

Sound Design Live: The Pro Audio Freelancer's Manifesto

By *Nathan Lively*

Below I have compiled five interviews into chapters by theme. There will be more chapters in the future and each one will expand as I include the other 15 interviews I have recorded.

Software Mixing: technologies available for live audio and the barriers to integration

Software mixing is the term I use for mixing and processing live audio in software with a personal computer. We talk a lot about a program called Software Audio Console here, but I've seen people mixing live with Pro Tools and Apple Main Stage, for example. I got into it myself when I needed an economical solution for the small theatre companies I was working for. I believe it will become more and more common as computers lose their stigma in the show environment and professionals come to favor processing power and flexibility over large control surfaces.

Bob Lentini is a pioneer in software mixing, demoing Software Audio Console at the 1992 AES convention. He feels that, in general, control surfaces are completely unnecessary because when your mix is setup well, you shouldn't ever need to access more than one parameter at once. He also points out that the software is just a tool and therefore not suited for all jobs. From personal experience I can say that software mixing is great for tours and shows where the material is the same from night to night. It wouldn't work so well for a fast-paced music festival with a new setup for each new act, and obviously you can't expect touring technicians to be familiar with your software setup.

Mark Mosher loves the fact that he can tour with much less equipment now that he does all of the processing with his computer.

Howie Gordon points out that computers do lighten the physical load, but do not make it simpler to setup or operate.

Bob Lentini

If you are already mixing and recording with a mouse and a keyboard at home, then this could be something that you are into.

The reality is, if I am standing and watching some audio engineer behind a console and his hands are all over the place like an octopus, his mix is messed up. Something's wrong with the gain structure or the trim. Something is wrong with his basic EQ.

The best sound I have ever heard in any concert, in any event, was when the engineer was just sitting back and grooving with the music. Once in a while he reaches over and pushes this button and grabs this data and pushes this button. He is certainly not all frantic back there, like an octopus.

What's your favorite controller to use with SAC?

Really none, because I generally don't use them, but out of the three main ones that work well with SAC there's the Behringer [BCF2000] for the cheapest way in. The [CM Labs] Motor Mix is a good in-between in that sense. Again you have to find them used generally on eBay, but they are well built. Then really the one that is still available is the Mackie MCU and the MCU extender.

The Motor mix and the Mackie are nice because they have the little scribble script with the display. The Mackies have a nicer display with more characters. The Motor Mix is only four characters or something like that. And of course the Behringer has no display.

One of those eight channel packs can really cover all 72 channels on all 25 mixers. For me, any control at all pass eight, I find no use for. The theatre guys on the forum argue vehemently that they need at least 16 to 24 faders to do what they do. My argument is, if you are looking like an octopus up there then something is wrong. You need to streamline things so you are not an octopus, but again I am not out there doing Broadway shows every day, so I am not going to take a stand and say I know everything.

My assessment of everything I have seen in my 45 year long career: I guarantee you I could streamline your setup so you can get it down on eight faders.

Mark Mosher

I used to play in bands for years, and I played with 61 keyboards that weighed 35 pounds with racks of gear. For the first time ever, starting a year and a half ago, I could actually take my rig on the road with me on an airplane in two carry-ons and then play a show.

Woohoo.

I know. So the fact that it's distributed--I've got the laptop, the Launchpad, the Audio Cubes, 25-key controller--means that I can set up in minutes.

Do you need \$130,000 worth of hardware? How to build a \$100,000 mixing board with software.

We continue to discuss software mixing here, this time comparing the entry price for a hardware and software based system. Bob Lentini suggests that you can have all of the processing power, and more, of a \$100,000 mixing board using your computer.

Bob Lentini

Joe Schmoie is never going to own a \$95,000 Digidesign Venue console. That is just the way it is. There is tens of thousands of musicians and audio people that are never going to buy a \$100,000 console. Software mixing became very attractive because essentially it's giving them the same power and not only the same, but really a lot more. On top of that, they can build it in their garage. Here you are, you can build 25 of them in your garage using Software Audio Console.

You know the code itself is extremely complex. To do real-time live stream processing like this, normally you'd have to work with something like a Midas XL8. You look at the mix engine alone, it is like an 11 rack space DSP processing engine. That mix engine alone is about \$130,000 worth of hardware to process one console.

You have to realize that SAC is doing all of that times 25. FOH plus 24 monitor consoles using a stock CPU that you can buy off the shelf. Even a \$200 laptop can handle a 24 or 32 channel kind of scenario.

The reality is the code is the big issue. It's complex. It is all hand-coded assembly that allows me to get the same kind of performance, or higher, than your Midas mix engine that takes up 11 rack spaces or whatever it takes up.

Challenges for using computers in live events and an outline for creating a solid setup.

So how do we take our home PC and turn it into a show-reliable mixer? What if it crashes and ruins the event? The first step is to dedicate one computer solely to running the mix software. Then, clean it up so that it's only running the minimum processes to function well. I run Windows7 from a separate partition on my MacBook Pro to keep it clean. I've had some computer problems along the way, but the software itself has yet to fail. Check out the forums on Software Audio Console for more solid setup tips and sample system builds. A computer can crash, but it's no more likely to if you set it up

correctly than any other piece of equipment. Also, it's a lot easier to carry a backup software mixing system than a large console and outboard gear.

Bob Lentini

When people find out that I am mixing on a computer, they get nervous. They say, "What if it crashes?" My first response is always, "Yeah, well, it might, but so might any other piece of equipment that we have here, and if it does we will have to deal with it just like any other piece of gear." That being said, it hasn't failed yet, and that is what I had to tell people a lot when I was on tour.

It's not even that. My reply to that is, "What do you use now? Oh, a Yamaha PM5D? Well what do you think is in that box?" It's a computer. The difference is you don't have access to the computer, so when it goes down, you're screwed. If my SAC system ever goes down, guess what? I can most likely run in and get some kind of accounting machine or something and get the show up.

Yes, it can go down no question, but you know what, what do you think the lighting people are using? They have been using computers for 10 years. What happens if the lights go down? Your show is down, isn't it? You are not going to perform in the dark.

SAC is really no more of a threat, as far as I'm concerned. In today's live venue scenario, 90% of the equipment is computer-based.

What's the most common mistake people are making in their set ups that leads to problems?

The fastest single processor will work the best for this scenario. It will give you the most stable audio with the least issues like slip buffers, messed up screen displays. These nuances can get very complex with serious with multi-processing.

I mentioned that there are a lot of theatre professionals like myself out there who use SAC for mixing and then some other software like Q-lab or SFX for playback. What do you think is the best way to run those in tandem? Should the playback software be on a separate computer, or are computers powerful enough to run both pieces of software on the same machine and route the audio internally?

It is powerful enough I think, but the stability becomes the concern for me. Any background processes can introduce instability into the system. That's why I suggest cleaning out windows. Get rid of background processes. Just strip the thing down as best you can and leave the necessities.

Other software is often prone to instability problems because they are written in various programming languages based on thousands of registry entry links and hooks and based on thousands upon thousands of links out to DLLs all over the operating system.

To be honest with you, yes, putting that on its own machine just seems to make a little bit more sense. You don't want an issue there on a playback rig bringing down your whole PA system. The SAC and SAW [Software Audio Workstation] combination are phenomenal on the same machine because of the internal links. That way you don't need splitters or extra cabling to record live performances. There are 40 to 50 tracks available.

I have an audio player coming out soon that I have been working on. It will be a plug-in that fits on a SAC channel or multiple SAC channels and you can synchronize them together. The idea is that you've got playback with a plug-in the pops up. It will cross fade between things. You can set fade in or fade out. It will be very geared for live show and theatre kind of playback.

It will also have a pop-up module of trigger buttons and stuff for sound effects where you can load individual sound effects. You will be able to trigger it by loading scenes or from the control track running in SAW. That kind of thing is coming.

Virtual Sound Check

We are probably all familiar with the now common practice of playing back a multi-channel recording through a live rig to simulate the performers on stage. I discovered that this practice could be extremely valuable in theatre for creating mix scenes and setting cues. With the recording of an entire play and script in hand I can automate mutes, set rough levels, EQ, and processing, and be way ahead

of the game by first tech rehearsal. Then I can focus on watching the play, not worrying about who comes on stage next.

Bob Lentini

Talking about the link between SAW and SAC, I want to share a technique I have been using recently working in theatre. I record a rehearsal using all of the mics and channels that will be used for the final production. Then later, when everyone is gone, I will play that recording back through the sound system and use it to set my EQ, dynamics, effects, and scenes memories in SAC.

That's exactly what that link is for. We call it the virtual band when we are talking about band in concert stuff, where we'll record 20 minutes of a sound check and then they can leave. We can now playback that sound check as if the band was still on stage, and start doing all that stuff that is annoying to people standing on stage waiting while we do it.

That's when we can start to tweak and balance out certain monitor mixes and feeds to get the signals routed to where we want them routed and all that stuff while the band is not up there.

Wireless Control: Integration of remote clients for mixing and plugin control

Mixing on iPads is all the rage. Bands are mixing their own IEMs on their iPhones. Concert sound engineers are impressing artists by mixing their monitors standing next to them. System techs are checking high-frequency coverage at the last row of the venue. Mixing boards are powerful tools, but multiply in power when they allow more than one user. Bob Lentini's software allows remote clients to access 24 separate mixing boards within a single console. He talks below about how funny it is that he has been offering wireless access to nearly all mix parameters for years now, while the marketing is just now catching up.

Bob Lentini

Now I laugh when I see all these big consoles with an 8-foot control surface that cost \$9,000. When you look at the marketing now, what's the big push? They are bragging about how they can now mix on their iPad. So what good is this giant control surface? Why would I pay \$90,000 to have this hooked up when you are telling me that the coolest thing is to go out in the audience with your iPad?

I'm laughing, because literally SAC was designed to work virtually without the need for a control surface. Whereas these guys are still designed around a control surface, and now they have added on the ability to get a few figures on an iPad. It is interesting that that is the big marketing push now.

Everybody is standing there with their ad holding up their iPad with a couple of faders on it. It's funny because I took note of this idea over 20 years ago. 1992 is when I demoed the SAC concepts for the first time at AES in San Francisco. And so, it's almost 20 years later.

How to use plugins with an analog console and wireless control.

Dimitris prefers a standard console rather than software mixing, but he does bring his computer for outboard processing. He normally doesn't work on touring productions big enough to carry a dedicated mixing console, but he is still able to use audio plugins to create some consistency between venues. He carries a collection of cables for connecting his audio interface to the local console and uses Touch OSC on his iPhone to adjust processing parameters wirelessly.

Dimitris Sotiropoulos

What kind of plugins are you using?

My favorites lately are Waves. I have the Live Bundle from Waves and I think they have the greatest DeEsser.

What kind of stuff are you using on your vocal tracks, for example? You are using the DeEsser and what else?

I am using a DeEsser, a C4, and a multiband dynamics plugin. I'm using my laptop computer with a Motu 828mk3 sound card and MultiRack by Waves.

Well I'm interested in this because I did a tour last year where I did all computer-based mixing with Software Audio Console. That was a contained system because I had the preamps and the computer and all the processing and outputs in one rack, so I could just show up and send our outputs to the house system. So tell me how you are hooking that up. Walk me through a session where you use your computer for that.

Most of the small-format analog consoles have Y insert points, so I have a few pairs of those with me all the time and on my rider, I ask for some extras. I figure out what I need. They bring me whatever I don't have.

I get there, we line check, and then I set up the computer. I patch the outputs and the inputs to the insert points. If I have a big setup with drums and everything, I'd probably use the card for the kick drum, the snare drum, the bass, and the vocals.

Cool. You're showing up with your computer instead of a big rack of outboard gear.

Exactly. All in a backpack. You know it's really convenient. I'm trying to make it smaller and smaller. That's why I love my little 13-inch MacBook.

And the latency isn't a problem?

It reports which plugins have latency and which don't. This is really convenient because you can go ahead and say, "I like this plugin, I like how it sounded at the studio," and then you plug it in and it has like 4000 samples of latency. It reminds you and you just take it out. I just found out about this program called TouchOSC.

What's that?

What's that, dude?!

[Laughter]

It allows you to communicate with the computer and MultiRack through network midi. You have to use a Wi-Fi connection or I use the 3G connection of my iPhone so they can be on the same network with the computer, and then I just assign midi controllers through MultiRack. It has a function called Hot Plugins that you want to see all the time. So, you have Hot Plugin number one through eight. If you have eight little buttons, you can assign them to MultiRack on your iPhone and you just click it and you have your plugin right in front of you.

See a video of Dimitris' interface and download his TouchOSC setup [here](#).

How To Mic An 800-Seat Theatre With Floor Mics

In 2010 I visited the Alley Theatre in Houston, TX and was impressed with their setup. I had been using so many head-worn wireless mics on actors recently that it was a surprise and a relief to find out that they almost never put mics on actors. Pierre Dupree attributes this to their actors' excellent vocal delivery and talks about how they use boundary microphones to distribute sound evenly around the room. The technique can get complicated when there is a lot going on on-stage, which requires mixing automation and thoughtful mic placement. After these techniques have been exhausted they may use one or two body-mounted microphones to bring the weaker voices up to the level of the rest of the group. Use this technique they are able to achieve a very powerful realistic sounding production.

Pierre Dupree

The normal regional thing and what you guys do at the Alley for voice reinforcement, isn't complicated or revolutionary, but it's important to talk about because I feel that people get into the habit of using wireless head-mounted microphones for every actor no matter what they are doing. It's funny because that is usually the most complicated and the most expensive sound reinforcement solution you can

implement. Now, when I get into situations where people are going down that path unnecessarily, I use the Alley Theatre as an example, and I say, "Well, here is Hubbard stage in Houston, Texas with a capacity of 824 people, and in most productions they don't use any wireless microphones. Is that true and can you talk a little bit about that strategy?"

Yes. Absolutely that is true. I am trying to think of the last time we have used a wireless mic simply for reinforcement in a straight play. Because when we do reinforcement, most of the time it would just be floor mics. With floor mics we can almost never get away, obviously, with putting them in the mains, they are too close. We would just pipe the sound of the floor mics back to the delays.

I think two things are happening. A lot of people who get into acting are not necessarily doing it from a theatre bent. They are looking at TV or movies or radio or film or something. What they lose is that technique and that skill of being able to whisper - speak very quietly and yet throw the voice incredibly far. Some people are so good at it, but I wonder if it is a dying art?

I think a lot of actors are not being trained the way they used to, learning how to speak in a loud volume, but also to speak in a quiet volume or whisper and know how to manipulate their voice, or what they'd do in order to reach a large amount of people to make their voice travel further, especially, as a lot of actors who are more movie or TV-oriented, where they don't need to do that. That is the first step of making this work.

The other thing is the audiences' ears are totally different than they were 50 years ago. In sound for movies and TV, which is definitely the dominant art form where people hear actors, they are used to hearing the sound of a voice three inches away from a fantastic microphone that has been mixed to all heck, which has been compressed and edited and checked for clarity and re-recorded and re-edited so it is really pristine.

What we will normally start with are PCC microphones along the lip of the stage and usually what we try to do is keep anything that is reinforcement only for what is considered the back of the house. Anything that is a delay fill is just essentially for people so far back that an actor would not be understood from the stage. We will pipe a little bit of that mic into those speakers. Then we always try to make it sound as natural as possible and we try to let the acoustic sound do most of the work, so that anything we are putting in those speakers is just for a little bit of clarity. Just a little bit. I am trying to keep the sound as natural as possible. That is what we try to do best.

The people in the front rows are really just hearing direct sound from the actor and as you get further to the back of the house, you are hearing the delayed speakers?

Right. The further back you get the more reinforcement you are hearing. That is always where we try to start. Then, if we start having problems like uniformity problems if it's still not loud enough in the front, then we will start very carefully trying to add it to our front speakers. But often because of the level we have to get at and because stage mics are so relatively far away from the actors' mouth, it is never as successful as when you're dealing with the delay speakers.

Sure. Is the operator following a lot of notes in the book or are they running through a lot of scene memories?

We build scenes along with the sound cues. If an actor is in a down stage position, the board will automatically fade. We lower whatever mics the actor is near down a little to compensate for volume and then we will dump all the other mics in that scene. Usually we will make scene changes like what lighting does with making sure the actors are lit. We will make sure that the actors are miced and turn any unneeded mics off. We will change scenes on our digital console along with the sound cues.

Is there anything else special that you are doing to make this all work out? Is there anything else that you think other people might want to know about?

That is a really good question. You know the old saying, "Garbage in, garbage out?" The key is we have a company of actors here, and they know the stage very, very well. They know how to use their voice. We have good support from the source. You are only as good as the actors.

For a specific tip about what we do, I try to think creatively and differently and not let the positions of the mics be the same, or the mics themselves be the same. There are lots of times where a

big black PCC is not going to work, because the set is a different color. It won't fit in with the décor, or it is just too big.

A lot of times we will use little lavalieres instead. We do have super cardioid lavalieres, which are awful if you are going to put them on an actor for a musical, but are wonderful for mounting to the stage because they are very, very small. No one can see them. They are super cardioids, so you can point them in specific positions on the stage. They won't feed back as easily as lavalieres that are omni-directional.

I have never tried that, so do you have a tiny little stand or a piece of wire or something, or do you just lay it on the stage?

We will use little pieces of wire and they are small enough that they can be stapled in. We will put them between the duvetyn and the back itself in the facing, and we will staple them in and they stay put. The wire is used very much how a lot of engineers and designers will put floral wire on a wireless mic when it is on an actor's head so it can be bent in a certain direction. We do the same thing for the stage.

Things like that. We use Audio-Technica choir mics like the 853 series. We use those a lot for a similar reason. They are lower profile, especially on a show if the deck is very noisy. If the deck is hollow and you hear a lot of stomping and a lot of rumbling coming from PCCs, we will just pick them out and replace them with these choir mics.

That also goes back to adaptability and being willing to try different things and experiment a little bit. I guess one thing I didn't touch on that is important is how it affects your playback. Anything on stage gets picked up by the floor mics. For a scene transition where we have big loud music and a lot of furniture clicking and everything, we will automate the mics in that cue until they are all the way out. Then, bring them back when the lights come back up.

When we were programming our playback system, Q-Lab for this show, we would always keep the floor mics on. There is not really a magical way for the floor mics to be on and not pick up the sound that is coming on stage and some of that getting piped into the delay speakers.

Anytime we were programming sound levels, we always had the floor mics on, so that we knew what the floor mics were going to pick up and send to the back of the house during the show itself.

Better Human Interfaces For Music: Making electronic instruments more expressive

Most of us would agree that there is nothing more boring than watching an artist on stage alone playing with their laptop. There is nothing expressive about it and we can't tell if they are triggering loops or playing Solitaire. Luckily, there are people out there working on making better instruments and more entertaining electronic music shows. I meet Moldover when I was the sound engineer for one of his performances in San Francisco. His computer sits off to one side running Ableton Live while he manipulates loops with his beautifully designed electronic instruments, plays guitar, and sings. Mark Mosher is a Colorado-based artist who's performances you can find videos of online. He also uses Ableton Live, but controls it with keyboards and a unique instrument called Audio Cubes.

Moldover

Acoustic instruments are great, and the reason things like the violin are still around, or still practiced and learned is not only are they incredibly expressive, things you could spend your whole life studying, but you pick them up and they make sense. There are intuitive things about physical instruments. Pitch is always controlled in this way and loudness is always controlled by how hard you push on that thing.

Just watching other people play with my electronic instruments has helped me realize that if we make electronic instruments more or less behave by those same rules, or very similar rules, they become way more intuitive to play, and ultimately become more expressive because you can learn them by touch and feel and type of feedback instead of needing to remember what note interacts with which fader. The more complex designs I find are less intuitive or satisfying to play.

Mark Mosher

I've never had the chance to use Audio Cubes. Could you give us a short introduction and talk about the best application for them?

It has two types of sensors on each face, infrared and wireless. Using the infrared sensor, and putting the cube in what's called sensor mode, a single Audio Cube acts like a Theremin with four sides on it.

With the Audio Cube in sensor mode, you can control four parameters at the same time, tangibly and organically with your fingers. The throw, the distance between 0 and 127, is like the length of your finger outstretched to the face of the Cube.

Like anything, it takes practice. You can't just grab a Cube and get a result. You've got to figure out what you want to do with it and then there's enough nuance in that finger movement if you can imagine going 3 or 4 inches. You can take an instrument from something very beautiful to something very harsh. Imagine being able to just control four things at the same time. You can't do that with knobs. You can't really reach out and do that with four knobs. So that's one unique characteristic.

The other unique thing is using the cubes in wireless mode. They're in transmitter-receiver pairs. A cube face knows what other cube face is facing it. If you set a cube down next to another cube, it will send a midi note.

Now you need a piece of midi-ware that's free called MidiBridge that allows you to configure these cubes to act however you want. You can say, "This cube is in sensor mode," and it's like having four little Theremins. These two cubes are a transmitter-receiver pair, and if you can imagine having those two cubes next to each other and then you rotate the second cube, now you're playing a D, and then, you rotate it again, and now you're playing an E.

On the surface, that sounds pretty simple. But when you take that midi information and you pump it back into Ableton Live, let's say the C, and say, when I play a C, I don't really want it to play a note, I want it to map to turn the reverb on. When I play a D, I want it to turn on Bit Crushing at 50%. And then, on the other side in your other hand you might have a sensor cube and you're saying, "Okay, now that Bit Crushing is on, as I get my finger closer to the sensor, I want it to be more intense."

The other thing you can do with mapping these notes is of course launch clips and launch scenes. You could in one form say, if I have the cube in one position and then I rotate it, now I'm playing the chorus. Rotate it again, now I'm playing the verse. Move it to another face, now I'm playing an extra midi clip, which is just like a bass hit or something. Turn it again. Map that to a vocal sample.

The sky's the limit. It's really about taking performance and making it tangible again. And probably one of the biggest benefits about the cubes is that they have LEDs inside them.

They light up. That's what makes your videos look so cool.

[Laughter] Right. So if I move my hand closer to the side of the cube, and that side of the cube is set to red, it turns more intense as I get closer, which also helps me because I can see how much intensity I'm sending to the cube with my hand. It's really becomes strange after weeks and months of using them. You can almost feel that bubble as you're squeezing in even though it's not there because you are seeing the visual feedback. And so now, this thing that you're just using your hands around in space, it feels like you are pushing on something. It's all in your brain of course, making you think that. But, it changes your performance radically, right? You can take a quiet piece and slowly swell something up just by moving your hands around it. You can beat-slice.

The difficult part of it is you have to figure out what you are going to do with them because it's an open system. It's like handing someone a guitar with no frets and no strings.

One of the projects I'm working on is an open knowledge project. What we need in the electronic music realm right now are people sharing processes and people sharing templates, so that not everybody has to go through that same learning curve. So that, when I hand you the Audio Cubes, it's not like handing a guitar with no frets on it or no strings. If we open-source our ideas and share our music, you know you don't have to give it up. Creative Commons just allows other people to access it and use it in ways that contributes to their art. I'm all about that. Also, I started another project called the 9 Box.

Oh you need another project.

[Laughter] The 9 Box is a set of templates for schools and people who want to do tribal jams with electronic music. My idea with this project was to create, using off-the-shelf products, a set of templates that would allow you to get the system up and running in a matter of minutes and then allow people who weren't necessarily musicians to get a taste for electronic music by collaborating with each other.

What's awesome about this project is that it's not a product. I've documented everything. I just put it up there as open knowledge under Creative Commons. As a result, a local school in Denver has based their new music lab on this. I have kids who are kindergarten through sixth grade, and they have all ages playing the 9 Box, which is based on six Audio Cubes.

There's a refill system, and they're doing field recordings and reloading the 9 Box with audio. It's just an amazing project, and it's just started with one school doing it, but I think there are applications for it in education and possibly music therapy.

Education

For those of us working in pro audio, there is still a heavy debate on the value of higher education. I'm less interested these days in whether or not people should go to school, but in what value they can hope to gain by following the various educational paths available. Many of the theatrical sound designers that I've spoken with enjoyed graduate school because they learned how to analyze scripts. Musicians that I interviewed felt that a university atmosphere made them more professional. Everyone that I talked to pointed to the industry contacts that they made in school that lead them to their first jobs. If you are a student these insights may help you decide what path is best for you. If you are a seasoned professional these topics may reveal some areas that you wish to improve. I know it had that affect on me.

Pierre Dupree

I went to a small liberal arts college called the University of Dallas. The program over there was more straight theatre, not technical theatre, not acting, not directing. It was very much drama. The study of text.

That was very good, too. What that allowed me to do was apply all my sound knowledge and take a bigger focus on only the text, only the play. From there, I got a very, very good work out -- a lot of Shakespeare, a lot of obscure plays that wouldn't necessarily be produced elsewhere, and things like that.

I moved from Dallas to Los Angeles going to graduate school at Cal Arts. There is the big debate of, "Do you go to grad school first and then into the professional world, or do you go to the professional world then go to grad school?" I agree with both sides, but for me what worked was going directly from undergrad to graduate school.

It took three years. It was a very selfish time where you just say, "Okay, I have taken three years and I am going to spend these three years to hone specifically what I want to do." I had my undergraduate degree in drama, so I understood text, I understood reading and I understood the basic principles. It was a very liberal arts education. Now, I am going to take three years and solely focus on sound, and just throw as much stuff at myself as possible to learn only about sound.

I learned a lot; freelanced after that for about two or three months; assisted the sound designer who was the head of sound at Cal Arts, John Gottlieb, assisted him for a few months on some shows at Geffen and at the Mark Taper Forum.

I ended up at The Pasadena Playhouse as their production audio supervisor, where I was basically a one person department running all the shows, designing a handful and just keeping the house system together.

The advice I would have for anybody looking at graduate schools from undergrad is to pick the place that is as completely different as your undergrad as possible.

Dimitris Sotiropoulos

Well, New York was hard anyway. I had to make a living. It was expensive and rent was expensive. But then when I came up to City College, the commute was crazy so I had to get a car and that was an extra expense, so I had to pick up a few more shifts at whichever restaurant I worked at at the time. I worked at several. So yes, I ended up serving fish and then, doing early-morning Greek radio at some point, plus school, plus all that stuff. It was kind of crazy.

It's the New York lifestyle.

I wish my daddy was rich.

Then, you got a graduate degree in computer science?

No, I didn't. Sonic Arts was my second undergraduate degree. My first was information systems at Baruch and then I moved up to City College for my masters in computer science. I sucked big time.

[Laughter] I see, so you came to City College to do your masters in computer science but didn't finish that and instead came to the Sonic Arts Center.

Across the street.

Nice.

I thought, what the hell, I don't want to wear a suit to work everyday. I stayed for a while and then I moved back [to Greece] with all this gear that I accumulated over the years in New York.

Social Media and Networking: Connecting through content

Not many of the professionals that I have interviewed make heavy use of social media to promote their business, preferring to focus on more traditional forms of networking. While it is not necessary for success, it may fit you well. While many people prefer to go to shows and trade events to make contacts, I personally prefer to hang out online, help people through forums and social outlets, and expand my network globally.

"On my Facebook page, my family doesn't even follow me anymore because I crush them with synthesizers." – Mark Mosher

Mark Mosher

So Mark, you're one of the first people that I've talked to who is blogging and is on Facebook and really promoting themselves online, and is also on Twitter. But you're not just on Twitter, you dominate it. You have over 1,800 followers; you appear in 165 different Twitter lists. Tell me some of your keys to success and what are your goals with things like Twitter.

Twitter's amazing. I like Twitter because Twitter helps you meet people based on the conversations they're having. Let's say you are working in a big corporation and you're walking by someone's cube. You might overhear somebody talking about, "Oh my God, have you tried Ableton Live?" You might, at that point, pause a second, take a look and see what the person looks like, walk by, and then you come by again.

Next time you walk by, they're like, "Oh my God, have you tried this amazing synthesizer?" This time you might actually stop and introduce yourself. You don't know each other very well, but the conversation is what connects you, not necessarily who you know. And you can get to know people through what they're saying and quickly decide, "Yes, this person is on the same wavelength as me." So one of the reasons I went on Twitter was to help. I wanted to find people doing what I was doing, because obviously there is just not that many people in every state doing that.

One of the other cool things is you're meeting people who have the same passion as you who are maybe living in a smaller place that doesn't have anyone to talk to about some of this stuff. So they're out there sharing their information as well.

For me, Twitter has been just a great way to meet people. Starting last year, I started traveling around a little bit and meeting people I've met on Twitter, to Electro-Music 2010 last year in New York. Last September, I met a whole bunch of people face-to-face who I had previously only met on Twitter.

Is the number of your followers an effect of you following them?

In order to be successful on Twitter, I guess the advice I would give would be to just be consistent and try to post something that you think is interesting to the people you want to meet. It's really about being consistent and using it for...We all have different personas, different hats we wear, and I think that what makes it better on Twitter is when people sort of stick to a particular persona so that it's not too mixed up. I mean obviously we are all well-rounded people.

[Laughter] People who get a lot of followers are being consistent. They're saying, "Most of the people who I follow and follow back are nonstop talking about Ableton Live and synthesizers and art and music and a lot of them, of course, are sideways into photography and video and things like that and sound design."

I think it's about being consistent. If you're following someone and all of a sudden, they start talking about something completely unrelated, I think that's what loses people.

Miscellaneous: Communication standards, playback formats, health, networking

Moldover

I'm curious about, what you think about MIDI because my perspective is that it's this 30-year-old slow protocol that can barely handle what people are doing with it. Yet, it's still implemented in almost every design and my only understanding of that is that it's cheap, easy to implement, so we still use it. You were telling me a little bit earlier that there's actually a big controversy about the continuing use of MIDI. I wonder if you could talk about that.

It's a standard. I think that's an important thing to point out. It's all those things you mentioned, but it's also still in instruments created 30 years ago, which means you can go get a synthesizer from that era, and connect it to Ableton Live, or whatever you want, and it works incredibly reliably.

That indicates what I think is most important about it, which is that it works. It's good enough. One of my things is, "if it ain't broke, don't fix it." There's something to that.

To me, MIDI is like sheet music. It's a digital form of that. That's been around for hundreds of years. It grew and changed a little bit, and nobody said like, "We have to update and come up with a new form of notation."

No. I augmented it and made it work. That's what happened with me. There are all these timing tricks that happen in software, and you can do a lot of smoothing algorithms in software. They're really smart and make up for the lack of resolution. There's a workaround for pretty much everything that MIDI falls short of in a way that works.

To me, it's like sheet music in that the MIDI that I learned ten years ago still works now. I don't have to learn a new system or start with a completely blank slate. A lot of people say, "Why don't you use OSC, OSC accounts for a lot of these things." It does, but you start with nothing. You have to label things as notes and controllers, and there's no standardization within OSC like there is in MIDI.

Other people shoot it down for reasons I used to. It's basically because you run into limitations. These days, whenever we run into a limitation, we're like, "That's not cool. There's someone on the internet that's already figured how to do that." They're more like, "Download the app right now, so I don't have a limitation." People expect that from the software.

It's true. You assume it must exist. If it's slowing you down, there must be a way around it.

Yes. As an instrument designer, I've learned that you don't like to slow people down, force them to do silly repetitive tasks, but sometimes the limitation of an instrument is really a limitation. Maybe it's there for a reason. Maybe it's okay. Maybe you learn to work within it.

Dimitris Sotiropoulos

Tell me about touring and playing live and dealing with high SPL. You told me at one point that you were going to get some molded earplugs. Have you been using those?

All the time. I've had them for years now.

And what is the attenuation on those?

I started using the 15-decibel ear pads then I started using the 25db buttons. They were better. For over 110dB, it was really comfortable for me.

And so you're mixing on that the entire night?

It ranges from 100dB to 112dB at the mix position. At some point it can get really tiring, so I either put the ear plugs in or put my headphones on or put them both on. [Laughter]

So, you don't start out the evening with the earplugs in and do the entire evening like that. You just put it in at some point after the show's already started.

Mm-hmm, when I start getting tired.

Because when I used to use them, I always felt like it would just make everything sound better. For some reason, it reduces the sounds of chaos in the room, and so I would still have to take them out every once in a while to make sure that the chaos wasn't overwhelming.

Another bad thing about the ear pads is that you have to learn to compensate for the presence and the high frequencies that they cut.

Yes, because they are not completely flat.

Exactly. You can get a really muddy mix if you don't check with your ears what's going on. Or you can get a really harsh sound also.

Short Bio and Career Outline

Bob Lentini - sound engineer, software programmer, and entrepreneur

You were working in electronics repair, and then, recording studios, and then, live concerts, and then, software development, and it never seemed premeditated.

Well, that's pretty true. Definitely, I did start out after high school, went to college with a plan to take electronics engineering. I went to Jackson University near Philadelphia. During that study I actually found the books and the process to be too boxed in for my taste, basically.

I didn't really leave just to be a rebel and throw it back in somebody's face. I listened and looked at the norm, and what their trained skilled set was, and the way to approach sound, and the way to approach math. Then, kind of deviated from that when I felt that something could be done or handled a little differently, maybe a little more effectively, and so forth to get better, or what I considered better results. It really is the results. I got into one thing, which led to another that led to another, which led to another.

Pierre Dupree - Audio Supervisor at the Alley Theatre in Houston, Texas

But, in high school is when I started getting into theatre. I went to Jesuit College Prep in Dallas and we had a very, very good theatre program over there and we did a lot of really good plays that were good for high schoolers to do.

Obviously, things like Hamlet, but we also did Arthur Miller's *Crucible*, some shows with a lot of sound in it. *One Flew Over The Cuckoo's Nest*. We even did *Auntie Maim*, and that really got me

excited about theatre and how everything I loved about music, either creation of music or creation of sound, using various different playback devices and where to put speakers and all aspects of that. I really it most satisfying in the context of theatre.

Honestly there were a lot of pretty girls in theatre. Theatre for me, that initial introduction in high school, I think really is what kind of set me on the course of where I am now.

Mark Mosher - musician, synth expert, and social media addict

I've been doing music in some form ever since I was a child. I actually grew up playing organ, not piano. I took organ lessons. And then later in life as I got into high school I started getting much more interested in electronic music. I started listening to the iconic classics -- Kraftwerk, Gary Numan, all those things -- and playing in bands for fun, and of course, I got into synthesizers and having to learn to program synthesizers just to be able to cover a particular sound so that when we played it live it sounded somewhat like the album or maybe different in our own way.

It's not like today with the Internet where you have a lot of online tutorials. You basically have to be self-motivated and there were very few people in your local area doing this sort of thing so it was a lot of experimentation.

Then, I moved on later to doing music more professionally both playing as a musician in bands where we were making money. I've been working professionally since probably '89. By 2002, I started getting into custom composition using a combination of hardware and software so I could create my own arrangements without having to hire studio musicians.

I was composing for hire. Then I went on to do sound design for live theater. I did about nine months of shows doing sound design. At some point, after doing this for quite awhile, I wanted to just be a solo artist and release albums. And also, since I've been working with synthesizers and all these gear for so long, I really wanted to find a way to get back.

For about five and a half years now I've run this blog called ModulateThis.Com, where I've been covering the industry news. That's how it started out, but then it really has turned into passing on tidbits and ideas and concepts around how to transcend the technology to make art.

I've also been experimenting with different ways to get sounds to people. I kind of wear different hats. Some days I'm a composer, some days I feel like I'm just a synthesist and a sound designer. Some days those worlds collide and merge.

But, I love creating sounds and synthesizers from scratch. I initialize the patch and just sit down and see where I can take it. I've been really searching for a venue online where I could be effective in getting those sounds out to people and have people also at the same time inspire them to master their instrument, whatever that would be, some sort of synthesizer, doesn't have to be the one I'm using.

Dimitris Sotiropoulos – Athens-based sound engineer for touring and recording

I just like the job. It's amazing. It's challenging, and there's always, always, always something new to learn. You never know it all. You always get to know great people, and the biggest jerks. They're all in our industry.

And, it's really fun. It makes you... It makes me think more. It makes me have more patience with people, and sometimes not. I think it's the struggle with gigging and meeting new people and doing records and getting so, intimate with people, and their musical dreams gives me an opportunity to be a better person for myself and for the people who I work with.

Moldover - electronic instrument designer, musician, and teacher

You run a blog, padcontrollers.com. There is your site moldover.com, and then, you also produce some shows through LoveTech. One of the things that you do besides performances is sound control playshops. I was wondering if you can give an overview of that, and what might happen if I went to one right now.

We like playshops because I think music should be fun. Workshops don't get me excited about making music all the time. Sound control is the term I came up with just to talk about what I do. It's in the same market as controllerism.

Sound controller workshops, or controllerism workshop is about playing sound with new instruments. The ones that I do, typically one is two hours, and I do it in universities, colleges, sometimes I do it on Skype. I did one, I think, with a group in Italy not long ago.

But, I just go through a lot of what we talked about. I have flyers and stuff to give you visual interest, and I play a little bit of live music and do live question and answer. I value education really highly and I think that's the most important thing you can do.

Resources:

[Links to the complete audio interviews](#)

[Career resources](#)