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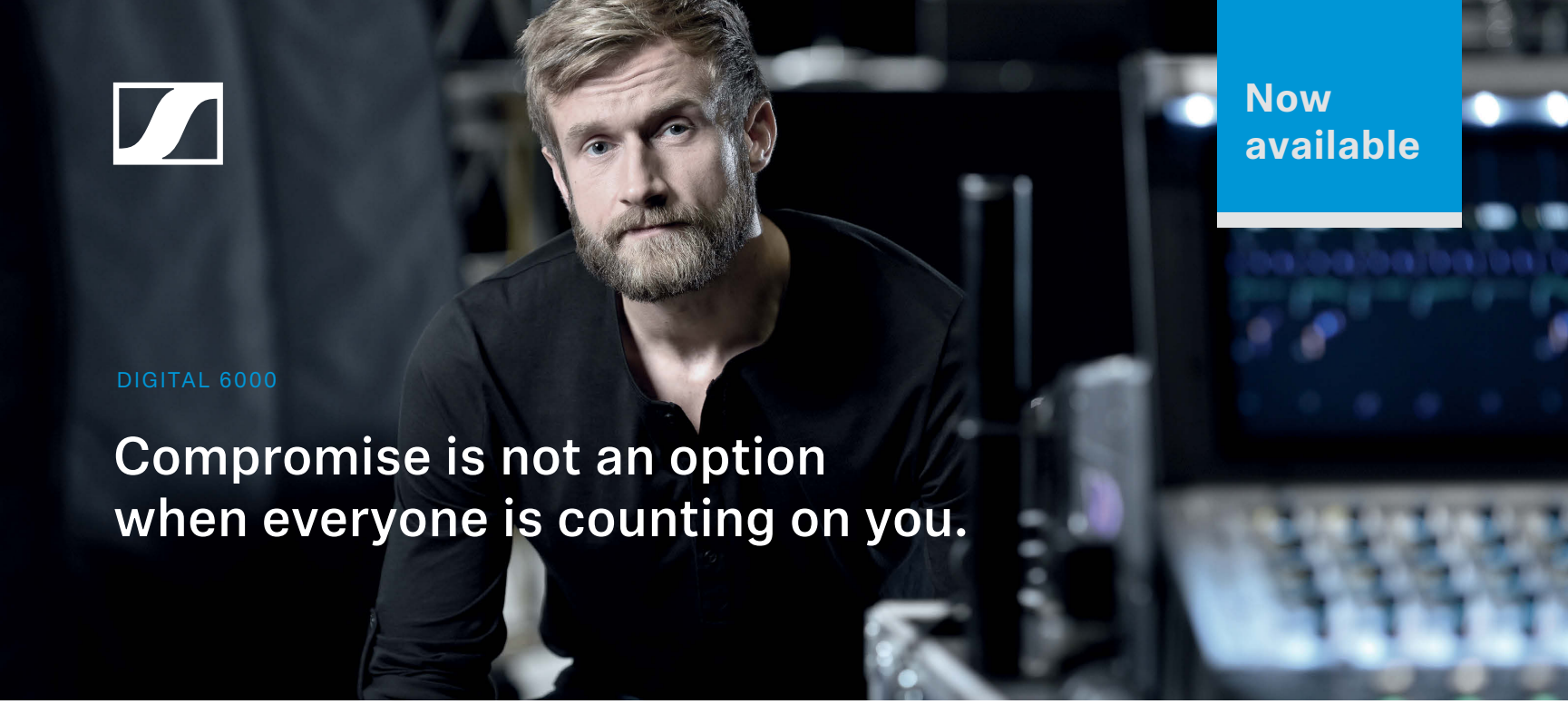

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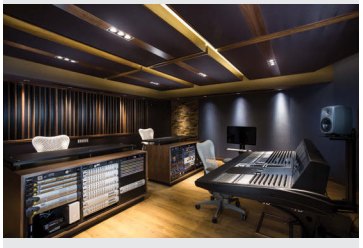

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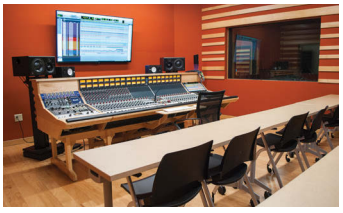

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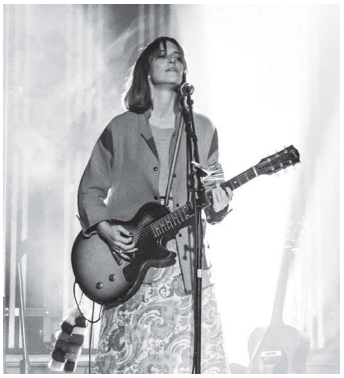

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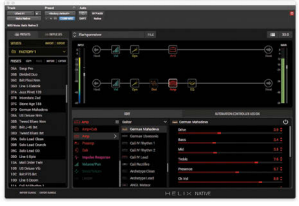

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On the Cover: Indiana University, known worldwide for its Jacobs School of Music, recently opened the world-class Georgina Joshi Recording Studio, led by Department Chair of Recording Konrad Strauss and designed by Robert Lee. **Photo:** Chris Powell

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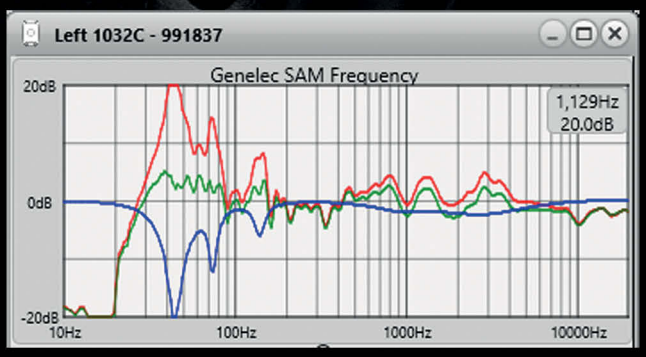

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Current

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From the Editor

EDUCATION AND WHERE YOU FIND IT

Indiana University, my alma mater, has boasted one of the country's leading music schools for decades now, to go with an opera/voice emphasis that has no real peer in the States. Its focus on facilities, faculty and performance is not necessarily unique, as there are wonderful conservatories and top-notch instructors from Boston to Seattle, New York to San Francisco, and many stops in between. But there are few public institutions that can match IU's Jacobs School of Music in the talent and scope of performers who, upon graduation, fill the world's jazz ensembles, symphonies, chamber orchestras and composition suites. In 2021, the school of music will celebrate its centennial anniversary.

Within the Jacobs School of Music is the William and Gail Cook Music Library, one of the world's leading repositories of information on all things music, with a depth unmatched certainly in the United States. For opera and symphonic works, the famous Musical Arts Center, designed to replicate the interior of New York's Metropolitan Opera House, is fronted by a gorgeous Alexander Calder sculpture. The other performance spaces, from rehearsal spaces to recital halls, are equally world-class. The faculty is a major drawing card.

Also within the Jacobs School of Music is the Recording Arts and Sound Production program, under the guidance of department chair Konrad Strauss. It's an intensive program based around fundamentals of music theory and electronics, hand in hand with real-world production instruction. Only 20 students are accepted per year, and besides regular classwork and projects, the students record more than 500 performances a year, from faculty recitals to full-blown opera productions.

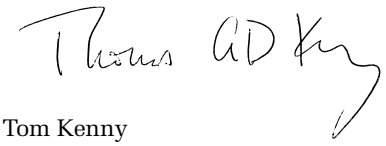
There are a number of studios sprinkled throughout the school, ranging from an Audient console-based room in the fourth floor of the MAC to an Avid/PMC-based 5.1 mix room known as Room 354. Plus, labs, a few production rooms, and all the local rigs for the varied performance spaces. As in a lot of public institutions, hard-working faculty make the best use out of the facilities and resources they have. Upgrades have to fit within a state and school budget. Never did the faculty and students at IU expect to be walking into a studio like the one pictured on this month's cover. That just doesn't happen at state schools.

But it did in Bloomington, thanks to the formation of a 15-year-plan of excellence by the Jacobs School dating back to 2006 and generous grants from first the Eli Lily Endowment and later the Georgina Joshi Foundation. Finally, there is a recording studio of quality to match the music being produced.

Nearly a year ago, I visited the IU campus, staying with my sister Annie and her husband Rick out in the country off of Old State Road 37. At the time, on campus, there was a concrete shell and a stack of drawings, laying out the floors and walls. Then I visited again in mid-October, on Homecoming Weekend, and walked into a beautiful studio, with students mixing at an Avid S6 and listening to ATC mains. A Hamburg Steinway in the main room and drums set up in a booth. Music students filled the hallways, as down the hall there was jazz ensemble practice. The Hoosier Hundred were coming in at 4. Students carrying cellos, trombones, violins and flute cases were everywhere. A college campus can be inspiring. A music school can certainly inspire a recording engineer.

At the same time, I am a firm believer that an education is reliant on the individual. Four years in Bloomington isn't for everybody. There are two-day master classes, weeklong workshops/retreats, summer internships in Aspen or Chautauqua, certificate programs, community colleges, for-profit colleges, four-year universities and well-established, elite conservatories. Many of them you will find in this month's issue. The point is that there are options out there for students of all types, and all are valid if they provide the opportunity for a young man or woman to achieve excellence.

I have the feeling that I will be returning to Bloomington often in the coming years. Two of my favorite things in life are family and music. Down home in Indiana, I'm lucky to have both.



Tom Kenny
Editor

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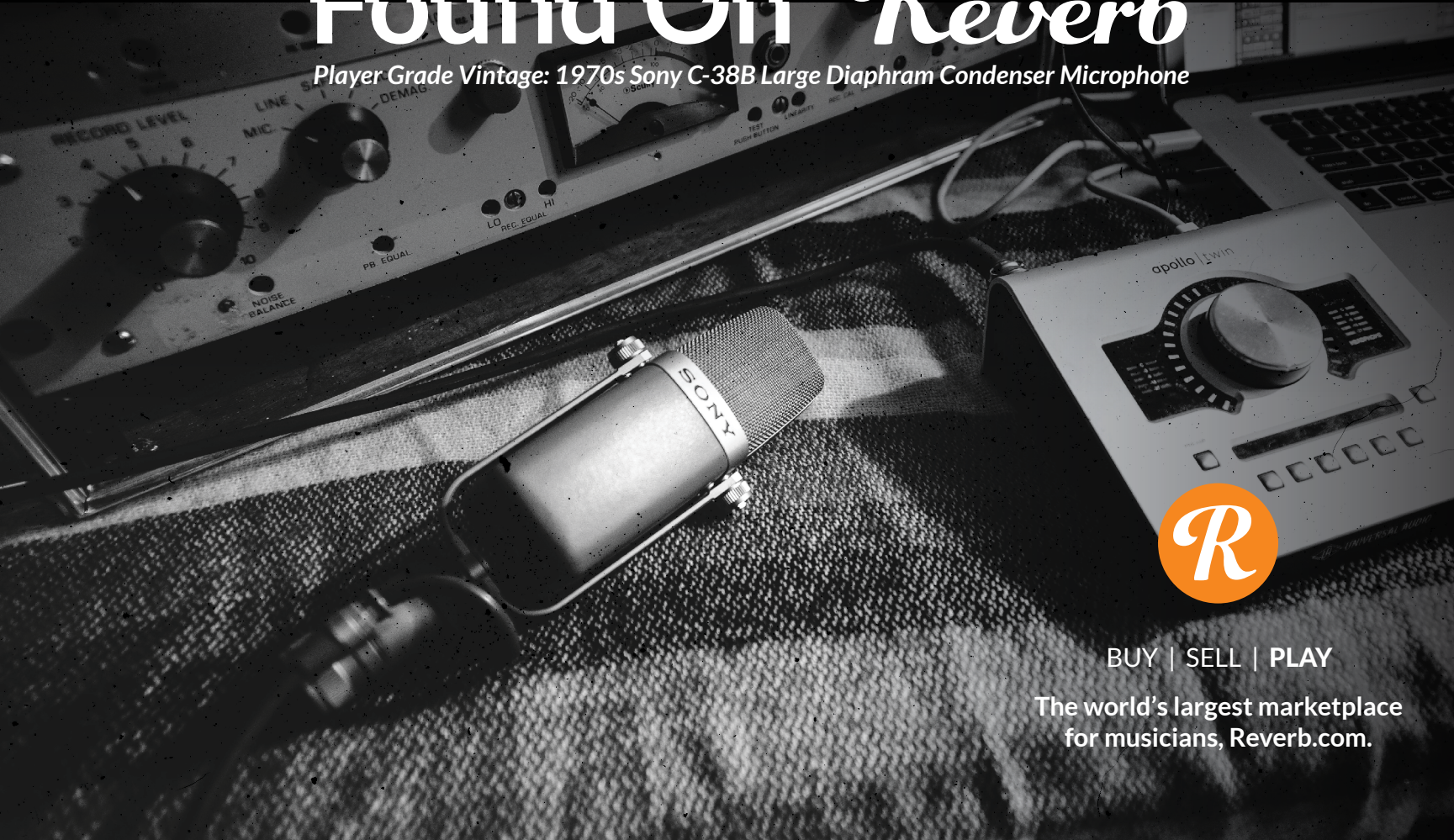

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Brian Schmidt, founder of GameSoundCon

Becky Allen, keynote speaker

GameSoundCon 2017

GameSoundCon, the premier conference on video game music and sound design, will be held November 7-8, 2017, at the Millennium Biltmore Hotel in downtown Los Angeles, featuring expert panels and intensive master class series on topics such as Game Audio Essentials, Game Audio Pro, Audio for Virtual Reality, Wwise Special Training, Speed Mentoring, along with more than 50 additional panels of interest to videogame sound professionals.

This year's keynote speaker will be Becky Allen, head of Audio at PopCap/EA and the first female game sound professional to deliver the keynote at GameSoundCon.

"Becky has helped push the industry forward her entire two and a half decade career; not just through her work as Audio Director and composer at EA/PopCap, or her work at Microsoft or SounDelux, but as one of the leaders of our industry," says Brian Schmidt, GameSoundCon's founder and Executive Director. "I'm honored that she's willing to deliver the keynote speech at GameSoundCon this year and share her insights and experience with us."

Other presenters and speakers include industry heavyweights like Neal Acree (World of Warcraft, Overwatch, StarCraft, Diablo, TV shows Stargate SG-1 and Stargate Atlantis plus over 30 feature films), Paul Lipson (HALO Wars), Gordy Haab (Star Wars: Battlefront).

The dedicated Virtual Reality Track has proven particularly popular, with notable speakers like Sally-Anne Kellaway, named by Variety one of the "10 virtual reality innovators to watch." Session topics range from Creating Immersive Soundscapes with 3D Audio on Playstation 4, to Composing Interactive Music, to hands-on Wwise-session training and professional advice

A hot topic of conversation between the sessions will no doubt be the recently released GameSoundCon Audio Industry Survey, which covers both freelance and salaried game music composers and sound designers and provides revealing data on income and educational levels of game audio pros.

For the third consecutive year, the report shows that women in game audio are on the rise. While their overall presence in the industry is still small, it is growing: 12.7% of those reporting are female (up from 10.4% in 2016, and 7% in 2015).

The complete report shows detailed information about average salaries, per project and per minute fees, how many composers also do sound effects, integration and programming work, and how many game audio pros are currently working on a Virtual Reality title.

If you would like to see the full report, it is available at the GameSoundCon website.

Photo: Steve Jennings

Front of House magazine editor George Petersen

Where's George Petersen?

This was undoubtedly one of the questions on the floor of the recent AES convention. *Front of House* magazine editor, and former *Mix* editor, George Petersen is a fixture at tradeshows. Most everyone in the industry wants his time and attention.

At present, George is recovering from the effects of a serious infection. He was hospitalized during what, in a normal year, would be another show season. Instead, he underwent months' of grueling procedures and treatments.

George's nephew, George Wirth, has established a YouCaring fund to help ease the financial strain. Here are a few of the details that the younger George shared online:

"… by the time he sought treatment, it developed into pneumonia, kidney failure, heart issues and a life-threatening aneurysm on his right leg. After surgery to repair the leg, he experienced cardiac distress, caused by the sepsis bacteria dissolving his heart valves. This required open-heart surgery (thankfully successful), while the lung and kidney issues were defeated after two months of intravenous antibiotic therapy."

It's no surprise to any of us at *Mix* that many generous donors have posted comments recounting the times George helped them out of jams. He is the kind of person who wants to be asked, and always comes through.

The small but mighty *Mix* family encourages readers to visit the youcaring.com site or *Mix* magazine's Facebook page, where you can learn more about George's situation and ways that you can help. As Bruce Springsteen says, "We take care of our own."

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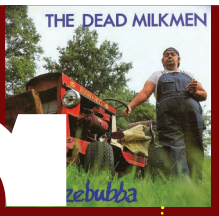

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L-R: Michael Shuman, Dean Fertita, Joshua Homme, Jon Theodore, Troy Van Leeuwen

Photos: Andreas Neumann

'VILLAINS' FOR A NEW AGE

Queens of the Stone Age Tap Into Dance-Funk-Rock

By Anthony Savona

Queens of the Stone Age is a band accustomed to change—whether it be a member shift or a new sound—for just about every album they've released. For their newest, *Villains*, the band turned to pop producer Mark Ronson, he of "Uptown Funk" fame. Aiding him in his mission is Mark Rankin, the engineer on Queen's last release (*…Like Clockwork*), who made such an impact on the *Villains*' sound that Ronson and the band named him as co-producer.

"I usually engineer Josh's [Homme, lead singer for Queens of the Stone Age] stuff, so I came on as engineer for *Villains*," says Rankin. "He told me his plan for the record, and I brought in a few pieces, including a kit that I thought would be good, which became central to the sound."

According to Rankin, Homme's plan was to create a "super vacuous and interesting sound—big picture, with lots of air." To accomplish this, the team moved into Los Angeles's United Recording. "We had been there before," says Rankin, "on the Iggy Pop record that Josh produced. They have those amazing rooms, and it was great to be able to set everyone up in that space, with that nice family vibe. Plus those

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*Roundtrip latency was measured at 2.74ms, working at 96kHz with a 32 samples buffer on Logic Pro X, running on a Mac Pro and OS 10.11

At work in United Recording, L-R: Engineer Mark Rankin, Matt Zivitch (Joshua Homme's guitar tech, behind Rankin), Josh Justin (Homme's assistant), drum tech Sahir, Homme and Mark Ronson

echo chambers! Great historic L.A. studio."

Back to the kit Rankin brought in: "We started in the B room with the drum canopy, where you can use it to close the drums right down," says Rankin. "I brought in some C-ducer contact mics and strapped them on to the drums to get this unnatural distorted sound. We put one on the kick and one on the snare, which also picks up a bit of kick. That became the center of the drum sound."

The C-ducers were not the only influential pieces of key gear Rankin brought in: "I brought in some Overstayer equipment. We had this great stereo 19-inch rack unit called Mod Channel. It comes from the modular synth world, but it has preamps on it as well as distortion, super-resonant filters and compression. That became a main thing, as well. We did a lot of processing with it, and you can totally annihilate things.

"One day I was playing with it when the piano was being tuned and Mark [Ronson] and I were in the control room. I started messing around with the filters as we were listening to the guy tune the piano, and he just sort of descended into hell when the filters started resonating. Mark said, 'Oh my god, what is that?' and he commandeered it into the side room and started processing everything through the Mod Channel."

Despite being the new addition to the team, Ronson had no trouble fitting in. "I've worked with Josh a lot, so I know what he wants," says Rankin. "And bringing Ronson into that was great. He has a vast

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knowledge of music and great ideas. If an idea didn't work, it was no big deal. It's whatever works for the project. Mark would be involved in the initial stages and the arrangement, and then a lot of times I would be working with the band in the main room while he would work in a side room on other stuff, and then bring it back into the main room where we would fit it in."

Adding Ronson, King of Funk (Uptown or otherwise), also helped toward the completion of Homme's other goal for the album: a rock record you could dance to. With its '70s-style funk and '80s-implied synths, *Villains* does just that. "I think we got there," says Rankin. "But Ronson's processing on the Mod Channel gives it a modern sound, as well."

Mixed by Alan Moulder at Pink Duck studio (Burbank Calif.), *Villains* has a clear '70s influence; it is especially apparent in Homme's vocals, which in several cases seem downright Bowie-esque. "The main chain for him was a nice old Neumann U87 I have, a JHS Pedals Colour Sound preamp, and the effect compressor on the Overstayer," Rankin explains. "That was the basic chain, although sometimes we used an Eventide H910 or H949 Harmonizer for that close, fake room sound. We also used the Fulltone Tube Tape Echo a fair bit for the tracks that have slap echo on them."

That echo plays a big part of the sound on *Villains*, particularly on rollicking "Head Like a Haunted House," which also features a Martin Audio Ondes wooden keyboard controller. "That was [Queen's keyboardist] Dean Fertita on the Ondes," states Rankin. "You put your finger in a ring and you run it up and down a cable. The echo on that tune, like most of the songs on the album, was from the Fulltone Tube Tape Echo."

As they always do, Queens of the Stone Age continue to evolve with each project, building upon the experiences of ...Like Clockwork and bringing them to *Villains*.

"*Villains* was more processed in an analog world," says Rankin. "We learned from the last one and committed more to certain sounds. There were lots of layers on Clockwork—quite a dense record. This time we used minimal guitar leads and stuck to eight channels of drums. The contact mics were the center of them, and maybe a pair of rooms for character. We were going for character on this...and weird."

So if you are looking for danceable rock with weird, interesting sounds and lots of air, then *Villains* is for you, as this remarkable team accomplished all of their goals and created another memorable album for the diverse Queens of the Stone Age oeuvre. ■

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ODESZA'S 'A MOMENT APART'

By Barbara Schultz

Photo: Daniel Zetterstrom

Harrison Mills (left) and Clayton Knight of ODESZA in Mills' Seattle studio

Electronica/pop duo Harrison Mills and Clayton Knight, better known as ODESZA, released their third album last month. *A Moment Apart* (Counter Records/Ninja Tune) blends synthesized and processed sounds with more organic-sounding instruments and vocals from guests such as Regina Spektor, Leon Bridges, Sasha Sloan, RY X and more. *Moment* is full of sonic surprises, as well as some of the familiar processed vocal sounds that have been a hallmark of ODESZA's music.

We spoke to Mills about the making of *A Moment Apart* following ODESZA's appearance at the Bumbershoot Festival in Seattle this past summer.

Tell a little bit about your writing process for this album: How do you work together to write songs and what tools do the two of you use to capture your ideas?

Most of the ideas start with a chord progression or sample chop recorded in the computer, and that is almost always one person working alone, because we find it's easiest to get started that way with all of our travel and shows. Then we'll take ideas to each other when they are in their early stages and talk about direction. Sometimes we'll let one person lead the direction because they have a clear vision and you don't want to get in their way. We each have our particular specialties, but that doesn't necessarily mean that we're each only doing certain aspects of a track. Once we're at the stage where we're working on a track together, that all happens in our home studio.

Where did you cut and mix final tracks for your new album?

Most of the recording and engineering was done in our home studio in Seattle, and we produced all the songs on the album. The Regina Spektor and Sasha Sloan vocals were recorded at The Village in L.A. by Alex Williams. RY X vocals for "Corners of the Earth" were recorded at Temple Base by Alden Paguia, also in L.A. We made the Leon Bridges track "Across rhe Room" in a single session in Seattle, but then he re-recorded the vocals to tape with the guys at Niles City Sound in Fort Worth, Texas. Eric J. Dubowsky did the final mix, and Matt Colton at Alchemy did the master.

What was the process like for laying down tracks? Did rhythm parts always come first, for example?

We had been working on ideas since before our last album [*In Return*] came out. When we finally stopped touring and started to work on the album, the first tracks we finished were the opening track, "A Moment Apart," and the closing track, "Corners of the Earth," with RY X. That really set the concept for the album and helped us filter all these drafts we had been working on.

The tracks themselves usually start with a melodic idea, then we build the rhythmic elements and experiment with a bunch of different sounds and layers, and decide whether or not it needs a vocal. Then we peel back everything that isn't crucial to the song and try to make it as simple as possible.

What were some of the key techniques and equipment that were essential to the sounds on this album?

Our studio is built around Native Instruments Maschine and the S49 Kontrol keyboard, with a couple hardware synths like the Korg minilogue and Moog Voyager XL, and plug-ins from Universal Audio, iZotope and Soundtoys. We like to saturate and distort everything to give it lots of warmth but that can be easy to overdo. ■

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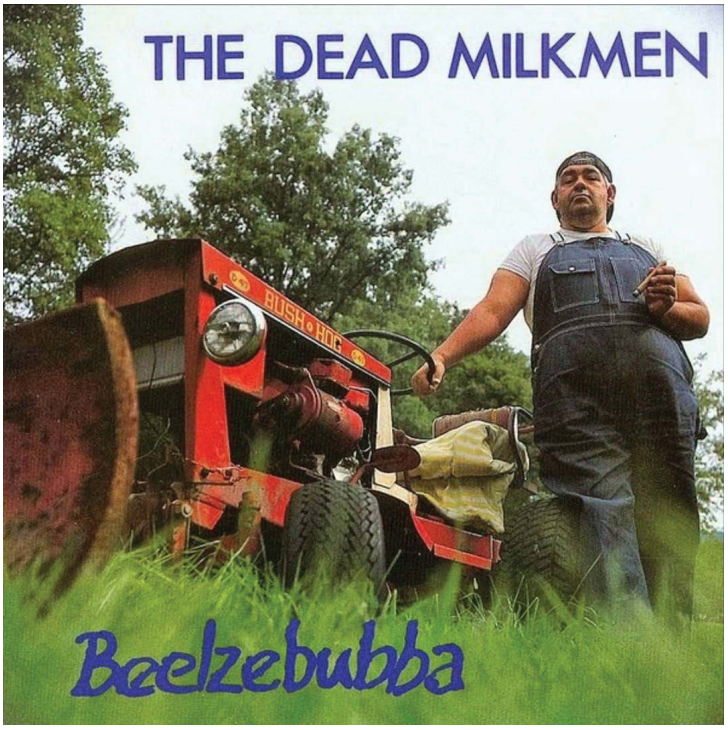
By Barbara Schultz



"PUNK ROCK GIRL"

The Dead Milkmen

The story behind this month's Classic Track, "Punk Rock Girl," is a tale of two musical cities: Locales in the Dead Milkmen's hometown of Philadelphia figure memorably in the lyrics, as the narrator takes a walk to punk clothing shop Zipperhead and later orders some hot tea at the Philly Pizza Company. But the track was actually made in Austin, Texas, where the musicians' friend and producer Brian Beattie is based.

"The song idea came when… I had graduated from Temple University and I was working in their library, hanging out with people in other bands, and someone was talking about a punk rock nursery song they wanted to write," says Dead Milkmen guitarist/songwriter/singer Joe Genaro (aka Joe Jack Talcum). "I thought, a nice little punk-rock love song would be cool, from the perspective of a guy who wasn't a punk rocker. He's attracted to a punk rocker girl."

Lyrics and melody started to come to Genaro, but he wanted a little help, so he took his song to Dead Milkmen bassist Dave Schulthise (aka Dave Blood). "I said, 'I've kind of run out of things that rhyme with girl,'" Genaro says. "He said, 'How about Minnie Pearl?' That was good. He also came up with the line, 'Do you have a beau?'"

At first, Genaro didn't think the song was right for the Dead Milkmen, but he and Schulthise did perform the song live as a duo, in a side project called Ornamental Wigwam. "We got a good response, and somebody at one of the shows said, 'You should turn that into a Dead Milkmen song.' But the song was around for a while before we asked the other guys if they wanted to record it."

"Punk Rock Girl" finally made it onto the band's fourth album, *Beelzebubba* (Enigma, 1988), the second full-length they made with Beattie.

"When I first met those guys, I was playing in a four-piece art/alt-rock kind of band called Glass Eye," recalls Beattie. "At that time, the Dead Milkmen had recorded their first album [*Big Lizard in My Backyard*, Restless Records, 1985] but it wasn't out yet. We played in Philadelphia at [a festival] called the Human BBQ. The Dead Milkmen were also playing and, being sweethearts and all, some of the guys invited us to spend the night; we always needed a floor to sleep on. I remember that night they played me their new record and I heard 'Bitchin Camaro' while I was falling asleep. It was a surreal kind of experience."

Over the next few years, Beattie and the Dead Milkmen crossed paths, playing shows together and hosting each other in Austin and Philly. "It was a fast friendship," Beattie says. "We talked about wanting to work together, and eventually their manager asked if I would produce them."

Beattie produced the band's third album *Bucky Fellini* (Enigma, 1987) and its follow-up, *Beelzebubba* (1988). "We liked working with Brian, but he just wouldn't leave Texas," Genaro says. "We found a house to rent in Austin for about a month or so. It had a pool. We felt like rock stars."

After a week of pre-production and rehearsals, Beattie took the band to Arlyn Studios, where Mike Stewart engineered their sessions. Then a recent transplant from Oklahoma City, Stewart remembers Austin in the '80s as a time when "there was a lot of creativity and a lot of records being made, but not a lot of infrastructure." It was a busy time for Stewart, and a time when an indie punk budget went far enough in Austin for the Dead Milkmen to record in an API/Studer 820-equipped facility.

"The API that was in their control room had different EQs and compressors that you could insert; you literally pulled them out of the console and stuck new ones in when you wanted to change your sound," Stewart says. "It's the same principle they used with the Lunchbox."

Beattie, Stewart and the band worked civilized workweeks at Arlyn, starting with coffee in the morning, then heading out for breakfast tacos or burritos from the same place each day, Seis Salsas. They would be in the studio by 10, Genaro says, and stay there until 7 or 8 at night. No work on the weekends.

Stewart set up the musicians together in Arlyn's main tracking room, approximately 30 by 40 feet, where they recorded basics live as a band, with guitar and bass amps situated in an adjacent iso room. "But if someone wanted to hear his 'more,' he could jump into that room," the engineer says.

Genaro's guitar amps included a Silvertone that Beattie had and a small Kay amp that he says had an overdriven sound. "We used a split box and ran two amps at once," Beattie recalls. "We could choose or blend those."

For those basics, Stewart doesn't recall 100 percent which instrument microphones he used, but he can narrow it down: "Guitar mics were more

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TIPS & TECHNIQUES

From the Pros

1 You Don't Need to Slam an Input at 24-Bit

In the analog days, it was often desirable to drive preamps as hard as possible, for tonal purposes. The same held true in the 16-bit world, but for issues relating to the noise floor. However, neither of these issues apply to 24-bit, so give yourself valuable headroom—you'll need it later on.

2 Check for Mono Even though it's 2017

In the old days, one often checked mixes for mono compatibility due to technological constraints of the times. You should still do this today, since your average listener won't hear a mix in perfect stereo (think sitting in the driver's seat, or sitting on the left side of a couch).

3 Try Out a Manual De-Esser on Vocal Tracks

What is a manual de-esser? The answer is, you. Go through the track and manually gain down each sibilance, either by clip or pre-fader automation. Pretty quickly, you'll learn to recognize the football-like shape of a peaky sibilance, which will expedite the process. Sure, it takes time, but it's one of the most natural ways to tame those ear-splitting "ssssss" sounds.

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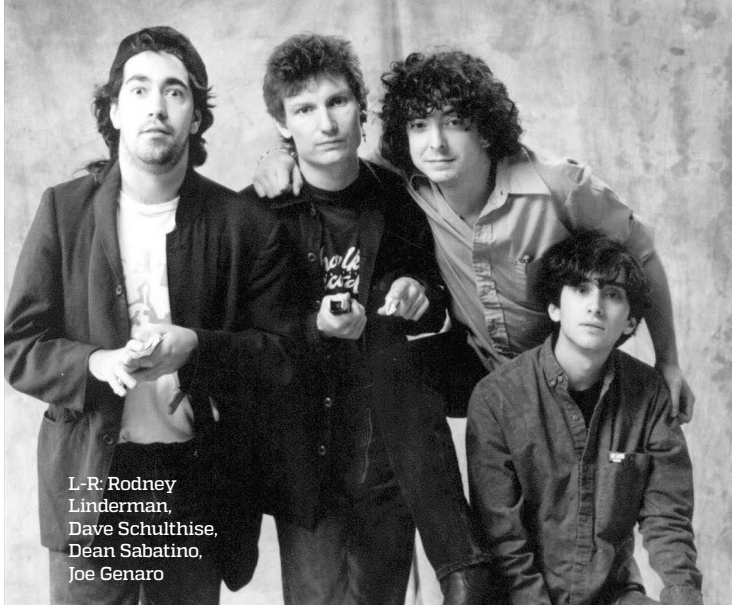

L-R: Rodney Linderman, Dave Schulthise, Dean Sabatino, Joe Genaro

than likely older, transformerless [Shure] SM57s, but I also remember using a couple of old [Neumann] U87s that we would place two or three feet away," he says.

On Dean Sabatino's (aka Dean Clean) drums, Stewart says, "It was always a 57 or an [Electro-Voice] RE20 on kick, sometimes with a U67 or U87 out front. There were various room mics; Stuart Sullivan [another Austin engineer who helped with the *Beelzebubba* sessions] had a great pair of older Schoeps that I loved—those ones from the '50s and '60s didn't go higher than 5k. We would use those for room mics often, because they let just enough of the cymbals come in and helped with a great snare sound in the 1 to 2k range. We would use [Sennheiser] 421s or U67s or 87s on toms. I'm almost certain we had a 57 on snare. We rarely used snare bottom mics. The close overheads were almost always [AKG] 451s or [Shure] SM81s."

Beattie recalls that Schulthise's Musicman bass went through a DI, as well as a Montgomery Ward bass head and Ampeg B15 cabinet that was miked with a 57.

Overdubs for "Punk Rock Girl" included the accordion part that comes in after Genaro's guitar solo. "Brian suggested the accordion," Genaro says. "I had never played accordion before, but Brian lent me one on a Friday and gave me the weekend to learn how to play it. On Monday I played it as much as I could, but I didn't get good enough. So he said, 'Why don't you play just the right hand—play a melody.' He tracked the left hand himself, and he got the oompahs just where he wanted them. Now when we play live, Rodney [Linderman, aka Rodney Anonymous] plays the accordion part on his keyboard."

Linderman sang lead on most Dead Milkmen songs, but Genaro would typically front one song per album. Because Genaro wrote "Punk Rock Girl," that tune, which was intended to be the album's first single, became his one song to sing on *Beelzebubba*; he sang a scratch vocal during basic tracking, and later overdubbed the keeper part via a Neumann U47.

"We finished recording all the instrument stuff and then we did all the vocals at once," Genaro says. "It was like, 'It's vocals week now.' And sometimes it would be like, 'That's as good as it's going to get today, Joe.

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~ Paul Northfield

(Rush, Dream Theater, Moist, Asia, Ozzy Ozbourne, Marilyn Manson)

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Try again tomorrow.'"

During tracking, Stewart and Beattie made use of the mic pre's and processing in the API, as well as the studio's selection of outboard gear, including Pultec, UREI and dbx compressors. To vary the sounds they captured, they also moved between different spaces within, and without, the studio. There was the piano room where amplifiers were usually placed, and a small acoustic-recording room that Stewart says made pretty much any acoustic instrument sound amazing; and then there was some bonus space that adjoined Arlyn Studios, which was built into a former hotel owned by Willie Nelson.

"The studio was built in an area where there used to be a restaurant, and attached to the former restaurant kitchen was an event center that used to be called the Opera House," Stewart explains. "Someone had put a door from the acoustic room so you could go through to this huge back room. It wasn't part of the facility, but it wasn't being used for anything else. The roof leaked when it rained and there was no insulation, but we would stick guitar amps back there and sometimes drums, and we would string mics back there."

During the mix, Beattie remembers, he concentrated quite a bit on Genaro's guitar solo. "On the demo, the solo sounded tossed off, like, 'I don't remotely give a shit,' and I wanted some of that badness on the track," he says. "I wanted it blown out and random-sounding. I remember pushing the compression more and more, probably with a Blackface 1176 that they had. It was weird to keep compressing it more and more, but it just kept sounding more right."

The final touch that Beattie and Stewart put on "Punk Rock Girl" was to double the full-band vocal line at the end of the song: "Just you and me, punk rock girl!"

"When we put both tracks in, it sounded splashy, and I said to Joe, 'It sounds a little like 'It's a Small World After All,'" Beattie says. "Joe looked horrified, like, 'No No! It's not supposed to be like that!'"

Fortunately, that's not the connection listeners made. The tune, and a madcap video shot partly in a former Philadelphia penitentiary, caught fire with alt-rock and mainstream music fans. "Punk Rock Girl" rose to Number One on Billboard's Alternative Songs chart.

Today Beattie and Stewart are still working with local and national artists in Austin, where many more pro and personal recording studios have emerged and come of age. And Arlyn is still going strong.

The Dead Milkmen made one more album with Beattie, and then two more in Philadelphia before deciding to disband in the mid-'90s. The passing of Schulthise in 2004 seemed to be the final blow, though the band performed with bassist Dan Stevens at Schulthise's memorial.

However, in 2008 the band was asked to reunite at a festival in Austin. With Stevens on bass, the Milkmen enjoyed themselves and decided to re-form. At press time, they were ready to release their latest EP on the Philly-based Giving Groove label, which donates half of its profits to music charities chosen by the bands.

"We're giving to Girls Rock Philly," Genaro says. "We like girls, we like rock, and we like Philly." ■

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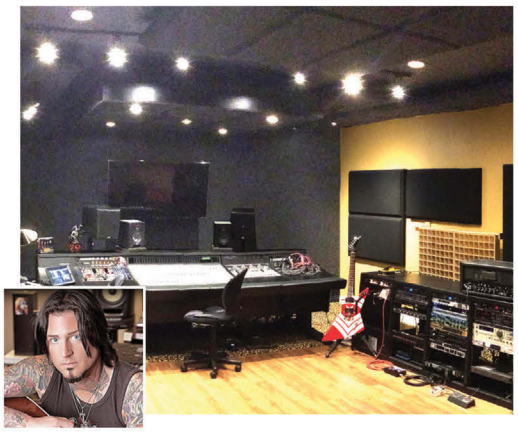

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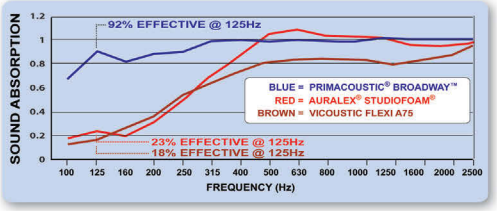

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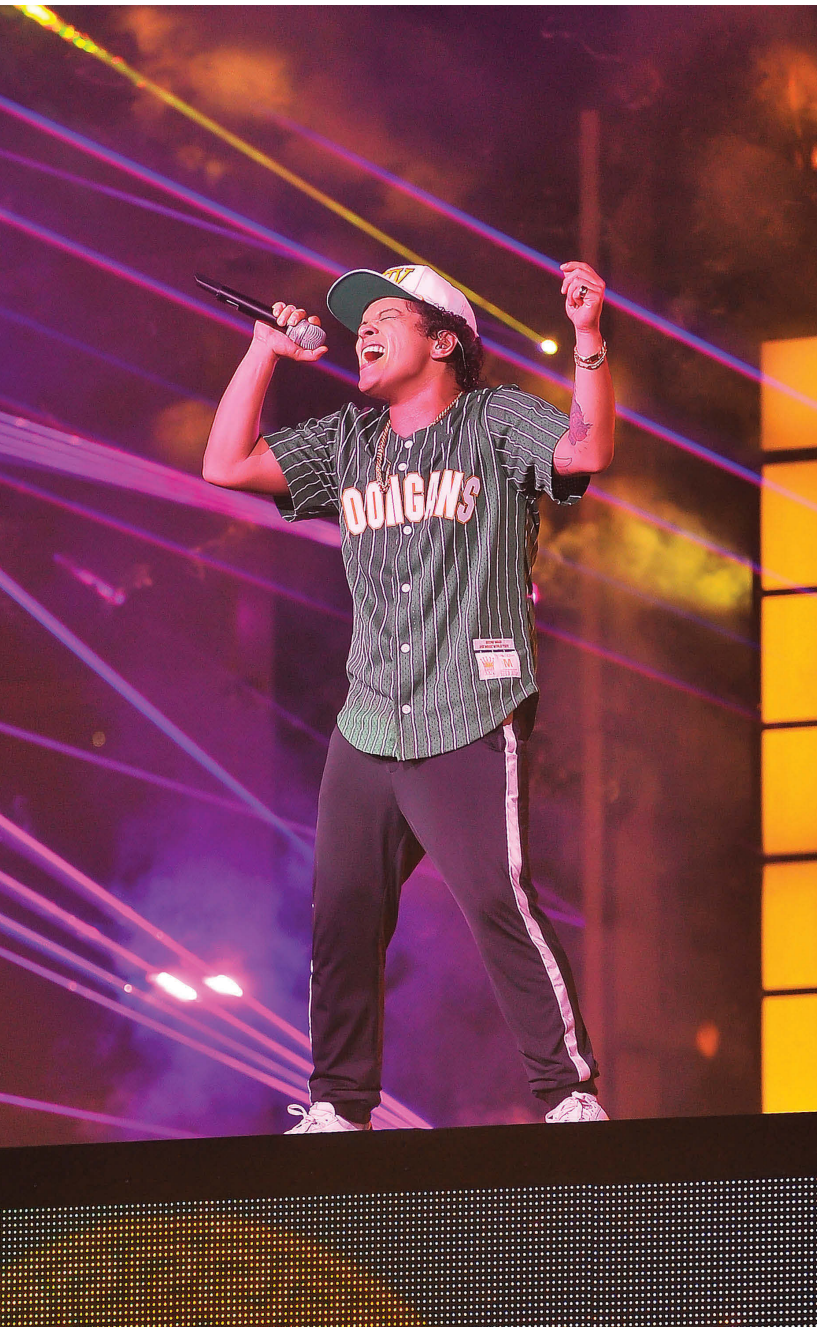


Bruno Mars brought his 85-date worldwide 24K Magic Tour to the Bay Area back in late July, with two nights at the SAP Center in San Jose, where *Mix* caught the show. After opening in Belgium in late March 2017, Mars hit the States in mid-July with a Clair Brothers P.A. and a veteran crew. The tour returns to the Bay Area this month before concludiing in Los Angeles.

"The DiGiCo SD7 mixing console has been a choice of mine for years," says ***FOH engineer Chris Rabold***. "Feature-wise, it offers a world of options; it's hard to beat in that department. I use both the onboard processing and some plug-ins via Waves. I have a rack of hardware toys I like to make use of, as well. At this point we're right around 100 inputs.

"My rack gear is almost always master bus, rhythm section and vocal-specific," he continues. "On this run, the bass guitar gets a Distressor, an Overstayer MAS and a SansAmp. Snares get Fatsos, Distressors and Overstayer MAS. Drum bus compression is handled by both an Overstayer SVC and Overstayer SFE.

"Bruno's vocal gets a BSS901 into a Distressor into an Empirical Labs DerrEsser. Background vocals all have Rupert Neve 5045s inserted across them. Finally, the stereo bus gets an API 2500 bus compressor into a Sonic Farm Creamliner.

"Bruno's live approach, thankfully, is to produce something that is not a direct copy of the album. By and large, everything's a little faster and with a few more pieces added to the puzzle. 'Live' really is the whole point. It's a blast. This show has a very specific design sonically, and I'm proud of what we've achieved. This gig has challenged me in the best ways possible."

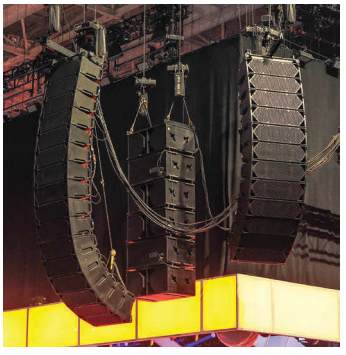
"I've been using the DiGiCo SD7 for quite a while now," says ***monitor engineer Ramon Morales***. "It's a very well-laid-out desk with everything you need right in front of you. Mixing in-ears on the SD7 changes everything. You can place instrumentsin their own space without compromising everything else. I like to create my mixes on the desk first, then after a few rehearsals I'll add plug-ins, if needed. But everything is pretty much on the desk—pre, EQ and gate/compression.

"My SD7 is pretty full at the moment, he continues. "I'm running my session at 96k, which makes a huge difference, but it also keeps me limited on the input/output availability. Currently I have three SD racks at 56 inputs each; I'm pretty tapped on outputs also." Some favorite outboard rack gear includes an Avalon 737, TC Electronic System 6000 and a Bricasti M-7.

"Working for Bruno Mars keeps you, and everyone, wanting to be the best at what you do!" Morales concludes. "I am truly blessed to be a part of this tour and do what I love to do. And also have a killer Clair audio crew!"

Drum tech Jason Bowers takes care of the kit, which is miked nightly with: Shure Beta 91A on kick 1; Telefunken M82, Kick 2; DW mic on kick; Shure SM 57 on snare 1 top, Granelli 5790 snare 2 top; Telefunken M80SH on snare 1 & 2 bottom; mojave MA-101FET on Hi-Hat and ride; Shure Beta 98MP on toms and floor toms; Telefunken M82 on large tom; Mojave MA-201 on overheads; Radial JD1 on SPD and kick trig.

Mars sings into a Sennheiser SKM5200 with a 5235 capsule, his choice for a few years. "We tried a few different microphone combinations on him and just kept going back to Sennheiser," monitor engineer Morales says. "A Sennheiser Digital 9000 system takes care of all the vocal mics on stage, and we just swapped to a Sennheiser Digital 6000 for horns, which consists of four DPA 4099 microphones." IEMs are Shure PSM1000.



The Clair Brothers P.A. system consists of, per side: 16 CO12 boxes on the main hang, 6 CP218 flown subs, 14 CO12 for the side hang, 12 CO8 for rear hangs, 4 CP6 front fill boxes built into the stage, and 6 i5B sub front fills.

"Chris gets a stereo output (mono for Moog Voyager) of each board so he can control the elements," says ***keys tech Tremaine Williams***. "Most interesting is the custom chopped B3 and 147 Leslie that are both covered in Rhino Liner; the Leslie lives under the stage. I just try to make it easy for a bad-ass player to do his thing."

SPOON MAKES THE ROUNDS

This past spring, alt-rockers Spoon added 30 dates to their tour supporting the album Hot Thoughts (Matador, 2017), hitting a wide variety of venues, from small clubs to massive festivals. When we spoke with front-of-house engineer Patrick Scott, who balances dates with Spoon, Grimes and Sleighbells, the band was in Chicago, where they'd played the Metro the previous night and were getting ready for soundcheck at Lollapalooza.

"One day it will be a benefit or a radio promo at a 300-cap club and the next it's Lollapalooza or the Hollywood Bowl, which is where we're going next," Scott says. So, the tour is using house-provided loudspeakers, but Scott and monitor engineer Aaron Mendez are carrying an otherwise complete audio package provided by Clair Global: a Midas Pro 2C console for front of house and a Pro 2 for monitors, a small selection of outboard gear, as well as the bandmembers' wedges, mics and backline.

This is Scott's first tour with Spoon, but he's quickly come to value the band's chops onstage and off. "Britt [Daniel]'s lead vocal mic is an earlier model of the Sennheiser MD431," he says. "It's a great mic; it's supercardioid; it sounds fantastic. Good off-axis rejection. I can't say enough wonderful things about that mic. But with supercardioid mics, you have to be up on them, because if you're off-axis, it doesn't do very flattering things to the voice. Luckily, Britt has really solid mic technique, and it works perfectly for him.

"Usually, Britt or Jim [Eno, drummer] and I will spitball ideas back and forth," Scott continues. "When I wanted to add an outboard reverb, the TC Electronic M3000, I talked about it with Jim one day. He has a studio, and he has his opinions. I wanted a good, dark and kind of syrupy reverb for this airy ballad on the new record called 'I Ain't the One.' Jim said, 'Great idea. That's a great unit. Go for it.'

"It helps when the musicians are involved on that level, because it makes the sound better coming off the stage. Mixing a band is a lot easier if I'm not fighting what's coming off the stage; I'm enhancing it." —*Barbara Schultz*

Feist Performing at The Neptune Theater in Seattle, October 2017.

Photos: Todd Berkowitz

FEIST: THE PLEASURE TOUR 2017

Canadian indie pop singer-songwriter and guitarist Leslie Feist (professionally known as Feist) is out on a worldwide tour in support of her first studio album in six years, *Pleasure*. Playing mostly to a seated theater audience, Feist and her small team of accompanying musicians aim to bring a more intimate and relaxed show to the audience. *Mix* caught them in Seattle in early October.

"The band's sound is incredibly dynamic in nature. Everything in the live sound is close-miked to reduce feedback and bleed, so I employ a few special techniques to transition from quiet to loud moments smoothly," says FOH engineer Brenndan McGuire. "One is my loudness bus. I merely double-bus all the inputs except for the vocals to a subgroup and I insert a 2-band EQ [joemeek EQ, with the bass and treble bands cranked] to emulate the classic 'loudness' curve. When the band is quiet, the bus is not active. This keeps the sources from becoming muddy and undefined."

After several albums, and years of experimenting with styles and sounds on tour, this tight-knit Toronto-based production team works to keep things simple.

"Onstage we're 100 percent self-contained," says monitor engineer Matt "Sully" Sullivan. "Venues provide the P.A. and a tie-in for my distro and that's it. I'm carrying a DiGiCo SD9 running at 96k with v929 software for my monitor console, using a combination of internal effects and an SPX990 and PCM81 externally. The band is all on Shure PSM1000 ears with JH-11 custom buds, and we're also carrying a pair of d&b M4 wedges for Les that I use to fill out some low end things depending on what I'm getting back on stage from the P.A./room; Leslie likes next to no lower frequencies in her IEM mix."

FOH engineer Brenndan McGuire

Monitors engineer Matt "Sully" Sullivan

On this particular tour, it's been helpful to be performing multiple nights at each venue. The first night at each location is a challenging negotiation with the room to keep bite in Leslie's vocals. "She often sings very quiet, and most of the things she wants to hear occupy a very small frequency range, so getting her voice on top while keeping everything else spaced out so they don't step on one another is really the name of the game," explains Sullivan.

"Leslie has curated a very original sound that has evolved a lot between her earlier records and what she has crafted in her later releases," adds McGuire. "Running her vocal through guitar amps is a very signature sound that has been a challenging detail to bridge into the live performances. It wants to feed back. Thankfully, Sully *never* lets it feed back or else my life would be hell. I ring the hell out of it at *all* soundchecks so that during the performance I have as much headroom on the vocal as possible. It is often frustrating, but in the right conditions it can be a very magical sound to carry her vocal." —*Todd Berkowitz*

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On the Cover

By Tom Kenny

GEORGINA JOSHI RECORDING ARTS STUDIO, INDIANA UNIVERSITY

Photo: Chris Howell

The live room, with native Indiana limestone on the north wall, looking into the "piano booth," which students have used frequently for drums.

Inset: The construction crew installs the custom clouds roughly 18 feet above the floor, hiding the HVAC and offering variable trapping above.

Photo: Konrad Strauss

It seems so obvious that it doesn't even need to be stated, but Music and Recording are cultural and artistic siblings, symbiotic to the point that, while each may exist in its own world at any one time, they are, at this point in history, forever intertwined. Nowhere is this more apparent than in school, where young musicians and budding recording engineers/producers bump elbows in rehearsal rooms, practice their crafts in recital halls and learn from each other in the studio, developing the skills necessary to make each other sound great.

This intermingling can happen anywhere, in any place, from a weeklong summer workshop to an elite conservatory fellowship. And it recently came together in a major way in Bloomington, Indiana, when this past June the world-renowned Jacobs School of Music opened the world-class Georgina Joshi Recording Arts Studio, pictured on this month's cover.

While the Recording Arts and Sound Production program had numerous smaller facilities sprinkled throughout the music school, there was no "big room" to match the scale and excellence of the Jacobs School, a music conservatory within Indiana University that has attracted top faculty and students since its inception in 1921.

It's not always easy for programs within a public institution to procure the funds to build something like the Joshi Recording Studio. Bids are required for equipment and vendors, there are ethics rules of interaction, and, let's face it,

support for the arts in public education has not been a priority over the past few decades. That's why the genesis of the studio goes back to 2006, when the Jacobs School (of which the Audio Engineering program is a part) developed a 15-year-plan of excellence, encompassing goals for innovation, faculty, facilities and entrepreneurship, to culminate in 2021, the school's centennial year.

That plan was then presented in 2007 to philanthropy partners, and the Eli Lily Foundation, impressed with the long-term commitment to excellence, provided a $44.2 million endowment to the Jacobs School. Part of that money was earmarked for a studio within an addition to the famed Musical Arts Center, while the majority went toward the construction of the nearby East Studio Building, which contains technically and acoustically state-of-the-art faculty offices (each 300 square feet). That phase of the plan was dedicated in 2013. Meanwhile, the MAC addition took on a life of its own when the Georgina Joshi Foundation stepped in with an additional $1 million grant specifically for a recording studio.

"Georgina had a special relationship with her parents, and they fully supported their children in whatever they pursued," says Melissa Dickson, Jacobs School executive director of external affairs, who attended the school with Joshi in the mid-2000s. "One day at their house in Michigan, Georgina was talking to her parents and said, 'You know, what my friends really need is a recording studio, to be able to have professional demos for auditions, and so they can see what exists out there in the world.' That really resonated with her mother and father."

Georgina Joshi, a soprano who trained at the Royal College of Music in London for her undergraduate degree, was returning from a performance in West Lafayette, Ind., in April 2006 with four of her close friends, all top students at Jacobs, when an accident claimed all of their lives. It was devastating to the community. Since then, the Joshi family of South Bend, Ind., has donated more than $4.2 million to the Jacobs School to specifically honor their daughter's passions, including the endowment of a Handel early music series, an international fellowship program, a recital hall for the South Bend campus, and a Five Friends Master Class Series emphasizing each of the disciplines favored by her and her colleagues.

Konrad Strauss, a Jacobs alum in composition and now Chair of the Department of Audio Engineering and Production, had been instrumental in developing the plan originally presented to the Lily Foundation. With the generous gift from the Joshi family, he says, we were able to build a truly world-class recording studio adjoining the two large, orchestra-scale rehearsal spaces in the Musical Arts Center addition.

Photo: Chris Howell

Photo: Konrad Strauss

The view from the control room, through the side glass to the studio. Inset: Assistant professor Michael Stucker, who led the integration, is shown directing students in the installation of the ATC monitors.

THE CONTROL ROOM AND THE STUDIO

"When I started here 16 years ago, I knew that someday we would be able to upgrade our studios, but I never expected anything like this," Strauss says. "We wanted the studio to serve two purposes: We wanted a great facility for our students to work in, where they can exercise their craft and make good recordings, something that was representative of the great studios of the world, with traditional iso booths, the best equipment and an ambient space that suited all styles of music—jazz band, quartet, classical chamber group, rock band, horn section. The studio has to fill all those roles.

"We also wanted a teaching facility, a control room with enough space to fit students and not be crowded," he continues. "And we wanted a control room with first-rate, even monitoring so we could play back recordings at a high quality and judge and analyze them. We wanted a high-end, 7.1 listening room, and we hadn't had that before."

Knowing that they had a defined space with high ceilings within the MAC addition, Strauss and his colleagues on the faculty began on the layout, working hand in hand with Robert Lee of BAI, an architecture and acoustics firm in Austin, Texas. The control room orientation was rotated to be more horizontal, with side-facing glass into the studio. An ATC soffit-mounted monitor system was selected early on in order to optimize the design approach. And, late in the game, an Avid S6 control surface with high-end analog front end was chosen over a traditional in-line analog console, the idea being that students were more likely to encounter a hybrid workflow once they left Jacobs, and they already had an Audient board in another studio to teach analog signal flow.

"Most studios are going hybrid today," Strauss says. "After sitting with the S6 and working on it, it felt very natural to me, and we felt that it was something the students would embrace. Then once we decided to go with a control surface, we thought, 'Now let's look at a classic analog front end.' We looked at analog gear that we felt they would encounter out in the field. That's why we have the Neves, the APIs, the 1176s, the Pultecs, the TubeTechs, the LA-2A, the SSL and Neve 500 Series modules. Great-sounding gear that students will definitely encounter in professional studios. So we have a high-end analog front end, with a variety of flavors students can choose from when they're making their mic selection, then into Pro Tools, then mixing. I was worried that the students would all continue to mouse around, but no. They're at the console and spending their time learning how to use it and work tactilely, moving several faders at a time."

"We started by thinking of the room, not necessarily the gear," adds Assistant Professor Michael Stucker, who led the electronics integration in the control room, working with three students over the past summer. "The whole front wall was built for the ATCs. Main monitoring is coming back in style; putting the speakers in soffits keeps them off the floor, leaving more room to move around the studio. Perhaps the biggest difference, though, is the position of the equipment racks to the side of the S6; we wanted students to be able to see what is going on. If we had used a credenza, the equipment would face away from the student seating area."

Photo: Konrad Strauss

The wall-within-wall construction of the live room, which allows for HVAC returns and 4-inch hanging batts for trapping low end that enters from the open space at the top of the inside wall.

"We have a diffuse back wall, more of an old-school design because it's an old-school control room," adds Strauss, noting that there is room for 20 students in the rear. "Above the clouds is a big bass trap, with a hole pattern. The rear wall and front wall contain bass traps, accessed above the clouds via a perforated plywood panel that's tuned to the room. It's a great place to talk and teach. And it has incredibly accurate monitoring."

The left-center-right ATCs are supplemented by QSC surrounds for a 7.1 monitoring system. Input/output is via an Avid matrix, while a Trinnov D-MON system engages room optimization for variable listening environments, again for teaching purposes. The room is wired for immersive sound; ceiling speakers are likely to be added soon.

The live room, meanwhile, follows a classic design approach, with irregular non-parallel walls, a bulkhead, high ceilings, clouds and three iso booths. Again, it had to be suitable for multiple and varied styles of music.

Photo: Konrad Strauss

The room layout begins to take shape as the floating floors are laid down.

"Robert [Lee, of BAI] really hit a home run. We wanted it to be able to fit 20 musicians or more, and we have that," Strauss explains. "But more importantly, we wanted an ambience that was appropriate for anything from rock 'n' roll drums to a string quartet. We wanted three isolation booths: one fully damped for drums, a piano booth large enough for the [Hamburg Steinway] grand piano. Then a small vocal booth, which can double for upright bass on jazz. And a closet for storage! You have to have storage."

The clouds in the ceiling are custom quad fusors that both break up early reflections and allow for more cubic feet up above to go with any future treatments and hide the HVAC feed. "I was kind of floored at the cost of the HVAC," Strauss laughs. "But the great thing is that the air handling is two rooms away—an incredibly long run coming here, so there is no transmission. And as far as I can tell, it's completely silent. I set up a cellist and a pianist with a stereo pair. We got sounds, I started rolling, and I didn't hear a thing. I thought it wasn't working. When they started playing, there was no ambient noise in the studio."

Treatment in the piano iso booth includes alternating squares of absorption and diffusion, clouds in the ceiling, and a slice of natural light.

All floors are floated and isolated. The north and south walls (one of which features a section of local Indiana limestone) are essentially double walls, with a sound blocking wall against the concrete. Then there's a cavity to contain the duct returns, with grilles near the floor and a 12-inch opening at the top of the interior wall to serve as a bass trap. A series of 4-inch batts hang loose within the cavity, about 18 feet, to absorb and help control the low end. Behind all the fabric, the walls themselves are covered by Real Acoustic Fast Panels, a perforated wood board on top of two inches of 704 or 706 insulation. "It's both absorptive and reflective, so it helps control the space without killing the ambience," Strauss says. "The room just sounds fantastic."

THE STUDENTS

The Recording Arts Program accepts only 20 students per year. There is no performance requirement or audition, though a 15 credit-hour concentration in an outside field is required, the most common being music composition and performance; others include media studies, game audio, informatics and computer science, and business. Two semesters of music theory are also required, and freshmen and sophomore years are primarily devoted to audio basics and electronics, though students begin working on recording projects from day one.

"We believe very strongly in hands-on practice, doing the craft day-in and day-out," Strauss explains. "So our students provide audio production for all Jacobs School events, all the performances and recitals that take place here, more than 500 a year. For a music student coming in as a violinist, they join the orchestra. The audio student's ensemble is the audio crew."

The focus in the first two years on analog electronics is particularly noteworthy. In a curriculum designed by Stucker, students begin by learning how to solder, and to analyze and build simple circuits. That's followed by more intense concentration on audio equipment design and construction, with the ultimate goal being an advanced knowledge of troubleshooting. "When I first designed the curriculum nearly 20 years ago, I figured that this was like music theory for audio students," Stucker says.

Juniors and seniors take on more project-based learning in the curriculum, and serve as leads on the recording crews, guiding the first year students. The emphasis on peer-based learning is buttressed by peer-based networking. The new studio, now in its first semester of use, "has already made me a better engineer," one student said. "I put mics up the way I usually do, and it just sounds better from the start."

The Jacobs School of Music 15-year plan of excellence, reflected magnificently in the opening of the Georgina Joshi Recording Studio, has from the outset been focused on students and faculty, providing them with the resources to not just become proficient in their fields, but to become leaders.

"It used to be that students would come in to a school of music and then go get a job," says Dickson, the executive director and friend of the Joshi family. "Now when you come here, we want you to go out in the world and help define your profession." ■

Mexico's Banda Sinfónica del Tlalnepantla in session in TEC's new Studio A, a scoring room with variable acoustics and space to accommodate groups of up to 50 musicians.

TEC EXPANSION

New Studios From the Malvicino Design Group Boost Audio Education in Mexico

BY BARBARA SCHULTZ

The Monterrey Institute of Technology is a 31-campus network of higher-education throughout Mexico. TEC, as it is commonly called, boasts numerous highly regarded programs, including an award-winning school of medicine, *The Economist*'s top-rated business school in Mexico, and many more. TEC is constantly growing and upgrading to meet the needs of its students, and recently the school's Recording Arts program has added a number of state-of-the-art studio facilities.

New York-based studio designer Horacio Malvicino has designed studios for four TEC campuses in four different cities: Monterrey, Mexico City, Santa Fe and, most recently, State of Mexico (Estado de Mexico), northeast of the capital.

"They already had the program on the State of Mexico campus, but they just had two tiny studios with an older Tascam console and an old 8-track, half-inch tape machine," Malvicino says. "They started the program two years ago, and they were busing students to [the Mexico City] campus about half an hour away to use their studios, but the traffic in Mexico City is insane—compared to it, New York is a piece of cake. People started moving to the other campus because they didn't have a studio. So they asked us to rush to get these new studios done in eight months, from scratch."

The State of Mexico's new studios went online last September; like many high-end studios within educational facilities in the U.S., they're designed to serve student projects and instruction, as well as occasional live performances and commercial clients. Included is the large 23x20-foot Control Room A, which is connected to a 40x260foot scoring studio, with a 13x8 iso booth and variable acoustics, that can accommodate up to 50 musicians.

THE TEC STUDIOS TEAM

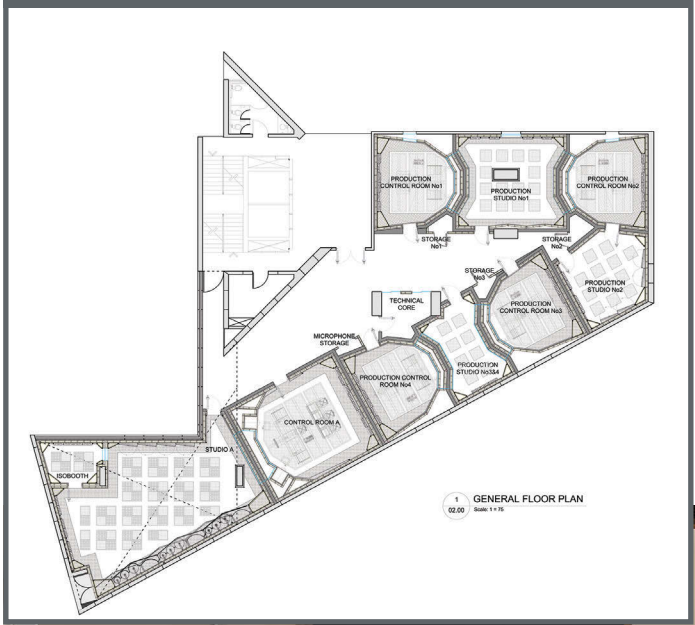
Designer/Acoustician:
Horacio Malvicino/The Malvicino Design Group

System Integration: Inake Prades Cardenas

General Contractors: Veronica Vernal Reyes and Israel Zermeno

Studio Manager/Program Director:
Francisco Javier Ortiz Cerecedo

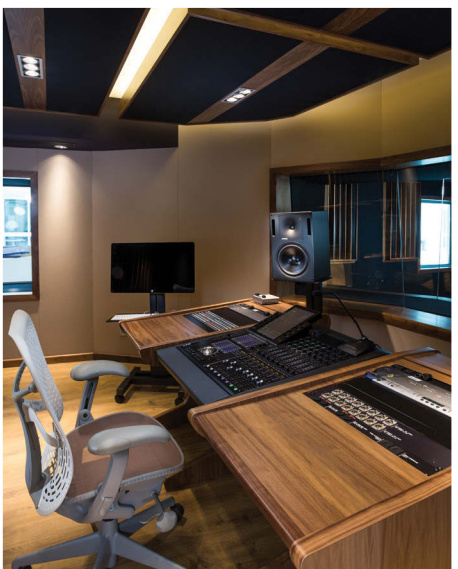
Equipment Provider: Vari International



Studio A is the TEC State of Mexico campus' flagship. Major equipment in Control Room A includes a 32-fader Euphonix Fusion console, three Neve 1073 modules, Ocean Way HR-3 main monitors powered by QSC amplifiers, and Pro Tools HDX-2 system.

The 20 x 14-foot Production Studio 1 adjoins control rooms 1 and 2. Control Room 2 (20 x 20 feet) also adjoins Production Studio 2. A third tracking space (20 x 8 feet) is situated between Production Control Rooms 3 and 4.

Adjacent to Studio 1, Production Control Room 1 includes an Avid C-24 control surface and Pro Tools HD Native. Monitoring is via Adam Audio S4X-H loudspeakers. Outboard gear includes a Bricasti M-7 Stereo Reverb Processor and Universal Audio 1176.



Studio Architectural Photos: Rod de la Garza

Malvicino also designed four identical 15x18 production studios, which share two tracking rooms and a central machine room between them. All of the studios are interconnected with audio and video tielines, as well as Dante networking. "In all of the smaller rooms, we used the same control room layout and acoustics, but with different control surfaces," Malvicino explains. "And it's the same with studio monitors and outboard gear—each room is different."

The idea is that students will not only gain experience using a variety of platforms that they may encounter in other studios, but also, because the rooms are acoustically identical, they will have the opportunity to compare the sonics that different pieces of gear impart.

At press time, Malvicino was designing new studios for a fifth TEC campus—the one situated in Guadalajara. "In Mexico, the music business is actually booming," Malvicino says. "People buy CDs there and download music. So there is a demand for more people to do studio work." ■

Production Studio 3 is shared by Control Rooms 3 and 4. Production Control Room 3 features an API 3208, while the identical Production Control Room 4 offers an SSL Nucleus.

Production Control Room 3

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DAWS DO IT ALL

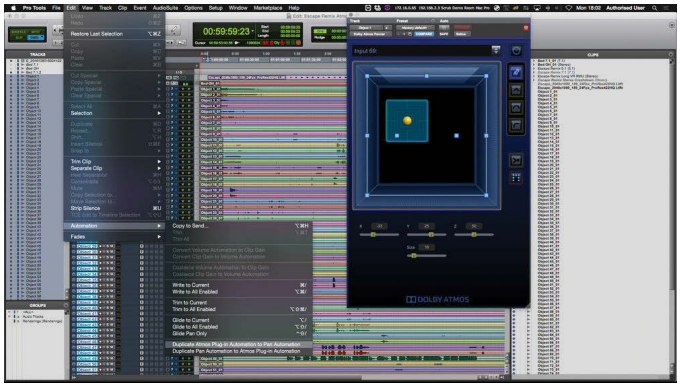
What's New in Workstations

BY STROTHER BULLINS

Last week I was reminded of how the digital audio workstations of 25 years ago were still far, far away from realizing their potential. While talking about their recent remastering work with R.E.M., producer Scott Litt and engineer Clif Norrell mentioned that *Automatic for the People*—a remarkably rich record from 1992, with all ingredients of grand Southern rock yet with a sound far larger than the South itself—noted that the originals were from 24-track analog and digital 32-track tape (ProDigi format), and there were multiple rooms and lots of people involved. There were DAWs available back in 1992, but they weren't typically used on a project of this scale.

Today, it's not unusual to write and record a song, with string arrangement, alone on a laptop while wearing headphones, conducting the entire production (with all apologies to proper conductors). And *Automatic for the People* will be available in the Dolby Atmos format on November 10. It's a very different world.

The following DAWs can do things as simple as compile and mix 48, 72 or however many channels you want. You can remix old tracks into a multichannel album release. Many of them include rich sources of tones, with input-to-master production features, to gain nearly any stylistic effect you can dial up. All options are available to all of us. Automatic for the people, indeed.



With **Avid's Pro Tools 12.8** DAW update, the industry leader joins forces with Dolby to include a suite of Atmos workflows into Pro Tools | HD, to effectively allow more audio content creators to work more easily within burgeoning multichannel and object-based audio formats. The new features include built-in Dolby Atmos panning, support for 7.1.2 stems, Avid pro mixing control surface integration, automation with the Dolby Rendering and Mastering Unit (RMU), and support for Avid NEXIS shared storage, increasing workflow speeds and overall efficiency.

Broad-based audio firms such as **Yamaha**, encompassing both **Steinberg** and Yamaha Commercial Audio, give its hardware users every good reason in the world to adopt anything between the most basic Cubase to a sophisticated Nuendo 8 rig as their primary working DAW. Yamaha notably embraces all pro-grade DAWs in its Nuage environment; for example, up to three different DAWs can be directly switched and controlled from a Nuage fader unit, etc.

Steinberg Nuendo 8 features include Sound Randomizer, Direct Offline Processing, Auto ReNamer, User profile manager, ADR enhancements, MixConsole History, Sampler Track, new zone concept, new video engine, reworked plug-ins and improved performance, and Game Audio Connect 2. Most notably, Nuendo 8's Direct Offline Processing with its Live!Rendering capability "enables users to easily apply frequently used techniques in an offline plug-in chain and render the techniques offline in real time."

Mac OS-centric DAW manufacturer **MOTU** is now shipping Digital Performer 9.5, a free update for all DP9 owners that introduces ZTX Pro technology, an audio time-stretching and pitch-shifting DSP developed by **Zynaptiq GmbH**. ZTX Pro has been deployed throughout Digital Performer 9.5 wherever audio time stretching can be applied. It can be used with drum loops, solo instruments, multitimbral material, vocals, full mixes, mono, stereo, etc. ZTX Pro pitch-shifting is offered for use on both monophonic and multi-timbral audio material, including full

mixes. A new relative pitch-editing layer in the Sequence Editor allows users to transpose any audio material up or down graphically by interval, using a draggable pitch bar or a pencil tool for pitch correction, adding or removing vibrato and so on. The new Effect Performance window which monitors processing loads, allowing users to identify and manage plug-ins that impose high processing demands on their computer.

Apple's Logic Pro X version 10.3 features an updated interface, new production-oriented features and support for Mac Book Pro's Touch Bar. Logic Pro X 10.3 features a 64-bit summing engine, 192 additional buses and true stereo panning, providing discrete control of stereo signals. Tracks can now be added remotely from iOS to Mac via a new share option: Users simply upload a special GarageBand-compatible version of a Logic project to iCloud, then open on their iOS devices. When the project is saved back to iCloud, any newly added tracks will automatically appear in the original Logic project the next time it is opened on a Mac.

Fully embracing AoIP and immersive audio trends, **Merging Technologies** now links Pyramix 11 with Aneman, the company's new Audio Network Manager tool. It allows Ravenna/AES67 devices within one interface. Further, Pyramix 11 has broadened its 3D immersive audio toolkit with a new FX Rendering feature for multitrack and multi-effects processing, along with the implementation of a HOA panner and binauralizer directly within the Pyramix 11 mixer. Also, multichannel timeline based advanced effects processing lets users build signal flow processing throughout any preferred VST and VS3 plug-ins, from mono to multichannel. It can then be directly applied to the clip in the timeline while keeping the edits/fades.

PreSonus' new Studio Magic, a plug-in suite for the Studio One 3 DAW for Mac and Windows, is available free to registered owners of any currently available PreSonus audio interface or mixer. The software bundle includes seven popular plug-ins in Studio One Native Effects format from some impressive names in effects and processing: Arturia's Analog Lab Lite, a collection of physically modeled classic analog synths, organs, string machines and pianos from Arturia's V-Collection; Brainworx's character-rich bx_opto compressor; Eventide H910 Harmonizer and 2016 Stereo Room Processor; Lexicon's MPX-i Reverb; Mäag Audio's EQ2 two-band equalizer; and the SPL Attacker micro-plug-in, which employs the same Differential Envelope processing technique as the legendary Transient Designer.

Harrison's Mixbus version 4.0, a flexible DAW available for Mac, Windows and Linux OS, incorporates hundreds of new improvements, most of which were inspired by the requests of Mixbus users. Key updates include a new-generation GUI, various new parameters, and the ability to load VST plug-ins on Mac OS in addition to AU and LV2, to allow for easier Mac-to-Windows-to-Linux sharing. Further, Mixbus v4 is session

file-compatible with other Ardour-using workstations, including Ardour5, Waves Tracks Live and iZ Session. Recognizing Pro Tools' ubiquity in the marketplace, Harrison also offers .ptf and .ptx file import as a new item in its Session menu. This feature allows users to select a Pro Tools session file and import its raw audio and MIDI data.

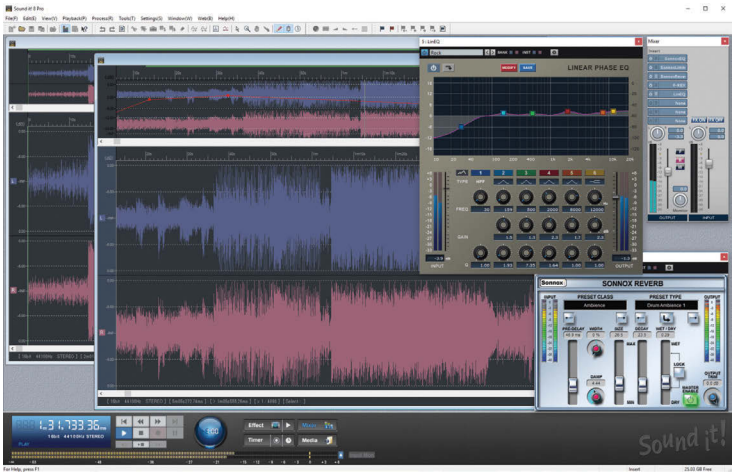
In May, **Cakewalk**—launched in 1987 when Greg Hendershott, a student at Oberlin College, turned some software he had developed into an MS-DOS-based sequencer—marked its 30th anniversary with its most advanced SONAR-branded form yet, along with more low-cost options for entry. SONAR is available in four configurations: SONAR Home Studio, SONAR Artist, SONAR Professional, and SONAR Platinum for $49, $99, $199 and $499, respectively. While Professional and Platform are rich with sounds and sonic tools galore, Home Studio and Artist provide essential tools that are arguably bargains.

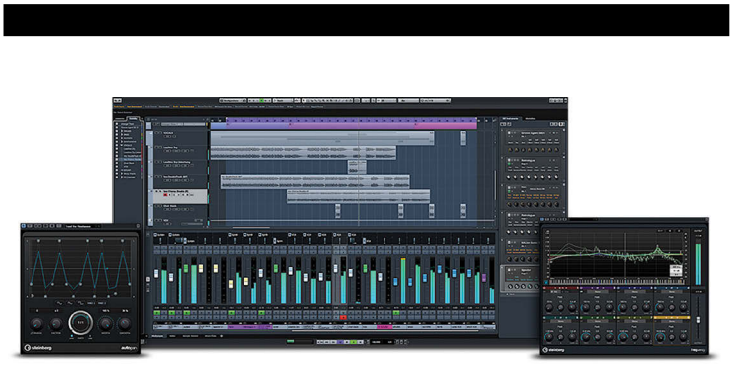
Magix Sequoia 14 offers a bevy of new features, including Avid Pro Tools | S6 controller extensions, streamlined functionality via the Eucon iOS app, a full version of SpectraLayers Pro 4, Celemony's Melodyne essential package, an alternative interface design via Birdline's Platinum Pack V. 6.0, ARA interface, Tempo automation for audio recordings, Audio to MIDI conversion, zplane élastique V3 time-stretch algorithm, and a range of new shortcuts, exporters, processors and other features that encourage better multiproject management overall.

Meanwhile, **Samplitude Pro X3** now includes an ARA (Audio Random Access) extension for VST, which enables closer interaction between Samplitude and Melodyne; 70 GB of sound content; multiple outputs for complex productions; VCA Fader for mixing; up to 24 virtual instruments; 32-bit floating point calculation, spectral display and editing, multiple outputs, and much more.

OTHER DAW DEVELOPMENTS

Just when you think you've heard of everyone that's doing DAWs, a new name surfaces. **Internet Co., Ltd.**, Osaka, Japan, has announced Sound





it! 8 Pro, a 2-track audio editing DAW for Mac and Windows. Sound it! 8 Pro supports up to 768 kHz, 32-bit PCM files, allows native Direct Stream Digital (DSD) recording and playback up to 11.28/12.28 MHz (DSD256), and is reportedly well-suited for mastering for SACD.

Meanwhile, **iZ Technology** has optimized Windows 8.1 Professional OS-based CPUs. The RADAR system features a quad-core i7 processor, allowing users to "go from hitting the power switch to launching your favorite DAW in less than 30 seconds."

Instrument-like, music-making DAWs—such as Apple's Garageband, Ableton Live 9, Propellerhead Reason 9.5, and FL Studio 12, and streamlined DAWs including Reaper 5.5 and Mackie Tracktion—further blur the lines between sound sources, traditional performance and production than ever before.

Free with an Apple CPU purchase, **GarageBand** is now in version 2.2, gaining the Alchemy synth and a new sound browser. The Alchemy synth comes to iOS with over 150 Apple-designed patches from a wide variety of genres, including EDM, Hip Hop, Indie, Rock, Pop, etc. With Alchemy's Transform Pad, users can morph between eight sonic snapshots in real time. Further, GarageBand for iOS gains Multi-Take Recording, allowing multiple passes, plus the ability to audition and switch between takes. Also new is Audio Recorder that adds fun, one-tap vocal effects as well as pitch correction, distortion, delay, and an interactive graphic Visual EQ.

Finally, iOS-based DAWs such as **WaveMachine Labs** Auria Pro, as well as streamlined versions of desktop-borne DAWs such as Cubase, continue to gain users as new-generation content creators use the computer most comfortable to them. For mobile OS users, a notable improvement has been increased numbers of hardware devices ready for iOS's Lightning connections.

Strother Bullins is NewBay Media AV/Pro Audio Group's Technology Editor.

SPECIAL FOCUS: AUDIO EDUCATION

FEMALE FUTURE

Nonprofit Programs Train Women And Girls for Audio Careers

The Women's Audio Mission's new Oakland, Calif., facility provides afterschool training to girls from local public schools.

The gender imbalance in the audio industry is easy to see. But changing the mindset of a long-entrenched boys' club? That's not so easy. One solution that's clear, however: Bringing more women into audio careers starts with education and access—programs that give girls the tools to build on their passion for music and tech.

Engineer and musician Terri Winston, founder and director of the **Women's Audio Mission**, has made women and girls' audio education her life's work. She founded WAM in 2003, opening its first studio/training facility in San Francisco's Mission District. More recently, WAM has opened a satellite facility across the Bay, in Oakland.

"We developed a partnership with the Oakland Unified School District and settled in the Fruitvale neighborhood because there are eight public schools within walking distance and 14 more with an easy transportation corridor," Winston says. "These are chronically underserved girls, with a 30 to 40 percent high school dropout rate, 96 percent low income, 90 percent girls of color. This is our target population."

Thanks to a dedicated staff—including former student intern Victoria Fajardo, who leads efforts at the Oakland facility—and donated equipment from Ableton, Audient, Tascam, Mackie, Avid and others, WAM gives at-risk girls the training to make music, despite the fact that most of their schools offer little to nothing in the way of arts education.

"Seventy percent of these kids have never touched a musical instrument," Winston says. "That's sad to me, but now we can give them an outlet and a way to amplify their voice."

Leslie Ann Jones works in the studio with one of IMA's recording students.

The **Institute for Musical Arts**, founded by Ann Hackler and June Millington, also began on the West Coast—in Bodega, Calif., in 1986—but in 2001, IMA moved to rural Goshen, Mass., where Hackler and Millington offer music and recording camps and workshops for preteen and teenage girls, in an idyllic atmosphere.

"We own this piece of property; it's 25 acres with a house and two barns, and to one of the barns we have attached a bunk house and two recording studios," explains Millington, a groundbreaking guitarist who co-founded the all-female rock group Fanny toward the end of the 1960s. She still performs and works on personal projects, such as her upcoming memoir, but her main concentration is what she calls "playing it forward": giving budding musicians and recordists the support and skills to realize their creative ideas.

"We had zero access to studios and equipment when I was coming up, let alone the possibility of turning on the TV and seeing anyone who looked like us playing out," Millington reflects. "We talk about 'changing the world one girl at a time,' and that's all about giving them that access to equipment. I'm totally convinced of that."

Like WAM, IMA benefits from the generosity of audio developers, such as Avid, Millennia Media and Grace Design. Mogami provided all of the cabling for the facility, and the Walters-Storyk Design Group donated the room designs. "In our larger studio, we have an SSL board that was given to us by Berklee School of Music," Millington adds.

The console donation was spearheaded by Berklee professor/engineer/producer Leanne Ungar (Leonard Cohen, Willie Nelson, etc.) and WSDG systems design engineer Judy Elliot-Brown, who headed up the installation. Another industry pro who has shared her expertise with IMA students is multiple Grammy-winning engineer and Skywalker Sound Director of Music and Scoring Leslie Ann Jones, who spends part of every summer working with IMA campers.

"IMA was created specifically for girls and young women, and I want them inspired and empowered to record their own music and not let the lack of understanding technology hold them back," Jones says. "I did not have that when I was starting out and was completely self-taught until I actually started working in studios. It is not really about walking out after 10 days and becoming an engineer, but just like at their performance camps, the girls are much more comfortable and have a greater understanding of the process of recording music. The rest is up to them." ■

In Studio A, students listen in. Flex48 panels are visible on the walls.

UNIVERSITY OF SAINT FRANCIS UPGRADES IN STYLE

University of Saint Francis upped its game last year by purchasing the 90-plus-years-old, Spanish-style Scottish Rite Center in the university's hometown of Fort Wayne, Indiana. The building's existing performance hall remains intact, but acoustician Gavin Haverstick of Haverstick Designs helped the school treat 31 other rooms in the building, including classrooms, practice rooms, ensemble rooms, edit and mastering suites, and studios.

"They had a technology program before, but it was in a building they were leasing," says Haverstick. "Buying their building allowed them to treat the rooms as they wished. We use off-the-shelf treatments for some of the rooms, such as in the mix and edit rooms, but a lot of the rooms have brand-new, custom treatment packages."

Several of the rooms include Acoustic Fulfillment's Flex48 panels, which Haverstick helped develop and patent with the manufacturer to offer variable acoustics when plastic shields are repositioned or removed. "They installed 64 of those in multiple rooms—in the Studio A live room, the iso booths, and others," Haverstick says. "It allows them to tailor the reverb time of the room for whatever piece of music they're performing. They're the first university to install that product, and it helps when they teach their students about acoustics."

Equipment in the University of Saint Francis' new studios was purchased from Fort Wayne neighbor Sweetwater, and includes a 32-channel Neve 5088 console and ATC SCM25A monitors in Studio A, and an Avid S6 and JBL 5.1 surround monitoring in the B room.

Photo courtesy of Full Sail University

NEW GEAR, NEW GRADUATES AT FULL SAIL

At Full Sail University, the school's Studio A received a new Rupert Neve Designs Shelford Edition console this year, chosen "because of the sonic picture it brings to the table," says Darren Schneider, the school's Director of Advanced Recording. "Another point is it has a very vintage approach to it: There's no automation. It's Neve at its finest. It also complements the technology in the other major studios that we have on campus. Studio B, next to it, has a 64-channel API Vision, and then our Audio Temple has a 72-channel SSL Duality."

Full Sail also recently made a significant investment in Slate Raven controllers: "That's been a really big change for us over the past four years, but particularly in the last couple of years," says Dana Roun, Full Sail Director of Audio Programs. "Many of our different audio programs, with the exception of online students, experience the Raven platform now."

Speaking of the online students, Full Sail is about to celebrate the first graduating class from its online Audio Production degree program. "It's one of the fastest-growing programs we've ever had," says the Program Director Brian Smithers. "Those students get soup-to-nuts recording education in an online environment. They have a really well-outfitted laptop production package with microphones and Pro Tools, Logic, Ableton Live, Melodyne and all the things they need, not only to be an audio professional but also to get a jump start in their career."

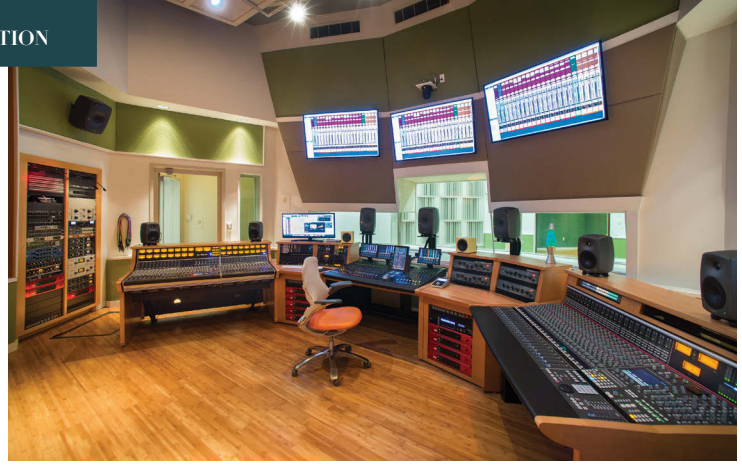
STUDIOS ADDED AT THE CONSERVATORY OF RECORDING ARTS AND SCIENCES

Director of Education Mike Jones works with students in Studio G.

The Conservatory of Recording Arts and Science has added two new studios on its main campus in Tempe, Arizona. Each of two control rooms features an SSL AWS 948 console and Pro Tools 12 system. "We created a mirror topology: two identical control rooms with recording space between them," says CRAS admissions director Ghery Fimbres. "Students are able to do one session in the interior recording space, but have two different functions of that session happening in the opposing control rooms."

The new studios were designed by Alex Otto, a CRAS alum. "Now he's a studio designer, contractor and builder," Fimbres says. "The two new studios are referred to as F and G, so you can see that we've started climbing the ladder as far as letters of the alphabet."

The studios are designed for classroom instruction as well as student recording projects. CRAS also has expanded its broadcast instruction facilities with a new 42-foot Mobile Broadcast Unit.



UNIVERSITY OF MIAMI UPDATES STUDIO

Lou Clark of Sonic-Space provided acoustical consulting, and Parsons Audio handled system design and integration for the redesign of the Weeks Center studios at the University of Miami. The university requested an aesthetic update to the rooms, which were built around 1990, as well as upgrades to treatments, infrastructure and equipment.

"In the tracking room, fabric panels were torn and the room needed to be freshened up, but the control room was one of those old-style rooms with the console and big speakers up front, and behind a credenza with a step up and room for a few people to sit back there. Well, that credenza and step got torn out; we raised the whole floor up, replaced the wiring underneath. It was a substantial change and a lot of work, particularly since the structure is solid concrete."

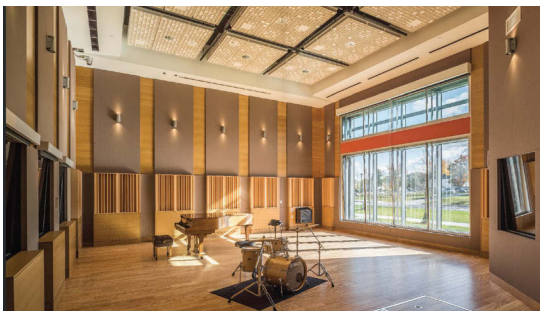
Removing the credenza and leveling the floors, and the integration of a video monitoring system, made it possible for up to 40 students to attend a class or session in the control room. The new design also includes three consoles—Avid S6, API 1608 and an SSL AWS 948—and numerous types of preamps and processing installed in a custom desk designed and built by Sound Construction & Supply.

A unique aspect of Miami's upgrade was the inclusion of students in the planning and build. The school's production engineer, Chris Palowitch, who graduated from the music engineering program in Spring 2016, helped to create the studio that he now manages. "We were looking for a space that gives students a large variety of sounds to choose from," Palowitch says. "We were really going for that ideal studio space that can not only be used as an educational facility but also can be regarded as a pro studio."

BOWLING GREEN ADDS FACILITY

New studios within Bowling Green State University's School of Media and Communication (Bowling Green, Ohio) were designed by Janson Tsai Design. Whereas the program formerly served students with a collection of small edit rooms, they now boast a 1,300-square foot recording/mixing facility that includes a 500-square-foot Avid S6-equipped control room, as well as a TV production studio.

On Bowling Green's wish list were room to accommodate up to 15 students at a time in the control room, and a tracking space with natural light. "They wanted us to design these rooms to be similar to a private recording studio, so when the students get out of college they have a sense of what's out there in the industry," says Dennis Janson.



"The studios will serve Media Production majors," says BGSU instructor Chris Cavera. "We are also offering the space to Recording Technology minors from the College of Musical Arts. Recording Minors will focus on music production, while Media Production Majors will focus on podcasting, radio production and post-production for video.

"The new facilities represent a giant leap forward for both programs," Cavera continues. "I'm hoping the studio will become a central hub for Media majors, Music majors and film students looking to produce high-quality audio. Our live room also features Foley pits, a lighting grid, a projection screen and video inputs that tie into the video production area. In addition to the recording space, the newly renovated building also houses a large video production studio and two radio stations. We wanted the new spaces to blur the lines between audio and video production and offer a true multimedia experience." ■

UPDATES FROM UMASS-LOWELL AND KENT STATE

As we went to press, exciting changes were are on the horizon for a couple more audio education programs. At the **University of Massachusetts-Lowell**, Dr. Brandon Vaccaro took over William Moylan's duties as Coordinator of Sound Recording Technology within the Sound Recording Technology program. Vaccaro, who joined the university in 2014, has a long, esteemed background in academia and engineering, and as a composer for TV and film. Moylan, who had served in his position since 1983, says he is pleased to pass the torch to a professor with a "deep skill set for administration and enough similarity of vision to my own to give consistency to the program... After more than three decades of directing the program, I will finally have time to pursue my research, writing and recording projects."

Meanwhile, **Kent State University** (Kent, Ohio) has begun constructing a ground-up facility that will serve its Music Technology program, which operates out of a satellite campus in Stark County, about 25 minutes south of the main campus.

With an acoustical design by Threshold Designs, the new building is scheduled to be completed during the first week of February 2018, with consoles coming online the following week.

"The Studio A control room is designed around a 32-channel API Vision board," says Ian Anderson, assistant professor of music at Kent State. "The tracking room will be larger than Studio B's, but the control room is smaller because that studio serves our upper-division students and we limit enrollment in those classes."

Brandon Vaccaro with Vivek Patel at Universtity of Massachusetts-Lowell

Studio B is to be based around an Audient ASP 8024 console, and both studios will take delivery of Barefoot Sound Masterstacks main monitors. Also included in the project will be rehearsal space, practice rooms, a percussion studio, and music production labs for computer-based projects. ■

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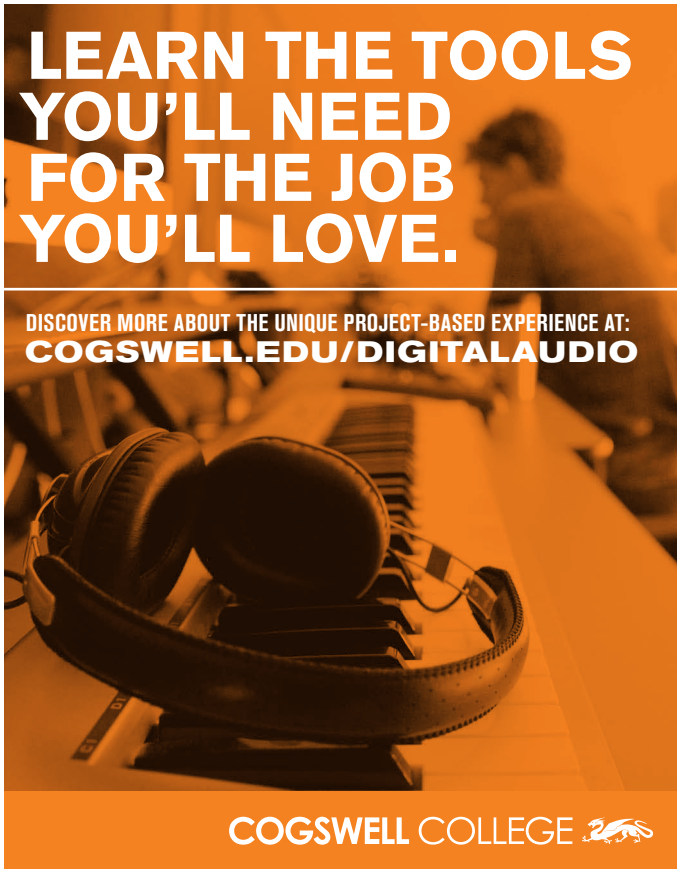

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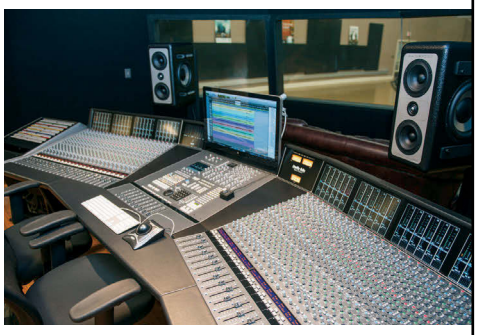

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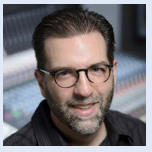

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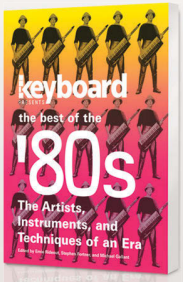

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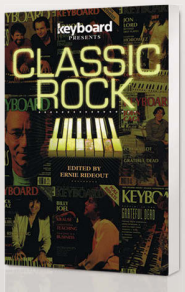

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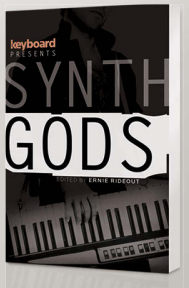

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Tech // new products

PMC RESULT6 NEARFIELD REFERENCE MONITOR

New Drivers, Plus Class-D Amps

PMC's result6 ($2,950 a pair) features a 27mm soft-dome tweeter with dispersion grille and a mid/bass unit composed of a doped natural fiber. Other features include dual amplifiers supplying 65W and 100W of power to the HF and LF drivers, respectively, and rear-panel trim controls allowing users ±10dB of amplifier output level adjustment. The pure analog crossover, which was also designed specifically for the result6 using circuit-modeling techniques, keeps both drivers working at peak efficiency, while non-invasive limiting protects the LF and HF units from damage without adversely affecting their sound.

BRAINWORX BX_CONSOLE G PLUG-IN

Classic British Sound for Your DAW

The E Series and G Series modeling plug-ins from Brainworx ($299 new/$99 crossgrade) are distinguished by their respective filter sections—both Pink and Orange revisions—that deliver a contrasting character when treating frequencies. The full-featured channel strip includes a Compressor/Limiter, Expander/Gate, 4-band parametric EQ, and wide-ranging High Pass and Low Pass filters. Brainworx Tolerance Modeling Technology (patent pending) simulates channel-to-channel variances in electronic components for the most realistic analog sound. Like the original, the EQ can be placed before or after the Dynamics section (Compressor/Limiter and Expander/Gate) in the audio path or routed to the Dynamics sidechain.

AMS NEVE 1073 SPX

New Classic With Optional Digital I/O, and a Few Extras

The 1073SPX ($2,695) has a Neve 1073 Class A design microphone preamplifier with 3-band EQ (fixed HF plus two switchable bands with cut/boost capability) and highpass filter. The 1073SPX introduces extra functionality with integrated DI input, phantom power, selectable Insert feature, level meters, output level control and I/O connectors for easy and direct connection of microphones and instruments. The 19-inch 1U rackmount unit includes an external multi-voltage power supply. An optional Digital I/O module (price TBA) provides AES and FireWire digital connectivity at a range of sample rates.

STERLING AUDIO ST170 AND ST169

Ribbon and Multipattern Tube Condenser Microphones

The Sterling Audio ST170 ($299.99) features a figure-8 pickup pattern, active phantom-powered design and SPL handling up up to 132 dB. The side-address mic weighs 11.4 ounces and offers a 2-micron aluminum ribbon element. It ships with a metal shockmount and sturdy aluminum carry case. The ST169 has a 1-inch diaphragm, selectable cardioid, omni, and figure-8 polar patterns, switchable highpass filter and attenuation pad, and can handle up to 142 dB SPL. It ships with Sterling's SM8 premium metal, band-suspension shockmount, aluminum carrying case and low-noise power supply.

DYNAUDIO PRO 9S AND 18S SUBWOOFERS

Long-Throw Boomers for Stereo or Surround

The new 9S (one woofer, $1,099) and 18S subwoofers (two opposing woofers $1,949) from Dynaudio Pro feature a frequency range from 16 to 175 Hz. Powered by a high-end 300-watt Class D amplifier, the 9S long-throw driver delivers low-end extension and SPL performance, while the 18S is powered by a 500-watt amplifier and features a powerful DSP engine and built-in presets for Dynaudio Pro studio monitors. Both units come with double front baffles, adjustable lowpass filters from 50 to 150 Hz and SAT output with switchable highpass filter, all housed in sealed cabinets. Each has a signal-sensing auto-power circuit that saves energy when not in use, and for larger rooms, it is possible to daisy-chain more 9S or 18S subs, having the first unit control the overall volume.

HAFLER HA75-DAC HEADPHONE AMP

Tube-Based Gainer With Variable Impedance

The Hafler HA75-DAC ($1299.99) is an audiophile-quality tube-based headphone amplifier and USB digital-to-analog converter featuring both XLR and RCA analog connections. The USB DAC for digital audio playback operates at up to 192kHz resolution, allowing for connection to a laptop with high-resolution audio files along with separate analog audio sources. Switching is via a front panel selector switch for analog and digital inputs. The impedance selector can be set from 20 to 400 Ohms, allowing users to set the optimal impedance to match all types of headphones. Also onboard is a three-position voicing switch that can be used to boost low frequencies, increase overall loudness or set to bypass for neutral voicing.

3DIO FS SERIES TRANSDUCERS

Stereo Binaural Microphones

The 3Dio comes in three models, FS ($499), FS XLR ($799) and FS Pro II ($1,999). The 3Dio FS and FS XLR models contain integrated and matched Primo EM172 mic capsules inside each of the prosthetic ears. The capsules are small-diaphragm, omnidirectional condenser microphones. The 3Dio FS Pro II model contains integrated and matched DPA 4060 microphone capsules inside each of the prosthetic ears. A full 20-20k Hz frequency range and the high-sensitivity of the 4060 capsules make the FS Pro II ideally suited for professional studio recording and high-end binaural recording. Common features include a bass roll-off switch beginning at 160 Hz, a 5/8-inch microphone stand adapter, a 9V alkaline battery within the chassis, and polyurethane ears.

ANTELOPE AUDIO VINTAGE COMPRESSORS

FPGA Hardware-Based Effects Plug-ins

The latest additions to the growing processor library from Antelope Audio features models of the classic BA-6A, FET-A78, SMT-100A, and Grove Hill Liverpool compressors. The new units are compatible with Antelope's own Thunderbolt and HDX audio interfaces—including Orion Studio HD, Goliath HD, Orion Studio Rev. 2017, Orion32 HD, Zen Studio+, Orion Studio, Goliath, Orion32+ and Zen Tour. Features carefully mimic the original units, as do the sonic characteristics, bringing classic integrity to any production.

New Sound Reinforcement Products

MIPRO TA-80 DIGITAL PLUG-ON TRANSMITTER

Eight Gain Levels, Selectable Phantom Power

The TA-80 from MIPRO ($170) is a true digital wideband wireless plug-on transmitter that comes with a balanced XLR mic input jack and is compatible with all MIPRO ACT-8 Series receivers. The TA-80 has eight gain levels and offers selectable 12V or 48V (at 10 mA maximum) phantom power, which can be switched off for use with dynamic microphones. The transmitter has a flat and wide 20-20k Hz frequency response, low THD and noise floor, fast transient response, strong anti-interference capability and a high S/N ratio. The green backlit LCD shows all operation parameters, and its high-capacity lithium battery facilitates five to eight hours of continuous use per charge.

SOUNDCRAFT VI1000 DIGITAL MIXING CONSOLE

Smaller Footprint Retains Features of Bigger Desks

The new VI1000 is the most compact member of the Vi-000 family (34x32 inches). Features include Soundcraft's Vistonics IITM channel strip with FaderGlow, and SpiderCore—a powerful built-in DSP and I/O engine based on Studer technology, offering 40-bit floating-point processing. The Vi1000 also can function as an additional remote-control surface for any of the larger consoles in the range, using the company's Mirroring feature. There is gating and compression on all 96 channel paths, audio processing including the BSS DPR901ii Dynamic EQ, and Lexicon multi-effects via an insertable processing pool—plus the ability to insert up to 64 external devices. Studer vMIX automatic voice mixing is built in, and BSS 966 graphic EQs are available on all output buses. Additionally, there is rear-panel local I/O featuring 16 HQ mic/line inputs, 16 line outputs, and two 64-channel expansion slots that allow up to two MADI-based Stageboxes to be connected, or the slots provide access to an extensive range of D21m I/O option cards.

YAMAHA MMP1 STUDIO MONITOR MANAGEMENT SYSTEM

Advanced Routing, DSP, and a 40 x 36 Monitor Matrix

The MMP1 from Yamaha ($TBA) is a 40x36 Monitor Matrix to monitor source mixing that supports formats from Stereo to Immersive audio, including Dolby Atmos, Auro-3D and NHK 22.2. Other features include eight cue outputs, two talkback systems, cough mute, cough mute override, and studio speaker auto-mute. A 32x32 speaker management matrix with crossover filters for bass management on all channels follows the monitor matrix, allowing greater freedom and flexibility rather than just providing a limited selection of preset patterns. Both Finite (FIR) and Infinite (IIR) filters are provided for precise bass management, and to maintain flat phase response characteristics between channels for optimum sonic clarity and imaging. Time alignment delay and EQ are also included for comprehensive speaker output control.

GIG GLOVES ONYX

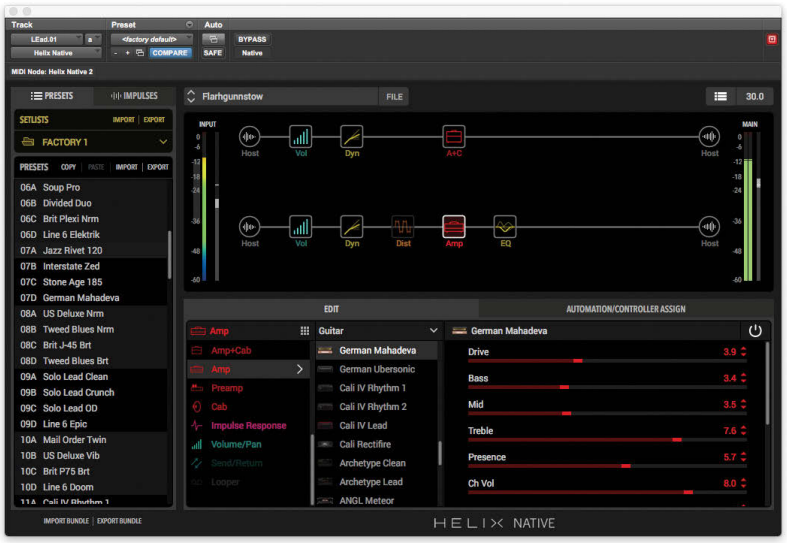
Tough Wear for Live Sound Pros

Gig Gloves from ONYX ($49) feature tough, durable material and strong nylon threading and all-black material on the entire surface of the glove, allowing the wearer to remain discreet. TPR molding on the back of hand and fingers ensures ultimate protection against impact, abrasions or pinching, and an articulating design ensures reduced fatigue even during long periods of use. The padded grip protects the palm while allowing a strong hold for carrying, even in slippery conditions.

By Mike Levine

LINE 6 HELIX NATIVE

Plug-in Version of Premier Amp-and-Effects Modeler



The Helix Native plug-in features a large collection of high-quality amp, cabinet and effects models.

Helix Native is an amp-and-effects simulation plug-in that uses the same modeling technology as the company's flagship Helix hardware guitar processors. Helix Native's preset architecture is also the same, which makes it possible for users to interchange patches between a Helix pedal and the plug-in. Not only is Helix Native designed for processing DI guitar sounds with an amp, cabinet and effects models, but it also offers a small collection of bass amp models, and can be used as an all-purpose studio multi-effects processor.

PLAYING WITH BLOCKS

Helix Native's user interface is well-organized and straightforward, and is divided into three major sections. The largest, called the Signal Flow Window, is where you configure the basic structure and routing of a patch, which Line 6 refers to as a Preset. Two banks (called "Setlists") of 128 Presets are included, along with a smaller one (31 patches) containing several routing Templates and some vocal and auxiliary Presets. The plug-in provides five additional banks for saving your own Presets, and you can Import and Export Setlist files.

Helix Native's default effects chain is serial and can contain up to eight Processing Blocks. You can have even more if you create a parallel chain. Each Block can be dragged anywhere in the signal chain, and you can also configure a chain that splits and then merges the signal, and even a parallel one.

Each Processing Block can hold one effect that is chosen from one of the following categories: Distortion, Dynamics, EQ, Modulation, Delay, Reverb, Pitch/Synth, Filter, Wah, Amp+Cab, Amp, Preamp, Cab, Impulse Response and Volume/Pan.

Within each category, Helix Native offers both mono and stereo components. This is important because the plug-in is capable of discrete stereo processing if all of the effects in your chain are stereo. If you add a mono Block, you will get mono or mono-to-stereo operation, depending on how you instantiated the plug-in.

One notable missing feature in Helix Native is a tuner. It's not a critical omission, as many DAWs include their tuner plug-ins, but it's an odd one for an amp-and-effects modeling plug-in, and certainly a little inconvenient.

READY FOR INSPECTION

Unlike some amp-modeling software, parameter editing doesn't take place on a graphic depiction of the amp or effect's front panel. Instead, after you select a component in the Inspector Window, its parameters show up as simple sliders, arranged vertically.

The available parameters aren't always the same as on the original hardware, but usually are pretty similar. The amp models all have addition-

TRY THIS

You'll need a speaker cabinet impulse response file to do this. Create a new Preset (or edit an existing one) with an Amp Block selected rather than an Amp and Cabinet Block. Create a new Block to the right of the amp in the signal chain and assign it to the Impulse Response category in the Inspector. Select the Impulses button at the top of the Librarian window, and you'll see the Impulses list. Click on a location in the list and then click on the Import button. Browse to the directory with your downloaded IR file and double-click it. It will appear in the Impulses list. Now select the Impulse Response Block (you can choose either 2048 or 1024, which refers to how many samples are used). Click the number in the IR Select parameter that corresponds to the Impulse Response you want from the list, and it will load into the Block.

al controls related to amp circuitry behavior that isn't user-adjustable on the actual amps. These include Sag, Ripple, Hum, Bias and more. Although it's cool to know that they are available, they'll likely only interest hard-core tone tweakers.

Unlike actual guitar amps and stompboxes, where you can see all the settings at a glance on the front panel, some of the Helix Native components have too many parameters to see without scrolling the list, which detracts from the realism a bit. I wish there were a way to expand that window so you could see them all at once.

As with any modeling software, the proof is in the authenticity of the sound and feel of the emulations. In this area, Helix Native excels. Line 6 sent a Helix pedal to compare to the plug-in, and the two are virtually indistinguishable, sound-wise.

The software offers 62 models, including 51 guitar amps and nine bass amps. Included are models of classics from Fender, Marshall, Vox, Mesa/Boogie, Hiwatt, Orange, Soldano and Matchless, Silvertone, Dr. Z, and PRS, along with some Line 6's original models. All of the models have matching cabinets.

Both the amps and cabs can also be loaded as separate components, allowing you to mix and match easily. The amps' preamp sections can be loaded separately from the Preamp category, which also has one offering that's not from one of the amps: a modeled tube mic pre.

Sixteen different virtual microphones are available on any of the speaker cabinets, including models based on a Shure SM57, Coles 4038, AKG 414 and Neumann U67, to name just a few. Other cab parameters let you control early reflections and add high-cut and low-cut filtering. You can also adjust the distance of the mic from the cabinet, but you can't change the mic placement otherwise; nor can you use more than one mic at a time on a cabinet. This arrangement is less flexible than what I've seen on some competitors.

If you create your own speaker cabinet impulse responses or use third-party ones, you will be happy to know that Helix Native has an IR feature that lets you load your own in place of the cabinet models. IRs can be imported and exported from within the plug-in, and 128 can be stored in the plug-in (and more can be stored in an external file).

Overall, the guitar amp and cabinet emulations are quite impressive and stack up well against the best ones I have heard in competing software. All amp models have Drive controls (even when the modeled amp didn't) that give you tons of flexibility to dial in everything from super-crunchy or distorted sounds to slightly crunchy or clean sounds—depending on the model. The models capture the sonic flavor of the amps they emulate and feel authentic from a guitar-playing standpoint.

I wasn't as impressed with the bass amps, which include models of an Acoustic 360, an Ampeg SVT and a Sunn Coliseum 300, among others. You can get some good sounds with them, but to my ears, they weren't as impressive as the guitar amps.

PRODUCT *SUMMARY*

COMPANY: Line 6
PRODUCT: Helix Native
WEBSITE: www.line6.com
PRICE: $399.99 (discounts for owners of Helix hardware pedals)
PROS: Good variety of excellent-sounding guitar amp and effects models. Drive controls on amp models make it easy to adjust amount of crunchiness. Intuitive GUI. Presets can be exchanged between Helix Native software and Helix hardware floor pedals.
CONS: Pricey. No tuner. Ho-hum bass amp models. Parameter lists require scrolling in many cases. Only one virtual mic per cabinet with limited positioning options. No auto-wahs. Parameter automation setup is clunky.

FX CENTRAL

Helix Native's effects collection is generous and wide-ranging. The models are primarily based on classic stompboxes, but some of them are emulations of outboard hardware products such as the Eventide 3000, the Leslie 122 and 145, the Teletronix LA-2A, and the Echoplex EP-3.

The accuracy of the effects and their sound quality are both excellent. The reverbs sound good enough to use on an aux bus, and the pitch-shifting is clean and glitch-free. The ability to chain up to eight effects together opens up some serious creative possibilities.

The plug-in comes with 10 different virtual wah-pedals, including models of units from Vox, Dunlop, Maestro and others. The only problem with this is that none of them are auto-wahs, which means that, to get any actual "wah wah" action happening, you have to use an external controller to operate the virtual pedal, or move it with your mouse. Either way, you'll have to automate the pedal action if you're using it on track in your DAW.

All amp models have Drive controls that give you tons of flexibility to dial in everything from super-crunchy or distorted sounds to slightly crumchy or clean sounds.

All the controls in Helix Native are automatable, but you have to assign parameters for automation inside the plug-in before you can control them from your DAW. I'm not sure why Line 6 chose this arrangement, but it adds an extra step to the process.

Helix Native would be a handy addition to any studio. Its extensive collection of modeled amps and effects make possible a huge range of tones for DI guitar and, to a lesser extent, DI bass. It also makes an excellent all-around multi-effects plug-in.

The plug-in is more expensive than its competitors, which might be a problem for some, but there's no question of the power and utility of Helix Native. Line 6 has been doing amp and effects modeling for a long time, and it shows. ■

Mike Levine is a composer, producer and multi-instrumentalist from the New York area.

By Kevin Becka

MAAG AUDIO MAGNUM-K COMPRESSOR

New Take on Gain Controls, Plus EQ

The MAGNUM-K features a full-featured compressor, 3kHz-centered dynamic EQ, 2-band parallel EQ, and a soft limiter

Maag Audio makes no bones about redefining pro audio gear and how it operates. It all started from the mind of owner Cliff Maag back when he introduced the Air Band in the NTI EQ3. Fast-forward nearly two decades, and Maag Audio has taken the Air Band concept and pushed it into rackmount and 500 Series gear in the Maag EQ4M, PreQ4-500, EQ2, EQ4 and assorted plug-ins.

The Magnum-K is the company's first compressor/limiter/EQ product, and it blows the lid off what can be accomplished in a single-rackspace unit. I had a pair that I used in many sessions at Blackbird Studios, and it never failed to make me stretch my workflows and create new sonic plateaus.

THE BREAKDOWN

Make no mistake, the Magnum-K is complex, but the easiest way to understand it is to unravel its five component sections. From the left are the input attenuator and input gain controls. It seems odd to have both, but you can use the attenuator to trim up to -10 dB, which is handy when your input is hot. Here you'll also see a handy signal-present LED and peak indicator helping you optimize level. The Input Gain control feeds the next section, the full-featured Magnum Comp compressor.

The compressor has the usual suspects—Ratio, Threshold, Attack and Release controls—plus some extras. The defeat-able, built-in sidechain HPF rolls off at 40, 80, 120 and 220 Hz. This can also be set to external should you want to patch in your device at the back of the unit. There is also a Comp Range rotary adjustment (4, 8, 12, 16 dB) that works in tandem with the Ratio control and Feedback (FB) and Feedforward (FF) switch. Here, the Ratio values are a function of the Range settings.

In FF mode, the compressor is smooth and predictable, but in FB mode the Comp Range restricts the amount of compression to the value set (4, 8, etc.) For example, with the range set to 4, the ratio range stretches from 1.3:1 to 1.5:1, narrow and relaxed. But with the range set to 16, the ratio range goes from approximately 3:1 up to limiting and is much more aggressive. In true Maag style, the Comp Range, Ratio and FF/FB buttons provide nearly limitless combinations of compression effects, from subtle to smashing.

The third part of the Magnum-K is the wicked-simple, and switchable, K Compressor, a 3kHz focused dynamic EQ. A turn to the right provides more attenuation at a fairly wide Q centered around 3 kHz. It's as simple as that with this surprising and musical feature.

Next, comes the two-band, boost-only, parallel EQ. Each band is switchable and can be separately blended into the signal that comes after the Compressor and K-compressor. The coolness and usability of this EQ can't be overstated. Finally, make-up gain is there to feed a switchable Soft Limiter. This limiter adds distortion, but if tucked in nicely, it offers a final smoothness to the overall effects of the previous processors.

Because I was using two Magnum-Ks as a pair in most cases, I first linked the units. This is accomplished simply by patching a ¼-inch TS cable between the two, then pressing the Link buttons. This pairs common Threshold, Ratio, Attack and Release settings across both processors. For this outing, a tracking session, I bused my overheads and hi-hat to a pair of Magnum-Ks to use as a parallel feed for drums. I'll often do this, calling it a Kit Crush to tame cymbals, especially when the drummer is a

TRY THIS

When first setting up the Magnum-K, start with all features in the Off position. Start with the compressor, setting it to taste, then blend in the bands parallel EQ and optional K-Compressor (great for taking the 3kHz edge off of cymbals). Finally, introduce the limiter, remembering that it absolutely adds distortion to your signal. Just a bit will add a finish to the final blend without being overtly and apparently distorted.

basher and they're overpowering my drum mix.

I started with all processors out (see "Try This") and set my input gain so I was barely compressing the inputs, noted by the blue LEDs between the Ratio and Threshold knobs. Because compressing cymbals can make them more brash, especially in the 3- to 5kHz range, I engaged the K-Compressor and dialed in the reduction to taste. This is a subtle way to get more cymbals in the mix without tearing your face off.

Next, I added the top band of parallel EQ, bringing Air to the blend. What I like is the ability to audition the various bands from 10 kHz up to 40 kHz. How I set it differed from session to session based on the cymbal choices, but I could always find the correct spot that put the sound of the stick hitting the cymbal right up in your face. The K-Compressor and Air settings I used with Zildjian Kerope and Sabian Artisans, which are smooth by nature, were different than with Zildjian A Customs and Paiste.

It usually takes patching two to three processors to accomplish this when I go à la carte, but the Magnum-K had all I needed inside the box. Once I heard what this did for my drum tracks, I ended up using the Magnum-Ks a lot for this application. It's addictive when recording drums.

I also used the Magnum-K when recording acoustic guitar. Either in stereo or mono, it sounded great. I patched the unit directly before the Pro Tools inputs and used it like I would another serial processor. For this application, I used fewer of the options, leaving out of the K-Compressor but using some mild overall compression, parallel Air and a bit of 1k to bring up the bite of the pick across the strings. I experimented with the limiter but found that it easily got out of control when the player strummed strong chords or made other dynamic moves on the instrument.

If you tally it up, the Magnum-K has two compressors, one full-featured and another centered at 3kHz, a soft limiter that can go from "is it there?" to "OMG," two bands of parallel EQ, and breakthrough features like variable compression range limits. And they all sound great. Like other Maag products, especially EQs, the results are musical out to the 10s.

All this firepower might seem overwhelming but what's beautiful about the presentation is how Maag has stretched the boundaries of how common processors like EQs and compressors work together, yet they've kept it understandable. There's no confusing terminology, oddly arranged GUI or other nonsense. This leaves more time for getting in there, turning knobs and hearing how you can take your tracks to new heights. Bravo Maag! ■

PRODUCT *SUMMARY*

COMPANY: Maag Audio
PRODUCT: Magnum-K Compressor
WEBSITE: maagaudio.com
PRICE: $2,395
PROS: Groundbreaking design, sonically excellent
CONS: None found

Kevin Becka is Mix's technical editor.

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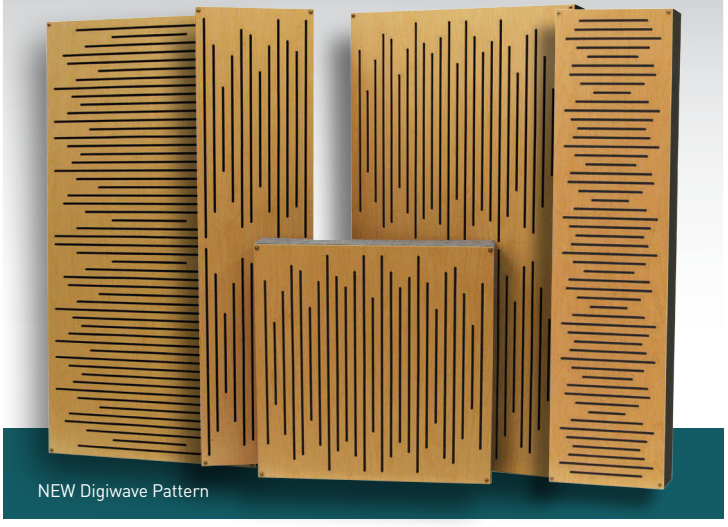

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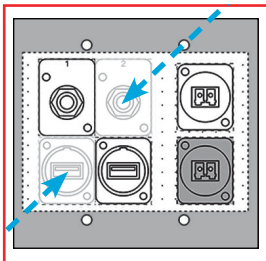
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Embracing the Stream

By Kevin Becka

Whether you browse the WSJ, Lefsetz, DigitalTrends or Recode, you now understand that music streaming is booming. The RIAA reports that streaming revenue generated $2.5 billion in the first six months of 2017. This number is up 48 percent from last year, driven by more than 30 million people paying for a streaming service in the States. Sure, there are exceptions like the new Foo Fighters record *Concrete and Gold*, which is excellent and debuted at Number One on *Billboard*'s all-genre Hot 200. From Hugh McIntyre in Forbes: "The record…begins at the peak with 127,000 copies shifted, of which 120,000 were actual sales, showing that the majority of Foo Fighters fans are still interested in owning albums and not just streaming them." I paid $10.99 at foofighters.com to download three versions at high resolution—okay, they're calling 44.1kHz/16-bit "high res," but you have to start somewhere.

Ninety-nine percent of my music listening comes from live recording sessions or my collection of more than 10,000 songs from my CD and vinyl collection uploaded to a hard drive in Apple Lossless format. Though this limits me to what I hear in studio or what I can fit on my Galaxy phone or enjoy from my music server at home, I don't ever have to listen to an MP3. My problem with low-res streaming, or even listening to dumbed-down online purchases, is the quality—it sucks, and the industry knows it. Tidal offers "Lossless High Fidelity" streaming for $19.99 per month, and paid Spotify subscribers ($9.99 per month) can up their quality to 320 kbps to Extreme for both desktop and mobile apps. And ,just recently, according to theverge.com, Spotify is experimenting with lossless streaming, dubbing it "High-Fi," at the cost of an extra $10 per month on top of the regular subscription fee. While these efforts indicate that high-def matters are promising, I still can't get all my choices in the stream; well, I should say, "until now."

What's changed my mind and experience with streaming is BRIO by Orastream. I always thought that pipeline issues would keep me from ever having a great audio experience online. That is because, in my area (suburban Nashville), the bandwidth is a joke. On a sleepy Saturday morning as I write this column, with no TVs or other computers running in the house, my up is 2.83 Mbps and down is 22.68 Mbps. It's not unusual for movies to hiccup in prime time, and my wife, who works from home via VOIP, hears a loss in quality if I'm working on my computer at the same time. But even with these numbers, BRIO works flawlessly at the house.

What is BRIO? It was started by Singapore-based CEO Frankie Tan and his partner, CTO Kelvin Lee, in 2011. The Orastream system takes files up to 24-bit, 192kHz (WAV, ALAC, AIFF or FLAC) and encodes them as bit-for-bit lossless files in MPEG-4 SLS format. From there, they can be served back into the original formats. When I asked Tan if BRIO would work on my challenged home pipeline, he said, "For full 24/192-bit perfect lossless, the streaming bit rate is up to 6,000 Kbps; For full 24/96 audio, bitrates up to 3,000 Kbps. So, if you have a fairly consistent network at 10-20 Mbps, it should be able to support 24/192 bitrate streams." The website explains further: "When the network is fast enough, the audio frames are streamed in full, i.e., all data in each audio frame is delivered to achieve full native resolution lossless bit-rates. When the network slows down (congestion, weak reception zones, etc.,), the bitstream is truncated and streaming data scales down from lossless bit-rates to avoid audio buffering, interruptions, etc., for improved QoS."

All that tech explained it does work very well at delivering what it promises. I have the Cloud plan ($150 per year), meaning my collection resides on Orastream's server and can be accessed from a browser or mobile app. You can also set up your server from the tutorial on their site, which streams your music for free from a browser; then you can add the mobile plan for $30 per year to take that on the road. All very reasonable.

What I like about this is the pro application. I asked Tan if an engineer, from his server or a secure Cloud account through BRIO, would be able to have the client/artist/producer listen to a mix on their mobile device or computer-streamed at full resolution? He answered: "Yes, that would be one of the use cases for BRIO. In your example, the producer would upload the mixes, then the artist would access the mix(es) by logging in with the producer's account credentials. This is private sharing and is within BRIO's terms of use." Orastream also provides archival storage and collaborative working solutions for studios offering remote access and playback at native resolutions.

In a world where project collaborators are all online with mobile playback in their pocket, why couldn't streaming be the future of delivery of mixes for approval, or at least for a gut-check appraisal? Whether BRIO is the platform or not, this seems to be an expedient and high-quality way for pros to work in a streaming world. That's how the consumer will be listening. And if you want to step up your DAC from your computer, try the Emotiva Big Ego or Grace Designs m900 DAC/Headphone amp I'm now reviewing for *Mix*—they provide an excellent way to improve the playback quality from your computer. ■

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