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# METALLICA'S CUBIST PERIOD

The classic metal band tries a new look featuring plenty of video

By: Sharon Stancavage

**D**an Braun, production designer for Metallica's *WorldWired Tour*, says that he took his cue from the drummer, Lars Ulrich, who asked for something "next-level," a request that took the band—which routinely brings fans new and exciting productions—in an unexpected direction. "It's a very different Metallica show than has ever been out there before," says production manager John "Lug" Zajonc. "It's more technologically driven. In the past, they've done some amazing shows, but this is more sophisticated and artistic."

Braun found inspiration in the world of art. The video cubes that are such a striking feature of the design, he says, "came out of an industrial architectural sculpture in an Amsterdam building. I was fascinated by the way it juxtaposed light and shape in lines and cubes and boxes. I thought, I could do that with those little light panels, but then we wouldn't get any light on the stage." Then another art project, this one in New York City, came into the designer's view. "It had cubes, in a ceiling, that were color-changing. It was everything I wanted to do, except the cubes didn't move. I started playing with sizes, weights, what we would do with them, and how we would get illumination on the band."

An arrangement of moving video cubes wasn't the only concept in play, Braun says: "A Metallica show is really half-band, half-audience and to me—and I think to the band—we're striving for a creative situation where the energy of the band comes into the audience where it gets amplified and goes back to the band. They become energized, amplify that, and send it back to the audience. To



## CONCERTS

me, that cycle is a Metallica show.”

Although Metallica has played in-the-round before, this isn't a typical example of that configuration. “The concept of the stage/height/size/positioning is all about intimacy,” Braun says. “We're trying to make it feel like everyone is sitting in the band's rehearsal room, garage, or practice area, and everyone has a front-row seat.” Eliminating the barrier between the band and audience was a challenge, however: “I worked hard to reposition the support technicians around the stage so there is minimal equipment between the band and the crowd.”

Other crew members were affected by this layout, Braun notes: “We have a great pair of monitor engineers, Bob Cowan and Adam Correia, and they're mixing remotely, using video monitors, on the loading dock.” Also, there are no manned cameras to block the audience's view. “The level of collaboration and cooperation from every single member of the crew was amazing,” he adds. “It wasn't without some bumps, but, ultimately, we're all pushing in one direction: to make the best possible show.”

The stage, fabricated by Lititz, Pennsylvania-based TAIT is low. “It's 44' square, 52" and it's spun, off-axis, 45° from what you'd do traditionally,” Zajonc says. “In the stadium shows, our stage is 200' wide and 40' deep, so this is a much more intimate space for them to play in. It gives them a chance to interact with each other and not have to run long distances.” The stage layout also includes four prop lifts.

### Video

The set design features 52 video cubes, 36 of them on a TAIT Navigator motion control system. The cubes feature ROE CB5 panels, provided by the Los Angeles office of PRG, on four sides. Braun explains, “The top is open and handles the kinetic motion equipment and cable management, and underneath hangs Robe BMFL WashBeams.”

Zajonc says: “The 16 cubes that don't move need to be tested before they go up, because they're hard to reach.” Fortunately, he adds, “The product we have is very reliable, and we don't see a lot of attrition. Our video crew also does a very good job of inspecting everything before it flies.”

Movement, along with weight, is a daily challenge. Braun notes: “The show is big and heavy, and that has been Lug and Chad Koehler—our head rigger—figuring out how to make it work. When you're moving things that are heavy, if you hit an emergency stop, there is a dynamic load issue. Lug and Chad are crushing it; they worked through it in an amazing way.” Zajonc adds, “The show is 170,000lb static and 220,000lb with the dynamic loads taken into account, with 168 rigging points. I think it's the 60 two-ton motors that upset everybody.” Rigging is provided by Five Points Production Services, based in Bell Buckle, Tennessee.

Braun continues: “One thing that became apparent as we were messing with the cubes is that, if we could make this work, every seat would be a unique view. As you move around the arena, you're looking at different screen



Flames and pyro are two of the special effects provided by Pyrotek.





The cubes pose a rigging challenge, due to their weight and the fact that they're automated.

surfaces. That's part of the magic of the show." Content creation was by KPX Video. Braun also brought along Scott Holthaus, production designer for Red Hot Chili Peppers, as art director. "For the video content people and my live imagining people, it's a nightmare," Braun says. The nightmare deals with, among other things, routing images to different sides of each cube, which may or may not be moving at different times. "It became apparent very quickly how difficult this was going to be, but no one said, 'We can't do this.' They said, 'Okay, let's think about this a little bit,' and got down to it." Video is controlled using two disguise gx 2 media servers.

The production also includes 16 robotic cameras. "Manned cameras would interfere between the band and audience," Braun notes. "All of that is run away from the stage." There are 12 Panasonic PTZ cameras and four AJA Video RovoCams, directed by Gene McAuliffe.

### Lighting

"This show is designed cohesively, so that everything works together," Braun says. Similarly, he and lighting

designer/director Rob Koenig collaborated closely. "This production was done differently from how we're used to working," Koenig says. "Really and truly, the set—which is the videos cubes—is everything. When Dan put this on the table, he had already conceived placing a fixture on the inside bottom of each cube. There aren't many places to put anything else, as the show is in-the-round, and a lot of buildings have weight limits when you're talking about hanging center ice. Those weight limits are typically tied to center scoreboards and with LED panels. A lot of thought went into how we were going to pull this off."

Aside from the cubes, the area over the band is streamlined. "There isn't a traditional piece of lighting truss in the building," Braun says. "Some trusses handle cable management and we've hung lights on them for convenience, but there are no lighting trusses per se."

To light the stage, Koenig chose the Robe BMFL WashBeam. "It's incredibly fast for a fixture of that size," he says. "It's the best large-format hybrid fixture on the market, in my opinion. It's a great spot luminaire, a great wash light, the pan/tilt motors are incredibly accurate, and





The drones from Verity Studios make an appearance over the stage during “Moth into Flame.”

the color rendering is fantastic. I don’t have enough good things to say about it.”

As previously mentioned, one BMFL WashBeam resides under each cube. “Tait built us a mounting system that hangs the light at the bottom of each cube,” Koenig says. “There are 52 cubes and 52 Robe WashBeams. To keep the lights stable, they put an RSC Lightlock [motion dampener] inside each cube.” Overall, 60 BMFL WashBeams are found in the main grid; the others are located on various trusses used for cable management.

Because the BMFLs are physically tied to the cubes, focusing could have presented a problem. However, Koenig says, “We utilize the stage marker system in the [MA Lighting] grandMA2 system attached to each cube so that, as Michael ‘Kilty’ Petite [automation crew chief and operator] moves the cubes during the day, every light knows where it is in 3D space. We also have markers on the stage and in the house, so I’m not focusing the WashBeams on a daily basis as much as focusing the markers. The positioning comes through Tait Navigator, by way of Art-Net, and the stage markers read where every-

thing is. As soon as I saw Dan’s renderings, which he worked out with Tait, I knew this was the direction we would have to go: I take a light, point it at a stage marker, and whether a cube is 52’ in the air or 16’ off the floor, the light points at the stage marker. The current system takes approximately two hours per day to focus.”

Audience lighting is provided by 44 TMB Solaris Flares. “The band really likes a lot to see a lot of audience,” Koenig says, “Especially when in-the-round, you have to make sure you cover everywhere. We’re taking everything at oblique angles to make sure that audience light comes from the sides, so that while staring at the band they’re being lit, but not being blinded.”

On the floor, Koenig says, “We have 16 GLP JDC1 [hybrid strobes], and eight SGM Q-7s [LED flood blind strobes]. A Q-7 uplights each mic position. We also have three [Martin by Harman] MAC Quantum Profiles behind our esteemed drummer.” The JDC1s were a late addition: “We originally had [Martin] Atomics and Q-7s on the floor, and some movers, too, but the stage floor was becoming overly crowded with gear. There are audio wedges, wah



and volume pedals, remote cameras, and drone transponders, so we needed to condense to achieve a clean look. At the last minute, GLP showed us the JDC1. PGP [Premier Global Productions], based in Nashville, the show's lighting vendor, immediately purchased them for the tour. The JDC1 is a great little light; it does everything you want them to do, and GLP has been very responsive in terms of helping us update software to get more of what we want to see out of the fixture."

Followspots use the Spotrack 3D tracking system, an Irish product that, Koenig says, is an integral part of the show: "We needed consistency in angle and distance from the spotlight positions, primarily due to the travel path and distance of the cubes. Trying to use a single light/operator system would not have worked, because backstage and corridor space would be limited in most EU arenas. Premier Global was beginning a relationship with Spotrack and wanted to see if it was viable. We used it on the US stadium tour, and they were very quick with tech support, writing new code and jumping through a lot of hoops to make it work for this type of show. There is nothing better to see than a Metallica show, if your equipment is going to make it! They have done very well by us and made sure we have everything we need."

The Spotrack system, Koenig says, consists of "a computer with a camera over the stage that our guys calibrate during the day; the operator has a mouse and he tracks the band members that way. Every station has one computer and five lights tied to it, assigned to a band member;

we have 20 BMFLs on that system. Eight fixtures are placed on the interior side of the cube grid for truss spot positions, and an additional 12 are placed at the far end of the cable bridge truss. I'd say the truss spots get utilized as the cubes get a workout during the show."

Programming was done by Troy Eckerman and Joe Cabrera. "The reasons we had two programmers? Availability and technology. When we started, we knew we would have very limited on-site production time. We were basically ending in Canada with the stadium tour, while the gear was being shipped over immediately, and we were only going to have six days between the arena in Canada and the arena in Europe. There's no way to cue a Metallica show in that short amount of time. During breaks on our stadium tour, I would pre-viz with Troy. Then we brought in Joe; he's great on all fronts, particularly the technology side. Joe was able to implement—with Michael Petite, from Tait—everything into the console, so that, for 95% of the show, the lighting console drives the cubes."

Typically, a Metallica show is done in shades of white, with complements of saturated colors. However, Koenig says, "On this one we wanted to go with more monochromatic looks. It's something that, in the history of the band, has rarely been done. The stage surface is white, so we went with a monochromatic color palette, affording a lot more saturates."

For Koenig, "The biggest challenge was going into a show where our fixture count is rather small for an arena show. What I really liked was that it took me back to basics. I felt constricted at first, but it's so cool to have those limitations; instead of throwing light with limitless possibilities, you plan out the programming. We had no choice but to be very specific in etching out what we wanted to accomplish for each song."

### Drones and more

Tait—specifically, chief creative officer Adam Davis—also had a hand in another aspect of the show. "James [Hetfield, lead vocalist] has wanted to use drones for a long time," Braun says, adding that Davis referred him to drone provider Verity Studios, based in Zurich, Switzerland. "I said, 'Adam, you can't tell me about them if they're not going to work. If I show them to James, I can't back out of it.' So, we did some animations, looked at the drones, and, at some point, took a leap of faith."

The Verity drones "have been good; the product is able to do what they wanted it to in a safe manner in the inside and have been very consistent," Zajonc says. "They have very small, encapsulated fan motors; they're probably about the size of your hand and they weigh very little. It's all GPS-positioned and based upon markers that set the limitations and tell the drones where they are; they're calibrated every day to their exact environment. We set up a grid for them to fly within; it's a very complex program." If



To keep the band's connection to the audience, band technicians were repositioned around the low-profile TAIT stage.

a drone goes out of its zone, it simply falls to the stage.

The drones, which emerge, through pockets, from under the stage, only fly over the band. “Rules and regulations in America control where they can fly, safe operating distances, drone zones, so on,” Zajonc says. “We were the first to do it in Europe, so there’s no code, no inspectors, which worked to our advantage. We were in one venue, and they said, ‘Nothing can fly over the head of the audience.’ I looked up and there was a small blimp. I said, ‘What’s the difference between that and ours? We’re not flying them over the public’s heads.’ And they lost their argument.”

Before integrating the 108 drones that swarm during the song “Moth into Flame,” Zajonc did his own safety test: “Before we put the band with them, I personally stood on the drum kit to see what it was like. If you don’t experience something, how can you speak to how it feels or how it works? I intentionally let a couple run into me, and you don’t feel anything.”

Braun says, “They are fascinating, they work well, and they are safe. The biggest thing for me is that the Verity guys have been able to deliver them in workable solution. When they appear, it’s a show-stopping moment.”

In addition, the tour features audio effects (see below) and some pyro. “There’s not a lot of room under the stage for anything more,” Braun says. “We have some flames and ‘Enter Sandman’ has some legacy cues.” Zajonc adds: “All of our pyro is built into our stage, so there are specific moments where the band has to make sure they are not near those areas.” All of the above are provided by Markham, Ontario-based Pyrotek Special Effects.

### Sound

Handling audio duties at the front of house is the legendary “Big” Mick Hughes. “I’ve been with them for 34 years,” he says. “I started in November 1984. We’ve grown up together. I was 26 when I started with them, and the guys were 20 and 21.”

In terms of mixing the band, Big Mick notes: “Every one of them contributes their portion to each part of the song, and as long as I can assemble those portions to the correct volumes and tones, the overall outcome is Metallica. You’re trying to capture the essence of the band, and that’s done with a variety of things, from the tonality of the guitars to the volume and how you assemble the mix.”

To accomplish the latter, Big Mick has a Midas XL8 console. “I can’t think of anything else to use,” he says. “I’ve looked at lots of other desks, and this is perfect for what I want to do. It’s basically a digital version of my XL4.” The XL8 has been discontinued; however, he is unconcerned: “We own two, which will, hopefully, see me to my retirement.”

At the front of house, Big Mick’s setup is streamlined. “Midas doesn’t run external plug-ins,” he says. “I only use their internal stuff. I’ve always opted to keep things simple;

it’s more about the tone and volume than that cool little reverb, especially with the nature of this music.”

He adds, “I’ve started using Waves MaxxBCL. It’s a mastering thing with a Renaissance compressor on it. It has an L2 [ultramaximizer peak limiter] and MaxxBass, which creates this psychoacoustic low-end thing. It’s very clever.” Externally, he uses a Rackman audio rack. “I have a small [TC Electronic] D-TWO delay unit. I could do it in the console; it’s a bit of a throwback from the analog days when I dabble around. I also have a Korg DRV-3000 [dual digital effects processor], and I actually buy the spares off eBay for 100 quid; it’s the only piece of gear I’ve found that I can program to do the ‘Master of Puppets’ effects, which is like a pitch down when the vocal repeats, ‘Master, master, master.’ I tried the Eventide H3000 and the H4000 and you’d think it would be able to do that, but I’ve never successfully programmed them.” Currently, he has six Korg DRV-3000s. “They won’t be around much longer, so I have to grab them while I can,” he adds.

Big Mick confides: “We don’t have as many microphones as we used to.” One reason is that the guitars now use Fractal modeling amps, which are DIs. “They’re working fantastically, and it’s so easy with them. The backline guys love them, and they give us a load of flexibility.”

On drums, “We were using DPA [d:vote] 4099s on the tom-toms and overheads. I’ve just changed them to the new DPA [d:vote] CORE 4099s, and I’m impressed with the change. [See the review on page 92]. I don’t know what they’ve done to them; they look the same as the old ones, but they certainly don’t sound the same. They’re much fuller-sounding.” On the kick, he has an Audix D6 and Shure Beta 91. On the snare top is “an old Audio-Technica ATM23HE and Audio-Technica ATM450 side fire condenser; on snare bottom, it’s also an ATM450. We use a side fire on the hi-hat as well; I really like the way the 450 sounds.” On vocals, he’s using “Shure Super 55s; these are the big square ones. They’ve been around forever, and we use a ton of them.”

The tour features a massive Meyer Sound PA, owned by Metallica and managed through UltraSound, based in Martinez, California. “The show is in-the-round, so the brief was that we get everything heavy out of the center out of the venue,” Big Mick says. “As much as we would have normally gone in a little tighter to the middle, we couldn’t. We had to expand it outwards, which we did, and it’s been very successful.”

For the PA design, Big Mick turned to Bob McCarthy, of Meyer Sound: “Bob literally wrote the book on audio. He’s a very smart guy, and the design we needed had to be very smart.” McCarthy designed a near field system. “We wanted to do a near field experience anyway, as opposed to being at the mercy of everybody listening to the horrible acoustics in some of these venues,” Big Mick adds. “So, the thing is to move the speakers closer to the people in the near field,





Attached to Ulrich's drum kit are microphones from Audix, Audio-Technica, DPA, and Shure.

as opposed to the far field. And that's working out for us pretty well. It allows me to run at a lower volume; I'm doing about 100dB, a-weighted, I aim for 99 volume dBa for the whole show, which is more comfortable."

On the short sides of the venue—where hockey goals would be located—"There are four hangs: two on each end for a total of 40 LEO [line arrays]," explains systems engineer Thomas Lyon. Big Mick adds: "We need the coverage up to the barricade from the Leo. We only make the Leo do the lower portion of the arena, and we take care of the extra height with LYON cabinets, moved closer to the people and the upper balcony. On stage left and stage right, which are shorter throws, there are left/right hangs of 15-deep Lyon; they're a mix of Lyon Ms and Lyon Ws to cover lower in the rig and wider. On the downstage hangs are two LEOs; at the stage left hang are two Lyon. In the upstage hang, there are two Leos, and on the stage-right hang are two Lyons."

"The arrays only cover a certain distance from the stage," Lyon says, "so we have smaller speakers basically pointing straight down and covering under those mains to the edge of the stage. There are eight hangs of

LEOPARDS. Each of those eight hangs is six cabinets."

"There is an extension PA for the upper balcony," comprised of four hangs of five Lyon delays. Big Mick notes. "These are meant to cover the area above the main Leo hangs, so they are treated as 'upper mains,' in a way,"

Initially, Big Mick says, "We did have another twenty-four 1100-LFC subs around the perimeter of the stage, but they made the stage vibrate too much, so we had to get rid of them." Lyon adds, "James [Hetfield] is sensitive to sub frequencies, and we're trying everything in our book of tricks to appease as much as possible, but still have that low-frequency energy we need to make a Metallica show."

Four hangs of subs are "flown in a staggered end-fire configuration, which is three columns of three, and they're stepped behind each other," Big Mick says. "We staggered them by having each column going lower than the last one, and that steers the image down a little bit, which gives us coverage on the floor." Lyon adds: "Each sub hang has three stacks; each stack has nine cabinets in each array. They stagger downwards about 2' per stack or so. They are delayed in a manner in which the one closest





Underneath each cube is a Robe WashBeam, stabilized by RSC Lightlocks.

to the stage has no delay, and the next one is delayed compared to the one behind it, which makes a pattern that skews the sub energy away from the stage. There are 36 total subs in the air. That's quite a bit and we probably should have more; it's enough to do what we have to for Metallica, but it probably should be more for Big Mick's taste." Overall, there are approximately 60 sound hangs; each using two to three rigging points.

If that wasn't enough PA, there's more in the form of a cabinet Meyer released last year; Metallica is the first band to use it for special effects. Big Mick says: "We have the VLFCs [Very Low Frequency Control], which are ultra-low subs that go down to 13 cycles. They do 13Hz to 30Hz, and we only use them for explosions and the intro to the song 'One.' We put them in the corners, pointing to the middle; we tried them around the stage but, once again, the problem of the vibration comes around; it's just vicious." There are 12 VLFCs in each corner of the arena. Big Mick continues: "We wanted another sensory experience; that was the brief behind it. We wanted to create some kind concussion effect that didn't rely on pyro.

Pyro just goes clatter; you never really get a boom out of pyro, so it's difficult to get a deep bass explosion, especially when it reflects around the arena. We started firing these low-frequency effects with the pyro in order for it to fire in sequence, and to give us the complete picture. Then we found out that concussions worked well on their own too; so, we do some of that too."

The VLFCs "are triggered on a sampler," Big Mick says. "We have a low-frequency explosion which is enhanced and is connected via MIDI to the lighting console; our lighting guy actually fires them, to fit in with a lighting effect."

At the end of the day, Braun emphasizes that this production is a group effort: "No one does this alone. The people working on it on a day-to-day basis are living with it and maintaining it, so the audience has an incredible experience. We can take all the cubes in the world, but they won't make the difference; it's a great band, they're great friends, they are great to work with, and their fan base is incredible. Metallica gave us the opportunity to do something special and I think it turned out pretty cool." 📶