There’s no such thing as a correct snare sound. Pretty much anything goes. Criticizing the snare sound in someone’s mix is a lot like grading a class of kindergartners during Play Dough hour. Sure some sculptures are better than others, to you. But it’s rather subjective, and each kid’s parents can always comfort themselves with the certain knowledge that their child’s dough blob is best.

With dough, there are just a couple rules: keep it out of Andrew’s hair, and don’t eat it. Similarly, the snare drum follows just a few rules, which this article seeks to define.

The freedom to do most anything with a snare sound when recording and mixing it is a blessing and a curse. Where do you begin? How do you narrow the world of possibilities and define something resembling a goal? Let’s break it down.

THE SOUND

To begin to make sense of the snare drum, consider the following oversimplification: think of the snare drum as a Burst of Noise. The length of the burst ranges from a tiny impulse (cross stick) to a powerful wash of energy lasting more than a half note in duration (Check out the intro to “Woman in Chains” by Tears for Fears on the album Sowing the Seeds of Love for a good example.).

That the snare can be thought of as noise shouldn’t surprise. With the exception of that distinct, exaggerated ring used only for special effect, the snare is generally without pitch. It’s a percussion instrument after all. In addition, unlike the rest of the drum kit, the snare has those wires stretched across the bottom head – cleverly called “the snares” - to make sure that each hit of the snare is a buzzy, rattling mess of noise.

With this Burst of Noise template in mind, let’s explore ways to control and enhance the sound of the snare drum for maximum musical effect.

SPECTRUM

Because the snare is in fact noise, it can have acoustic energy throughout the audible range – lows, highs and everything in between.

Often the distribution of the energy isn’t even focused on a specific range of

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figure 1: The spectral content of a snare hit.
frequencies for a specific character. This is unlike many instruments we record. We know the consonants of our vocals live around 2 to 5 kHz. We know the fundamental pitch of the piano’s lowest note is around 30 Hz, and its highest note is around 4 kHz.

But the comfort of such standards does not exist with the snare drum. This is part of why it is so popular in pop/rock music. Spectrally, the snare is all over the map. Such a range makes it an ally in our anything-goes, rebel-for-the-sake-of-rebelling mission to be heard.

The question then is obvious: What are good recording strategies (snare selection and tuning; mike selection and placement; and equalization and processing) for the snare drum? Per the (wildly insightful, nay poetic) Play Dough analogy above, the strategy begins with creative music and production decisions and is followed later by the more technical evaluation of engineering issues.

<table>
<thead>
<tr>
<th>BAND/ALBUM</th>
<th>SONG</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Led Zeppelin/</td>
<td>D’yer Mak’er</td>
<td>A touchstone for many engineers and</td>
</tr>
<tr>
<td>Houses of the Holy</td>
<td></td>
<td>drummers. Recipe: well-tuned drums,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hit harder than most humans are capable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of. Examples abound but this track is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a favorite with some outstanding ambient</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mike placement.</td>
</tr>
<tr>
<td>Nine Inch Nails/</td>
<td>Closer</td>
<td>Literally a burst of noise.</td>
</tr>
<tr>
<td>The Downward Spiral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Hot Chili</td>
<td>The Power of</td>
<td>Close mic left, room mike right.</td>
</tr>
<tr>
<td>Peppers/Blood</td>
<td>Equality</td>
<td>Snare pulls right for a cool effect.</td>
</tr>
<tr>
<td>Sugar Sex Magik</td>
<td></td>
<td>Listen to each side separately to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>compare the character of close and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ambient snare sounds.</td>
</tr>
<tr>
<td>Spin Doctors/</td>
<td>Two Princes</td>
<td>Glorious room sound, gated. This room</td>
</tr>
<tr>
<td>Pocket Full of</td>
<td></td>
<td>available only at the Power Station</td>
</tr>
<tr>
<td>Kryptonite</td>
<td></td>
<td>(Now called Avatar) in New York City.</td>
</tr>
<tr>
<td>Bruce Springsteen/</td>
<td>Born in the USA</td>
<td>One of the first larger than life</td>
</tr>
<tr>
<td>Born in the USA</td>
<td></td>
<td>snares. This just doesn’t exist in</td>
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<tr>
<td></td>
<td></td>
<td>nature, it’s a studio-only creation.</td>
</tr>
<tr>
<td>U2/Zooropa</td>
<td>Daddy’s Gonna</td>
<td>What the...? Flood at work.</td>
</tr>
<tr>
<td></td>
<td>Pay for Your</td>
<td>Compression, distortion, etc. This</td>
</tr>
<tr>
<td></td>
<td>Crashed Car</td>
<td>sounds like a gated guitar opening on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>each snare hit, but I have no idea...</td>
</tr>
<tr>
<td>Stevie Ray Vaughn</td>
<td>The Sky is</td>
<td>Classic blues: lazy (i.e. just a hair</td>
</tr>
<tr>
<td>and Double Trouble</td>
<td>Crying</td>
<td>late) time, classic plate reverb.</td>
</tr>
<tr>
<td>The Sky is Crying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Wallflowers/</td>
<td>One Headlight</td>
<td>Tight, great ring, seriously compressed.</td>
</tr>
<tr>
<td>Bringing Down the Horse</td>
<td></td>
<td>No cymbals except hi-hat yet this tune doesn’t lack energy from the drums.</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XTC/</td>
<td>Here Comes</td>
<td>Check out the three different snare</td>
</tr>
<tr>
<td>Oranges and</td>
<td>President Kill</td>
<td>sounds by the first chorus.</td>
</tr>
<tr>
<td>Lemons</td>
<td>Again</td>
<td></td>
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</table>
First choose a certain shape, color, feeling or sound that you personally like, and then make recording decisions that help you progress towards that goal. The risk is that someone might walk into the room and announce, "Dude. What are you thinking? I hate that snare sound. What is this, some sorta Disco-meets-Nashville album?"

You must be prepared to ignore this. Who cares if this particular person does not like your idea of a snare sound? Find a snare they like, and it'll be pretty easy to find 10 listeners who don't like theirs either. Odds are, they are the ruffian who put the Play Dough in Andrew's hair back in kindergarten anyway. That said, there are a few people whose warnings you should heed.

The Drummer. Yes, this is one of those times when you should actually listen to the drummer. Drummers often have a very good idea of the sound they are going for and have a terrific amount of experience listening to instruments. This is right up their alley. Remember, snare drums are round, just like pizzas, so the drummer is a real expert here.

The Producer. Because the snare has such a strong influence on the overall sound of the tune, the producer often has strong, and even useful, desires. And - by the way - they often sign your paycheck.

The Songwriter/Composer. Many writers have specific sounds and feelings in mind when they build an arrangement. This is especially true for film scores. You must not violate their creative vision.

Ideally your recording project is a collaboration among all these and other talented musicians. Consider their input as a chance to hone in on the goal. Consulting examples of released recordings or drum samples with the character you like is a good way to manage this discussion - and this doesn't have to happen while the studio clock is running. This is a rehearsal and preproduction activity.

Once a fairly specific goal is set, start making the decisions around which snare drum to use, how to tune it, which mikes to try, and so on. The tasty snare sound of the Wallflowers’ "One Headlight," for example, could not be gotten from a large diameter, super deep snare tuned low for maximum punchiness. If the project consensus is "tight, with an edgy ring," then select and tune the drum accordingly. Clearly it is a mistake to wait until mixdown to decide you want this sound.

FREE ADVICE TO STUDIO OWNERS: Here are the two best ways I know to increase the number of hours a project uses.

1. Walk through the control room just before they print their mix and say, with a look of real concern, "Are you sure about that snare sound?” Wait one day. Repeat.

2. Walk through the control room just before they print their mix and say, "Sounds killer. Wouldn’t it be awesome if you tweaked the snare so that it had that huge Phil Collins in the eighties vibe?" Lend them the keys to the studio and take a two week vacation.

In both cases, the project will dive headfirst off a cliff in pursuit of either that elusive 'right' snare sound, or a snare sound that simply can’t be derived from what they already tracked.

When you are the engineer, such inefficiencies aren’t acceptable. Clearly, good preproduction would make your session immune to such shenanigans.

SIGNAL PROCESSING

Now with all this accomplished, you can consider what most others mistakenly believe to be the starting point when recording the snare drum: equalization. While they mangle a snare sound with radical equalization curves trying to make a chocolate mousse out of a crème brûlée, you can calmly fine-tune the exact flavor you want.

Most people head for high frequencies (around 10kHz) and boost. No
duh. No one likes a dull snare. But you already addressed this through the selection of drum tuning and mikes. As a result, any brightening you do with EQ knobs will be less severe, perhaps even unnecessary.

In fact, consider the less obvious equalization move: Subtractive EQ. Notching out a narrow band around 1 kHz (+/- an octave or so) can open up the sound of the snare and give it a distinct sound.

It has the welcome additional benefit of making room spectrally for things like vocals and guitar. Remember those? Cutting rather than boosting is an excellent way to shape the character of the snare sound while improving other elements of the overall mix. And as long as we are avoiding the mistakes others so often make, watch out for the low end. Too much energy in the bottom octaves (below 300 Hz) in search of “punch” is an all too common error. Remember that through close miking with directional mikes, you’ve got a fair amount of proximity effect going on.

Proximity Effect - it ain’t just for vocals.

In fact, because of proximity effect, one should beware of deep snare drums and give serious consideration to piccolo and other shallow drums; what works in live venues doesn’t always work in the studio.

Generally speaking, boosting more lows is suicidal. If you must boost (and isn’t that the fun part of EQ anyway?), try going for some upper middle frequency “crack” (3 to 7 kHz) instead of low end “punch.”

Meanwhile, your snare can have plenty of punch without boosting. Consider again some subtractive equalization, this time around 200 Hz, but listen to the low end of the snare sound as you do it. Removing a narrow notch of lower middle frequencies usually reveals plenty of clear, tight low end underneath. Challenge yourself to find a controlled amount of low frequency power without boosting.

To help make the point, consider that a typical 3 verse song might have more than 130 snare hits plus fills. If each hit of the snare overpowers everything in sight, even just for that instant, the vocals and guitars and everything else will seem relatively wimpy; the energy of the tune evaporates.

Said another way, too strong a snare weakens the entire mix. A spectrally well-placed snare, on the other hand, which is appropriate to the feeling of the tune, can send the project to the next emotional level.

ENVELOPE

More useful than equalization at helping the snare cut through a stereo pop mix is compression. It is common to think of compression as a tool for smoothing out the overall dynamics of a performance to make it sit better in the mix. It turns down the loud notes and turns up the quiet notes.

Ah, but there is so much more to compression and limiting than this. Compression
can be used to change the envelope of the sound wave. The envelope describes the 'shape' of the sound, how gradually or abruptly the sound begins and ends, and what happens in between.

Drums are generally expected to have a sharp attack and immediate decay. That is, the envelope resembles a spike or impulse. Synth pads on the other hand, often ooze in and out of the mix, a gentle envelope on both the attack and decay side. Lastly, consider the sustained notes of a piano. Its unique envelope begins with a distinct, sharp attack and rings through a gently changing, slowly decaying sustain.

All instruments offer their own unique envelope. Look at, or I should say listen to the sonic differences among the following instruments playing the same pitch (e.g. middle C): piano, trumpet, clarinet, voice, guitar, violin and, of course, didgeri doo. Sure there are differences in the spectral content of these instruments; they have a different tone, even as they play the same note. But at least as important, each of these instruments begins and ends the note with its own characteristic envelope — its signature.

**ENVELOPE: ATTACK**

Low threshold, medium attack, high ratio compression actually alters the shape of the beginning of the sound, giving it more attack. If you haven’t had the pleasure of hearing this, set down these pages now and go squash any snare sound you have handy on tape or in your sampler. Be sure your attack isn’t too fast, set the ratio at 4:1, preferably higher, and gradually pull the threshold down. This type of compression has the effect of morphing a spike onto the front of the snare sound. The result is a snare better equipped to poke out of a crowded mix and be noticed.

In the same vein, microphone selection can take care of the front end of the snare envelope for you. Condenser microphones are generally physically better equipped than most dynamic microphones to follow sharp, quick transients. Use a combination of dynamic and condenser microphones with this in mind, mixing in a little condenser for attack and a little dynamic for color.
ENVELOPE: LENGTH

Besides the attack, another variable to massage as you record and mix the snare drum is at the other end of the envelope — the decay.

If this Burst of Noise can be persuaded to last a little longer by lengthening its decay time, it will achieve more prevalence in the mix. Compression to the rescue again, but this time it’s through the knob labeled “release.” A fast release pulls up the amplitude of the snare sound even as it decays. Dial in a fast enough release time, and the compressor can raise the volume of the snare almost as quickly as it decays. This lengthened snare sound can be placed in the mix at a lower fader setting. It’s long enough to get noticed, so it doesn’t have to be turned up as loud. It’s that simple.

IMAGE

An important variable beyond spectrum and envelope, is the stereo image of the snare sound. We’ve got to master this element of snare recording pretty quickly, because it’s going to get complicated fast in a world of multichannel, surround sound audio. For now, let’s retreat to the relative security of two channel recordings.

The snare’s image is really created by the pair of overhead microphones placed on the drum kit. There are some problems with close-miking a snare drum that are nicely addressed through the use overhead drum mikes.

In the heat of the battle, as the drum set is being recorded, it is perfectly natural for an engineer to think that the microphone close to the snare creates the snare track. And the one inside the kick drum provides the kick track. And the mikes above the drums are for recording the cymbal tracks. But it just ain’t so.

When our drums are sequenced rather than recorded, we might have a snare sound, a kick sound, a hi hat sound, and so on, which we assemble into a complete drum sound. But when we record a live drum kit, we are recording a single instrument, played by a single musician, but requiring anywhere from one to twenty or more microphones to record it.

I find it more useful to think of the overheads as capturing the sound of the entire drum kit. Everything’s there: kick, snare, hat, toms and cymbals. Place the overhead microphones so that they capture a balanced sound of the whole kit, and use the close mikes to reinforce specific elements of the drums (n.b. kick and snare).

Compared to close miking, there are a couple of advantages to capturing the sound of the snare through the overhead microphones.

First, they capture the snare from a more rational distance. When we hear music live, we don’t usually have our ears just a couple inches away from the snare drum. We have no real life reference for the sound of the drum at the close microphone; it just isn’t natural. As we already discussed, it suffers from proximity effect.

Moreover, the close mike presents an incomplete or skewed picture of the snare, too focused on the sound of the top head, without an appropriate amount of the sound components that radiate from the bottom head and drum shell. The sound at the overhead microphones is more consistent with a typical listening distance.

Second, the snare sound at the overhead microphones includes not just the direct sound of the snare itself, but also the sound of the several early room reflections of each snare hit. Again, this is more consistent with how a snare drum is usually heard live. The drummer hits the snare, and the sound slams against the floor, ceiling and walls on its way to our ears. That’s what a snare sounds like, so it makes since to capture that context when recording it.

But beyond the advantages of using more distant microphones to capture the complete timbre of the drum and its room reflections, the overhead microphones give the snare its stereophonic image. Placing a single microphone up close to the snare will create only a nar-
row, small, monophonic snare sound. Such a tiny image will have a difficult time keeping up with a wall of electric guitars and rich layers of sweet vocals.

The solution is to make the snare image a little (or a lot!) bigger. A stereo pair of microphones above the drum kit can be all it takes to make the snare more substantial and exciting again.

Proper placement of the microphones and careful treatment of the signals is required to keep the snare sound balanced relative to the other elements of the drum kit with a stereophonic image that is centered in between the loudspeakers for maximum rock and roll effect.

Listen carefully for amplitude consistency when tracking the overheads, as a snare which pulls to one side usually goes from “cool” to “annoying” pretty quickly. Also maintain phase consistency between the two overhead mikes. “Phasey” overheads lead to snare hits which seem to drift behind the listening position. The snare needs to help hold the band together and drive the music forward. It must be fully front and center to do this effectively.

In addition, these phase differences suggest you’ll have some serious mono-compatibility problems. Specifically, when listening in mono, the snare will change tone, lose power and drop in loudness. For large phase differences, these changes can be substantial. Once balanced, the overhead microphones present a strong, stable, convincing image of the snare drum.

This stereo miking technique is taken an important step further through the use of ambient/room microphones. These more distant pairs of microphones can further exaggerate the stereo width of the snare sound, but they are tricky to use.

As microphones are placed further from the drum set, they pick up relatively more room sound and less direct, or close drum sound. As these ambient microphone pairs are moved still further away from the kit, the drum tracks quickly become a messy wash of cymbals ringing and a room rumbling. The musical role of the drums — keeping time and enhancing the tune’s “feel” — is diminished, as the actual drum hits become difficult to distinguish, lost in a roar of drum induced noise.

This problem is alleviated through the use of noise gates. Two noise gates can be patched across the room tracks to gate out the problematic wash of noise that fills the room between snare hits. The trick is getting the gates to open the ambient tracks musically at each snare hit. Your gates need key inputs to accomplish this; stereo linking capability is extremely helpful. Patch the close miked snare track into the key input of your gates. A little tweaking of the gates’ threshold, attack, hold and release settings and you’ll have a “gated room” sound. Every snare hit is more powerful than can be captured with close and overhead mikes alone. The snare becomes a wide explosion of adrenaline inducing noise, a phenomenon known to increase record sales.

ALL OF THE ABOVE

My students know that the correct answer to most of my multiple choice exam questions is: all of the above. Naturally, the snare responds well to creative uses of all that we have discussed above.

Compressing the drum tracks for enhanced attack and length becomes just plain sick (in a good way) when applied to room tracks. Squash (i.e. radically compress) and gate them and you can take over the world.

And an alternative to natural room tracks is synthesized ambience — reverb. Compress and gate reverb returns (plate reverb is a common choice, but anything goes.) to add width, length and caffeine to your snare.

And don’t be afraid to use studio devices that may not have been intended for drums. As an example, lets look at things labeled ‘guitar.’

While mixing, send some of
your snare track through a
guitar amp (Be careful to
match impedance and watch
levels. Use a passive D.I.
‘backwards’ sending a very
low amplitude line level, low
impedance signal from the
console through the D.I. and
into the amp. The passive
D.I. will happily boost the
amplitude and impedance of
the signal into something the
guitar amp expects to see
coming from a guitar).

Use radical equalization,
distortion, spring reverb
(generally only available in
guitar amps), wah-wah ped-
als, and stereo ambient
miking techniques to add
crazy magic to your snare.

Similarly, guitar amp
simulators can create stereo,
distorted noises from your
snare sound with a lot less
headache. I think of these
distortion boxes as compres-
sor/equalizer combinations
that can seriously bring en-
ergy enhancing noise to a
snare drum.

The idea is to target a
specific feeling in the snare
sound, shaping this Burst of
Noise along the dimensions of
spectrum, envelope and im-
age to get an exciting, appro-
priate sound through some
means other than just “crank-
ing it.”


Alex teaches distortion to young,
unsuspecting minds at the
Berklee College of Music and is a
practitioner of compression
throughout New England.
In case you haven’t had enough, there’s more stuff just like this in the book from Focal Press

**Sound FX**

Unlocking the Creative Potential of Recording Studio Effects

by

Alex U. Case

The Recording Studio is finally recognized as a MUSICAL INSTRUMENT. CORE EFFECTS get a chapter each, from TECHNICAL fundamentals to advanced CREATIVE opportunities.


*Thanks - ACase*
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