


# MONOLITH MAN

*The (R)evolution of Steve Jobs applies a high-tech patina to the story of a digital genius*

By: Ben Coolik

Tzukyn's scenic design took into account the stunning desert vista that is visible beyond the Santa Fe Opera stage.





**S**anta Fe Opera's latest world premiere, *The (R)evolution of Steve Jobs*, tells the story of the enigmatic, controversial, brilliant visionary behind the world's largest information technology company: Apple Inc. The double entendre in the word "revolution" relies in its reference to not only the genesis of a major technological breakthrough sparked by the creation of the now-ubiquitous mobile digital device, the iPhone, but also to Steve Jobs' own inner revolution, from his boyhood days in the 1960s tinkering in his garage, through his increasing megalomania during the rise of the Apple brand in the '80s and '90s, to a spiritual catharsis in the face of mortality.

The opera was co-commissioned and co-produced with Seattle Opera and San Francisco Opera; Indiana University's Jacobs School of Music was an additional commissioner. Mason Bates, the Grammy-nominated composer, tackles his first opera score in *The (R)evolution of Steve Jobs*. Known for his style of blending electronics with orchestral compositions and also as an EDM DJ, Bates brings a modern, technology-driven ethos to the opera. He notes that approach is rooted in the libretto by Mark Campbell: "*The (R)evolution of Steve Jobs* explodes the





Above: Tzykun notes that the garage set is among the most detailed. “It was important to make the garage set grounded and the most naturalistic, since the garage is the core of Steve’s—and, in turn, Apple’s—story.” Opposite: The panels are moved by members of the apprentice stage crew, following the choreography of Chloe Treat.

concept of Wagnerian leitmotifs—the melodies assigned to various characters—into soundworlds.” Gary Rydstrom, of Skywalker Sound, who created many Mac sounds during his time at Apple in the 1990s, assisted Bates with the electronic sounds that, the composer states, included “spinning hard drives, key clicks, charming whizzes, and beeps.” Michael Christie conducted the orchestra and live electronic at Santa Fe Opera.

Following their success with the world premiere of *Fellow Travelers* at Cincinnati Opera (in June of last year), and with many previous collaborations on stage and film projects, director Kevin Newbury turned to the versatile set designer Vita Tzykun for *The (R)evolution of Steve Jobs*. Having worked with Newbury and Tzykun on *i Capuleti e i Montecchi* at Lyric Opera of Kansas City in 2013, Japhy Weideman rejoined the team as lighting designer. Benjamin Percy, project director of the New York office of 59 Productions, led the video and projection design, and Rick Jacobsohn designed the sound.

### Scenery

From the electro-acoustic score to the cohesive production design, the Apple aesthetic is front and center: crisp, yet serene, clean hard lines softened by rounded corners, with a narrow color palette of white, grey, and black and an overall postmodern minimalist approach. “It was clear

to me from the very beginning,” Tzykun says, “that the scenic world needed to be minimal, offering infinite possibilities while delivering a sense of wonder. These three qualities are at the core of Apple’s aesthetic, so it was only natural to incorporate them into the design of an opera about Apple’s founder and mastermind. It was interesting to find out where Steve Jobs got a taste for such a minimalist, streamlined aesthetic. Not many [people] know that he was a practicing Buddhist and had a Japanese-born spiritual advisor named Kōbun Chino Otagawa. Steve reveled in the beauty of Japanese design. This allowed me to dig deeper into Japanese theatre and architecture, which, in turn, led me to the show’s scenic design.”

Tzykun’s research into the roots of Japanese theatre steered her to the culture’s rich history of pictorial storytelling, known as etoki. Technological advances in Japan gave rise to an art form popularized in the 1930s and 1940s known as kamishibai. Tzykun explains, “[Kamishibai is] a form of storytelling that originated in Japanese Buddhist temples in the 12th century, and was later turned into traveling street theatre. Storytellers used picture slides that appeared from behind a rectangular frame, illustrating stories that were then narrated to the public. An idea that we think of as so modern actually has its roots in the Middle Ages.” Drawing a parallel between this visual style of storytelling utilizing “rectangular frames in which differ-



ent stories can cycle endlessly,” as she describes it, and the way people interface with modern devices on screens through “scrolling or swiping,” Tzykun zeroed in on a solution: She combined minimalism with the need to transport the audience to various time frames and locations in this modern-day, kamishibai-esque, technologically advanced time-traveling opera.

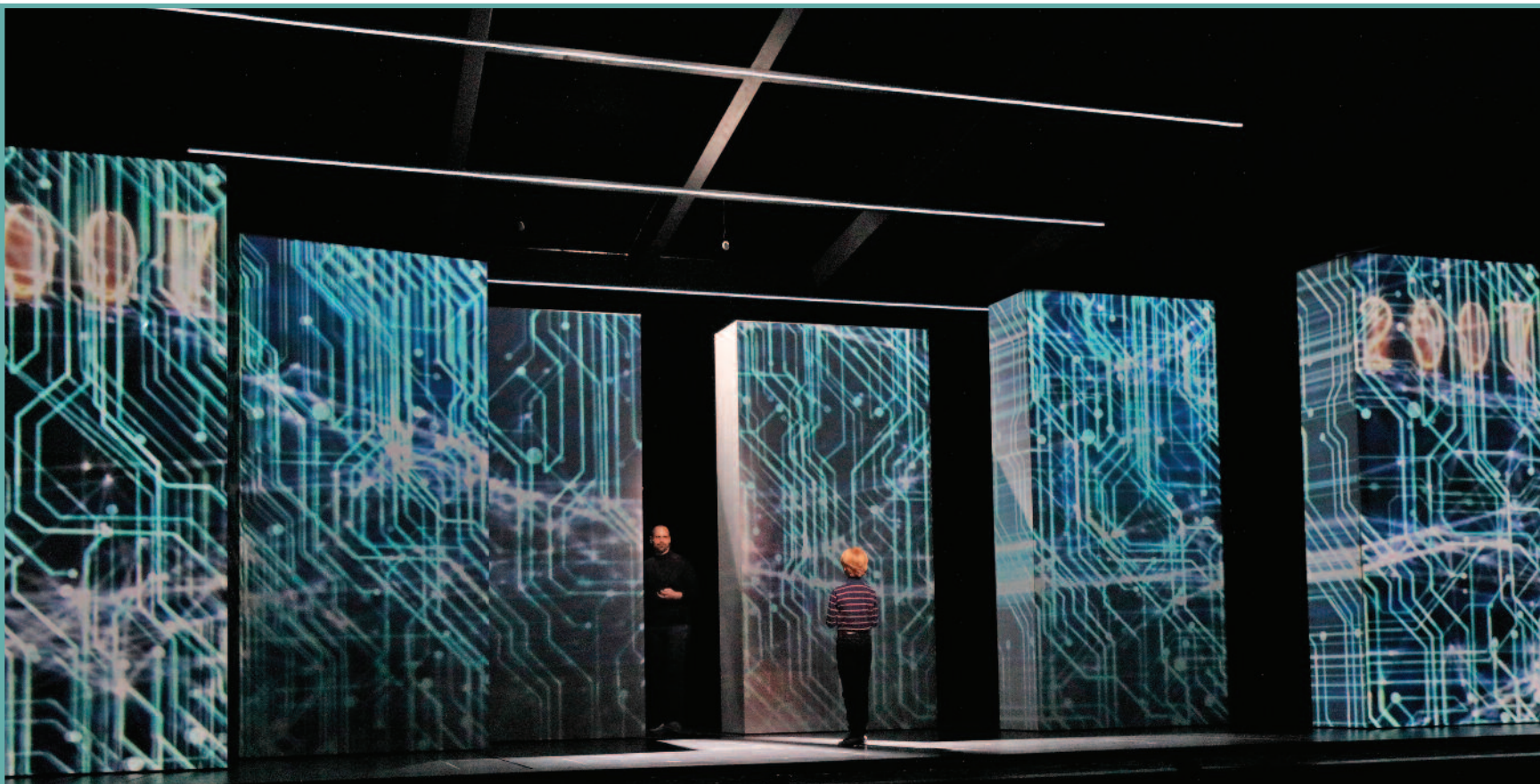
In a union of both functionality and style, the set relies heavily on six white rectangular moving panels that are 11', 6 1/2" tall, 6' wide, and 2' 6" deep. Resembling generic, hand-held “iDevices,” these free-standing modular “monoliths,” as Tzykun describes them, move into various configurations, often accompanied by minimal furniture to help establish locale. Like the iPhone, the monoliths are a marriage of simplicity and high technology; they are also simply moved.

In an age of complex stage automation, technology is here eschewed for good, old-fashioned people power. Scott Schreck, the opera’s technical director, explains, “Each panel has four triple-swivel casters with soft rubber wheels to reduce rolling noise. The base of each unit also has foam attached, to further reduce noise. The challenge

for us is always working with the fact that we’re an outdoor venue. We have a roof over the stage, but very strong winds can whip through the space. Keeping scenery from getting knocked over or torn apart by wind is part of our engineering process.”

Schreck found a solution that kept the panels upright and aligned on stage. “The show deck was built with what is essentially a giant T-track that forms the grid that the moving panels travel on,” he says. “The [panels] have a .5" steel rod with a roller bearing that rides under the deck in the track. This keeps the units from being able to fall over, and forms the basis for keeping the units lined up while we move them around on stage. The paint scheme on the deck also incorporates lines that the crew uses to keep the panels either flat to the audience or to the correct angle when turned.”

Not simple at all, however, is the precision of the stagehands’ movement in perfect symmetry, carefully choreographed by Chloe Treat, with Newbury directing the movement of the performers around them. Tzykun explains, “[The] positions of the monoliths for each scene were designed by me in advance and laid out in 3-D, as they fol-





The grid and sidewalls of the theatre are outlined in Environmental Lighting RGB LED Neon.

low a particular trajectory, starting as an enclosed cube that is exploded into [Jobs'] garage, followed by linear movements and geometric configurations, until we reach the wedding and memorial scenes, when the monoliths, for the first time, assume an organic semi-circular shape, which, in turn, restores to the garage." She adds, "Complex diagrams had to be generated for the crew by our unparalleled stage manager, Chelsea Dennis." The panels are often moved quickly forwards and backwards, left and right, gliding and rotating, with the appearance of floating across the stage. Schreck emphasizes, "The apprentice stage crew are out there every performance, making those panels move and making it look effortless. They've done an amazing job, so much so that Kevin Newbury has them come out for a curtain call!"

The high-tech aspect of the monoliths lies in the fact that, in addition to defining and shaping the space for each scene, they are fully utilized as light boxes and projection surfaces. Describing their construction, Schreck explains, "The walls of the panels are basically standard flats, using 1 x 4s and Luan, which were covered in muslin—very low tech! The light-up sections are just windows in the flats using white polycarbonate sheeting.

Inside the box is another box of plywood that sits 6" from the polycarbonate and has LED tape attached to it." Rose Brand speaker-mesh was used around the outside of the panels to create a projection surface that works very much like scrim.

Despite the heavy reliance on projected imagery, Tzykun added crucial scenic details. "In some scenes, video complements existing scenery," she says. "This is especially evident in the garage scenes, which have naturalistic set decoration augmented with projections. In other scenes, the shape of the space is dictated by the positions of the monoliths, while video gives them context. In the Zen center, the evenly spaced walls have Shoji screens projected on them. It was important to make the garage set be grounded and the most naturalistic, since the garage is the core of Steve's—and, in turn, Apple's—story, while other episodes of his life could be more transitional and ephemeral."

In order to create the core of the story visually, Tzykun—and the Santa Fe props department—went to great lengths to find or replicate period-accurate artifacts—some of which the audience doesn't even see, due to distance—to fill the garage, including an early Apple



prototype. In defense of her cinema-like attention to detail, Tzykun argues, “When designing for a large stage, we have to scale up and many small details get lost when viewed from such a distance. Nevertheless, I believe that they help performers plant themselves more firmly in the scene and deliver a truer performance.”

In addition to the moving panels, Tzykun added two other important scenic elements. A 6' 10"-wide rock pathway, made up of 10,000 rocks, spans the downstage edge of the stage. The designer says the idea came from Campbell's reference to traditional Noh theatre in the libretto: “The gravel path is an area of self-reflection into which Steve either walks willingly, or gets pushed, unwillingly, by the menacing circumstances of his life. The main stage area occupied by the monoliths thus becomes an area of active memories and life events that can either be participated in or observed.”

A large grid, a shape often found in minimalism art, serves as a false ceiling, which helps to emphasize the forced perspective inherent in the opera house's outdoor architecture as it narrows in focus to highlight the mountainous Santa Fe landscape. It was her effort to “seamlessly integrate the set into the architecture of the theatre itself and the landscape surrounding it” that lead Tzykun to the grid solution. “Rather than force a set that will cover all the walls of this very unusual space with stage side-

## Lighting

Just as the moving panels are transformed by internal lighting, the grid and sidewalls of the theatre are enhanced with an added lighting element. Environmental Lights' 24V



In many ways, the production design echoes the sleek minimalism of Jobs' products.



Weideman says that a major challenge involved keeping the panels' front faces clear of residual light.

walls angled and curved with 11'-tall openings every few feet to serve as entrances, I wanted to use it as is and enhance its beauty,” she explains.

wide-top RGB LED Neon, placed along the horizontal edges of the grid, vertical edges of the sidewalls, and the length of the forestage, underscores the minimalist aesthetic of hard lines, and works with the set to accentuate the native forced perspective. Weideman describes it as “a kind of linear light grid that can shift color and undulate throughout various sections of the opera. This grid of light serves as a metaphor to illustrate the mystical and divine unknown source from which Steve's inspiration originates. Jeff Englander, the ETC Eos programmer, was able to create a multitude of effects that works beautifully with the music and electronic effects. At times, they shift into a high-frequency flicker static state, working hand-in-hand with the video design; at other times, they slowly undulate, creating an abstract effect of moving clouds or rippling water.” The LED Neon was controlled with 16-bit DMX decoders supplied by Environmental Lights.

To transform Tzykun's moving panels into light boxes, Weideman placed 50m of QL Light Co.'s RGB LED strips, placed 6" behind the milky Plexiglas “windows” on 5" centers. Controlled with four 16-bit DMX decoders and powered by two 12V marine batteries in series, the 3,600 LEDs per panel are intensely bright. Weideman adds, “We rarely use them at above 30% unless we are going for a very powerful brightening effect. Often, we use them around 1% – 2%.” RC4Magic Series 3 Dimmers provide wireless



Above: A rendering showing the moving panels, or monoliths, in their starting position. Below: A deck running sheet gives a sense of the monoliths' complex choreography.

TIME	CUE LT	ACTION	WHO
<b>SCENE 1 – Product Launch (7:20)</b>			
3:25 7/3/3	<b>RED LIGHT A</b>	TRACK Panel #1 SR to Posit. 3 (Sc 1) – 10ct. A/F EXIT SR4 TRACK Panel #2 SL to Posit. 3 (Sc 1) – 10ct. A/F EXIT SL4	Katie & Jake Tim & Liz
4:00 8/4/2	<b>BLUE LIGHT B</b>	ROTATE & TRACK Panel #3 SR to Posit. 3 (Sc 1) – 5ct. ROTATE & TRACK Panel #4 SL to Posit. 3 (Sc 1) – 5ct. TRACK Panel #5 SR to "gap" Posit. G – 3ct. TRACK Panel #6 SL to "gap" Posit. G – 3ct.	Charlie & Frankie Venus & Reed Morgan & Robert Matt & Theresa
9:30 27/4/1	<b>RED LIGHT B</b>	TRACK Panel #5 SR to "gap" Posit. G – 3ct. TRACK Panel #6 SL to "gap" Posit. G – 3ct. HANDOFF New Phones to Chorus	Morgan & Robert Matt & Theresa Matt, Robert
10:30 32/2/4	<b>BLUE LIGHT C</b>	TRACK Panel #5 SL to Posit. 1 (Sc. 1) – 3ct. TRACK Panel #6 SR to Posit. 1 (Sc. 1) – 3ct.	Morgan & Robert Matt & Theresa
<b>SCENE 2 – Steve's Office (3:00)</b>			
10:55 35/1/2	<b>SM Cue</b>	ENTER SL4 & preset behind Panel #2	Tim & Liz
11:00 35/2/1	<b>RED LIGHT C</b>	TRACK Panel #2 SR to Position 4 (Scene 2) – 25ct. ENTER SR3 w/ desk, SET DSR of C & XT SR3 ENTER SR4 w/ rolling chair, SET US of desk & XT SR3	Tim & Liz Katie Jake
11:03 35/2/vz	<b>BLUE LIGHT D</b>	TRACK Panel #4 SR to Position 4 (Scene 2) – 20ct.	Venus & Reed



DMX control.

Given that “eighty percent of the entirety of the opera is used as a video surface,” Weideman’s biggest challenge was “to keep the front facing of [the panels] clean of residual light.” In navigating this obstacle, Weideman “found it very useful to employ strong downlighting, carefully controlled sidelighting, and also LED footlights.” In addition, he had to work with Santa Fe Opera’s five-show rep plot. Due to the extensive use of projections, Weideman explains, “The conventional [ETC] Source Fours don’t usually have the intensity we need to cut through most of our stage pictures.” As a result, he “mostly relies on [Philips Vari-Lite] VL3500 Wash lights and [Martin by Harman] MAC Vipers from overhead and front of house.” Weideman adds, “Another tool we rely upon heavily to keep the principal singers lit, while not corrupting the video panels, is a trio of [Robert Juliat Super Korrigan 1.2K] followspots.” In addition to the six Martin Mac Viper Performance fixtures and five VL3500 Wash units, Weideman’s plot utilizes four Claypaky Alpha Profile 800 STs, six ETC Source Four LED Lustr+ Series 2 ellipsoidals, 46 traditional Source Fours in varying degree sizes, one ETC ColorSource PAR, two PAR 64s with Morpheus M-Fader color-changers, and three 1.2K and three 2.5K Arri HMI Fresnels with dousers and scrollers.

Weideman’s careful collaboration with Pearcy results in a unique synthesis of lighting and video. Weideman describes a common motif used throughout the opera, in which “many transitions morph from the specific to the ethereal. Ben and I discovered we could blend the panels by shifting and undulating color with the interior LEDs in conjunction with the video imagery projecting across them. We found moments in which the color of the panels shimmer over the top of the imagery so that the eye only experiences little bits and pieces of images while being overwhelmed with bursts of color. Then we slowly pull back the color from the [inside], allowing the [front-projected] imagery to take over. [It was] a super-exhilarating toolbox to work with.”

## Video

The motif used in scenic transitions to which Weideman refers includes projected animated sequences in which circuit boards, wires, processors, and digital information pathways come to life in vibrant color and electric movement. “Early on in the process,” Pearcy says, “Kevin Newbury and I came to the realization that Steve Jobs, the person, was, in a way, very much like the products he created. He designed beautiful things that were hidden from the people who used them, much as his personal and emotional life was hidden from the people in his life. We tried to express that visually by exposing the inner workings of the machine in much the same way that the opera exposes Steve’s emotional being.”

In describing video’s role as a scenic element, Pearcy says, “Vita and I worked very closely together to develop the visual language for the show. She did some initial renders of the set in a simple unlit form, which we then worked on in Adobe Photoshop to show how various styles of content would work across the set. We worked closely with all of the creative team to develop the imagery. We had a series of meetings where we shared visualizations of the set using [d3 Technologies] Designer, [planning] transitions using screen moves and MIDI music demos from Mason Bates to work out timings.” Designer is an all-in-one tool created to allow designers, production managers, and technicians to easily collaborate in realizing designs.

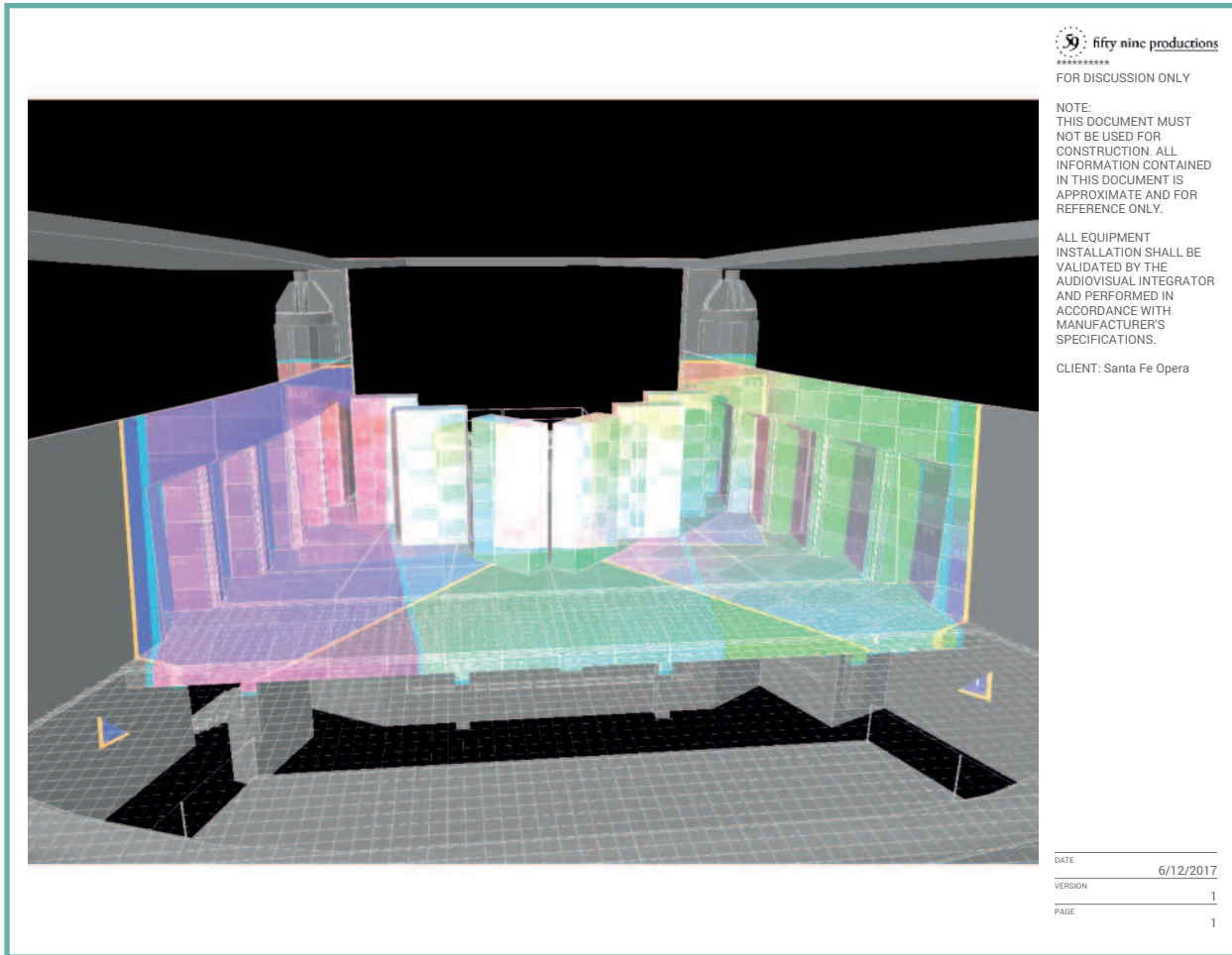
The video wraps around all sides of the panels and tracks their often-rapid movements across the stage as they are positioned for the next scene. In the more frenetic transitions, the six monoliths mirror each other, moving in opposing directions from the sides, rotating as some move upstage and others move downstage, then back again. Throughout all the seemingly chaotic, yet carefully choreographed, movement, the projections stay perfectly mapped to all exposed sides of the panels.

To accomplish real-time motion tracking and projection mapping on the three-dimensional moving panels, the production relies on the BlackTrax real-time tracking system, created by CAST Software and provided by Memphis-based DWP Live. Pearcy says, “[59 Productions] technical associate Max Spielbichler did the initial d3 project setup. The number and type of projectors was a group decision between myself and the other projection designers in Santa Fe this season: Driscoll Otto and Peter Nigrini. We sat down and worked out what was best for all three productions, using Santa Fe’s projector inventory. MadMapper [a video and light mapping software by garageCube and 1024 Architecture] was used to work out projector position, focus, and brightness.”

According to Santa Fe Opera’s lead production electrician, Travis Shupe, each panel utilized six BlackTrax BTStringers (IR LEDs) and two BTBeacons which activate the LEDs. “A major challenge,” he notes, “was the fact that since these panels rotate 360° onstage, all of the components had to be sealed inside. The panels don’t leave the stage, and there is no intermission. So we built chargers for both the LED lighting and BTBeacons into the panels. Each night, we simply attach a 120V Edison extension cord to the panel to charge all the devices. We also built in a portable USB battery brick for the BTBeacons. We were worried about their internal battery, so having the battery brick as a backup was a great solution.”

Eight BTCameras were placed around the stage to capture the position data and send it to the two d3 Technologies 2x4pro media servers driving four Panasonic PT-DZ21KU and two Panasonic PT-DZ13K projectors.





Above and opposite: MadMapper [a video and light mapping software by garageCube and 1024 Architecture] was used to work out projector position, focus, and brightness.

“Since we had three of the five operas using projections this year, we had to share the projectors and agree on a focus that would work for all,” Shupe says. His main concern was full stage coverage relying on the d3 media servers, which were recently added to Santa Fe Opera’s inventory, to internally handle image blending. “We have found the d3 to be incredibly helpful in our rotating repertory season,” he says. “The d3 Designer software gives us the ability to pre-cue and visualize what projections will look like before turning on a single projector. It is an incredibly powerful server, and allows for relatively fast programming. We programmed the shows using the internal timeline, and triggered cues from the lighting console, an ETC Gio, using OSC commands. We choose OSC over other forms of show control due to its fast setup and no need for additional infrastructure. We already had ETCNet distributed all over the venue, so we tapped one of the d3 ports into that network and were able to receive OSC commands from anywhere in the venue.”

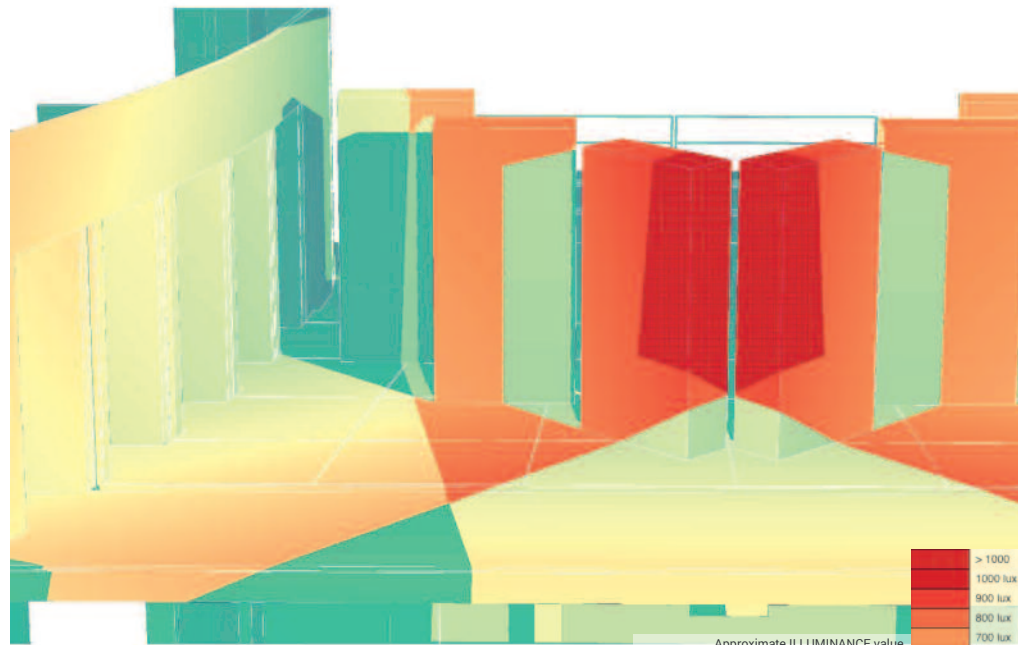
Tzykun explains how previsualization facilitated in get-

ting the opera off the ground quickly once tech rehearsals started: “I created scenery designs in 3-D using mostly [Trimble Inc.’s] SketchUp and [Autodesk’s] Revit. Once the set model was completed, I sent it over to Ben, who was able to import it into d3 and virtually tech the show with us out of his studio in New York. Some of the video content was dictated by the needs of the libretto, while some was created by Ben and his team in response to our conversations with Kevin. We were able to digitally time scenic movements to music and plan which video goes onto which panel and when, so that, by the time we got into tech, many of the sequences were already preprogrammed.”

**Sound**

With a unique combination of electronic and acoustic elements that define the sound of *The (R)evolution of Steve Jobs*, Rick Jacobsohn had the challenge of creating not only the perfect sonic blend but also creative placement of the individual sounds in three-dimensional space. He says,

Images: Courtesy of Benjamin Pearcy

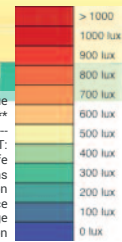


Approximate ILLUMINANCE value

\*\*\* Incident on surfaces only \*\*\*

IT DOES NOT TAKE INTO ACCOUNT:

1. Projector lamp life
2. Projector luminance uniformity & variations
3. Lens optical distortion
4. Lens transmittance
5. Lens focus range
6. Atmospheric absorption



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“Opera is of course very dynamic music by nature, but Mason really takes it to the extreme, which makes it very exciting. The orchestra is very large for an opera, with a big percussion section, piano, harp, celeste, and saxophones. During some interludes, the orchestra is going full tilt and Mason’s electronics are adding another layer on top of that. We’ve got two 18” D&B V-Series subs to handle the sometimes large low-frequency component of Mason’s electronics. One unique element that is very important for Mason is for the sound of the electronics to appear as if it’s coming from the pit. In orchestral situations, this is accomplished by placing speakers on stands within the orchestra to pull the image down from the main PA, time-aligned of course. In this case, the pit is filled to capacity, so we placed speakers in the downstage corners of the stage firing directly over the pit.”

The opera is mixed on a Soundcraft by Harman Vi2000 digital console, which, Jacobsohn adds, “is a great desk. The PA is a combination of D&B V-Series 7 and 10 boxes, as well as the subs to cover the orchestra and balcony, all

of which is incredible and very natural-sounding especially for this type of music. All singers (six principal singers and 16 chorus members) are on DPA d:screet 4071 mics. I’m fairly flexible when it comes to consoles and PA, but I always insist on DPA lavalieres, as nothing else comes close. The guitar is miked with a Schoeps MK41.” Jacobsohn acknowledges Trevor Peters, of Atlantic Professional Audio who, “did an incredible job setting up and tuning the PA.”

Though the modern-day technologies incorporated in *The (R)evolution of Steve Jobs* are undoubtedly exciting, it is the skillful, artful synthesis of the technologies that truly impresses. “We worked together on finding the right balance of physical versus projected elements throughout the show,” says Tzykun. “Unlike many other projects in which designers could potentially work mostly on their own, this project required a close collaboration from the very beginning, as direction, movement, scenery, and lighting were very tightly integrated.” Weideman adds, “This is the first opera I have designed that employs this amount of video. I



believe we are going to see more and more of this in design simply due to the flexibility and ability to create an infinite number of worlds onstage. Contemporary writers and composers are creating works that cannot be solved by traditional scenographic techniques. And, for the first time in history, designers have the technology available to transport the stage environment into an almost virtual reality that contains living performers. It's a very exciting time to be a designer." 🎧

*Additional personnel on the production includes Greg*

*Blanke (master carpenter); Mike Ortiz (assistant technical director); Lee Fiskness (lighting director); Travis Shupe (production electrician); Jessica Creager and Keegan Butler (lighting supervisors); Jason Lynch (master electrician); Jeff Englander (lighting programmer), Brian Abbott (video programmer); Andie Szekely and Marq Gonzalez (staff electricians); Syma Birenbaum, Tyler Canada, David d'Olimpio, Maurice Epps, Shane Hennessy, Jennings Johnson, Henry Rodriguez, Jacob Wesson (electricians/followspot ops). 🎧*

# (R)ECORDING THE (R)EVOLUTION

**S**oundmirror, a Massachusetts-based classical music recording and production company, recently recorded *The (R)evolution of Steve Jobs* for release on the Pentatone label. This new live recording was captured using Lectrosonics Digital Hybrid Wireless technology, including LT and SMQV transmitters as well as Venue and Venue2 wireless receivers.

"We used 28 channels of Lectrosonics wireless equipment," says John Newton, who founded Soundmirror in 1972. "In the case of the principals, who were all double-miked, the transmitters were an LT and an SMQV on each of them. The choir was mostly LTs but also some SMQV transmitters. The microphones in all of those cases were DPA Microphones [d:screet] 4071 lavali-ers." Soundmirror also employed four

Lectrosonics Venue2 receivers fitted with six VRT2 modules plus a pair of six-channel Venue receivers fitted with VRT tracking filtered modules for the 28 Lectrosonics wireless channels.

On-site to record the production, working with classic music record producer Elizabeth Ostrow, were Mark Donahue and Dirk Sabotka, Soundmirror's veteran recording engineers. Massachusetts-based independent wireless specialist David Williams also assisted. The team recorded a total of 88 channels through Merging Technologies Horus and Hapi microphone preamps and converters to a SmartAV Tango control surface and into redundant Merging Pyramix DAWs running at 192kHz.

"One Horus lives in the rack with all of the Lectro wireless gear. It puts all of the wireless channels onto our RAVENNA network," says Newton.

"It was a big orchestra in the pit,

which we miked as we would any orchestra of that size," he continues. "We had a row of hanging microphones over the edge of the stage and two rows of mics in the footlights, pairs of shotguns and wide cardioids in five sets. There were some places where we needed a bit more help, and that's where the Lectrosonics wireless channels came in."

Newton notes that *The (R)evolution of Steve Jobs* differed in one important way from any of other opera that SoundMirror has worked on. "The voices were all lightly amplified," he explains. "The composer, Mason Bates, is well-known for using electronic components. In this case there was an electric guitar in the pit as another orchestral instrument. Mason also created some sounds that he played using a keyboard. The guitar and those sounds were amplified, as were the singers and choristers. This

kind of sound design is unusual for an opera.”

Adding to the challenge of any production of this size and complexity was the fact that the opera was presented in repertory with several others. “We had to set up and tear down the entire system for every production. We set up all the Lectro wireless equipment on a platform with wheels, so we could disconnect the antennas and the network cable and roll it away. Then it got set up for each show in synch with the pit and the

begin to implement their new services following the recent incentive auction, Newton happily reports, “Our equipment is not in the 600 band. But there will be more competition for UHF frequencies in the future. Luckily, the technical people at Lectrosonics will fix all of those problems as soon as they crop up!” he laughs. “That’s what’s so good about working with Lectrosonics. They are ahead of the game and they have great solutions.”

In the role of Steve Jobs was baritone Edward Parks, joined by mezzo-

Brennan. Leading the production were conductors Michael Christie and Robert Tweten.

The production was captured over the course of multiple shows during its premiere run at Santa Fe Opera for release in summer 2018 on Pentatone. The Dutch classical music label specializes in high-end, multi-channel surround-sound recordings and *The (R)evolution of Steve Jobs* will be released as part of Pentatone’s American Opera Series.

Soundmirror’s orchestral, solo,



David Williams (left), RF tech, and Mark Donahue, recording engineer.

stage being set,” says Newton.

“We have used Lectrosonics products so much over the years that we know that the reliability and ease of use is there,” adds Newton.

“Soundmirror is known for being an innovator, and our clients want the very best.”

And as microphone operators are having to begin vacating the 600MHz band nationwide as wireless carriers

soprano Sasha Cooke as his wife Laurene Powell Jobs, who plays a pivotal role in revealing his emotional, human side. Bass Wei Wu performed as Jobs’ spiritual advisor, Kōbun Chino Otagawa; tenor Garrett Sorenson appeared as Woz, his friend and business partner; baritone Kelly Markgraf sang the role of his father, Paul Jobs; and soprano Jessica Jones sang the role of Chrisann

opera, and chamber recordings have received over 80 Grammy Award nominations, with the company’s staff collectively winning 25 Grammys. Newton has won seven Grammy Awards, Blanton Alspaugh is a four-time Grammy Award-winner, including one for Producer of the Year, Classical in 2012, and Donahue has five Grammy Awards to his credit. 📶