THE PRINCE OF EGYPT'S DOMINION

Kate Lyon reports on the remarkable scenic and rigging feat that is *The Prince of Egypt* at The Dominion Theatre . . .

As with the majority of London theatres, The Dominion has had a long and varied career since opening in 1929. Initially home to a brief and unsuccessful musical production based on golf, it had a lengthy spell as a cinema; a venue for touring productions in the '80s; most recently returning to its original premise of hosting productions like *Grease*, *We Will Rock You* and *Bat Out of Hell - The Musical* (see *LSi June 2018* for a report on the latter) after narrowly avoiding demolition. Since October 2009, the venue has been operated by The Nederlander Organisation who also run The Aldwych and The Adelphi in the West End and over 25 theatres in the US on Broadway and across North America.

Over the years, a series of alterations and improvements have been made to both front of house and backstage to accommodate the changing times and requirements of both audience and visiting productions. Despite the closure of the Upper Circle way back in the '50s, The Dominion remains one of the largest theatre spaces in central London, with a capacity of just over 2,000 offering production houses a solid return for a successful run of a technically complex and costly set-up . . .

A NEW STAGE

The latest refurbishment took place last summer, with Unusual Rigging contracted to replace the raked stage and reconfigure the area below the stage. Mark Priestley, head of capital projects at Unusual, explains: "The main rationale behind the refurbishment was to remove the raked stage and be able to provide a flat stage which would make the venue more attractive for larger producers. The new stage also needed to have the capability to be set at different heights - to allow for automated shows which typically have a 300mm deep show deck. The designs for the project were fully consulted upon and agreed with The Dominion technical staff and the executive; we continued to have regular progress meetings throughout with Dave Sutherland, who is a senior member of The Dominion technical team and the lead consultant and structural engineer for Nederlander, Mike Jackson."

Priestley continues: "The major works were located in the stage and basements, mainly because removing the original stage required the removal of ceilings on the basement rooms to stage-left and stage-right and the existing stage machinery - the large central stage elevator. It was decided to take the opportunity to refurbish those affected areas and to re-route services and remove clutter to make the stage more accessible from the basement. This enables the most flexible use of a palletised stage structure. Different productions have different and increasingly complex understage requirements. The palletised stage and 'cleared-out' basement now allows for elevators, traps, staircase entrances and the like to be positioned just about anywhere in the stage area; productions are no longer restricted to the central large elevator. The central pit has been floored over to allow this area to be used as flexibly as the remainder of the basement."







Considering the complexity of the task, it comes as no surprise that there were challenges along the way, as Priestley reflects: "Our main challenge was time - to carry out extensive demolition, install the new stage at the same time as associated refurbishment works were ongoing - new services, new MEP plant - and ensuring it was all ready for re-opening on time. The period for demolition and installation of the new stage was April until the end of August to meet the deadline for the opening of The Dominion production of *Big The Musical*. Some works had begun earlier than this - items such as re-routing services which could be carried out whilst shows were still on. And, of course, the extensive demolition - as with all 'cut and carve' refurbishments revealed some structural surprises which had to be dealt with along the way - it was a tight schedule with many uncertainties and risks. We were helped by both the client and our suppliers. The Dominion team were committed to a practical solution which could be configured and maintained by theatre staff, so we were all working towards a single and mutually agreed goal - and I must credit our suppliers, Sheetfabs of Nottingham for their excellent fabrication work and customer service."

RIGGING & SET

Just a few short months after completion of the stage refurbishment, the production team arrived to begin preparation for *The Prince of Egypt* (TPOE) - a production that was to stretch the imagination in terms of structural set and effects in a theatrical setting. On stage, there was to be a vast mobile Earth Piece with a Sky Piece above for projection and scenic changes. Downstage and beyond the proscenium, string curtains form part of the design that takes the show out to the audience, particularly during some of the major dramatic moments of the story. Once again, Unusual was part of the package.

Lloyd Thomas, the show's production manager, comments: "The venue staff, led by Dave Sutherland and Stuart Plume, were engaged

and proactive throughout. The venue was now the proud new owner of a new modular floor, designed by Mike Jackson and realised by Unusual. We needed to remove and backfill a large area of this floor to accommodate the Earth Piece and lifts. Without this floor, and in particular its time-efficient design, many days would have been added to our load-in; time which we did not have. With Unusual's knowledge of The Dominion, they were the obvious rigging contractor for the job."

The rigging requirements and the complexities of the stage set meant fabrication and engineering were key challenges for Thomas. Unusual design engineer Emily Egleton explains: "Lloyd asked Unusual to supply a complete rigging and engineering package; on such a big show, this meant we were looking at doing a significant amount of design engineering, load-calculating and coordinating between departments to make everything fit together. On stage, our responsibilities were hanging the Sky Piece, removing the stage floor to accommodate the Earth Piece, hanging the onstage string curtains, LX, sound, LED screen, FOH flying trusses, storage motors and various other scenic elements. FOH, we designed and built a system to hang the LX and sound equipment as well as a huge string curtain environment that extends far into the auditorium."

She continues: "FOH was a challenge due to the sheer volume and weight of the items. Part of the vision of set designer Kevin Depinet was to hide much of the equipment behind the string curtains. The Dominion is blessed with quite a wide range of hanging points FOH and a great load capacity, but the extent of the string curtains meant it wasn't possible to get all of them in the required positions without adding more points in the ceiling. After extensive design work and in collaboration with the building's structural engineers Hayles & Howe, we managed to get it down to just two extra points in the extreme left and right of the auditorium, slightly in front of the Circle. We had to install steelwork and trussing in the FOH void in order to make these points viable - no mean feat in such a delicate and difficult area.

"Part of our brief for the FOH environment was that Lloyd quite rightly wanted 'the Red Sea, not a Sea of Truss'. Along with getting the Red Sea curtains in the correct positions, I needed to get about 3.5t of PA on trusses close to the proscenium and also a run of moving lights - there were more lights, further out into the auditorium. Most of the weight ended up close to the proscenium and the proximity of the sound and LX to each other meant that I had to achieve a balancing act of enough truss and motors to spread the weight around evenly and safely while simultaneously minimising the amount of truss I was using - 13m long spines of S52V Prolyte truss. Using a combination of these spines and our extra, newly installed points, we sub-hung trusses for the sound and LX. We also designed and fabricated curved bars to take the string curtains."

Lloyd Thomas takes a similar view to the complexities of the FOH: "Unusual really earned their glass of warm Press Night wine with what has been achieved FOH. Working with Simon Stone [director of theatre at Unusual], Emily took the lead on the project initially, with Harrison Snelling [production rigger] joining in later. Harrison did an incredible job running his team."

Meanwhile, on stage it was the Sky Piece that provided ample headscratching opportunities for Egleton, Snelling and Thomas. "Due to the Sky Piece taking up a large amount of real estate centre-stage and automated tracks running upstage to downstage for the Red Sea string curtains, virtually every fly-bar had to be split and diverted, or replaced with custom truss and motors," says Thomas. "The Sky Piece Kinesys system was supplied by Unusual. The piece needed to be covered seamlessly with a front projection surface, which - due to its size - had to be done onstage. Working with Unusual and Cardiff Theatrical Services, we devised a methodology of build trusses and custom dollies to make this happen."

Egleton again: "The size and position of the Sky Piece also made the hanging of LX and other scenic elements that would usually have gone on fly-bars tricky. All these elements needed to be on split bars either side of the Sky Piece so that we could both achieve the required trim









From top: The Earth Piece 'Tongue' over the orchestra pit The Tongue's moving mechanism

The Sky Piece going in . . .

... and in use during rehearsals

Facing page: Unusual Rigging at work removing and rebuilding The Dominion's stage



heights and make it possible to bring them down to the floor for maintenance. We removed 15 of the house bars, stripped the steel wire rope from the flying system and bolted bespoke divert pulleys to the grid, then re-reeved the system through the diverts and hung short ladder beams or solid bars depending on the weight of the flown pieces."

She continues: "During the show, the Sky Piece flies out in view of the audience and its location and weight made this impractical to do using the flying system. We decided to use six Kinesys motors rigging them in pre-designed positions; then the Sky Piece was swung forward from its upright storage position to allow the riggers to connect the Kinesys to the lugs on the rear of it. We could then programme the system to move to the same in and out deads every time. Precision was key to this job. The tolerances I had to work with were lower than you would usually expect in a theatre."

THE EARTH MOVES

Egleton agrees with Thomas about the contribution the recent stage refurbishment has made to the production set-up. "Without the Dominion's floor refurbishment, there's no way we would've been able to install the Earth Piece in the time frame that we had available. Brilliant Stages built and projectmanaged the installation of the Earth Piece, but Unusual's crew chief and lead rigger Harrison Snelling worked very closely with Brilliant to come up with a safe and effective way of achieving the install. Without the modular floor, this would've been a complete nightmare to achieve."

Client services director of Brilliant Stages, Toby Van-Hay comments: "Our brief for this show included steps for the Trap Room, the Sand Lift and, of course, the Earth Piece with its extension, the Earth Tongue. The Earth wagon structure consists of an 8.3m wide SL-SR by 8.9m deep US-DS open platform frame spanning and cantilevered around flat trusses spaced 3.7m apart and clevis mounted downstage to the house floor steel. The top plane of the pentagonal shape is clad with flat tubing frames on 0.6m tube centres to receive the top scenic plywood layer at CTS. The organic shaped perimeter of the unit, at 200mm minimum width is provided by CTS and contains the pyro trough on top and the masking soft goods below."

Van-Hay goes on to describe how the Earth is engineered to tilt and extend: "The heavy scenic platform is pivoted up to

24° maximum and has a max linear lifting speed of 125mm/s by dual link arm column clevis's mounted to carriage guides in dual vertical Winkle channels in steel truss and driven by Serapid LinkLift 80mm rigid chains. The Serapid chains are driven by SEW helical bevel gearboxes and coupled to 8kW AC SEW servo motors with integral brakes and absolute encoders, all controlled by Absolute Motion Control (AMC). The mechanics directly lift the upstage end of the Earth platform frame, but also carry the integral Sand Lift axis, Tongue telescope axis, scenic cladding and over 20 live performers."

He continues: "The Earth Tongue is a 3.3m wide by 6m long steel-framed custom cantilevered platform that stores retracted under the downstage centre of the Earth platform structure and telescopes out up to 2.9m at 0.3mps max speed. The unit is guided in dual heavy duty Winkel channels integral to the inside of the Earth platform main trusses - the Tongue mechanism notches around the Sand Lift assembly inside. The Tongue axis is hardwired and interlocked to the Earth platform tilt with redundant switches, so the Tongue cannot extend when the Earth platform is above a 9° rake and the Earth platform cannot tilt above 9° with the Tongue extended. When fully extended the Tongue can sustain up to four performers.

"The inner Sand Lift raises a single performer on a 4° raked 800mm square platform that can be lifted up to 2.1m. The entire Inner Sand Lift assembly raises with the outer Sand Lift assembly and can be used at the same time. The inner Sand Lift can be used with the Earth platform at any angle from 4° to 24° tilt. There's also an outer Sand Lift which can carry two performers from the Earth Piece platform top upward. The lift mechanism is mounted inside a structural frame mounted at a 12° angle in relation to the Earth platform, or 16° off plumb. The entire inner Sand Lift assembly raises with the outer Sand Lift assembly and can be used at the same time."

"The Earth Tilt and Tongue are very interesting and groundbreaking pieces of stage engineering," remarks Van-Hay. "Whilst based on standard off-the-shelf components, the total elements had to push the boundaries to the maximum. In order to fully carry out the pre-build and testing, Brilliant built a Layher based mock-up of the Dominion trap room which allowed us to not only fully test the assembly but review the installation methodology. Due to the offset nature of the Tilt unit, a 1,750kg

🕞 THEATRE

counterbalance was also part of the stage engineering just to ensure compliance with the motor capacities. The Tongue element is like a huge tuning fork - it had to be designed to operate around other elements of the Earth platform. Structural engineering was complicated, as the direction required load to be applied to the extended 'tip' of the Tongue, so huge loads were transferred by the Winkel bearings back into the structure. We built all the elements at our workshops, tested and approved by the clients prior to installation. This also allowed AMC to prewire the safety systems and complete limit checks, and enabled Lloyd to view the Earth Piece and the Tongue in action."

Remarking on the new stage, Van-Hay says: "As Lloyd and Emily have said, the new stage is just superb; a testament to Unusual. The palleted stage could be removed for the lifts and allowed for easy access into the substage - which was extremely empty. Working with Unusual and the local crew, we were able to open the floor to hoist basement elements into place, and then replace the floor to allow works to continue on the stage itself. Without the palleted system, load-in and installation would have been near to impossible. We did have to create some load spread plates to assist

with load bearing ground pressures in the basement, as the core floor on the basement is still a little 'delicate' to take serious point loadings. The ability to work on the stage platform channels and secure well to the steel work was really suitable for this show."

As already credited by Van-Hay, automation of the mobile set pieces is by AMC. "We were contacted by Lloyd in June 2019, prior to a design being finalised," opens AMC's Ben Phillips. "The scale of the production was apparent from our initial meetings. Not only was this production being staged on one of London's largest stages, but the desired effects we were asked to work on were enormous. Being involved at this stage allowed us to collaborate with engineering firms prior to drawings being penned. The final design managed to encapsulate the large-scale dramatic effects required for a West End production of this calibre. We had just three months prior to installation so we needed to guickly and efficiently communicate and liaise with the engineering and scenic building firms [Brilliant Stages, Adder Engineering, CTS, MDM Props, Setup Scenery and Triple E].

"From an automation perspective, the staging is centred around the Earth





The Sand Lift . . .

. . emerging through the Earth Piece and the ring of fire during rehearsals

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Cast and crew (front, from left): Jeremy Murphy (mix engineer), Gareth Owen (sound designer), Dave Rose (musical director), Dominick Amendum (supervision & musical arrangements) and Philip LaZebnik (playwright)

Piece. We were tasked with facilitating the precise, safe and repeatable movement of these separate elements by means of electric servo motors and centralised computerised control. In order to safely move the Earth Piece (which fully-loaded weighs 6.8t) from 4° to 24° we integrated Brilliant's 8kW braked servo motors, with an additional six Mayr Silenzio brakes. These are driven by two 25A drives, which, along with the Tongue and the Sand Lift effects, are all integrated with our standard rental Rack[Four] motor control cabinets. Whilst from an audience perspective the combination of pieces may seem seamless, in reality, the interaction between these elements is guite intricate. Two hazard zones contain safety edge detection, which if struck prevent all motion on the Earth Piece. An enabling handle requires local personnel presence to permit motion on the Sand Lifts. To make space for the Tongue to extend into the auditorium, a section of the Pit Wall has to be lowered, therefore the wall is interlocked with the Earth Piece, preventing the Tongue from extending if the wall is not fully down. The Tongue can only extend when the Earth Piece is tilted at an angle between 8.5° - 8.7°, therefore safety interlock switches are installed on the mechanical tilting system to ensure that this angle is achieved prior to allowing motion on the Tongue. Similarly, more interlock switches prevent the Tilt from moving when the Tongue is extended".

He continues: "In addition to the Earth Piece, we also provided control of a drop-and-slide, a large trap door upstage of the Earth Piece. This is used heavily throughout the show to allow performers to enter and exit substage. We also provided control of the Levitation effect and six large endless-tracking string curtains, which provide lighting and projection surfaces. These are custom synthetic strings which are attached to a closed loop of chain, housed within Triple E curved tracks.

"Our Desk[Five] console provides centralised control for all of our controlled effects. CCTV cameras provide further feedback for the operator to see in the dark, and provide sightlines to areas not directly visible during operation. Operation is separate from any other show control that exists on the production; it ensures the operator has safe and complete control over any automated scenery moving. In order to synchronise the movement of automated projection surfaces, we supplied our standard rental tracking interface (based on the PosiStageNet protocol), and transmit the position of each automated axis over Ethernet to the video department. This facilitates the disguise servers to track the position of moving scenery and adjust the position of their projected media."

He adds: "A large proportion of our time was spent working alongside Brilliant Stages; during the design phase, we worked closely with Martin Radmall and James Kempf. We visited Brilliant for seven days of pre-production testing. Finally, we were collectively able to demonstrate to Lloyd a series of possible show sequences in order to be fed back to rehearsals and the creative team - a crucial part of the pre-installation process."

LIGHTING

Lloyd Thomas introduces the show's lighting designer, Mike Billings. "The first *TPOE* production was at the TheatreWorks Silicon Valley, California in 2017, which was a co-production with the Fredericia Teater in Denmark. Mike was involved from those early days, so has been able to fine-tune the original concepts and ideas. The look now is still essentially the same but elevated to a much larger scale and more finely-tuned vocabulary. Despite the LX's journey through the red scissor department, the lighting package remained large. White Light with Louise Houlihan at the helm, were the suppliers at The Dominion and provided exemplary support throughout; Production electrician Tom Johnson and his LX had a tall order to be ready for focus, bearing in mind that for much of the load in the Earth Piece prevented access to the overheads, most of which were on custom, diverted bars."

Billings describes the design and the challenges: "Back in 2017, we had 11 moving lights and 32 colour scrollers, so now having an all moving light and LED rig has allowed for so much more flexibility and specificity. The script for TPOE has many locations: a dusty desert worksite under the harsh sun, the rippling water along the riverbank of the Nile, an Egyptian palace with a secret torch-lit room within, a lush campsite of the Midian tribe, and of course, the Red Sea that Moses parts to lead the Hebrews to freedom. I was inspired by a lot of the natural lighting found in these locations - harsh sunlight, moonlight, torchlight, campfires, sandstorms, water reflections . . . Mimicking these light sources helps the audience travel with us and also informs and supports the emotional content of the scene. All these locations are represented by the look of the Earth Piece mirrored by the Sky Piece above together with a full-stage video wall in the background; all scenic surfaces are layered with projection content, which tie all of the scenic and lighting elements





FOH truss configuration and the string curtain

together into one cohesive, stylised world."

"The Sky Piece creates a giant ceiling above the stage blocking most angles of backlight," Billings continues. "We saw this as an opportunity to use some low side light angles and ideas not typical to a big musical. The choreography, by Sean Cheesman, contains a lot of stylised movement and uses the bodies of the ensemble to morph into shapes of chariots, brick walls and the Nile river turning to blood. This required me to rely heavily on very low side-lighting to really accent the human figures and the shapes they were morphing into as an ensemble. Although born out of necessity, this allowed me to create different layers of colour and texture from upstage to downstage."

From this artistic perspective, Billings had to make some hard choices on rigging points and fixtures: "The rigging was very flexible but heavily subscribed. My challenge was trying to fit lights in-between all of the scenic, flying, pyro, projection, and sound elements. The string curtains FOH was an additional element from the earlier shows and presented their own challenges. We definitely had to make compromises between all departments to

make everyone's elements share the real estate overhead.'

On his choices of fixtures, he says: "I tested many profile moving heads in search of the ultimate workhorse that could act as a regular side light in one cue but then be the brightest, most convincing water ripple or fire effect in the next cue. Even though LED technology has made some incredible advances and is impressivelybright, the arc-lamp of the Martin MAC Viper Performance still stuck out as the brightest in a deep red or blue with a gobo and animation wheel piled on top. To fill-in as shins and front-light, I opted for the Martin MAC Encore Performance CLD. Using moving lights FOH kept the trusses much smaller and gave me more opportunities to use them in different ways: in one cue, they would be a front light special, in the next, a breakup on the string curtains."

"In the very limited space above the stage, we used the Martin MAC Quantum Wash, which helped wash and tone the scenery. Along the bottom of the backdrop were Claypaky Mythos fixtures that create some amazing beam formations in the air. Along the front edge as footlights are Martin MAC Aura XB wash lights. Meanwhile, a good number of ETC Lustr2 LED Ellipsoidals provide low and high side light, and texture on the scenic pieces. The Claypaky Stormy CC was amazing because it could strobe in any mixable colour we could make, really blending in with the look of each scene. The many atmospheric effects are created by MDG ATMe Hazers, Look Solutions Unique 2 Hazers and Viper NTSmoke Machines, and many JEM AF-1 fans. We are using three Lycian 1290 followspots because I knew they would deliver the punch I need from the spot booth in the back of the auditorium."

Summing up the project, Billings says: "This was an immensely challenging yet rewarding design. I have to thank my team: Mike Odam, the associate LD who kept the whole lighting design



team operating smoothly so I could focus on the design of the show; our programmer, Dave Totaro who is a true artist behind the desk and really helped me sculpt each cue; Tom Johnson, LX production electrician extraordinaire and Liam Sayer, a student from Guildhall who was assistant LD as part of his work placement and called followspot cues expertly through the technical and preview process."

VIDEO & PROJECTION

"Our director Scott Schwartz wanted the show to feel and look epic and biblical," opens projection designer Jon Driscoll. "I suggested that we could use engraving textures and grain throughout the design to tie it in closer to the stone built scenic design and give it a more organic feel. We steered away from any pure CGI FX, rather using CGI as a component and mixing it in with analogue effects to diffuse it. It was a requirement for the Sky Piece to be redesigned to provide brighter images; Scott is very fond of this part of the design and felt that in the past it had not been vivid enough. However, a balance needed to be struck between moments when the projection is prominent and times when it is subdued and should not pull focus. Budgetary constraints meant we had to remain with a traditional canvas face for the Sky Piece as used in the earlier productions. This required directing as much projection light as possible onto the screen to avoid being overwhelmed by stage and followspot lighting. To this end, I utilised two Panasonic PT-RZ31K 30,000 lumen projectors from opposite sides of the auditorium. The resultant combined brightness was sufficient to balance between the LED cyc behind and the stage lighting levels."

He adds: "The final part of the brief was to incorporate projection into the auditorium enveloping the audience into some of the most dramatic moments. Kevin Depinet, our set designer, devised an environment in the auditorium onto which I could project using the ShowTex string curtain. Kevin and I had both used string curtain in the past and it really disguises the Dominion architecture."

With such large mobile set pieces and screen on stage and projection surfaces FOH, the effective combination of light, set, projection and effects was crucial to running the show. Programmer Katie Pitt explains: "The [ETC] Eos lighting desk had a separate cue list for video, triggered by the main lighting cue list. This sent a MIDI show control command every time a cue was fired. This then travelled via a MIDI show control gateway into our disguise system, and triggered cues with the same numbers on our timeline. The automation system sent out PoziStageNet (PSN) for each of the axis it controlled. This came into disguise, and we could then assign the axis we wanted to the relevant pieces of set, meaning the set in the visualiser would move simultaneously with the set live on stage. The disguise system can then interpret these moves into the live projector outputs."

It's not just the hardware and software that needs to communicate effectively between departments - collaboration between creatives and crew is essential. "It was very satisfying to work closely with other departments, particularly choreographer, Sean Cheesman and illusion designer Chris Fisher," says Driscoll. "I also worked very closely with Mike Billings on cueing and achieving the colour balance between the LED cyclorama - the Glux LED was a challenging part of the system to work with - and the stage lighting. My long-term associate collaborator Gemma Carrington and I immersed ourselves in researching Ancient Egypt and developing a visual language to support the scenic design."

Speaking of his collaborators, Driscoll says: "I had a very talented team of



animators to work on the post-production. Special mention to Bob Walmsley who headed the Plagues and Red Sea sequences. Most of the team are National Film School alumni: Shay Hammias and Shaun Clark on animation; illustration was Nicole Mollet and Dan Radley-Bennett worked on the 3D model for disguise. Along with Katies Pitt, my video team, headed up by Alan Cox, was Steve Jackson, Joseph Theobold, David Callanan, Duncan Grieve and with disguise support from Mogzi Morgans. Together, we overcame some significant challenges. Differences between the CAD design and the reality gave us a few headaches, particularly FOH where we had to reposition projectors to accommodate some unexpected sightline issues. The 3D model used in the server was modified significantly during the set-up. Also, the parting of the Red Sea scenic elements were delivered late during previews. This required a lot of late night projection line-up work in order to prepare the disguise 3D model in time for rehearsals. Certain parts of the show were hard to define and it took a lot of visual auditioning. The final design only solidified during the last week of previews. This was unusual for a musical, but the end result makes it all worth it."

ILLUSIONS

Chris Fisher is a member of the Magic Circle and responsible for, as he puts it, 'acts of wonder and moments of magic and illusion'. He explains: "I was asked to help provide new moments of magic and illusion such as a new way of parting the Red Sea. This is now quite a visual feast with the use of set, automation, sound, projection, lighting and, of course, the string curtains all intertwining. It really is a culmination of all departments and creatives working together. Collaboration between myself and all the departments is critical for illusion, with lighting and set in particular," he continues. "The set needs to hide a lot of the illusion elements. For instance, we needed to make the 'parents' appear and bleed through the string curtain. We had to secretly get people into various positions and then it required both lighting and video work in certain ways, and sometimes from different angles, in order to create the effect.

"The Earth Piece is probably one of the most technical pieces of set in the West End, both in terms of engineering and scale, but also what effects it contains. One of the elements that Scott Schwartz wanted was to increase the use of fire in the production. His big vision was to have a ring of fire around the edge of the Earth Piece. I'd recently worked with Ed Samkin on *Harry Potter and the Cursed Child* - he created all the fire effects for the show - and I knew he'd be the best person for the job. He liaised with everyone involved with the construction of the piece as the various gas pipe routes and rigging had to be carefully integrated into the rest of it. The final effect is quite breathtaking. We also worked together to create a dust explosion as well as pop-up outlets for the low smoke. One of the biggest challenges for all these FX was that the Earth is a moving setpiece and has to tilt forwards at quite an angle, so installation was delicate."

"The Plagues set-piece was also quite a big challenge as we had so many elements to it. From an illusion point of view, I was overseeing a levitating cloak effect onstage, boils appearing on an actor's face and chest and a falling fireballs pyro effect. Everything had to be timed perfectly. It's probably one of the things that took the longest to tech. Some elements, for example, the pyro fireballs, couldn't be easily reset, so we wouldn't have many goes to try it. The Moses levitation illusion was very satisfying as I don't believe it's been done before in the way we did it. It used a lift set under the stage, but the way we hid the contraption was guite unique. The challenging thing for illusion in any theatre is making sure that everything reads from all angles. The Dominion is a massive theatrical auditorium and you have guite a view from the Circle down onto the stage, as well as the seats stretching far round to the sides. If just one member of the audience can see it, the spell is broken."

AUDIO

Even before considering the audio installation, it's clear that 'social distancing' is not part of the package on *TPOE*. Sound designer Gareth Owen remarks: "Looking at what else is rigged on stage and FOH, you can understand the overhead rigging was a complete nightmare - there were more than a few moments when I was very glad not to be our production manager as he negotiated a few very tricky rigging debates! Honestly, we would have been completely shafted if it wasn't for the herculean efforts of Emily Egleton and Harrison Snelling burning the midnight oil with Lloyd to make it all work."

Having been given a blank brief (composer Stephen Schwartz, director Scott Schwartz and Owen have worked together for nearly 20 years), Owen chose to use d&b audiotechnik's Soundscape system. "The PA system is all d&b, supplied by Phil Hurley at Stage Sound Services. While we have done more than a dozen shows on Soundscape to-date, this is certainly one of





the largest and easily the biggest rig of its type ever installed in a London theatre. The main arrays consist of seven hangs on nine d&b V boxes, interspersed with eight wide V sub array, also flown from the main truss. This is then augmented by B22 and J-Infra subs on the deck as well as an assortment of smaller E8 and E6 boxes as fronts fills and infills, rigged by production engineer Dom Bell and his team. Delays-wise, we opted for a rather large cabinet - the d&b Y10P in horizontal format. We felt that with the depth of the auditorium and the distance from the main PA, delays with a bit of punch would be required to keep the sound consistent all the way to the back. We also deployed the first four d&b B8 subs used in the UK as delay sub woofers to help us get low end energy to the back. Finally, we also deployed a rear-only surround system, made up of E8s and E6s as appropriate, allowing us to bring the orchestra and vocals into the auditorium as appropriate."

On stage proved just as problematic as FOH space-wise. "Cast foldback was one of the trickier aspects of the show," says Owen. "Every time we thought we had all the speakers in the right place and the coverage even, another piece of scenery would move or another piece of string curtain would be adjusted and we'd have to start all over again. It was not the easiest of processes but we eventually managed to use a combination of V7Ps, Y7Ps, and E6s to get all of the parts of the stage covered."

When it came to mic'ing the cast: "We worked closely with Wardrobe and Wigs. Some actors had to wear three packs (double mics, plus tracker) so using the Sennheiser 6000 series with the new and incredibly small 6212 packs coupled with the DPA 4061 mic capsule, work perfectly and sound fantastic. I have to thank our backstage team, A2 Wes McCann and A3 Alice Brooks for doing such a great job. They were helped in their efforts by a WaveTool monitoring system, allowing them to walk around with iPads to check the radio mics backstage."

Owen continues: "Having the reasonably large band in the pit was something I was very excited about - it's always great to hear the orchestra power emanating from the pit, particularly with such a dramatic score as *TPOE*. Then I discovered that the stage was going to come over the top of most of the pit, effectively blocking the sound. While disappointing, the cinematic aspect of our sound design means that we have the full orchestra in the full sound system pretty much all the time, so in reality it wasn't an issue. My initial plan for monitoring was

No 'social distancing' available for lights and d&b line arrays



that the orchestra would play together in a traditional manner with a very limited amount of monitoring. While a noble gesture, it quickly became apparent that this wouldn't be a workable solution, so we opted for our go-to monitoring system - the Allen & Heath ME-1 individual mixers, driven from the DM64 rack."

Moving onto the mixing desk, he says: "My console of choice is the Avid S6L and we spec'd it again for this show, coupled with the pre-production S6L-tc theatre control console a custom-designed GOS console extension for theatre operation. Pretty much all the processing was done in plug-in land, using a combination of tools from McDsp, Sonnox, Flux and Empirical Labs. We also make quite extensive use of the Avid range of plug-ins, coupled to our one external piece of outboard - the tc Electronic System 6000 surround reverb. We also coupled the Soundscape system to the TiMax D4 tracking system to provide full XY tracking of the performers as they moved around the stage. This, along with the beta version of the GOS software package EnSnap (written by Russell Godwin, EnSnap is a snapshot, timecode and tracker management package for Soundscape), resulted in a hugely powerful immersive audio control system - something that associate sound designer Matt Peploe used to full advantage when programming the show. As well as Wes and Alice, I was lucky to have Tom Aspley as A1."

He continues: "Pre-recorded click tracks are kept to the bare minimum, mostly being used for synchronisation between departments as we are responsible for feeding timecode to both lighting and video as and when required. Sound effects, on the other hand, were a complicated and demanding thing, particularly for sections of the show such as the parting of the Red Sea and the Plagues. Like many shows, we currently rely on Figure 53s QLab software to make this work for us."

"The Prince of Egypt was, without doubt a huge collaboration between the creatives and the crew," concludes PM Lloyd Thomas. "Working at The Dominion is a dream, headed by the incredible Dave Sutherland: all his technical staff at the venue are professional, adaptable and extremely hard working. It is not always an easy task to balance the requirements of every department and providing solutions to the near-impossible but I'm proud to say that what we have achieved is remarkable."

The Prince of Egypt at The Dominion is currently paused due to the coronavirus pandemic. $\textcircled{\sc opt}$