

Omri Shiv

The Making Of A Rock Album – An
Experiment In Sound Design

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Introduction

Recording, as I have come to understand it, is the process in which a performance is faithfully captured to be later reproduced in as true a form as possible. That is, what the performers play is what will be faithfully reproduced, as long as the medium does not degenerate. This is especially true in concert situations; however, it also holds for studio-recorded classical music as well as classical jazz. Rock, however, is slightly different in that what is recorded is not always what will be reproduced.

Every genre is unique when it comes to recording. Jazz music is difficult because there is no way to isolate each instrument during the recording process. Classical music does not have the luxury of the shortcuts jazz and rock engineers take when editing due to not being able to perform exactly the same each time. Rock demands much more time spent after the initial recordings are made.

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In rock music, the recording process is only the beginning. Just as much time, if not more so, is spent in the mixing process. Rock music can call for extensive amounts of processing to achieve sounds that cannot be created naturally. Not only does an engineer need to understand the equipment to its fullest to capture the correct nuances before the mixing process, he needs to be able to think creatively to use those sounds to satisfy his clients' needs and surprise them with an arsenal of original sounds that would complement their needs.

After mixing takes place, postproduction begins. During postproduction, everyone involved in the process will carefully listen to the songs and subtle changes will be made.

Songs will be remixed and any final editing/rerecording will be done. After this step, mastering begins.

Mastering is the process in which, ideally, no more mixing will occur. An outside engineer usually does this, as mastering one's own work is incredibly difficult. Mastering requires a neutral ear. An engineer who masters his own work may be biased and will therefore not utilize the full complement of tools that are available in the mastering process.

The Hats I Wore

In the section titled “The Hats We Wear – Studio Roles” in his book “Total Recording”, David Moulton writes about the various types of people found in a professional studio (this section has been reproduced in Appendix 1). Throughout this project, I have had to play many of the roles described in this section, as well as others.

The musicians collaborating on this project mostly played the artist role. Keeping the artist happy was critical to the success of this project. One of my friends was very reluctant about helping me on this project. To make them feel more comfortable, I sang the vocals of the song they planned to sing. After the recording session, they came out with such a high, they had a great time. It was making them feel comfortable about the whole process that got them to sing their best and enjoy it.

When the musicians would get frustrated, a quick run for coffee or food was in order. When they got tired, a short comedic break was taken. When the artists were happy, it showed in their playing. When they were tired or frustrated, well, I've tried to omit those moments as much as possible.

As studio “owner” I had to juggle the task of booking my time and ensuring that it would work for the musicians. Everyone has such different schedules, that it is amazing that it only took a year to complete this project. I also had to perform a lot of maintenance on the studio along the way. Fixing cables, cleaning the computer, and even cleaning the room were all tasks that I took on. As this was my project and they were doing me a huge favor in helping me, it was crucial that everything was ready when they came in. It was also crucial that I knew what I was doing when things were not working.

I had to roll up most of the other roles into one position. The recording engineer, assistant engineer, mixing engineer, mastering engineer, and producer were all one role to me. While they were not treated the same, they were all equally important. It was especially difficult to play the mixing engineer as well as the mastering engineer role. I had a lot of help from people listening to my mixes along the way to make sure they sounded good and were hitting the concept correctly.

The Project – How It All Began

The project started in April 2008. Kyle Napierkowski (bass, guitar, vocals, banjo, and piano) asked me to help him record a song he had been working on. That weekend, the piano and vocal tracks were laid down in the CIM studio using my computer and Apple’s DAW (Digital Audio Workstation) Logic. I took the project home and played with some drum ideas. A week later, Sean Detwiler (drums, guitar), laid down the drum tracks. At that point, I had to switch programs to Steinberg’s Nuendo software to better facilitate working in the studio. This is one of the industry standards in multitrack recording. In retrospect, I regret making the switch; for reasons I will discuss later. There

were a lot of different drum ideas for the track. Sean took the unedited drum tracks over the summer and sent me a list of edits. The first track for the project was done.

Initially, I thought this drum track would be used for my Junior Project; however, it did not make sense with the collection of jazzy tunes on the album. I then decided to use this track for my Senior Project. I began to think of what that would mean for the project. Kyle and Sean are great musicians, but they are business students. They do not have the time to keep up with their class work as well as write and practice on a daily basis. This would mean that the CD would have to consist of few original tracks. In fact, the first song we recorded is the only original composition on the album. I imagined this album being a collaborative project in which musicians would be mixed and matched for different songs. While this idea was not completely realized, many of musicians performed on this album. Below is the full list of musicians who made this project possible:

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<u>Name</u>	<u>Instrument</u>
Patrick Bittel	Vocals, Clapping
Sean Detwiler	Drums, Guitar
Keith Lewis	Bass
John Myers	Bass, Clapping
Kyle Napierkowski	Bass, Electric and Acoustic Guitars, Vocals, Banjo, Piano
Louis Ng	Midi Quantization
David Ramsay	Guitar
Omri Shiv	Vocals, Electronic Drums, Percussion
Lauren Walter	Vocals

The Ladies of Solstice:

<u>Name</u>	<u>Solo</u>
Janice Ahn	Womanizer, New Soul
Maya Bhat	Back to Black
Sarah Franjoine	
Celia Gendler	Don't Speak
Leah Golub	Fidelity

Janet Jang	The Way I Am
Emily Lawson	You Picked Me
Caitlin Powell	Perfect Day
Lauren Saito	Happy Ending, Mama Who Bore Me
Adrie Welsh	Don't Speak (Beatbox)

Their time and commitment is immeasurable. I thank them for everything.

Without them, this project could not have been completed.

The track list solidified as a collection of different ideas, desires, aspirations, and a general love for the same type of music and artists. Below is the final track list for the project:

Track	Name	Band
1	Blackest Eyes	Porcupine Tree
2	Trains	Porcupine Tree
3	Are You Gonna Be My Girl	Jet
4	Sex And Candy	Marcy's Playground
5	That Thing You Do	The Wonders
6	New Soul	Yael Naim
7	I Woke Up In A Car	Something Corporate
8	Sound Of Muzak	Porcupine Tree
9	Lazarus	Porcupine Tree
10	Wish You Were Here	Incubus
11	You Picked Me	A Fine Frenzy
12	Aeroplane	Red Hot Chili Peppers
13	Kyle's Song	Kyle Napierkowski
14	First Date	Blink 182
15	Tonight	Stars
16	Where We Would Be	Porcupine Tree

More tracks were recorded; however, they did not make it to the final master. These tracks included:

Title	Artist
Deadwing	Porcupine Tree
Wedding Nails	Porcupine Tree
Anthem Pt. II	Blink 182
Give Me One Good Reason	Blink 182
Clumsy	Our Lady Peace

The challenges this project presented was coordinating musicians' time, balancing the musicians' different talents on different instruments, getting a great recording, and producing a sound that would be an accurate representation of the original song. Creating an accurate representation of the song proved to be the most challenging aspect of the project, especially when it came time to play the recordings to people who have never heard the original song. Playing some of the tracks to uninitiated listeners elicited mixed responses. The Porcupine Tree tracks seemed "poorly mixed" due to the attempt to make them sound "Lo-Fi" as they were originally recorded. A different approach was used to achieve this effect. Additionally, fans of "That Thing You Do" understand the "Live" aspect of the song. It needed to sound as if it was being played live in a concert venue.

The project was a learning experience. Over the course of the project, the techniques used to record the different instruments evolved. Microphone choice and placement became much more accurate and tuned for the desired sound. Familiarity with the recording software and the ease of use and accuracy improved. Many quirks and problems were discovered along the way, which led to new discoveries. These will be discussed later. Additionally, plug-ins and outboard processors became second nature.

I will discuss the way I recorded each instrument before I talk about the tracks, the track choices, and what I've learned. Where appropriate, I have combined tracks.

Vocals

Vocals are an interesting thing to record in rock music. It is not desirable to have a vocal part with a very wide dynamic range. In rock music, the vocals can get buried in

the mix very quickly. For this reason, vocals tend to be recorded through a compressor (a TL-Blue in my case). This device uses a combination of settings to keep the output of a signal at a consistent level.

The microphones used to record vocals included:

<u>Microphone</u>	<u>Type</u>	<u>Company</u>
RE-20	Dynamic Cardioid	Electro Voice
Bluebird	Cardioid Condenser	Blue
SM 58	Dynamic Cardioid	Shure
AT 4060	Tube Cardioid Condenser	Audio Technica

I had a hard time convincing one of the vocalists to switch from one microphone to another. He knew how he sounded on one of them and had heard it so many times that a new one seemed unfamiliar to him. In the end, I conceded and let him use his choice because he was planning on using the recordings for a demo of his band. I was able to do a little correcting using the software and some outboard gear.

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Bass

Bass in rock music is very similar to vocals. For some songs in the project, the bass was run through the same compressor as the vocals. For others, a combination of a bass amp with a microphone pointed at it (the RE-20) as well as a split for a direct signal was used.

Electric Guitar

The electric guitars were recorded very similarly to the bass; however, the guitar tracks were not compressed during the recording phase. Some tracks were recorded with the guitar directly plugged into a preamplifier; however, the majority of the tracks were recorded by using a combination of the direct-in with a microphone on the amp. The

microphone used on the guitar amp was a Shure SM 57, a Dynamic Cardioid microphone.

Acoustic Guitar And Banjo

The acoustic guitar used for the album did not have a pickup. That would not have changed the preferred recording technique. For the entire album, a stereo microphone technique was used. In this case, a large diaphragm Neumann TLM-170 in the cardioid pattern was placed on the low end of the guitar while a KM 84 was placed about 6 inches from the guitar pointed at the 12th fret. The large diaphragm on the TLM proved very useful in picking up the low end of the guitar while resisting the effects of the sound pressure. The small diaphragm KM 84 provides a true representation of the high end of the guitar. Together, the combination worked well to provide a true, non-colored, and wide ranged representation of the acoustic guitar.

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The same technique was used to record the banjo part found in the bridge of “Trains”.

Drums

Drums are the most challenging part of a rock recording due to the microphone count required to capture a drum set. Depending on what kind of sound desired, it is not uncommon to find at least one microphone on every drum, if not more. This becomes increasingly challenging when recording a drum kit that is bigger than the standard 5-piece setup. Additionally, there is the challenge of positioning the microphones in the desired place, which is increasingly difficult with the increasing number of cymbal stands

and the tightness between the drums; however, the bigger challenge is making sure the microphones are not in the way of the drummer's sticks.

Phasing is another problem that occurs when drums are miked. Phasing happens due to the time difference between two microphones picking up the same signal. In my setup, the snare and bass drums both had two microphones on them. Imagine the sound wave emanating as either of these drums are hit. The two drumheads vibrate in the same direction; however, the microphones, positioned on both heads, pick up the forward wave and the back end of the wave at the same time. This causes destructive interference, which makes the overall mix sound flat and dull as the interference wave attenuates the drums' frequencies. To counteract this effect, one of the microphone's polarities needs to be reversed. This is done either on the mixing console or in the software. I chose to do it on the mixing console and on the track that I would be less likely to use if I was in a situation where I could only have one microphone on a drum – that is to say, the microphone that was under the snare drum picking up the sound of the snare, as well as the microphone pointed on the beater head of the bass drum picking up the attack of the beater, had their polarities reversed.

In addition to microphones on every drum, I chose to have two overheads to capture the cymbals as well as a mid overhead to round out the mix. The mid overhead is Blue's Dragonfly ribbon microphone. Being a ribbon microphone, it is able to capture sounds in a figure 8 while rejecting everything to the sides. I used this to capture a pseudo stereo sound of the kit, while the inherent nature of the ribbon made it sound "warmer". My drum kit microphone list is as follows:

<u>Placement</u>	<u>Microphone</u>
Left and Right Overheads	AT 450
Mid Overhead	Dragonfly
Hi Hat	KM 84
Snare Top	MD 421, AT 2020 (Replaced 421)
Snare Bottom	SM 81
Rack Toms	MD 421 (Individually Miked)
Floor Tom(s)	D-112
Bass Drum Beater	SM 57
Bass Drum Resonant	RE-20, TLM 170 Hypercardioid (Replaced RE-20)

Upright Piano

The piano proved to be a very difficult instrument to mic. In addition to being in a small room, the piano was not consistently in-tune. Two setups were used to capture the piano sounds. The first setup, the one for “Kyle’s Song”, was my first attempt at recording upright piano. The second, and most involved, setup was used for the song “Tonight”.

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The first setup consisted of a pair of Sennheiser MKH-40s, a pair of cardioid condenser microphones. At the time, these were my go to microphones for acoustic recordings. They worked, but my setup evolved.

The second setup consisted of:

<u>Placement</u>	<u>Microphone</u>
Back of Piano	(2) TLM 170 Cardioid
Over The Piano (Open Lid)	(2) KM 84
Behind Piano Player (Room Mikes)	(2) Schoeps CMC-6 MK-2 Capsules

This setup also included diffusers behind the TLM-170s. These were used to create as big a sound field in the room as possible. Additionally, the room mics were intended to be the BnK 4006s; however, the capsule on one of the microphones was

inconsistent; therefore, it was replaced by the Schoeps. This setup worked very well for the song as it created an accurate reproduction of the original tone.

The last setup would have consisted of a pair of KM 100s. These microphones were placed behind the piano, close to the ground on the low end and almost to the lid on the high end. The idea for this arrangement came about after hearing it used in our multitrack class. This provides a much closer sound, which is more akin to the songs the piano was being used for. I wanted to use this setup; however, Louis Ng suggested I should use a quantized MIDI sample to keep the piano as consistent as possible. It worked out well.

A Capella

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For the Solstice recording session, I had to acquire some microphones from Bruce Gigax. I used a combination of two TLM-170s, two AT-4050s and an AT-4050B arranged in a cardioid pattern to record the group. The microphones were arranged in an arc with the inside two microphones being the TLM-170s in the middle, the AT-4050s on the outside of the arc and the AT-4050B as the solo microphone.

This worked very well. The group was very happy with the recording, as it was far superior to their previous one, which was done with one microphone (probably a dynamic microphone), in mono.

Percussion

The percussion parts included clapping on both “Trains” and “Are You Gonna Be My Girl” and a tambourine part on “Trains”. For these tracks, an SM 58 was used to

record the parts. The 58 is able to handle the sound pressure created by the clapping and faithfully recreated the sound of the tambourine. The 58 proved to be a fine microphone for capturing the tambourine.

Kyle's Song

This is the song that launched the project. It was an early introduction to the world of studio multitracking. The song started out in Logic Studio, Apple's DAW software. For recording the drums, I had to switch to Nuendo because CIM's studio lacked the software I was using. I had used Nuendo quite a bit beforehand, but it was not until this project that I encountered many of its shortcomings.

Recording the song taught me how to properly create a balanced mix, the importance of working with groups (that is, combining the drum tracks into one group, the vocals into another, guitar and bass, etc, and then mixing the groups), and the importance of using just one program. As all the tracks were in Logic before switching to Nuendo, I either had to do the editing for all the tracks in Logic, then export them one by one into Nuendo and finish my mix there, or I could create a stereo mix in Logic and work with that in Nuendo. In either case, switching programs was a major undertaking.

Lazarus, Trains, Blackest Eyes, Sound of Muzak – The Louder Side Of Porcupine Tree

The reason Porcupine Tree features prominently on my album is because Kyle and I both enjoy their music. Having played the drum tracks for all of their songs, Sean too, has come to enjoy the challenge of playing their progressive rock influenced music.

Postproduction was the most challenging phase of the work. Porcupine Tree has a lot of value in their postproduction. There is a lot of work put towards creating very ethereal sounding music. Many of the sounds they create are synthesized, while there is a lot of equalization used to create the overall sound of their mixes.

[Trying to match this level of postproduction quality required experimentation and trying different approaches.] After the realization that my initial mixes sounded inconsistent, I took a different approach to creating the same effects. By using a combination of reverberation, compression, and equalization, I got as close to the sound as I could.

I Woke Up In A Car, Sex And Candy, Aeroplane, Area You Gonna Be My Girl,

Wish You Were Here, First Date

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These tracks are typical alternative rock tracks. The drums are very tight and highly compressed. The bass and vocals are also as compressed as possible. The entire mix needs to sound as dry as possible. I picked these songs because they are very catchy and a nice contrast to the rest of the album.

There are two general styles to rock music: the loud, in your face, very “studio” sounding rock, and the more alternative music, which tends to get very creative atmospherically. These tracks are of the former variety. This does not make them any easier to engineer. Getting the tracks to sound tight and loud without also fatiguing the listener is hard. I do not want to participate in the “loudness wars”; volume does not equal quality. Although I do not consider loudness a virtue, I tried to faithfully reproduce the original material. I believe my tracks strike the appropriate balance between the two.

That Thing You Do

I challenge anyone to not get up and dance when they hear this song. I picked this song because of its contrast to everything else on the album. There is no other song that exhibits the same quality as “That Thing You Do”; that is why it has its own section.

Besides being a very fun song, this track also proved to be incredibly challenging. I was working in the studio, mixing this track. I thought I had the overall mix; however, something was lacking. The instrumentation was there, but the track just didn’t sound as I had wanted, It lacked depth. I used my standard mixing techniques, but still, I couldn’t quite place it.

I ended up boosting the high end of the overall mix while doubling the guitar tracks and panning them wide. This gives the illusion of a much larger stereophonic image.

Additionally, the track needed to sound “live”. This also proved to be a challenge. I have been using the Waves reverb plugin “TrueVerb” to add a slight reverberation to my mix; however, this plugin was not providing me with the effect I wanted. I ended up having to use a different reverberation processor on select instruments in the mix as opposed to the mix as a whole to get the effect I wanted.

Tonight, Where We Would Be

These songs are the calmer songs on the album. Kyle suggested “Tonight” and “Where We Would Be” to me as songs we should do for this album. I thought these songs would be, instrumentally, a big departure from what had already been recorded.

I really wanted to contrast the constant driving hi hat and bass patterns with something a little more subtle. In fact, none of these songs have a constant pulse throughout. There is neither bass nor drumset in the songs.

These songs created a problem that was not at all present in any of the other songs: headphone bleed. The click track playing through the headphone bled into the piano microphones on “Tonight” and the guitar track in “Where We Would Be”. I had to use audio restoration software to clean the tracks up as much as I could without damaging the sonic qualities.

Plugins and Processing

It is interesting that the same week I said I hate using plugins is the week that I found a great one to work with. We were in class, talking about a compressor plugin modeled after an LA-2A compressor when I mentioned that plugins cannot possibly sound anywhere near as good as their analog counterparts because of the missing circuitry. I went into the studio that week to sit down and mix. I started working on the vocal tracks, but they were lacking “oomph”. I decided to try using one of the Waves compressors we have. It worked, very well. I began using the Waves compressor plugin to add compression to the parts that needed it while also using the reverb plugin to add reverberation to the track itself.

Sometimes having very talented friends who are enthusiastic about the music they are performing is not enough. For some of the tracks, Melodyne, a pitch correction plugin proved very useful in correcting some intonation issues related to the vocal tracks.

The advantage of most plugins is their “offline” nature, that is, plugins don’t need to be processed to take effect. This was a big consideration when it came to picking whether or not to use a plugin or to use an outboard processor. The use of the Waves compression plugin was an obvious choice as it works well and does not require the time-consuming reprocessing of all the tracks I used it on. Melodyne is a real-time processing plugin; however, only what needs to be edited needs to be processed is.

Sequencing and Mastering

For this project, while outside ears were enlisted along the way, I did the final mastering phase. This involved the use of plugins to help the final mix “pop out” more. Additionally, the sequencing phase occurred alongside the mastering. In this phase, the beginnings and endings of the songs were determined. The fade-ins and fade-outs were also decided as well as the pause between the tracks. Lastly, and most importantly, the tracks were laid out in the order that the final CD is in, as well as the overall level between them.

I decided to start the CD with “Blackest Eyes”, a very rhythmic song that embodies the philosophy of experimentation in this project. I felt that putting “Trains” next was the perfect segue from “Blackest Eyes”. Incidentally, that is the track order of the Porcupine Tree CD featuring both those songs.

The next few songs: “Are You Gonna Be My Girl”, “Sex And Candy”, “That Thing You Do”, “New Soul” and “I Woke Up In A Car” build up the intensity in the CD. “That Thing You Do” offers a slight contrast in the middle of that block. “New Soul” is more of an acoustic rock song, which I think works very well as an a capella track.

The ending to “I Woke up In A Car” leads very well into “Sound of Muzak”, which brings back Porcupine Tree. “Lazarus” follows, which also leads into “I Wish You Were Here”.

The decaying notes in “I Wish You Were Here” lead into “You Picked Me” very well. “Aeroplane” features a very nice diversion from the very hard rock that this CD includes. It’s funky and creates a slightly different feeling for the listener.

“Kyle’s Song” follows “Aeroplane” along with the last bit of the hard rock, “First Date”. Lastly, “Tonight” brings the album back to a slower tempo, ending with “Where We Would Be”.

When I first heard “Where We Would Be”, I immediately knew that this song would close the album. The song is both very sad and very beautiful. While it may describe the lost aspirations of an adult realizing he is not who he thought he would be, it also sets us on a path we did not consider. I wanted to leave the listener questioning where they are and realizing that they are exactly where they need to be, in the present. As I have often thought to myself “Don’t look towards the future or life will pass you by unnoticed, don’t look to the past or you will miss what’s important, live in the present and enjoy every moment”.

Quirks and Mishaps

Along the way, I had my share of problems. From broken or shorting microphones, to dirty potentiometers, adaptability and improvisation are necessary skills. Of all the days we were in the studio recording drums, doing overdubs, mixing, or

editing, there was only one day in which I had a perfect day; and in that day, I almost lost an entire recording.

It is very difficult to reach your full potential in a shared environment, where things change constantly and where things that should work, do not work. As a learning studio, that is an environment we have to master

During one of the last studio days, another student was doing his recording and needed a lot of the equipment out of the studio. This list included the Analog to Digital converter, a key component of being able to make a recording in the studio. I brought along my recording interface, which can double as one of those converters. Until then, I had never used it for such a purpose, but I was sure I could make it work. I set it up and we started recording. When we began recording the vocals, I noticed that my waveforms looked square and short, rather than the smooth wave we want. Additionally, the quality of the sound coming from the microphone was not what I was expecting. I checked the microphone, I checked the compressor settings, but I couldn't quite figure it out. It sounded dull. There was no high end and no low end. It turned out that the interface was outputting a much higher level than I was expecting. I connected the interface to my laptop, set the levels accordingly, flashed the settings to the interface, and tested it out. It worked flawlessly.

Additionally, that day someone had taken the headphone amplifier out of the studio. I was frantically trying to figure out how to work around this problem. I could run a very long cable from the listening room to the recording room; however, I would have to make this cable on the spot and I did not want to waste the cabling. I tried to borrow

one from the CIM Recording Services; however, they were not there. I was almost tempted to try and use a small loudspeaker in the room, but I had a better idea. I ended up connecting a recording interface to the talkback in the recording room. This provided a way to convert the XLR connector to a headphone ¼ output. This also allowed the musician to adjust his volume on the fly. Lastly, it provided the best way to not play back the recording into the microphone in the room.

The last quirk I had in my recording process was during the remote recording of Solstice. I had set up all the microphones and routed them in my recording program. When I started to listen to the microphones, two of them were not outputting anything; however, I could see them on my monitoring metering. It turned out that my computer was limiting the bandwidth for the microphones. When I went to change it, the program did not recognize it. It was not until I quit the program and reopened it that everything worked correctly.

Most studio mishaps can be traced to oversight such as gear not patched correctly because someone had borrowed it and not put it back correctly. Dealing with and anticipating these problems is something I have come to understand.

My main problem was the software. It was only after I switched from Logic to Nuendo that I understood what was missing in Nuendo. For instance, I could not highlight multiple inputs and assign them to a mix bus; I had to go track by track and do this. This was increasingly aggravating as I was trying to build a drum sub mix. Additionally, Logic has a very nice feature that lets the user see all the takes at once and

just highlight what is needed for the final product. This is much better than having to create a disposable track just for listening and having to cut and paste parts of a song.

Nuendo was difficult to use towards the end. It was throwing a lot of errors every time I used the scroll bar, which made scrolling a song or the mixer very aggravating. This may be a function of the junk the computer has accumulated, as I have not seen this issue on other computers. I actually quelled the errors by increasing the buffer size on the audio interface.

Conclusion – A Retrospect

Looking back at the development and progression of my experience in a recording and multitracking environment, this project has been a great learning experience for me. I truly understood how much I learned during the recording of Solstice.

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About half way through the session, the group switched to a song in which the soloist did not know the words and had to read the lyrics from the sheet throughout the entire take. I didn't want her to put tape the sheet to an expensive microphone, it would alter the quality of the vocals. Instead, I put the lyrics on a music stand, raised it above her head to force her to look up and at the microphone, and I threw my jacket over the stand. The reason for the jacket being that the reflections of her voice bouncing off the stand and back at the microphone would destroy the take.

I learned the importance of keeping the clients happy. Whether it was making them feel more comfortable by showing them that recording is not as scary as they thought it was or bringing them coffee in the morning, keeping them happy meant getting the best possible performance out of them.

Troubleshooting was crucial in this experience. I had to do a lot of studio maintenance throughout the process to troubleshoot faulty equipment and lines. Additionally, I learned to work around problems. Missing equipment, broken equipment, were all things I had to work around. This knowledge is crucial when working in a studio and especially when working in the field when you may not have all your gear with you.

Lastly, the knowledge of being able to hear a sound and try and reproduce it was realized. Being able to hear a recorded sound of a snare drum that a client likes and being able to reproduce it is a critical skill to have in a rock-recording scenario. This goes hand in hand with knowing how to compress the track and set the reverberation processor correctly to achieve the desired effect.

This project was a lot of work. From working around the available studio time, to setting up the large setups required for drum tracking, to the late hours mixing, studio life is never ending. I am very glad I had the opportunity to do this. I believe the results show an understanding of microphone placement and techniques, good use of sound engineering, and a thorough understanding of troubleshooting and maintenance.

Bonne ecoute!

Appendix 1. The Hats We Wear (Reproduced with permission)

When we describe the people who work in the studio, we usually refer to the types of people found in the large professional studio, including the Recording Engineer, the Producer, the Artist, Session Players, a Sound Designer, the Sequencer Programmer, a Studio Manager, a Maintenance Engineer and, of course, the Owner. When we teach people about this business at the college level, we view[] these roles as professional jobs in a professional environment.

However, in real life, the roles are not cut and dried and the skills needed for each of these roles is changing rapidly-many of the specific technical skills we use today probably weren't needed five years ago and others won't be needed five years from now.

Also, you will probably serve in all of these roles from time to time, often from sheer desperation or lack of funds, and not because that was what you set out to do. Most of us started out with a musical vision and thought that multi-track recording was a great way to realize that vision. Being a studio manager was the furthest thing from our minds, but when we decided we really need to get organized and print track sheets, Studio Manager is the hat we've just put on.

These roles describe some very useful things about making music in the studio, and if we understand the roles it is much easier to understand what we are really doing. Keep in mind that the lines between these functions get pretty blurry in reality and that when we are making music in the studio we will wear all of these hats, sometimes several at once.

The Artist

As the Artist, we are the person who is performing the music. We probably wrote and arranged the music, or are making it up in the studio as we go along. We may be part of a band, we may be the leader or a side-man, or we may be a one-man band or synthesizer player. We may think of ourselves as composers or sequencer programmers.

When we are functioning as the Artist, we are the one actually *making* the music, creating the actual sounds, and arrangements of sounds. We have two really important tasks: first, to have really good music (that's our composer/arranger task) and to create really great performances (that's our performer task). These are *absolutely critical!* If we don't succeed at these, the rest of the project can be abandoned right now! Nobody ever bought a dull recording just to enjoy the signal-to-noise ratio!² Music is powerful, emotional stuff (especially rock and roll, which is superheated and emotionally *on fire*).

As the artist, it is our job to make *great* music. No more, no less!

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The Recording Engineer

The Recording Engineer label actually describes a specific job role: the person who actually operates the equipment of the recording studio. As the Recording Engineer, we listen to the acoustic sounds, select and set up microphones, maintain control over signal levels and settings, hook up synthesizers, sequences, computers, etc. in the studio. We also operate the recorders used to store the sound, conduct overdubbing sessions, mix the resulting multitrack tape down to the stereophonic or other master, and edit, remix, and otherwise fix the master tape recording for use as the source for all subsequent production runs for CDs, cassettes, etc.

² Or, as engineer Bruce Swedien is alleged to have put it, nobody leaves the recording session humming the console!

The engineer may have many other tasks, and there are many variations of the role, including sound reinforcement, maintenance, mastering, etc. But the core of it all is operating the substantial resources and systems of the multitrack recording studio to create a recording of music that when played back by the listeners really moves them, rocks them, touches them, blows their minds, and otherwise reaches into their hearts and souls.

In short, the engineer is not a technician or a scientist, and the job isn't a science or technology – it's art. The recording engineer uses science and technology to get music to come out of loudspeakers. He or she is making loudspeakers sing!

The Music Producer

The Music Producers I much like the director of a film. It is his or her vision of the final recording that hopefully will be realized, and equally it is his or her responsibility to make that happen. As the Producer, we make it all happen.

For this to occur, we must be *able* to make many things happen. We choose the music, the artists, the arrangements, the recording studio, and the engineer. The music must be composed, developed, rehearsed and performed. We decide when the recording is good enough. We listen to the engineer mix, guiding him or her to satisfy our vision.

The Producer must really *know* recorded music, have a clear and focused sense of how his or her recordings should sound, and know how to communicate that sense to the Engineer. The Producer must know how to get the performers to perform at their best in the studio, when to support, when to antagonize, when to try again, when to take a break, etc. The Producer must be able to visualize and *keep in mind* how the final product is

going to sound while listening to the tracks, the overdubs and various disparate elements of the recording.

The Producer must be organized and keep the project moving . The Producer must be responsible for the money, and for paying the bills as they are incurred.

The Producer, in short, carries the multiple burdens of vision, responsibility and communication. The assumption of these burdens frees the Artists, Engineers and others to concentrate and focus on their tasks, relieving them of distractions that would otherwise interfere with their efforts to obtain their best performances.

As I mentioned above, these roles get mixed up more than a little bit in real life. Sometimes, this gets really confusing, because the roles really have different functions and value systems, and what is appropriate and good in one role may actually hurt our performances in another. For instance, I have found it extremely difficult to engineer sessions where I am producing my own music. The value systems I use for engineering (keeping control of the physical systems and maintaining good recording craft) interfere with both musical and production decisions, and I find it all too easy to get lost in pursuit of technical details, so that I have to constantly guard against the tendency to do it all myself, unless I have virtually unrestricted time, which turns out to be a very expensive luxury.

So, think of the roles as *functions* that have to be fulfilled in order for your work to succeed, and try to keep clear in your mind as you go along *which* functions you are working on at any particular moment. Also try to keep in mind the balance between those functions, so that your decisions taken as a whole (for example, do you keep fiddling

with a hum problem, work on lyrics, or do another take while the band is hot?) work most successfully toward the realization of your goals.

Studio Work As A Social Grace

One other issue that needs to be mentioned here is the interpersonal aspect of this work. If you are working as a synthesist in a completely private project studio, the effort is very much a solitary one, and it requires that you develop considerable self-reliance, the ability to criticize your own work, and a complete arsenal of musical and technical skills, not to mention creative vision. If you work with others in a band or production team, you may need to trade some of the self-reliance and master-of-all-trades abilities for some interpersonal skills. Studio recording is really a team effort and it demands the ability to work effectively in a team. This means the ability to permit your efforts to be merged with those of others, to sacrifice or assert where needed, and to support and empower your teammates in their efforts.

For this reason, the *ability to work with people* is a key job skill for both the Recording Engineer and the Producer, and really desirable for the Artist. If you want to make great music in the studio, it really helps if you can work effectively with people, especially great people.

Moulton, David. Total Recording. 11-12. City: KIQ Productions, 2000.