SPAT: Worth Its Bytes in Gold

By Jose Herring / April 27, 2012

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Flux/Ircam Tools *SPAT*. Say good bye to the old pan and send method of mixing and say hello to a true room acoustic simulator. On the surface, SPAT, seems as if it's too hard to use for practical purposes. But that's on the surface. I hope that this review demonstrates for you that once you dig around on it, SPAT is an intuitive and easy to use program that allows musicians, project studio owners and post production houses to achieve realistic room simulation with this one plugin.

For a great introduction to SPAT I refer you to Peter Alexander's excellent review "SPAT: Your New Best Buddy For Mixing."

My review is coming from a slightly different place than Peter's in that here I'm giving you a full application based on a big band arrangement I did with samples, mixing different libraries together to create the desired end in mind, which is what we all have to do when doing MIDI mock-ups and mixing libraries together to create our own ensemble.

I think it would be too involved to get into all that this program is capable of, including all the parameter settings. That's why my focus for this review is on what I use SPAT for. In subsequent reviews I'll get into other uses for SPAT focusing on surround sound capabilities. So again, this review comes from the trenches, with audio examples, of SPAT used for a real life music cue that I had to deliver just recently.

The exciting part is for such a technically involved program, great effort has been made by Flux and IRCAM to make this program rather user friendly.

But First…
But first, a little history from the viewpoint of José J. Herring. Not at all historically accurate, but for sure exciting!

I first became aware of IRCAM during my conservatory days. I had come across a CD performed by Ensemble InterContemporain lead by one of my favorite conductors Pierre Boulez. IRCAM (Institut de Recherche et Coordination Acoustique/Musique) is a leading force of music research and contemporary music of which many notable contemporary composers, musicians and music technology professionals come together to further the art of music.

The particular recording I was in to at the time (circa 1990) had utilized an acoustic live chamber ensemble performing alongside computers in real time recorded live. The music was referred to as "hybrid" music.

Sound familiar?

The entire CD was an acoustic phenomenon the likes of which I'd never heard before or since. Whatever they were doing, I thought, they do rather well and at the time was so cutting edge that I literally thought that this was the future of music. And to a large part the merger of live instruments and electronic computer based music, became the future of what I live with everyday.

Given my history with IRCAM through the Ensemble InterContemporain, I was really happy to get my hands on what I feel is a piece of golden technology, SPAT. I found that best way to get familiar with SPAT is to use it towards some creative purpose.

For this review I'm focusing on project studio music production. At the risk of exposing myself, there will be three examples of a big band piece I was hired to write utilizing clarinet recorded live, sax, brass, and rhythm section all using sample libraries. The first two examples highlight the problems I had with the production, while the final example illustrates how SPAT helped solved them.

The First MP3 Example: No SPAT
[Booming Big Band (No Spat)](#)

The above example is the cue where I used the old "pan and send" method to try and create acoustic space. No SPAT! Just me!

To restate the professionally obvious, as many of us working with samples know, we need to mix together several libraries. The problems inherent in that approach *are* many:

1. Samples recorded in different rooms;

2. With different amount of ambiance;

3. In different locations, etc.

In trying to compensate for that you have to do a *lot* of mixing and employ unusual techniques which I call MIDIstration– a counter intuitive mix of sample programming and engineering techniques made to get things to sound as *close* to real as possible. The results were less than stellar as you can hear.

The Second Example: With SPAT Attempt #1
The next example uses SPAT for the first time. But before that a brief explanation of some of the more used parameters in SPAT (see the graphic interface on the next page).

SPAT is of course a room simulation plugin. SPAT is short for Spatializer. There are three main pages: Source, Reverb and Setup all accessible through buttons in the upper left.

Going down from there you have a section called Perceptual Factors. In that section you can adjust Source Presence which effects the presence of the audio file most notably volume.

Source warmth adjusts the bass level of audio while Source Brilliance adjusts the high frequency level.

Just below those sliders you have Room Presence. This is the reverb send level. Running Reverb blends the early reflections into the source signal so that the reverb becomes more a

part of the sound. Envelope controls the perception of the sound coming from around the listener (mostly effective in surround applications from what I've seen so far).

Below the main graphic display on the source page you have a section called "Radiation" which adjusts the way that the source signal radiates in the space. Through a set of sliders you can control Distance which is the distance in meters from the listening position of your source.

Azimuth is the angle between 2 or more audio sources (stereo width).

Yaw is the angle of the source with respect to the axis (meaning, "in English" that you can turn your virtual player all the way around so that he's facing another direction entirely).

Elevation is height of source.

For Pitch, think in 3D and the angle of a nose of an airplane.

The Aperture is especially important as with this you can narrow the signal source thus allowing you to more accurately place your virtual players in a space.

All this feeds into a reverb plugin that I found quite useful. You can turn it off. That is a definite option. But since the reverb sounds good and is integral to setting up a proper space, I kept it on to good effect. Then by applying another reverb either as a send or on the same channel I was able to create a reverb very reminiscent of my favorite Lexicon reverbs.

There's so much more and it would be beyond the scope of one article to explain it all. But don't be turned off by the complexity of SPAT. A lot of good work can be done by just dragging icons in the graphic part of the interface and once you understand all the technical words SPAT is actually quite simple. The best way to do it is to use your ears and imagine a real space and to place your source where you want. SPAT gives you that control.

Now time for SPAT in actual use!

I opened up SPAT on an insert mono track of my clarinet performance which I recorded in the well known *Jose J. Herring Centre For The Recording Arts*, otherwise known as my living room.

> So the final version involved a live player performing with a sample ensemble. I could have also done this with a vocalist. So immediately you can see the very practical applications with SPAT opening up.

On a mono track, though, I couldn't locate the instrument. I could get good back to front distance, and using the "Aperture" slider I could narrow the field, but I couldn't get a convincing left to right image.

I wanted the clarinet in the left speaker and I couldn't place it there.

After realizing that to place an instrument left to right I needed at least two signal sources, I bussed my mono clarinet recording over to a stereo buss and inserted SPAT on the stereo track. SPAT then gave me two signals to work with. Looking at the visual display I realized that a lot of placement options are available visually by dragging the source icons in SPAT.

Ok! Easy.

I dragged the icons labeled 1 and 2 to the left of the field thus adjusting the Azimuth, or stereo field, narrowing it. I adjusted my distance. Adjusted the Aperture (signal width of the source. Think camera lens–makes it more narrow or more wide.) As the original recording was done in my living room with the mic 1 foot away, I wanted to place the clarinet more in the ensemble, but in front of it. SPAT did this no problem. Then I adjusted the send level of the source signal to the reverb using the Room Presence slider.

Verb is a great sounding reverb. Reminiscent of really high quality Lexicon reverbs. I was really happy with how the reverb opened up the sound and also, equally happy with the early reflections and the body of the reverb.

The tail came off a little digital sounding, but with a few adjustments I was able to smooth out the tail quite a bit.

Adjusting the "Room Presence" slider I was able to get a really good balance. I had my clarinet in the space I wanted which wasn't my living room but a realistically mocked up stage.

Next, I noticed that my drums were all over the stereo field.

I use EZ Drummer which is recorded in Stereo and takes up much if not all of the stereo field. I noticed that my kick was in the middle, toms all over the stereo field and my cymbals were again all over the place. I needed to somehow narrow that field.

I put another instance of SPAT on the drums, narrowed the Azimuth, tightened the aperture. Again adjusting the reverb send (Room Presence), I was able to get my drums in a good space. Much of the same work was done on the acoustic bass and sax section. But there is still work to be done. Not quite there. SPAT didn't magically fix my mix! *Damn!*

Here's the MP3 example *after* my first SPAT session.
Booming Big Band (Spat)

So quite bummed, I worried about why this magical plugin that I knew was good didn't fix the problems with my mix. Yes, I could hear SPAT working, but it still wasn't good. In some ways better I thought and in other ways worse. I pondered this dilemma for about half a day, then I remembered this little maxim I always keep in mind with reverb:

> If the mix isn't sounding right *before* you apply reverb then applying reverb will only make it worse. The *better* the reverb the *more* it highlights other problems.

But, what could the other problems be? After all I did my best MIDIstration possible given the libraries I was using.

Then it hit me like a ton of bricks.

Real instruments, orchestration and their use derived from the assumption that instruments would be placed at the same time in the same space.

The Rimsky-Korsakov manual on orchestration goes into great detail over the balance and resonance of instruments and instrument groups based on the fundamental principle that your orchestra is playing on a stage situated in a certain way. Traditional samples recorded in different spaces and live clarinet recorded in a different space required me to do the "usual" unusual things—MIDIstration.

Because my cymbals were clobbering my mix, I had put the horns in weird octaves to be heard. Because, my saxes were close mic'ed and my trumpets were ambient I had doubled articulations to get more "punch" from the trumpets.

All typical things we do to get over spatial and resonant shortcomings in samples.

Ah, but I had used SPAT, and it had realistically mocked up a proper space for me. So now these MIDIstrations were becoming more obvious orchestration flaws. The little timing discrepancies to avoid the "accordion" effect of everything coming in at the same time were now just *off*.

The Third MP3 Example: With SPAT Attempt #2
So the next day, I opened up the mix again. I said to myself, "If I had real instruments in a real space what would I do?"

I adjusted the orchestration accordingly. Working with the SPAT graphic display, which by now had become by best friend, I fine tuned the Distance and the Azimuth on my instances of SPAT and the arrangement came to life.

Shimmy Shake (Spat Mix3)

This example was done on a two speaker system. SPAT allows you to control up to 8 Speakers giving you up to 7.1 surround sound spatial realization for your mixes if you work in surround. Given the impressive way it handled 2 speaker setups I'm eager to someday try it on a full surround mix.

Wrap Up
In closing I should mention a few things. First, SPAT is way more CPU efficient than I thought it would be. I used up to 6 instances without a problem. The ram usage is minimal. Worked within a 32bit environment without any problems ram wise.

As with any mix tool, a little bit goes a long way and my initial attempts over used the SPAT parameters. One weakness is that if you want to adjust things using real measurements in meters the meter gauge doesn't appear to be that accurate as I tested it, so it's best, like always, better to use your ears to match spaces in a virtual mockup.

Its real strength is that in spite of the big words SPAT is easy to use, does its job better than I had hoped and has a great reverb section. Giving my samples a "real" consistent space allowed me to use more of my orchestration chops rather than my MIDIstration chops. For these reasons, though its pricey for many, I think SPAT is worth its bytes in gold.

This article was previously published at the SonicControl website.