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I'm Doug Fearn and this is My Take On Music Recording

I get asked about how I got started in pro audio equipment manufacturing. To tell you the truth, this was not my plan, but it has been one of the most gratifying aspects of my pro audio career.

I'm also sometimes asked for advice from people who want to start their own manufacturing business.

I think my path is a bit unusual, and I don't recommend some aspects of it to people starting out. But perhaps you can learn something from my experience, or perhaps enjoy hearing the story.

The story starts when I was around 7. I should say that I hated school, from the very first day of first grade. I had my own way of learning things and I found the school approach to be incredibly boring. How could they take an interesting subject and reduce it to memorized facts and multiple-choice tests? I was curious about everything, and their education approach didn't work for me.

I might give first grade credit for teaching me how to read, although I think I would have figured it out on my own pretty quickly. Once I could read, I would read everything I could get my hands on.

The elementary school library had lots of story books, but not much non-fiction. By second grade, I had learned all I wanted to learn from the school library. That's when I discovered the public library in the town where I grew up, outside of Philadelphia.

I would walk the half mile to the library, where I was directed to the children's section, where all the books were on the bottom shelf. I found several interesting books on dinosaurs, biology, and geography, which were my main interests at the time.

When I had exhausted all of those, I wandered around and found the 600 section – the sciences. My mother had a library card, so she would check out the books I wanted to take home. One book, on basic electricity, totally fascinated me. The book was written for high school students, or maybe non-engineering college students. In it, I learned about simple circuits. The first thing I built used a battery, some wire, and a flashlight bulb. I bought the parts I needed from the local hardware store, and I was delighted when I got the bulb to light. I learned that for a light bulb, it didn't matter which battery terminal went to which bulb contact. And that two batteries in series made the bulb light up brighter, but three batteries gave out a spectacular light – at least for a few seconds.

Also, in the book were drawings of how to make electromagnets, which fascinated me. The ultimate project in the book was an electric motor, made with wood supports, electromagnets, and copper strips for switching the polarity of the electromagnet to keep the motor turning. My motor didn't work very well, but it would run, for a while, after giving it a push start.

No one in my family had any scientific training. My father was a classical musician and my mother an English literature major. I would ask questions of grownups in my neighborhood who I knew worked in technological fields. Most of my questions were answered with, "That's too complicated for you to understand."

This led me to realize that nothing is as difficult to understand as those who do such a thing for a living would lead you to believe.

My parents were supportive of my experiments, and seemed to share in my delight when I made something work. But they really couldn't help me much. It was surprising that for Christmas that year, Santa brought me a crystal radio receiver kit. It was incredibly simple, with just a few parts, but I put it together and my father helped me string a wire antenna from my bedroom window to a tree in our yard.

I could only receive one radio station, and that was WPEN, where, ironically, is where I would end up working as an engineer ten years later.

My interest in electronics led me to more books, some of which I had to order by mail. One explained how Edison invented the phonograph, which used a cylinder wrapped with aluminum foil, a stylus, and a horn to gather sound. I decided to try making my own cylinder recorder, but that was beyond my fabrication skills at the time. I did learn a lot from that attempt, however.

I became fascinated by radio, and particularly Amateur Radio, where if you passed a government test, you received a license to transmit. And that's what I did, obtaining my Amateur Radio license at age 12.

The first receiver I had was built from a kit, but the transmitter was homebuilt. It put out only about 5 watts, but it could reach other amateurs within about 50 miles and occasionally much farther.

It seems quaint today in the age of cell phones and the internet, but back in 1961, it was magic to me.

Over the next few years, I gradually improved my equipment, upgraded my license, and put up better antennas. Now, under favorable conditions, I could contact stations anywhere in the world. The beginner's license only permitted transmitting Morse code, but that was fine with me. The code transmission used simpler equipment than voice transmitters, and the code signals went father.

In retrospect, this experience set up my entire life. That and spending time with my father at Philadelphia Orchestra concerts and rehearsals, and learning some things about music from him. He never encouraged musical training for me, but he did expose me to some incredible musicians. Well, I did have a couple of years of weekend solfege classes, taught by a Philadelphia Orchestra string player. I didn't particular like the lessons, but it did help me to hear musical intervals and detect off-pitch notes.

Additionally, my father showed me by example how to speak and move and interact with the world with elegance. He taught me to appreciate silence.

He was never intimidated by trying to do something he had never done before. I have never been able to equal his comfort with living in the world, but I think I did acquire his drive for perfection, and his appreciation of many things, both manmade and natural.

One day, when I was 14, I contacted a fellow radio Amateur, via Morse code, of course. He lived not to far from me and worked as a draftsman for GE. He wasn't particularly knowledgeable about electronics, but he had more hobbies than anyone I have ever met. His basement was an amazing place, with workbenches, tools, projects under construction, and projects completed. For example, he built a canoe, which we took on an organized tour of the New Jersey Pine Barrens one summer day.

Also in his basement was a printing press. It was a small version of the typical letterpress type of equipment. That technology was largely unchanged for the previous 100 years. With it, he could print text up to 8.5 x 11 inches, and even bigger if you turned the paper around and did another run from a different direction. And there was a tall wooden case that held about 30 different typefaces in various styles and sizes.

The type was set by hand, one letter at a time. Things that are trivial on a computer would take all day to do by hand, especially if the lines had to be centered, or, the most challenging of all, justified.

Proofreading the set type meant looking at the raw metal characters that were upside down and backwards.

My friend seemed to be always moving on to a new hobby and hadn't used the printing equipment for a while. When he saw my fascination with it, he gave it to me!

After we moved all this heavy equipment up to my third-floor bedroom, I cleaned it all up, replaced worn out ink rollers, and taught myself how to set type. My first project was to make a Christmas greeting for my friend Jack, who lived about a block away. Jack had a paper route.

We printed the Christmas card, which Jack inserted with the paper delivery in early December. We were very pleased with the results… until someone noticed that we spelled Christmas wrong. From my electronics experiments, I knew that attention to detail was important, and this embarrassment was a lesson I never forgot.

Now that I had the printing equipment, what was I going to do with it? I printed a bunch of stuff for my own use, such as a form that I would fill out and put in a sealed bottle. I threw dozens of those bottles into the Atlantic Ocean, and a few more into Lake Michigan. Only a few got a response from the finder, who were mostly in Cape Cod, but a couple from northern Europe.

I thought maybe I could print things for others and get paid for it. A few neighbors were my first customers, and pretty soon I had a thriving business.

Well, I never actually made much money. I became somewhat obsessed with type faces and I wanted to have most of fonts shown in the catalogs. That was expensive, and much of my "profit" went into buying more type, or another size of a font I particularly liked.

So what did I learn at age 14 that would help me later? First and foremost, I learned to deliver a quality product to the customer. And I learned that treating the customer well made me feel good, and it generated more business. Of course, there was also that attention to detail thing. I really didn't want to spend all day setting type for a job, printing the required number, and then discover that there was an error. I learned to check and double-check my work.

Printing also gave me a sense of what good graphic design looked like. I came to appreciate creative typography and esthetically-pleasing composition. That proved to be useful when I was creating a look for my audio products, and designing ads and brochures.

As much fun as printing was, it was not really my career goal. I was more interested in electronics. Surprisingly, music was kind of a non-factor. But music lurked in my daily life, and the lessons I learned from a near constant exposure to live classical music, made by world-class musicians, affected me unconsciously. I didn't fully realize that until years later.

Our family friends were almost entirely Philadelphia Orchestra players, plus some from the New York Philharmonic. There were also conductors, soloists, and composers at our house. Those were the people I was exposed to as a kid. And most of them were larger-than-life characters. It surprised me that they wanted to know all about what I was doing, with electronics, Amateur radio, my printing business, or whatever.

These people were intense. But outside of work, they were some of the most relaxed and fun-loving people I have ever known. Beneath it all was a drive for excellence. These people did not get to the top of their field by being second-best, and they had the drive and the ability to take them there.

Like my father, they didn't see any point in doing something half-way, no matter what it was. And this attitude was another influence on me, and one that once again I did not appreciate until much later.

I've talked about these influences in previous episodes of this podcast, so I won't go into more detail this time.

Radio broadcasting was an extension of my Amateur Radio experience, and producing radio programs with the air talent taught me a lot about how to make people sound good, both sonically and performance-wise.

But what I really wanted was to have my own recording studio, which I opened in 1969 after I had reached 21 and had saved enough money to finance a studio.

People are surprised that I was operating a studio for a couple of years before I was ever in another studio. But this was consistent with my belief that I could learn what I needed to know just by doing it and figuring it out. My knowledge of electronics and music was also valuable.

Much of the equipment in my early studio was stuff I made myself. That could be acoustic devices, or electronics. I also had to fix things when they stopped working properly.

And by studying the schematic diagrams of the equipment I owned, I would often see things that made me wonder why the designer did certain things. Sometimes I was able to improve the performance by making circuit changes.

What I needed in the studio was not always commercially available, or affordable, so I would design and build what I wanted. This could be as simple as a direct box or as complex as a recording console.

Another influential event happened In the early 1990s, when friends who owned companies that manufactured electronic equipment, would occasionally ask me for help with a problem they were dealing with. Usually these were technical problems, but not always.

One company owner felt that production was slower than it should be, and quality control was causing some problems with warranty repairs. He asked if I could spend a week or two watching the process and giving him some ideas on how to improve.

That seemed like an interesting challenge, like nothing I had ever done before, so I made the time to study the problems.

The assemblers were not motivated to do high-quality work because they rarely received any positive feedback about what they were doing. In fact, management had very little contact with the employees.

Also, the parts inventory system was not very good, and production sometimes ground to a halt because of a missing part.

At another company, the employees were complaining about work conditions and felt that management was not listening to them. Turnover was high.

It wasn't really difficult to see the problems. I made my recommendations, some of which resulted in change and others were ignored.

One thing that made a big impression on me while doing this consulting work was that, at the end of the day, there was a pile of completed products, packed up and shipped out the door to the excited customers.

I realized that I had never in my audio career dealt with a tangible product. Sure, there might be a row of tape boxes that contained all the work, but those did not go directly to the customer. But a broadcast transmitter actually left the factory and was put to use by the buyer.

That realization came about the same time that I was getting really frustrated by the sound of the mic preamps I was working with. For one thing, they always sounded to me like they were on the very edge of sounding really bad. The preamps sounded stressed, as if I were asking them to do something they couldn't do well. These were all solid-state mic preamps.

I tried building some solid-state preamps, which generally sound at least as good as the commercial ones, but it still wasn't the sound I was looking for.

It got me thinking about my first studio, where the preamps were old tube-based designs from the 1940s and 50s. They seemed to take whatever went into them and handle the sound with ease and elegance.

Not only did they not sound like they were straining to pass the sound, but the tube preamps sounded more like the music to me. Quality musical instruments, played by talented players, sounded great in the room. They have a pleasing roundness to the sound, even if the instrument was loud and raucous. Maybe you would call it an "organic" sound. I always struggle with words to describe what good musical sound is, but you know what I am talking about.

It was obvious to me that it was the vacuum tube circuitry that translated the music in a way that sounded right to me.

I decided to try to re-create that sound, while making sure that the design was capable of delivering the frequency response, noise, and distortion performance we have come to expect in the digital era. In the old days, there really wasn't much need to make a mic preamp quiet and low-distortion when the tape machine had -65dB noise and 3% distortion anyway.

I gathered lots of schematics of old mic preamps, which was challenging in the pre-internet days, and studied the designs until I fully understood them. I built a couple of duplicates of the old designs, to get a better understanding of what they sounded like.

As I have talked about in previous episodes, most of the equipment in pro audio, and in any other endeavor for that matter, is designed to be built for a certain price. This was obvious even in the old designs.

I didn't want to compromise just because I couldn't use the audio transformer I wanted because it cost $100. And anyway, I was building this for myself, not as a product to sell.

Much of the principles of good audio circuit design I already knew, but the state of the art in electronic components generally moves towards increased performance. I experimented to discover which components had the least distortion, or the lowest noise, and perhaps what tradeoffs there were to optimize one in preference to the other.

Always, the sound was the most important thing. Sometimes a circuit change would measure better but sound worse. I always went with the better sound.

This new design was not a copy of anything that previously existed. There were many great designs that fell short for one reason or another, so I took the best ideas from the talented designers who came before me and combined that with new components and my own design ideas, and gradually refined the mic preamp until I was happy with it.

When I tried my mic preamp on a wide variety of sounds, and in all sorts of recording situations, I realized that my design did everything I wanted and sounded excellent on everything. It sounded like the music, which was the goal, of course.

One day, a new issue of Mix Magazine arrived, with a cover photo of old gear, like Neumann vacuum tube mics, a Teletronix LA2A, a Neve 1073 module, and others, with a feature story about the new interest in vintage gear.

I thought to myself, "That's great that people are beginning to appreciate the best of the vintage gear, but those devices can be made to sound so much better today. And be much more reliable."

It crossed my mind that maybe people would want to buy my mic preamp, but I decided that it would be too expensive and the market was too small. I estimated that I might be able to sell 200 mic preamps over the course of several years – certainly not enough to support a business. And would anyone buy such a thing from an unknown company? I rejected the idea at the time.

If I did want to market the preamp, normal business practice would have me do market research, asking engineers and producers what they wanted in a mic preamp, and how much they were willing to pay for it, then design to meet the demands. I wasn't going to do that.

Back in my radio broadcasting days, I saw how excessive research resulted in radio stations that all sounded the same and all played the same music. Very few people in radio were willing to trust their own instincts. They would rather pay a consultant big bucks to tell them how to make their station sound like another that was currently enjoying success. If you don't have confidence in your own decisions then it is unlikely that anyone else will have confidence in you or your product.

From thousands of recording sessions, I knew what happens in the studio, and what tools would help the engineer do his or her job.

I also knew that if I put out my mic preamp, it was going to be much more expensive than anything else out there. That was going to limit the potential market for my product.

Really, I didn't care about that. I thought that if I could find enough people who appreciated the difference, that would be good enough. I was not thinking of making it into a full-time business.

Several of my engineer friends knew what I was working on and wanted to hear the preamp. I built a couple of them and let them try them out. I never got them back. That made me think that maybe there was a market for a very expensive mic preamp that sounded the way I wanted it to sound. I just had to find those people that heard like I did.

I decided to build a batch of 25 VT-1s, the single-channel mic preamp, and see if I could sell them. Any that didn't sell would be used for my own recording projects.

I also decided that I did not want any partners. Nor any outside financing. I was determined to do this my way, even though that probably meant it would take longer to get off the ground.

I never considered myself a salesman, and like everything else, I approached sales differently. For one thing, I wanted to treat customers like I would want to be treated. I never try to talk someone into buying something. I'd just tell them what my design goals were, and explain why the VT-1 was so expensive. I'd relate stories of my experience in the studio, and why I never use any other mic preamp anymore. I think people appreciated that.

Back then, there was no commercial internet, so after I decided to build a batch of preamps, I had to find ways to reach potential customers. I bought a mailing list of about 1000 recording studios in the U.S., from Mix Magazine. But I had to have something to send to them.

I asked a friend who is a professional product photographer, to take some photos of the preamp for me. Those were shot on 4 by 5-inch color film back then, and it was expensive. And you never knew what you got until you got the film transparencies back.

Earlier, I had designed the front panel to look the way I wanted it to, based on the classic electronic equipment that always appealed to me aesthetically. The red color came about on a whim, which I have talked about before. It took several trial designs until I was pleased with the appearance.

The early prototype versions of the preamp were built using off-the-shelf metalwork. But that really did have the look and feel I wanted. I needed to have custom metalwork fabricated, and to do that, I had to have precise drawings. That meant I had to learn how to use CAD software, which, back then, was AutoCad. I still use it today.

And in keeping with the high-quality sound, I wanted an equally high-quality look to the product. That meant heavy metalwork and a very expensive finish.

I took the professional photos to another friend, a graphic designer, who helped me to create a brochure. He was a great designer, but it was really up to me to achieve the look that I wanted. After that first brochure, for the VT-1, I designed all the rest myself, using Quark XPress, the standard back then. I didn't always succeed in totally pleasing myself with the design, but I thought they looked better than most of the product literature out there at the time.

I picked out about 500 studios from the Mix list and sent out the brochures. The response was not exactly overwhelming. Around the same time, I bought small ads in a couple of the recording magazines. A one-time ad is useless. It had to appear regularly in the magazines to provide any awareness of the VT-1. That was expensive. I allocated about one-third of the gross profit to advertising and promotion.

Several high-profile people at the time bought VT-1s, and generously provided photos and quotes I could use.

The introductory price of the VT-1 single-channel mic preamp was $2000 in 1993. It was an outrageous amount of money for a preamp at the time.

But that's what it cost to build, plus enough to keep the company going. If you ever decide to market a tangible product, you must build-in enough profit to cover your overhead and salaries. I always tell people that I wish the price was half what it is, but that's what it costs to make a quality product, and support a company so that it will be around long-term. Customers want your company to be there if they ever need you.

After a slow start, the VT-1 started selling at a leisurely but steadily growing rate. Some customers were buying the VT-1 in pairs, so in 1994, I released the VT-2, the two-channel version, which remains our best-selling product by numbers shipped.

The first 15 VT-1s I built myself, but I could see that this was not the best use of my time. Besides, there were skilled people out there who could do incredibly beautiful work. Sure, most people will never see that. But it is part of the overall quality concept.

I was fortunate to always have good people to do the actual assembly work, some of whom have been doing it for decades now. I could not have been successful without them.

I had been going to AES Shows in New York since the late 1960s, and I have been a member of AES for over 50 years now. I knew that in the early 90s, that was the place to reach potential customers. I was fortunate to be able to share a corner of the Mercenary Audio booth at the show in 1992, and that introduction led to many sales, and, more importantly, relationships with pro audio dealers. Many of those original dealers are still an important part of our dealer network.

D.W. Fearn has always been an exhibitor at AES, and later, at the NAMM Show.

Also, at this time, the world of recording was making a major shift. With computer-based recording, the cost of entry to set up a studio dropped precipitously. Instead of an $80,000 Studer 24-track, now for under $1000 you could buy a computer with professional-quality software that exceeded many of the performance numbers of the tape machine.

You still needed to get your microphone into the software and this was an important opportunity for the VT-1. If you lose the quality in the mic preamp, there is no way to get it back.

During this time, I was doing everything except the assembly work. Well, occasionally I had to step in and build something if I had to get the product out to the customer right away. Doing everything actually fit my style very well. I tend to get bored after working on one thing for more than a couple of hours, and taking a break from design work often helped me to later come up with better ideas.

My day typically included checking parts inventory, and ordering what was needed. This isn't always as simple as It sounds because a supplier may be out of stock on something, or a part might be discontinued by the manufacturer.

And then I would spend time final testing, and listening to, every unit before it shipped, answering email from customers, prospective customers, or dealers around the world. After that, I might work on a new magazine ad, a brochure, or a mailing piece.

Then I would make accounting entries into our bookkeeping system. Maybe invoices needed to be sent out.

And I would try to make time periodically to contact the dealers that were key to selling my products. Many of the dealers became good friends, and even some that are no longer in that business remain valued friends. That personal connection also led to better trust between us, and encouraged them to make sales. Dealers that had units to demo sold many more than those who waited for an order and then sent us a PO.

Of course, my most important task was to come up with new ideas for products. I never wanted to make a product that duplicated other products that already existed. If I couldn't move the state of the art forward a bit, then I saw no point in making another LA2, for example. Always my goal was to create something that would improve my own recording projects.

That's one reason why I still do recording sessions, which I feel is a very important aspect of the equipment design process. It kept me in touch with the real world of recording, and I also had to keep up with the latest technology trends. Recording good music is still my favorite part of what I do.

When the world wide web became a viable avenue for commerce, I had to learn HTML code and make the first D.W. Fearn web site. That was tedious, but definitely worthwhile. The web site went live in 1996. And the internet slowly changed everything, almost all for the better. For example, now a tiny company like mine could have an international presence.

Sales out of the U.S. meant that I had to learn about the requirements for shipping products overseas. And also how to get paid from a dealer in another country.

In the early days, I was invited to mic preamp shootouts in different parts the country, and I found them to be very useful and interesting to me personally. I was mostly unknown back then, so I could sit with the audience of engineers and producers who listened to many different preamps and rated them all. It was interesting to feel the response of the engineers as each preamp was evaluated.

I was pleased that the VT-1 always finished in the top 3, and often was number 1, even in competition with some classic designs that were highly regarded.

Some of the people at these shootouts told me later that they couldn't really hear any difference between the various preamps. I would simply tell them that they would save a whole lot of money in their studio.

By the year 2000, my customer base changed dramatically, from the professional multi-million dollar commercial studio to, well, anyone with an interest in recording music.

Anyone could record at home, or in a dedicated space for a studio, either to do their own music or to charge others to use their facility.

That opened up the potential customer base dramatically. But it also meant that I was no longer selling gear solely to professional studio engineers. To serve the growing project studio market, I had to change the advertising approach somewhat, and completely re-write the instruction manuals to avoid excessive technical details that were of no use to the majority of customers.

I get that my designs are not for everyone. And an even bigger problem is that there are many more people who would like to own my products than can afford them. That always bothered me, but I could not dilute the D.W. Fearn brand by making a low-cost version.

But someone else could, and that resulted in Hazelrigg Industries marketing their VLC and VDI products, which are based on my VT-1 and VT-I/F DI, but somewhat simplified and designed to be less expensive to build, while preserving the sonic signature of the D.W. Fearn line of products.

After a couple of years, Geoff and George Hazelrigg took over handling most of my business, and they have put together a talented team of experienced people to handle marketing and sales, and someone to take over our social media and web site to keep them current and engaging. But I would say that knowing how to do all that stuff myself makes me better at helping to guide those services.

Turning over the day-to-day operation of the company was both a relief and a concern. But the Hazelriggs certainly share my obsession with audio quality, and quality construction, so I have little to worry about there.

It's a fine line, though, between being a helpful resource and idea person, while not limiting the creativity of the other people.

I always design the gear that I want for myself, to solve a problem or deficiency I found in other products. The addition of the VT-4 and VT-5 equalizers, and the VT-7 compressor were logical extensions of my need for a better preamp.

There were also some products that didn't do as well, or didn't really meet my goals, and those I discontinued after a while.

But the preamps, now in 1, 2, or 4 channel versions, have remained unchanged since the VT-1 design was released. And the VT-5 and VT-7 compressor have become indispensable to many engineers.

And now that I no longer have to handle all the day-to-day details of the manufacturing business, I am free to devote my time to new product design. And recording.

Your email is valuable to me, so keep it coming.

And as I approach a full year of doing this podcast, I want to ask your help in building the audience. Frankly, I'm happy to do this even if only a few people benefit from it. But producing this podcast takes up about half my working hours, so for me to feel motivated to keep going, I'd like to find more subscribers. If you would share your enthusiasm for this podcast with your social media contacts, or your real-world colleagues, I would appreciate it. Thanks.

This Is My Take On Music Recording. I'm Doug Fearn. See you next time.

Technical details for this episode: I wanted to get a better understanding of the RF condenser microphone sound, so I used a newly-acquired Sennheiser MKH8050 Hypercardiod mic. That went into a D.W. Fearn VT-2 mic preamp, VT-4 Equalizer, and VT-7 Compressor. The mic is about 24 inches away, and off axis, since it is easily popped. No pop filter was used. The eq was set for 4dB of shelving roll-off at 40Hz, and 2dB of shelving high-cut at 10kHz. I found that I needed the high cut to reduce the high-end boost inherent in condenser microphones. The low cut compensates for the proximity effect of most directional miscs. The audio went through a Merging Technologies Hapi converter and was recorded using Pyramix DAW at 24-bit, 96kHz sample rate. Of course, the podcast format is a 96kb/s MP3, but the higher resolution capture results in a better translation to the MP3 format.