorders (for playback)

very important when using the Venice. In testing, I had found that in fact many of the ubiquitous LED lights on the market don't really work very well with the Venice, as the camera can see a lot more colour than most other digital cinema cameras, including any missing information and spikes in the lamp's spectral distribution. The Gemini addresses these shortfalls, providing a much better quality of white light; I urge you to try it and see what you've been missing! Furthermore, it is around 3–4kg lighter than the market leader, it doesn't get as hot and, as it uses slightly less power, the electrical crew love it.

We also used a lot of Kino Flo Select 31 and 850 fixtures, which also have superior colour reproduction. A great feature of the Kino Flo lamps is that they allow you to select which type of camera you are using (Sony, ARRI, RED, etc.) and the spectral output is altered to suit your camera's sensor. This is incredible.

Where we couldn't use LEDs, more traditional ARRI MSR and incandescent fixtures were used, predominantly for bringing in light through windows.

### The joy of sets

*Sex Education* presents many sets, locations and challenges for the DoP, but the extravagant futuristic interpretation of *Romeo and Juliet* in episode 8 brought the most fun for me. In the absence of an appropriate school assembly hall space for the play on our university campus, we had to decamp for a week or so each season to the Paget Rooms in Penarth, Cardiff. This old, listed building was not only very unfriendly for lighting, we only had 2 days to set and light and 3 days to shoot a very busy sequence, rounded off with a 6-hour derg.

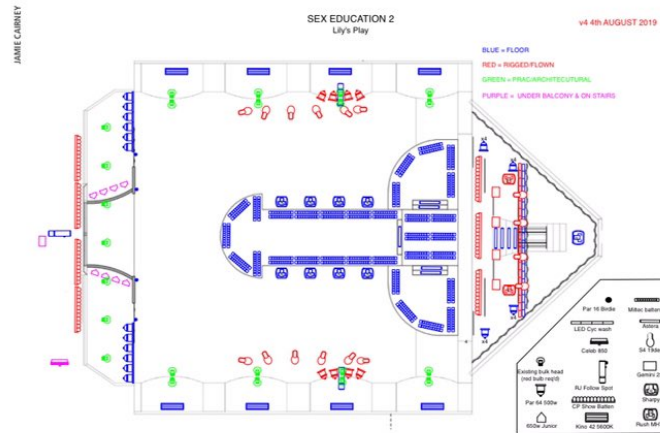
My crazy idea was to treat it like a touring rock concert. We spent a week building and lighting the set in a warehouse on the outskirts of Newport. This would allow Sam to refine her set design and work out the logistics of getting it in and out, as well as give me and the sparks a chance to spot any technical issues. There, we could also finalise power distribution as well as do the DMX addressing (this is the means to control individual lights within a lighting network), leaving us more time at the actual location to concentrate on focusing and programming. Production once again came to our rescue and facilitated this far-from-cheap idea, knowing it would pay dividends further down the line. The brilliant Dave Thorpe at Enlightened oversaw the multiple rig-derig cycles, which were done speedily and proficiently. A huge shout out to Ziggy Jacobs, who provided extraordinary support to me with her unrivalled (and fast) desk op skills and DMX management: there's none better!

### Setting the stage

At the Paget Rooms, there were only a few places I could rig lights, other than the small stage. The nature of the ceiling made it complex, expensive and probably quite ugly to add extra trusses and scaffolding. Added to this we needed at least seven different lighting states that would work for multiple cameras, Steadicam, Technocrane and handheld, all of which needed to shoot 360. Cue much head scratching, until the epiphany: a "thrust" stage stretching into the audience from the existing main stage! We could make the flooring semi-transparent, under which I could place many Clay Paky RGBW Show Battens, providing the base colour for each cue, along with chases and Clay Paky Sharpys along the



Top of opposite page: Jamie and 2nd Unit DoP Nick Martin take aim at Connor Swindelo who plays Adam; Above, top: The Paget Rooms transformed into the school assembly room's setting for *Romeo and Juliet*; Bottom: Camera op Will Lyte (left) and clapper/loader Nick Baker (right) line up on cast members Mirren Mack and Keddar Williams-Stirling



Jamie's lighting plan plots out all the lamps deployed to light the intriguingly shaped thrust stage for Mooralee High School's unique interpretation of *Romeo and Juliet*

side of the stage providing contrast and beams, supplemented by 16 Litepanels Gemini hidden in skylights in the ceiling for more colour. On the stage we rigged more moving lights and Show Battens, along with more traditional par cans on booms. LED tape and even some good old Kino tubes (fed by DMX ballasts) provided detail and backlighting for some of Sam's set design. Source Fours – old faithfuls – provided audience lighting, and three Robert Juliat follow spots were lovingly operated by the electrical team, masquerading as school pupils!

We mainly deployed the Fujinon zooms for speed, especially for the 22ft Technocrane we had on the last day. Will Lyte did a fantastic job of jumping between Steadicam and dolly, and managing the camera crew for me over the 3 days. The final shot, and test of the extravaganza, involved me running up and down the stage with

a handheld camera, shooting in all directions. I just about got away with my camera shadow, considering the low throw of the spotlights, but it was after this shot that I felt a sense of pride (and relief!) that Sam, Gary and I were able to design and light this space for 360 to let Ben have a camera wherever and whenever he wanted it.

### Faking it

Another bit of fun was the news that all scenes involving Gillian Anderson (in the audience) would need to be shot 2 months prior to the actual play! We only found this out at short notice, so Sam and I had to imagine all of the above without having time to actually design the entire thing. Although we were only seeing a small area of the room where Gillian would be sitting, it still had to cut with what was happening on stage; furthermore, this same area would be in shot (peopled with a

### LENSES

- 1x 10mm Zeiss Ultra Prime
- 1x Set Zeiss Master Primes: 14, 16, 21, 25, 27, 32, 40, 50, 65, 75, 100, 135, 150mm
- 1x Fujinon Premier 18–85mm T2.0
- 1x Fujinon Premier 14.5–45mm T2.0

### FILTERS

- Polarisers
- ND grads
- Optical flats
- Triffen Soft FX

### SUPPORT

- 1x OConnor 2575 head
- 1x OConnor 2060 head
- 1x Ronford Baker Atlas 7 head
- Ronford Baker tripods, bazooskas and tri-hats
- GFM sliders
- 2x Chapman Peeewe Mk3 dollies
- Easyrig 5 Vario
- MK-V Steadicam with AR
- Technocrane 15, 22 and 50ft

### LIGHTS (ABBREVIATED LIST)

- All supplied by John Lawton/Panalux

### LED

- Kino Flo LED Select Freestyle 31
- Kino Flo LED 850
- Litepanels Gemini
- Astera Titan tubes
- Aladdin A-Light
- Cinelease Quantum

### DISCHARGE

- 18kW Sunray
- ARRI 6kW Fresnel
- ARRI M40
- ARRI 4kW Fresnel
- ARRI 2.5kW Fresnel
- ARRI M1.8

### INCANDESCENT

- ARRI T12
- Molebeam 10kW
- Molebeam 5kW
- ARRI 5kW Fresnel
- ARRI 2kW Fresnel
- ARRI 1kW Fresnel
- ARRI 650W Fresnel
- ARRI 300W Fresnel
- Dedolight 150W kit

### MY PERSONAL KIT

- Sony A7s Mk2
- Odyssey 7Q+
- Sekonic light and colour meters
- MCS Pentafinder
- Artemis on Samsung S10



**SHIBBIR AHMED**  
– DIT  
Joining the second series of *Sex Education*

**Education** would prove to be a job of many firsts for me: **NETFLIX:** I was fortunate to have the support of Chema Gomez at Netflix, who helped walk me through the technical requirements the company has for all its shoots.

**SONY VENICE:** In getting to know how the Venice works and its foibles, Richard Lewis at Sony was invaluable with his support whenever I needed it. We captured the whole series at 4K utilising Sony's 16-bit X-OCN ST codec. This allowed us to shoot RAW but the resulting files were moderate in size, allowing for quicker offload times and reduced storage requirements. Overall, we shot 100TB of RAW footage across the entire 98-day schedule, which is no mean feat.

**ACES WORKFLOW:** Jamie wanted to ensure that all departments of the production, from the dailies to the edit, VFX and the final grade, established a singular and standardised colour workflow. During the prep time our colourist Thomas Urbye and his assistant Grace Weston finessed the colour pipeline to ensure that anything I did on set in Da Vinci Resolve could be replicated inside the Rio 4K grading tool at The Look as well as at our VFX house.

This all meant that I had to adapt and adopt new ways of working but that was part of the appeal of doing the series. The overall outcome made for a more collaborative experience across the board and I have become a better DIT/on set colourist. I can't envisage working any other way now.

There were many highlights on the job, but the one abiding memory was the night we screened a wrap reel/trailer. It had been cut by our brilliant assistant editor Robert Frost but was still carrying my offline grade. Watching it back I felt this overwhelming sense of pride; all that hard work, all those hours poured into grading every single frame had paid off.



Ncuti Gatwa, who plays Eric, lines up a shot

look-a-like) when we came round to shooting the main play. Bear in mind nothing had been thought about or agreed at this stage... I had many sleepless nights about it! Would it match? What would be happening on stage? Had I made the right colour choices? What lights would I be using and what about the lighting cues? It was only when the episode was edited and graded that I could relax... somehow, we had got away with it.



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**THOMAS URBYE**  
Senior Colourist at The Look, approved Netflix Silver NP3 vendor post-production company.

I worked with Jamie and Ben on series 1 of *Sex Education* and we all wanted to continue that collaboration for series 2.

I really enjoy working with Jamie Cairney as he brings three important skills to his work as a DoP. Firstly, he is very artistic with his lighting, always looking to push the mantel whilst serving the story. This is a fine line that many less experienced DoPs fail to achieve; they either light safely for any blocking or light with very little care for the director's or production's needs. As a colourist I am in a similar position, grading to serve the narrative, as well as working with the DoP to make every image look like a painting. Secondly, Jamie is very technically proficient, wanting to push his understanding of new workflows and cameras, specifically with *Sex Education* series 2 utilising an ACES colour-managed workflow. Thirdly, he has a great sense of humour and is easy to converse with, which enables the high quality of work he achieves as he brings his collaborators with him on the journey.

On season 1 of *Sex Education* we debayered the Venice material to SLOG3/SGAMUT3 (a common starting point for grading) and I graded by eye to HDR (P3/PQ). At the time, no official Sony HDR P3 LUT existed as it was very early days for the Venice, with beta firmware being used on set. Jamie was keen for us to explore an ACES workflow for series 2, as he had previously used it on Netflix's *Criminal*. ACES offers an excellent solution to the growing technical requirements of major multi-format cameras and CGI. It also has the benefit of solid future-proof archival as it allows the post-production to work at a much higher colour space and latitude than is currently available on any monitor. While Sony and others have now been more forthcoming with LUTs for converting camera spaces like SLOG3/SGAMUT3 to HDR, ACES also offers an agreed cross-manufacturer colour aligned workflow. Shibbir did some useful primary colour correction on set, but to have a fully creative colour workflow you really require a DIT as well as an on set colourist; you can't expect one person to do it all when there's so much media coming in. If you do have an on set colourist then colour decision list (CDL) information and the LMT (a form of creative LUT) can be interchanged between the dailies, VFX and the final grade. Some downsides to ACES are: it does require more conversions of the image data, which some people worry can reduce image quality; it requires more computing power to go between different IDTs and ODTs (colour spaces); and certain saturated colours, especially very saturated blues from LED lights, will have to be managed in the grading system with special colour matrixes.

In summary, as it's always best for a DoP to have a fully colour-managed workflow, if your project has a lot of CGI, particularly on green screen, you have a colourist on set, and you have multiple cameras from various manufacturers, then ACES can bring major advantages. The other option is to use the now more available manufacturer's official conversion Log-to-HDR LUT, and grade using that, which we, at The Look, also use for half of our projects at this time.



Top: Will Lyte aims B-camera at Jackson, played by Kedar Williams-Stirling, with A-camera in the foreground; Bottom: Clapper/loader Natie Davis marks up a slate

## Feeling the love

So much credit is due to all departments and to every member of the crew in making this all happen in such a short amount of time. It was quite hairy, but the camaraderie and good nature of our teams made this a success and, of course, LOTS of fun! Special mention to my friend, line producer Simon Morris and his team of Medyr, Fiona, Izzy, Paige, Jamey, Rio and Sian, who worked such long hours to get all the components in place for us.

Huge thanks again to my wonderful camera crew, helmed by focus pullers Ian Pearce and Louise Murphy: an unstoppable, delightful group of people who kept me smiling and laughing every day, even if I made them miserable and depressed! I love you guys! Season 2 has quite a lot of 2nd unit work as we couldn't fit all the scenes into the schedule. Nick Martin, Matt Wicks and Sarah Bartles-Smith helped me with this, backed up by a great gang of daily camera, grip and lighting crew.

## Fact File

London-based DoP **Jamie Cairney** continues to work across genres shooting drama, comedy, documentary and commercials for the likes of British Airways, Curry's PCWorld and Sky Q. He has worked on recent hits such as *Don't Forget The Driver*, *Delicious*, *Endeavour*, *Detectorists* and *Flowers*. The latter two earned him GTC Awards for Excellence and he is nominated again for his work on *Sex Education*.

Jamie is represented by Berlin Associates & WME.

See more of Jamie's work at: [www.jamiecairney.com](http://www.jamiecairney.com)

With thanks to GTC Council Member Hazel Palmer for photos and additional material.

