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Mynett, Mark

The sound and the fury

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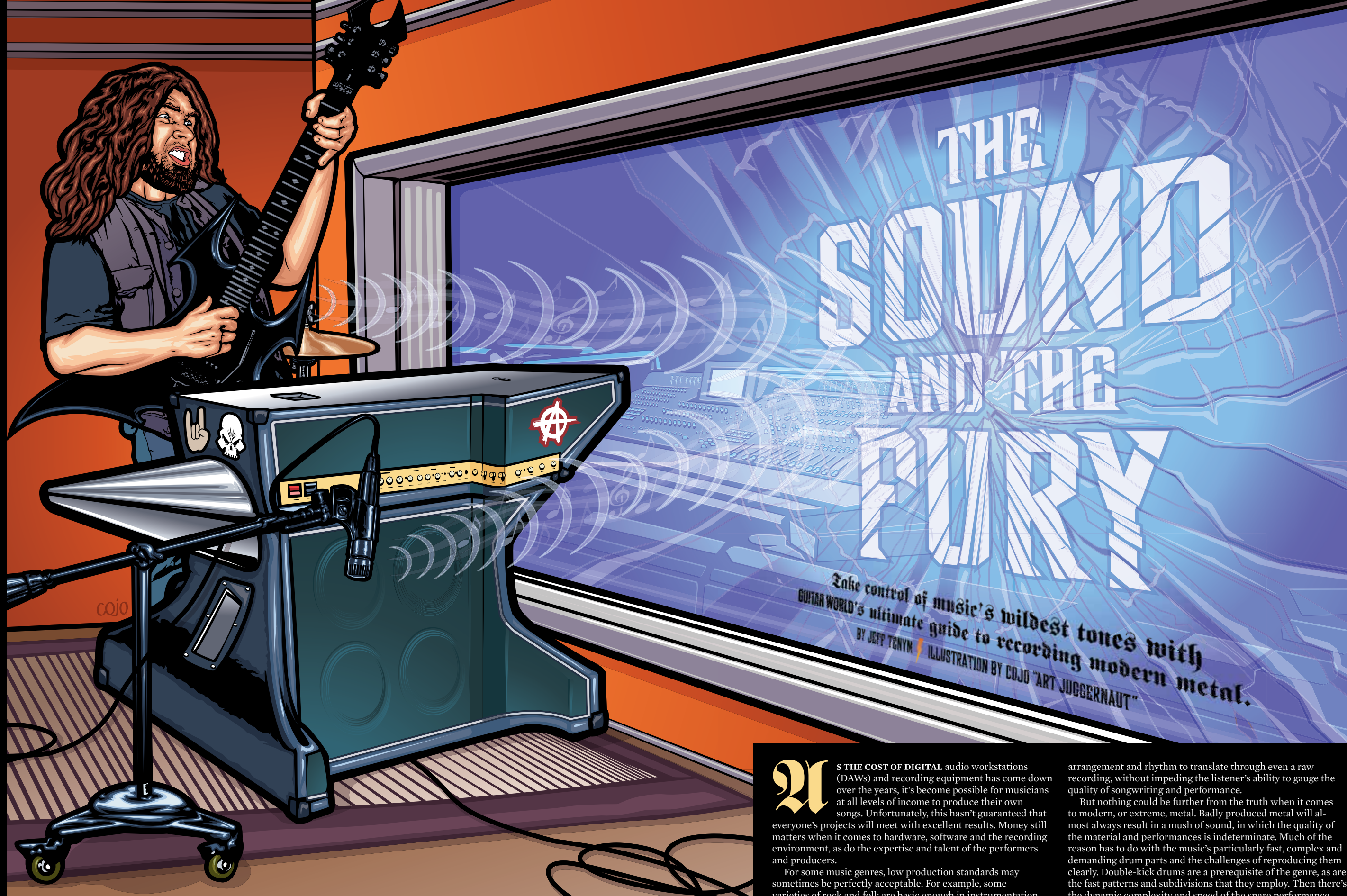
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AS THE COST OF DIGITAL audio workstations (DAWs) and recording equipment has come down over the years, it's become possible for musicians at all levels of income to produce their own songs. Unfortunately, this hasn't guaranteed that everyone's projects will meet with excellent results. Money still matters when it comes to hardware, software and the recording environment, as do the expertise and talent of the performers and producers.

For some music genres, low production standards may sometimes be perfectly acceptable. For example, some varieties of rock and folk are basic enough in instrumentation,

arrangement and rhythm to translate through even a raw recording, without impeding the listener's ability to gauge the quality of songwriting and performance.

But nothing could be further from the truth when it comes to modern, or extreme, metal. Badly produced metal will almost always result in a mush of sound, in which the quality of the material and performances is indeterminate. Much of the reason has to do with the music's particularly fast, complex and demanding drum parts and the challenges of reproducing them clearly. Double-kick drums are a prerequisite of the genre, as are the fast patterns and subdivisions that they employ. Then there's the dynamic complexity and speed of the snare performance,



Mastodon's
Brann Dailor

including techniques such as blast beats. Finally, there are the challenges of recording the high energy and drive from the cymbal work without rendering the mix abrasive.

Modern metal rhythm guitar techniques, such as tremolo picking and fast triplets, pose similar problems, especially when guitars are downtuned, as they usually are. It's easy for the sound to lose note definition and clarity, and this problem increases when tracks are stacked. This is further complicated by the need for the riffs to lock together with the kick drums and bass (which is also often tuned down). As the cap to it all, the vocals must sit atop the instruments and not become buried under the mass of sounds.

The basic challenge of producing modern metal can be summed up in one question: How do you capture the high intensity of the performances, as well as the heaviness and weight of the sound, while emphasizing definition, intelligibility and clarity? Under the circumstances, it's no wonder that the novice engineer/mixer will often deliver far from optimum results.

In this article, the first of two parts, I'll explain how to deal with these issues in ways that can make your recordings sound more professional. In the follow-up, I'll tell you how to plan, record, engineer and mix a world-class quality modern metal production, even on a tight budget.

BUDGETS AND THE IMPORTANCE OF DRUM TRACKING

SIMPLY STATED, THE vast majority of bad productions for this genre result from poor drum recording and processing. The drum kit's wide frequency range is part of the problem. The range of human hearing extends from 20Hz to 20kHz (though the range is narrower depending on age, hearing damage and so on). Unlike other instruments in a mix, the drum kit spans almost this entire range. Bass drum frequencies can extend to 40Hz, and splash cymbals will easily generate content in the upper frequencies near 20kHz.

And unlike electric and bass guitars and vocals, which typically emanate from a single source, a drum kit can easily contain upward of 10 pieces, including two kick drums,

one snare, four toms, hats, three rack toms and numerous cymbals. This makes achieving absolute individual control of the elements difficult, a subject I'll explore in next month's mixing article. For now, suffice to say that the drums will be a central focus of our study.

RECORDING WITH A STUDIO BUDGET

IF YOUR BUDGET ALLOWS you to record in a professional studio, consider yourself lucky. But as we've just learned, modern metal requires that the instruments are well defined and intelligible in the mix. For this reason, avoid studios with live spaces that are very ambient, as the added reverberations will muddy the recording. Instead, use a studio that has extensive acoustic treatment, with a very short reverb time—around 0.3 seconds. This will provide the tightest, most controllable results, particularly with the drums. Many studios have a drum room for this very purposes, giving the engineer great control over the sound.

If your budget allows you to track only part of the recording in a studio, I highly suggest that you devote it to the drums, due to the complexities of recording the instrument. When checking out a studio's offerings, make sure it has a live room with sufficient acoustic treatment (see previous paragraph), a mic selection suitable for recording drums (covered later in this article) and high-quality mic preamps. Since you'll be tracking some if not all of the other instruments in another facility (possibly your own home), make sure that the drum tracks are provided to you in a format that you can access. They may be saved as complete session files that can be opened or converted in the format in which they were recorded (Pro Tools, Nuendo, Logic and so on), or they can be raw audio files (such as WAV and AIF) that you can import into your recording platform. If the tracks are provided as raw files, they should be fully cataloged so that you know what song each belongs to. You may have multiple takes, as well as numerous drop-ins, and it's imperative that you know where each one belongs in its respective song arrangement.

Once you have your drum files in a workable fashion, you can begin overdubbing the other instruments. If your budget doesn't allow you to record these tracks in a professional studio, you should be able to achieve great results on your own using a DI (direct input) box and digital amp emulation plug-ins. A high-quality DI box (around \$250) will allow you to record all the guitar and bass performances directly to your DAW. You can then use amp, cab and effect plug-ins to get exactly the sound you want, or you can re-amp the tracks through your favorite rig using a device such as the Radial X AMP Active Reamping Device. Even if your budget allows studio time to track guitars and bass, you can record these parts on your own using a DI box and bring the raw tracks into a commercial studio. As with the drums, the essential benefits of a well-designed acoustic space, high-end mic preamps and microphones can go a long way to help you

capture the right guitar tone. And since the tracks will be prerecorded, your time in the studio can be spent getting the sounds you want rather than capturing a performance.

Just like the drums, vocal tracks can benefit tremendously from a commercial studio's offerings. The facility will have not only the best gear for vocals but also a sound-proof booth. In addition, an experienced engineer can be helpful in properly recording the wide dynamic range of vocalists and helping them with mic technique.

Once you have the instruments and vocals recorded, you should be able to do the majority of editing, processing and mixing at home. As the project approaches the final stages, you can transfer the session back to a commercial

ment is well suited to creating the tighter and more defined sound required by modern metal. First, avoid cube-shaped rooms—they display the worst acoustic properties due to the standing waves they create. A standing wave is a sound wave that remains in a constant position, and it can greatly exaggerate or de-emphasize frequencies associated with it. If possible, record in a fairly large room that is unusually shaped, with a high ceiling and walls that aren't parallel (parallel surfaces create standing waves). In particular, avoid ambient rooms and those with a lot of highly reflective surfaces, such as glass and tile. Set up the kit away from the walls as much as possible but without setting it up in the dead center of the room, as this is where soundwaves that bounce off the walls will converge and create standing waves. For that matter, microphones near the room's center will pick up sound reflections from the facing wall surfaces, and these reflections will meet the mics at slightly different times and cause phasing problems.



“Recording to a click track worked great. Without it, I was always a bit too fast.”



—DAILOR

studio to take advantage of the more accurate critical listening space and monitoring. In this instance, you'll have to ensure that the software platform used for mixing is the same as the studios and also ensure that all the plug-ins you've used during mixing are installed at the studio.

RECORDING WITH A TIGHT—OR NO—BUDGET

THANKS TO MODERN technology, it's possible to complete a project with little or no money, and with high production standards, provided you have a few key pieces of equipment and a recording space. However, in doing so you'll have to be more vigilant about the ambience of your recording space than you would in a professionally designed studio. Many producers who are new to the genre, or bands going down the self-produced route, record the drum tracks in any acoustic space where the kit and microphones can be set up, such as a rehearsal room. In the process, they often fail to consider how the room's acoustics affect the drums' sound, and they take no measures to improve the quality of the space.

For example, a highly reverberant room can make the kit sound mushy, with drums and cymbals bleeding together and the bass drum overpowering the other pieces of the kit. Spot miking the drums—that is, placing the mics six to eight inches from the individual kit piece—can diminish the effect of ambience somewhat, but it won't eliminate room coloration. For that matter, the drum overhead mics, which are crucial to picking up the cymbals, will certainly be affected by the room's dynamics, as they are typically positioned 18 to 24 inches away from the cymbals.

The drum kit's metalwork—the hi-hats and crash and ride cymbals—is one of the most critical, but frequently overlooked, elements of metal production. In contrast to music genres where a considerable degree of ambience in the overheads is appropriate, metal productions require dry cymbals recorded with pinpoint accuracy. When drum tracks are recorded in a poor acoustic environment without taking steps to minimize ambience, room coloration will be apparent in not only the spot mics but also the cymbal mics. As a result, the cymbals will lack the attack and pinpoint accuracy required for the music's high-end energy and drive.

You can take a few simple steps to ensure your environ-

ment is well suited to creating the tighter and more defined sound required by modern metal. First, avoid cube-shaped rooms—they display the worst acoustic properties due to the standing waves they create. A standing wave is a sound wave that remains in a constant position, and it can greatly exaggerate or de-emphasize frequencies associated with it. If possible, record in a fairly large room that is unusually shaped, with a high ceiling and walls that aren't parallel (parallel surfaces create standing waves). In particular, avoid ambient rooms and those with a lot of highly reflective surfaces, such as glass and tile. Set up the kit away from the walls as much as possible but without setting it up in the dead center of the room, as this is where soundwaves that bounce off the walls will converge and create standing waves. For that matter, microphones near the room's center will pick up sound reflections from the facing wall surfaces, and these reflections will meet the mics at slightly different times and cause phasing problems.

Room coloration can also soften rhythm guitar and bass tone, and reduce note clarity and definition. For those reasons, avoid setting up the cab next to a wall or in the dead center of the room, and suspend blankets around the front and back of the cab. If you have foam sofa cushions, you can use them to build a small wall in front of the cab, which will also help minimize room coloration.

Likewise, when recording vocals in this scenario, build a 360° vocal booth, again with blankets and duvets, and if possible enclose the rear of the microphone diaphragm in an arc with two suspended foam cushions.

EQUIPMENT

WHEN RECORDING EXTREME METAL, or any type of music for that matter, the equipment used for tracking is the most essential element in the production chain. For this reason, it's crucial that you get the right sound from the drums, bass and guitar at the source before you record. Don't assume you can “fix it” in the mix, because some things, like the effect of room ambience and mic placement, cannot be altered once an instrument is recorded.

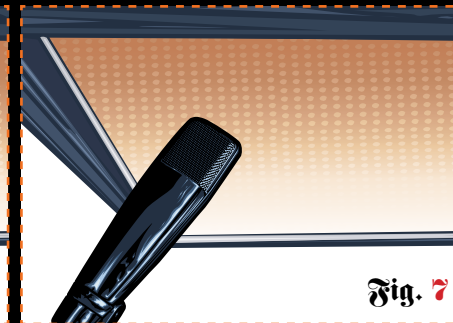
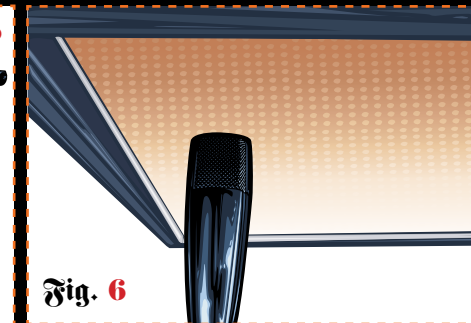
Certainly, some specific styles and makes of gear are better suited to modern metal than others, but there is no right choice when it comes to equipment. Every artist and producer will have his own opinion on the matter. Regardless of what equipment is used, certain issues are relevant and must be considered if you want your recording to sound its best.

DRUM HEADS: TUNING AND DAMPING

OLD, PITTED DRUM SKINS will greatly impede a drum's ability to resonate and project properly. New drum skins are the foundation of good drum tones. The skins should be stretched, tuned and, if necessary, dampened with a product made for this purpose, such as Moon-gel damper pads, rather than gaffer tape. A drum's resonator head, which is opposite from the batter head—the side you hit—needs to be changed from time to time as well. Even though resonator heads are never hit, they eventually dry out, which prevents them from flexing and vibrating correctly and causes inferior drum tone.

It is advisable to put new heads on the drums at least one day prior to the recording session and to use them for just one rehearsal to allow them to settle in properly. The kick-drum heads may not require replacement, since they tend to last much longer than the other heads. Ensure that a

MIC PLACEMENT FOR DRUMS AND CABINETS (SEE TEXT FOR DETAILS)



slam-patch is used on the kick's batter head to increase attack, and keep both heads tuned very low, usually within just a single turn from being finger tight. This will enable the right "weight" and movement of air from the kick drum. Snare tunings vary depending on taste, but if the performance involves a lot of faster rolls, stick drags and ghost notes, the batter head should be very tight to enable the right stick response. If your snare drum tends to ring, try using a drumhead that is less resonant. I've used Evans snare heads and have had good results with the company's "dry" models.

For the toms, opt for smaller drum sizes, but again with relatively low tuning. However, avoid having the batter and resonator heads tuned to the same tension. While doing so will increase projection, it will result in a less-pleasing tone, without the pitch bend that is a desirable part of the modern metal tom sound.

DOWNTUNING: STRING GAUGE AND INTONATION

WHILE MANY MODERN METAL guitarists and bassists use drop C and B tunings these days, I've encountered very few players who compensate for the lack of string tension by using higher-gauge strings. This is unfortunate. Tuning down a standard-gauge string can result in poor tone, because the string is much more slack than it was intended to be. For drop B tuning, I recommend guitarists use a minimum gauge of .056 for the 6th/lowest string; for basses, I suggest .130. If the entire instrument is tuned down, be sure to use heavier gauges for the entire set. Similarly, many musicians fail to have their instrument re-intonated for dropped tuning, which can cause tuning problems, particularly when rhythm guitar parts are stacked up.

In addition, it's essential that you place a fresh set on your instrument just before you start tracking and again after four or five hours of constant use. Bass strings tend to start going dead even before this, so you may want to change them more frequently.

VOCAL SCHEDULING

ALTHOUGH OBVIOUSLY NOT equipment in the traditional sense, the vocalist's "instrument" is too often overlooked, and consideration must be given to the scheduling of vocal performances for extreme metal music. A vocalist can sing only a finite number of hours per day, and I know few who can do so for more than two hours. For this



reason, it seems pointless to leave a certain number of days to complete the vocals after the drums, bass and guitars have been tracked. Instead, schedule the vocals throughout the guitar and bass recording sessions, and designate a separate day for recording clean vocals, as aggressive vocal styles tend to affect a singer's range.

MIC SELECTION, PLACEMENT AND THE TRACKING PROCESS

Drums

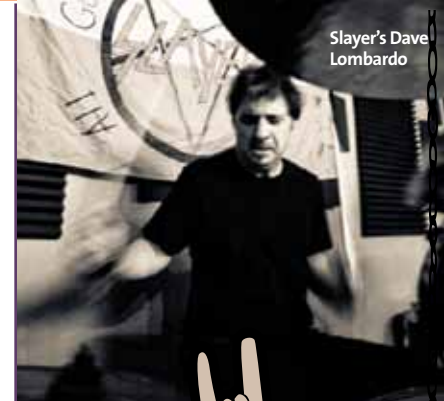
COMMERCIAL STUDIOS HAVE a wide range of microphones to work with, but if you're recording on your own, you may lack the variety and quantity of mics, cables and stands necessary to the task. If so, be prepared to spend some portion of your budget renting the necessary gear.

Regarding variety, you should use dynamic mics for the drums and condenser mics for the metalwork. Purchasing or renting the dynamic mics for the kit shouldn't be a large expense, as these tend to be cheaper workhorse microphones

that can be used for live work as well as studio applications.

For the kick drum, you should take care to mic the resonator head and the batter head. The resonator head gives the drum tone weight, while the resonator head provides attack. For the resonator head, use a wide-diaphragm dynamic, such as the Shure Beta 52, AKG D112 or Sennheiser RE20. Place the mic either in front of the kick resonator head (but away from the overly "boomy" center of the skin/drum) or half inside the resonator's sound hole, if it has one (**FIGURE 1**). At the same time, you can mic the kick drum internally with a standard-sized diaphragm dynamic, such as a Shure SM57 or Sennheiser 421. Focus the internal mic about four to six inches from the batter head, pointing its diaphragm (the mic's head, or capsule) just off the batter head's center. If access to the batter head is a problem due to the size of the resonator's sound hole and access for mic stands, consider using the Shure Beta 91, which has a flat profile and is well suited to this purpose.

For the snare, either standard Shure SM57s or Beta 57s should provide the right results. As with the bass drum, you'll want to mic the batter and resonator heads (**FIGURE 2**). For the batter, start with the mic about one inch above the head and an inch to an inch and a half away from the snare rim top, toward the drum's center. Aim the diaphragm toward the rim for more "crack" or toward the head's center for more stick noise. Moving the mic closer to the batter head will increase bass frequencies, due to the proximity effect, which causes a low-end boost when a source is close to a microphone. The resonator mic should be positioned directly beneath the batter mic to ensure consistent phase relationship between the two. Set the resonator mic three to four inches from the head, with the diaphragm aimed at the snare's wires, which should be positioned directly above the diaphragm. If you have only one mic available for the snare, place it horizontal to the drum's shell and point it at the side of the snare from five to six inches away. This will capture the top and bottom tones together. While it won't give you as much control as using two mics, the mic's greater distance from the heads will



Slayer's Dave Lombardo

"You have to be able to play to a clik today. I think it's helped me a lot."
—LOMBARDO

inches away. You can minimize bleed from the snare by pointing the diaphragm toward the hats and away from the snare, or place the mic so that the hats are between it and the snare (**FIGURE 3**).

When miking the ride cymbal, maintain a distance of at least six to eight inches and point the diaphragm at the bell (**FIGURE 4**). If you have enough mic preamps to mic each cymbal individually or even in pairs, do so. If your drummer has a china cymbal, give it its own mic, and be sure to keep the overheads away from it. China cymbals are incredibly loud and have a tendency to bleed into other mics.

I must mention again how important the overhead mics are. Many producers put up and reference a spaced pair of overheads before any of the other mics, as they feel this gives them a representation of how the overall kit is interacting with the room, what tuning alterations need to be made and even what the most appropriate mic selections will be.

If you don't have enough preamps to mic the cymbals individually or in pairs,

help eliminate many of the unwanted frequencies that the top and bottom spot mics often contain. Whichever method you use, be sure that the mics are pointed away from the hats to help isolate the snare sound.

I have always found correctly positioned Sennheiser 421s excellent for miking toms. Make sure you position its filter switch to "M" (for Music) rather than "S" (for Speech); the "S" position rolls off the bottom end, which we don't want to eliminate. Mic the batter heads, using the suggestions given for the snare. If Sennheiser 421s aren't available, then the cheaper clip-on Sennheiser 604s also provide admirable results and eliminate the need for mic stands.

Getting the right condenser mics for the metalwork will be more costly, but the expense is well worth it. Dynamic mics lack high-end clarity and are far less natural sounding for overhead applications, as they require some creative EQing. I suggest AKG 414s, which will provide a detailed reproduction of the cymbals, hats or ride. If you have the money, opt for the superb Neumann KM 184 small-diaphragm pencil condenser mic or the more expensive wide-diaphragm Neumann U87s or U89s. To improve separation between the metalwork and drums, ask the drummer to raise the cymbals as high as he can without impeding his performance or comfort.

Some condenser mics will let you select the diaphragm's polar pattern—that is, how sensitive it is to the directionality of sound. A cardioid pattern is ideal, as it will minimize room effects and colorization. Other options, such as figure-of-eight and omni polar patterns, are undesirable, as they widen the mic's pickup pattern.

Concerning placement for the hat mic, don't mic too closely—it can make the hats sound clunky. Keep the mic at least six to eight

a pair of overhead mics will suffice. As mentioned before, keep the overheads 18 to 24 inches away from the cymbals, and aim the diaphragm at the rim of the cymbal (FIGURE 5). Place each of these the same distance from the snare to ensure a stereo image that doesn't pull to one side (many engineers use a piece of string to measure this). In addition, observe the 3:1 rule: the distance between the overhead mics should be roughly three times the distance from the cymbal nearest to the mics. For example, if the cymbal closest to one of the overhead mics is 20 inches away, then the distance between the two overhead mics should be roughly 60 inches. Observing the 3:1 rule will reduce phase problems from using two mics in close proximity, but it is an ideal, not an absolute. Pay attention to the distance, but let your ears be the judge.

Once you have everything set up and miked, record clean hits of every piece in the kit, including the cymbals. You can use these as individual samples during the mixing stage to replace any missing or poorly played hits. You can also use them to create your own drum sample library, which can be useful for other recording purposes, some of which I'll hit on below and in next month's article on mixing.

Bass

IT'S ASSUMED YOU WILL record the bass both as a direct injection signal and with a microphone. The degree to which the bass is detuned will make a difference in what microphone you use. A smaller diaphragm dynamic mic like the Shure SM57 can provide a much tighter low end than a wide-diaphragm dynamic, such as the Sennheiser RE20 or AKG D-112, due to its sub-200Hz roll off. Still, if you have both types of mic, it's worth experimenting with each to see how it sounds. If the low end is still a bit boomy, back the mic away from the cab one inch at a time until the sound is tighter.

Consider splitting the bass DI signal to a secondary amp, amp/cab emulator or software modeler that's been set up to provide the all-important distortion element of the bass sound. A separate channel for the distorted tone will give you greater control over the sound. In addition, experiment with the DI signal using modeling software or hardware to create dirty-clean tones that can complement and strengthen your bass sounds.

If possible, track the guitars before you record the bass. You can usually achieve a much tighter performance by locking the guitars to the drums first. This will help you ensure that the bass is synced with both and that its frequency content is appropriate to the context.

Guitar

MIKING THE GUITAR IS relatively easy. You don't need room mics or any microphone further than six inches from the

source, nor will you need to mic the rear of the cab. Dynamic mics are better suited than condensers to recording down-tuned guitars. Capturing the right rhythm sound is usually as simple as placing a Shure 57 or a Sennheiser 421 on the best-sounding speaker within a 4x12 cab. If you find that one of the bottom speakers sounds best, turn the cab on its side so that the speaker isn't close to the floor. This will help minimize the chance of unwanted ambience from floor reflections.

With regard to mic placement, the tone will be brightest at the dust cap (the speaker's center) and boomiest near the grille cloth. I suggest starting out with the mic just off the speaker's center and close to the grille cloth but not touching it. If the sound is too bright, move the mic toward the speaker's edge until you achieved the desired tone; if it's too boomy, or not tight enough, move the mic away from the speaker in half-inch increments until you achieve the desired amount of low-end definition and clarity.

You can also reduce brightness by placing the mic off axis. An on-axis mic is pointed 90° perpendicular to the grille cloth (FIGURE 6). Placing the mic from 45° to 85° off-axis relative to the grille cloth will reduce the brightness (FIGURE 7). I recommend trying an off-axis placement that is around 70° to the grille cloth but pointing in toward the speaker cone.

Additionally, many producers will use their favorite guitar mics in on- and off-axis configurations simultaneously to give them a broader range of rhythm tones. When doing so, the capsules of both mics should be placed as close to one another as possible to reduce phase problems when the two signals are combined.

I recommend tracking two rhythm guitars for each side of the stereo picture, unless there are extremely challenging guitar parts, in which case stick to one rhythm guitar per side to avoid creating a muddy sound. When recording two guitars per side, vary the tone between takes, either with the guitar, amp, cab or mic, as this will help produce a thicker tone.

Vocals

WHILE A CONDENSER MIC is typically better suited to vocals than a dynamic mic, that doesn't mean it's the right choice for every vocalist. For that matter, you can't know which mic of either variety is best for your vocalist without some trial and error.

I suggest recording a quick test with your singer, using two or three vocal mics placed with their diaphragms as close together as possible. Record a vocal take using all the mics simultaneously, then listen to the results and determine which mic you prefer. It's essential that the singer stand the correct distance from the mics, as the proximity effect has a huge effect on the sound. Once this has been established, place a pop shield at least three inches from the mic, and

make sure that the vocalist remains at the same distance from the pop shield for the entire recording. Your singer can create a reference point by placing his hand perpendicularly between his mouth and the shield and noting the number of fingers he can fit within the space. Taking this step will ensure consistent volume and tone from one vocal take to another and over the selection of songs. (Note that you can achieve different tones for harmony and backup vocals by having the singer move to a different position relative to the mic.) If breath blasts are still a problem, experiment with placing the microphone slightly off axis (facing toward, but not directly in front of, the mouth area), so that the breath blasts go past the diaphragm rather than directly into it.

CLICK TRACKS AND DRUM POST PRODUCTION

ON MANY MODERN metal productions, the drum tracks are often altered to improve the quality of the performance. Often, the tracks include elements that weren't performed at all but rather were added by the producer using samples. Most producers are loathe to discuss the post-recording work they perform on the drum tracks, and the drummers themselves are even less likely to own up to it, for obvious reasons.

For modern metal drum performance, accuracy is more important than vibe, feel or groove. The kick drum work and the beats, patterns, subdivisions and syncopation involved demand the highest standard of precision and accuracy. However, in many instances the drummer simply can't perform the parts with the accuracy required, leading producers to use various methods to edit, quantize (fit to the beat) or build patterns that make the drum track sound tighter. Doing so is one of the specific engineering challenges of the modern metal.

A click track is essential to this task. It provides an essential reference point that helps the drummer keep time and turn in the tightest performance possible. It also helps the producer after the fact by giving him a grid-like guide on which he can edit and quantize beats and build new patterns that make the drum performance sound more accurate.

Recording to a click track has become a staple of the modern metal method. Slayer's Dave Lombardo, one of the world's finest metal drummers, told *Modern Drummer* in its September 2006 issue that he recorded all his parts for the album *Christ Illusion* to a click track. He said, "There was one tune where we wanted to speed up the ending, so we turned the click off at that point. But that was it. You have to be able to play to a click today. I really like using one. It's helped me a lot."

Mastodon's Brann Dailor is another metal drummer who has changed over to playing with a click track. He told *Rhythm*

magazine in the April 2009 issue that he played to a click track for the first time when the group recorded its most recent album, *Crack the Skye*, at the urging of the album's producer, Brendan O'Brien.

"Brendan said, 'Look, let's just get it up and see how you get on, if it doesn't work, we'll lose it.' But it worked great... With a lot of our songs they'll start with a theme, then go somewhere else with a heavier feel, then return to the first theme again. And so I have to be careful that when we return to that part, it's the same tempo as we started...I was always a bit too fast [*without a click*] when we were recording. Then you have to think very hard about slowing yourself down, [*and*] then it feels too slow. It's a nightmare."

There are a few ways to create a click track. Your DAW will have a simple click-style metronome that can be turned on or off, and this signal can be sent to your drummer's headphones for reference. However, a heavier-sounding tone is often required, and some producers will simply build a click track on their own, then loop it for the duration of the song. For the main accents, such as the first beat of the bar, a piercing tone with plenty of body, such as a cowbell, will work fine. A guide guitar can be recorded on a separate track to give the drummer a reference point for the song.

Once you've worked with a click track, you'll begin to appreciate its benefits. To help you get started, here are five production tools and techniques that a click track facilitates, each of which you can use to improve recorded performances.

1. Playlists

PLAYLISTS ARE A particular function within the Pro Tools platform, but I'm using the term here as a generic reference to recording multiple takes within the same arrangement. A DAW lets you comp together multiple takes easily and quickly. The various takes can then be compared and the best parts selected and assembled into a composite performance. Recording each to a click track ensures that the various takes match up.

2. Edits

EDITS ARE FIXES within the track itself. If you want to fix a mistake in the second verse, it might be as simple as copying the same pattern from the first verse and pasting it in place of the bad pattern. Again, a click track is required for the timing of each part to be in sync. This technique can work to varying degrees of success with all instruments, as well as vocals.

3. Overall Quantization

WHILE PLAYLISTS AND edits allow you to utilize the best parts of the performances, quantization lets you tighten up the re-

cording by moving individual hits so that they fall exactly on the beat. The Elastic Time function within Pro Tools is a powerful and effective method of quantizing drums without causing glitches or artifacts (except in extreme cases; see below). Using time compression and expansion algorithms, Elastic Time lets you stretch waveforms in real time. To do so, however a tempo needs to be allocated as a reference. This is where a click track is beneficial. While it's possible to quantize performances that haven't been recorded to a click track, it's much easier to do so when they have, and the results will sound more natural.

4. Kick Quantization

IDEALLY, ELASTIC TIME should be applied to all the drum tracks collectively, to retain the phase relationship between these sources. However, it's not a cure-all, especially when it must be used to such an extreme that glitches and artifacts result. Excessive quantization can be unforgiving with hats and overheads, resulting in an unnatural sound. However, you may find that only the kick drum is in need of quantization. As it is the most challenging part of the extreme metal drum performance, the kick drum

is usually the one part in greatest need of help, and tightening its performance relative to the other instruments may make the overall track sound much better.

5. Kick Building

SOME KICK DRUM parts are so challenging that it's best to forego the drummer's footwork altogether and build a kick drum track entirely from samples. Again, a click track will make this task much easier. Grid lines within the DAW's edit window will show where the beats fall, making it easy to place and copy kick drums within the track, whether the kick pattern is based around 16ths, 32nds or triplets. Once a section is completed in this manner, it is a simple enough process to copy the bass drum patterns over to where the section is next repeated.

While it's not impossible to build a kick drum track when a click track hasn't been used, it is incredibly difficult and time consuming, as you'll have no grid on which to place the beats. Furthermore, once you've completed the kick drum part for one section, you won't be able to copy and paste it onto the next section, as the drummer's tempo will have undoubtedly drifted and the kick patterns will not line up properly.

However, the success of kick drum quantization and building depends on how well the edited track syncs up with the original kick drum signals that may still be apparent on the tracks recorded with the overhead mics. If the sync is noticeably off, you'll hear a "flam" as the edited and original signals are played back—a sort of blurring of the kick drum sound that will make the performance sound inaccurate, despite your best efforts.

Techniques can be employed during the tracking stage to minimize kick drum bleed. The drum can be covered with blankets to limit the amount of bleed onto the other mics. Another solution is to pack the kick drums with pillows and blankets and push them right up against the batter head, so that the only noise that the bass drum makes is the slap of the beater hitting the head. Both methods will minimize the sound level from the kick drum, making any bleed onto the overheads irrelevant. Finally, a bass drum trigger pad can be used, which will give the drummer the sensation of hitting a drum but produce no sound.

As an alternative, the drummer can be asked to simply stop playing on particular sections where the kick work will need to be built from scratch, thereby removing kick bleed completely. This technique works well, but it could be confusing for the drummer and may cause him to lose the groove and feel.

It takes skill and experience to build a kick pattern so that it's effective and perceived as authentic. Certainly, most producers would prefer to have the drum parts performed live and accurately. But much of the time, building a track in this fashion will be the best way to establish a strong production standard.

Next month: how to mix modern metal. **GW**