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RENAISSANCE WOMEN



The basic layout is a kind of concert-touring look featuring a glossy stage deck backed by risers.

The musical *Six* comes to Broadway with a unified visual concept and sophisticated sound design

By: David Barbour

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roadway's first post-pandemic hit is the musical *Six*. Having had the dubious honor of opening on the night of March 12, 2020, just as New York City was going into lockdown, it had to wait a year and half before the reviews came in. Fortunately, they were favorable: "A rollicking, reverberant blast from the past," wrote Jesse Green in the *New York Times*. Already a buzz magnet thanks to a sizable youth following jazzed on the original cast album, *Six* has settled in for a long run at the Brooks Atkinson Theatre.

The six of the title are the wives of Henry VIII, a company of wronged women whose place in history is guaranteed by their mutual spouse. This is pop history; presented

as the ultimate girl group, they reclaim their stories in a competition to decide the most consequential ex-queen of them all. The attitude is sassy and wisecracking; the ladies' histories are grounded in solid historical scholarship. It's the Tudor edition of the *Real Housewives* franchise, a Hilary Mantel-meets-the-Spice-Girls mash-up that doubles as a paean to the power of women.

Originally produced with a cast of students at Cambridge—authors Toby Marlow and Lucy Moss are graduates of the university—*Six* played two engagements at the Edinburgh Fringe Festival before moving on to London, Chicago, and now New York. Also in the mix are UK/Ireland and Australia/New Zealand tours. Lighting

designer Tim Deiling spoke to *LSA* from California, where a production was teching on a Norwegian Cruise Lines ship. Clearly, these queens travel well.

For a quick refresher, they are, in chronological order: Catherine of Aragon, who married Henry after the death of her first husband, Henry's older brother Arthur. When she failed to produce a male heir, Henry went looking elsewhere. Catherine protested vigorously, earning divorce and banishment. His alliance with Anne Boleyn cooled when, again, no male heir arrived; accused of adultery, incest, and treason, she was beheaded. Jane Seymour, many argue, was Henry's one true love, not least because she produced the longed-for son, Edward. But her health failed, and she died after giving birth. (Edward, crowned at age 10, died six years later, paving the way for Elizabeth I, daughter of Anne Boleyn.) Anne of Cleves (called Anna in the show) had a seven-month run as queen, ending in an annulment on grounds of nonconsummation. Katherine Howard came with baggage in the form of a probable prior affair with a courtier; for her indiscretion, she was executed. Catherine Parr had been married twice but was a pious, learned woman who outlived Henry; later, she caused tongues to wag by taking a fourth husband: Thomas Seymour, brother of Jane.

The Broadway production is also the largest of the musical's iterations, so much so that it has now been implemented in London. Aside from the cleverness of its book and score and the smart direction of Moss and Jamie Armitage, the show succeeds because of its unified visual design and unusually sophisticated sound.

Scenery/video

Talk to any of the *Six* designers and, sooner or later, the name Beyoncé comes up. (Marlow told the *New York Times* he refers to Beyoncé and Lady Gaga as "my mums." In another interview, he said, "There are so many Beyoncé references throughout the show.") The pop star and her unique stage shows provided a solid jumping-off point for the creative team. Scenic designer Emma Bailey, who came onboard in April 2018, in time for the first professional UK tour, says, "Lucy was very clear about how the show was going to go; she had been working with Toby on this for a while."

(A new face in the US, like the other members of the creative team, Bailey's recent credits include *Little Wimmin*, by the feminist collective Figs in Wigs; the well-reviewed *Super Duper Close Up*, by the theatre group Made in China; and *Dirty Crusty*, by Clare Barron. She has also designed pre-pandemic productions of *Romeo and Juliet* and *The Playboy of the Western World*.)

The show's brief, Bailey says, was "all about the queens, those six women onstage, with musicians, as a girl group. We wanted to make it as democratic as possible; there is no hierarchy in that space." A certain simplici-



ty was also important, she adds: "We didn't want to have loads of things popping up and upstaging the performers. As the show moved from the Fringe to a small London theatre, back to the Fringe, and then to Chicago, it was clear that we couldn't have a lot of mechanics or automation. We needed to play festivals and various playhouses



Located upstage are nine frames, shaped like Gothic windows and lined with LED pixels; these were suggested by rood screens, partitions used in Gothic churches, Bailey says.

and do it without a hitch. That's why it is what you see: The Tudor court and the bandstand."

The basic layout involves a glossy stage deck backed by two risers for the musicians. Behind them are nine

frames, shaped like Gothic windows and lined with LED pixels; further upstage is a curved mesh screen consisting of LED pixel tape. The LED screens and pixel frames provide a variety of images, including flowers and crosses,

while also executing chase and pulse effects.

“The idea of the pixel frames is they’re rood screens,” Bailey says, referring to the partitions used in Gothic churches to separate the chancel, where the clergy sat, from the nave, home of the congregation. Rood screens “are silhouetted; you get these amazing archways made of wood and you can see through them. The pixel frames have a traditional silhouette shape, and, to make them more modern, they are embedded with LEDs. Each vertical in each frame has a channel of LEDs in aluminum or steel. Each is individually controlled. You can flash them, chase them, make solid colors.”

Bailey worked closely with lighting designer Deiling on embedding the LEDs, as well as conventional automated lighting units, in the set. (She says, laughing, “When we were doing it, we were fan-girling and fan-boying on Katy Perry and Kanye West.”) The Broadway set, the most elaborate iteration to date, contains 46,442 pixels.

Media is delivered to the mesh screen via a PRG Mbox media server, connected to the lighting department’s ETC Eos console. (PRG is the lighting and video supplier for the Broadway production.) PRG built generative effects in Mbox for the pixel frame LEDs; doing it this way, in place of custom video content, streamlined the cuing and playback.

“Mbox is typically used for LED or projection, so using it to animate the set of *Six* is a novel deployment,” says Matt Corke, Mbox product manager. “However, Mbox has one of the most well-developed pixel-mapping mechanisms and it matches action onstage very well. The main lighting console [an ETC Eos Ti] is controlling Mbox, thus reducing people, gear, and expense that might otherwise be required. At the same time, the power and flexibility of Mbox has allowed the lighting team to expand the scale of the show without compromising the design.”

Bailey also collaborated closely with sound designer Paul Gatehouse, creating a felicitous layout for the musicians, and providing room in the set for many built-in loudspeakers. “I’ve done a bit of live music design, at Glastonbury and for other pop acts,” she says. “As a singer, you tend to want the band quite close to you; that relationship is important. So, I didn’t want to create too much distance between them. Paul likes the speakers to be as close to the performers as possible, and we need to have a meaty pop sound. There are lots of speakers in the set, under the rostrum and behind the walls.”

In a way, designing *Six* is an ongoing task, given its many permutations. “The main challenge is the range of spaces it needs to go into,” Bailey says. “It’s been really hardcore, keeping the essence of what we have designed but also understanding that we’re going into a space where the stage is a little bit shorter, or the room is a little bit smaller. That adaptability is important for the creative team and producers.

“On Broadway, we have found a good resting place.

Before that, the show was still growing. Even going on the cruise ship, it wasn’t entirely ready, but it works fabulously there. Australia is a different beast; they came onboard with the first London residency and that’s the show they wanted. Our original West End home was the Arts Theatre, but with the pandemic it was too small; you couldn’t socially distance there.” With the move to the Lyric and then the Vaudeville Theatre, the show is now on the Broadway scale. For an upcoming international tour that will take in Asia, the venues will be larger. In all cases, Bailey notes, the challenge is the same: to provide the “wow” factor of a pop concert in a theatrical context.

Lighting

Deiling, an American who has made his career in London, has credits that include the West End production of *American Idiot*, the Munich production of the musical *Amélie*, *Guys and Dolls* at the Barbican Center, and the inevitable pantos, plus plays like *The Sweet Science of Bruising* by Joy Wilkinson and William H. Hoffman’s AIDS-era classic *As Is*. But the gig that may have most recommended him to the producers of *Six*, he says, was his ongoing work with West End Bares, the risqué annual revue, spun off from Broadway Bares, that has raised hundreds of thousands of pounds to fight AIDS. West End Bares calls for a certain show-business panache that is ideal for the assertive heroines of *Six*.

Once again, a certain pop star’s name is evoked. “Beyoncé’s narrative pop concerts, where she tells you parts of her story, is what inspired the authors of *Six*,” Deiling says. “Each of our six queens are actually influenced heavily from contemporary pop divas—Aragon equals Beyoncé, Boleyn equals Katy Perry, Seymour equals Adele, Cleves equals Rihanna, and Parr equals Alicia Keys—and I needed to differentiate between each queen, so we drew on reference material from each of them.”

Deiling says he prepped the design “starting with me in my bedroom, with an Ion console. I think we had 12 hours to tech it originally, so everything was plotted ahead of time. Of course, some ideas are great in the bedroom, but they don’t pan out. We got through tech and had two weeks to iron it out. Since then, it’s been more of the same, with scenery added.” In any case, the coordination of lighting and pixel effects works seamlessly.

Deiling, who notes his close collaboration with Bailey, also drew on others for help. “My friend Mike Atkinson, who has shelves of gizmos and gadgets, helped me engineer the LEDs in the pixel towers. He soldered all of the original pixel tapes. Of course, the towers are now built by a team of people. Originally, to keep costs down, we had only three LEDs per pixel, for a lower resolution wall; it kept down the number of drivers and power supplies. For Broadway, we added LEDs to the backsides of the towers.



Bailey worked with Deiling to embed many lighting units into the set design.

Going forward, we're using custom PCB boards with LEDs on them; it's another way of perfecting the build."

Setting up the video system on Broadway, Deiling says, "We had issues with different drivers; this is a setup that not many people have done before. We flew in people from ENTTEC [the driver manufacturer] to help us. It's such a massive setup, with so many LEDs and so much wiring. They were constantly updating software on the drivers, allowing us to chase gremlins, which was very helpful. It's such a dense installation."

Deiling's design often floods the stage with saturated color. "One of the first conversations I had with the directors was about color-coordinating the queens, an idea also presented by the costume designer," he says. "What if each of the queens has a specific color palette?" This idea is rigidly applied: "We try to stick to the rules, for the most part." He notes that, in Gabriella Slade's costume design, "each queen has a silhouette and a distinct color," which gives him something to work with. He saves two colors for special purposes: "The opening is purple, with gold accents, and the finale is gold with purple accents."

The overhead rig includes plenty of Martin by Harman MAC Encores (also on the front-of-house truss and box booms), Mac Quantums (identified by Deiling as a work-horse unit) and Mac Aura XBs, plus Claypaky Sharpy Beams and Sharpy Washes. The Encores and Quantums provide most of the gobo looks, which include wallpaper, radial breakups, and Tudor roses. Speaking of the incandescent Sharpy Washes, Deiling says, "They can do so much, and they look better doing it than any LED unit. It's the one fixture in the rig that we don't know how to replace. There are massive LED washes that would do it, but with a whole different look. There's a difference looking into a massive array and it being distracting."

For the number "Haus of Holbein," about Henry's search for a German bride via the paintings of Hans Holbein, Deiling says, "We wanted to use blue and green lasers but that would have been really expensive and challenging because of state regulations. PRG introduced us to the ROBE Spikie and we were able to put lots of them around the auditorium to create an intimate, immersive night club feel. With its narrow beam, the Spikie emulates



The performers' handheld mics feature Sennheiser's Digital 6000 Series with DPA d:facto 4018V vocal heads.

a laser but at half the price." The units are located on the proscenium booms and far box booms. Two proscenium arch portals, used only in the opening and closing numbers, feature Mac Quantums and Show 510C strobes. Adding more pizzazz are Ayrton MagicDot-Rs and MagicDot-SXs (located in the pixel frames with ETC Source Four PARs), and SGM P-5s.

Control is via an ETC Eos Ti console. "Before we came to Broadway," Deiling says, "we had a special [ETC] Gio that was expanded for 80,000 parameters to handle all the pixel-mapping." Mbox, he adds, "takes the processing off the console. It gives us more flexibility with what we do with the content, which is great."

Deiling maintains that most of his gear choices were based on cost and availability, which is appropriate for a show that began small and has grown with each new iteration. "Recently, I said to the producers, 'If you had given us \$6 million—the Broadway budget—from day one, we would have come up with something totally different, and it would have been totally wrong. As we developed from the Fringe to Broadway, it started with the band platform

and the pixel frames. Then we added a portal for Chicago, as it was our first large stage, and a second portal for the next version. It evolved as the show got bigger and we were presented with new problems to solve. Now we have six different versions." A lucky number, that.

Sound

The score of *Six* reflects a style of pop music that doesn't prioritize lyrics, yet Marlow and Moss have provided witty, intricately rhymed words that are key to understanding the characters. With six hard-driving heroines, the threat of sonic overkill is omnipresent. Yet Gatehouse's sound design never overwhelms and—thanks to a cast with clear diction—the lyrics are thoroughly intelligible.

"I had a very clear brief from Toby and Lucy," Gatehouse says. "Beyoncé's [video album] *Live at Roseland* was a massive influence, musically and stylistically. I love working across all genres, but this pop music score allows us to really dig in and provide a high-impact backdrop to the storytelling. Because the musical is presented in a concert format, we can make elements like



"We want a big, punchy sound but need to balance it against intelligibility and presence." Gatehouse says. "That's a tricky line to tread."

handheld mics and custom-molded IEMs play to our strengths."

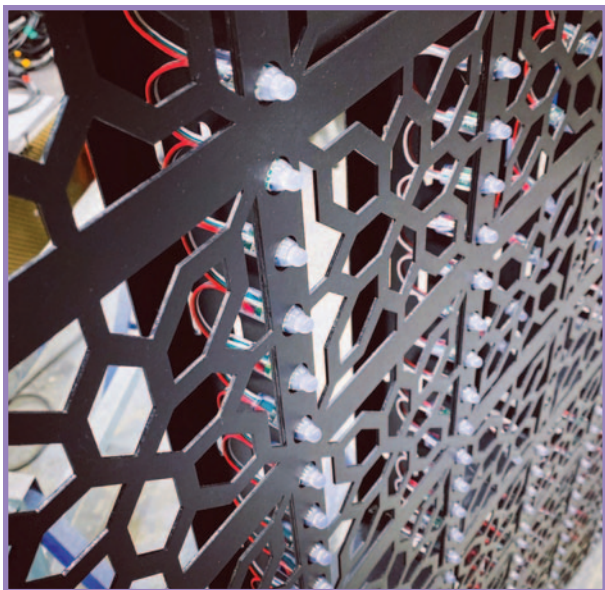
Unlike his colleagues, Gatehouse has worked on Broadway before, as an associate designer on *Phantom of the Opera* and *The Woman in White*; his design credits include *Oliver!* (in Japan) for Cameron Mackintosh, the West End revival of *Mary Poppins*, the previously mentioned *Amélie*, and a production of *Rent* in Manchester.

Gatehouse notes that the Broadway production involved many upgrades. "We transitioned from a conventional left-right proscenium-based loudspeaker system to using d&b [audiotechnik] Soundscape. Vocals are the heart of the show, so the localization of Soundscape instantly connects you to where the queens are and the detailed harmony work that's going on. Our 'Ladies In Waiting' live band are augmented with certain production elements on track, played back from QLab for the tight metronomic sequenced sound. Our sources afford us a lot of manipulation and movement in the space. Soundscape allowed us to expand on what we had, putting it into three dimensions. We were able to add surround to the production for

the first time."

Vocal clarity was a primary goal. "There's a lot of comedy and historic information to get across, and a lot of wit in the lyrics," Gatehouse says. "The localization [of Soundscape] takes you instantly to where someone is and what they're saying. Your brain doesn't have to decode it from a stereo system. We want a big, punchy sound but need to balance it against intelligibility and presence. That's a tricky line to tread. You have to control the loudness contours and frequency balance; there's nothing worse than being bombarded with sound when you haven't taken in what's going on in the plot. Managing the spectral balance to where the show sounds big and 'loud,' but perfectly comfortable and intelligible is something I devote a huge amount of time and thought to."

Happily, he says, "The acoustics at the Brooks Atkinson are not too long and reverberant. Especially because we have that prominent low end, we don't want it to hang on forever. It needs to speak quickly and be kept in check. Reverb time can be a challenge in any theatre, depending on the genre of music; you're always trying to work with



A closer view of the LEDs embedded in the pixel frames.



The pixel frames are placed downstage of the curved mesh screen consisting of LED pixel tape.

the room rather than against it. And Soundscape gives you that separation in three-dimensional space; you can spread things out into their own sonic space and allow the sound to breathe.”

Unsurprisingly, given the choice of Soundscape, the loudspeaker system is made up of d&b gear. “I like the way they voice their systems,” Gatehouse says. “They bring something to the party right out of the box, especially in *Six* with the coherent impact from their low-frequency boxes. We deployed a big horizontal sub array, using V-Subs and SL-SUBS, to expand the frequency range.”

Altogether, he says, “We’ve got five arrays of AL90s, which give us our overlapping horizontal coverage for Soundscape. Above that is a horizontal sub array of six V-Subs and three SL-Subs plus a system of delays and fills. It’s a high-resolution system in terms of coverage. We’re breaking all the golden rules of sound system design, not dividing the auditorium into isolated zones, but rather overlapped dispersion to create a high lateral resolution which object-based mixing requires.

“It’s a completely different ethos,” he continues. “But you once you understand that and hear what object-based mixing can do, it becomes hard to go back. Working with a conventional left-right system, there’s only one sweet spot. As soon as you move off center, you have increasing amounts of comb filtering. But Soundscape provides even frequency and SPL coverage over the whole house.

“Underbalcony delays are really important with Soundscape,” Gatehouse says. “You’ve got to make sure they match the relative SPL and frequency capabilities of the rest of the system. We have [d&b] E8s, with five V10P [point sources] covering the mezzanine level. [The theatre

has a mezzanine, with no second balcony.] For the surround, we have E6 [point sources].”

The performers’ handheld mics feature Sennheiser’s Digital 6000 Series with DPA d:facto 4018V vocal heads. “It’s a very specific design choice in terms of tonality,” Gatehouse says. “I’m looking for a very clean, poppy vocal sound.” With the four-person musical ensemble (keyboard, bass, guitar, and drums), he says, “A lot of our sources are very direct. For example, we have a full-size electric drumkit, plus real cymbals and hi-hat.” Interestingly, he adds, “All the musical instruments are owned by production and were chosen specifically for their sound.” The live performance is augmented by playbacks from QLab along with time code for lighting control: “There’s a lot of technology on this show. It’s a fun one to be part of.” He adds that he and his team, including US associate sound designer Josh Millican, assistant sound designer Joseph Haggerty, and production engineer Dillon Cody, worked closely with Marlow, Moss, orchestrator Tom Curran, and vocal arranger/music supervisor Joe Beighton to create the show’s signature sound.

The sound is controlled using a DiGiCo SD7T Quantum console; in addition, for processing Gatehouse employs Universal Audio UAD Live Racks “for a big pop sound with multiple of layers of compression and dynamics management. I love the Universal Audio stuff. It’s connected to the SD7T over MADI. We have them directly inserted over instruments and vocals in various ways; they also provide our reverbs and ambiences using the Lexicon 224, EMT 250, and Ocean Way Studios plug-ins.”

In addition to the spatialization offered by Soundscape, Gatehouse uses OutBoard’s TiMax Tracker D4 system for

positional tracking of vocal objects. “Each queen has a TiMax D4 tag sewn into her costume, which triangulates her position and sends it into the d&b DS100 signal engine using an OSC string. This gives us vocal tracking in real time. Other static and dynamic music content is recalled through QLab. Each song is different. Some have lots of dynamic movement and ear candy; in others, like [the ballad] ‘Heart of Stone,’ we’re going for a warmer, more immersive sound. The singer is the focal point in the center, but we have keyboard pads and atmospheres moving around her. It gives you a richer palette and heightens emotion.”

The performers wear custom in-ear monitors supplied by 64 Audio. “We’re using the A3e triple-drive model for the queens and band,” Gatehouse says. “This allows us to give each queen a controlled environment to work in, and not battle for the same sonic space as the other queens.”

“The band is also set up with Roland M48 personal monitor mixers. IEMs are managed from the front of house, not from a monitor position. The queens themselves hear pre-fade and post-fade mixes of the other vocals, which follows the front-of-house mix; it works well.”

“Everything is very direct and controllable,” Gatehouse

says. “The production really is a great marriage of high-quality writing, brilliantly crafted sounds, and the latest audio technology. It’s great to be part of a tight-knit team. I feel more akin to a music producer than a sound designer on this show. It’s a very specific setup to create a very specific sound, which heightens that engagement and emotional response from the audience—seeing how people connect to this show and identify with the queens and the band onstage is hugely rewarding.”

Additional personnel on *Six* include Bonnie Panson (production stage manager), Christine M. Daly (stage manager), Rachel A. Zucker (assistant stage manager), Yu-Hsuan Chen (associate scenic designer), Paul Toben and Timothy Reed (associate lighting designers), Victoria Bain (assistant lighting designer), George Reeves and Jason Lee Courson (digital media consultants), Andy Cappelli (production carpenter), Eric J. Abbott (production electrician), Scott K. Tusing (with Toben, a moving light programmer), Brent Oakley and Billy Staples (followspot operator), Mike Tracey (associate production sound), and Kate Munchrath (deck sound).

On Broadway, as apparently everywhere else, *Six* appears to be settling in for a long run. It’s a major victory for Henry’s queens; long may they reign. 📶



Above, left: Lighting units are embedded in the pixel frames. Above, right: An illuminated pixel frame.