



Robert Sanderson

The tools of the trade may be similar, but **NIGEL JOPSON** finds a forensic audio analyst's job can be very challenging

Robert Sanderson is the president of Audio Video Forensic Labs, whose forensic-science laboratory in Poughkeepsie, New York offers audio and video analysis and expert witness testimony. Sanderson originally started his career in the New York music scene, working as chief engineer at Soundscape Recording Studio from the early '80s to mid '90s.

When shrinking budgets and rising realty prices put paid to many well-know NY studios, Sanderson switched to corporate video and DVD production, and for the next ten years successfully operated SVS Television Productions.

Now he brings 24 years of combined professional A/V experience to the forensics world. Professionally trained in audio and video authentication and clarification as well as voice identification, he has a string of legal credits for wiretap authenticity, Taser Cam Authentication and Analysis, Body Cam Authentication and so on. Unlike many skilled journeyman-engineers of the '80s, Sanderson has succeeded in amplifying his audio knowledge, threading his career through the

high-ticket media turnstiles of changing times, and building a successful business. When we caught up with him recently he told us about the history of the company and the tools he uses to help him in his work.

How did your career in audio start?

After an early interest in music and electronics I became a recording engineer, building and owning a state-of-the-art 24-track analogue studio called Soundscape in New York in the '80s. It was a fascinating career and I loved it, but after ten years there was a shift in the industry. Some of the bigger labels were building their own studios and we saw our business begin to suffer.

At the same time digital audio was coming in and keeping up with new technology would have required a complete refit. The numbers didn't work. I had always been fascinated with TV production and the original business model for the recording studio had been to do film work so, after 14 years, I decided to sell the business and convert the facility into a television production studio. SVS Television Productions was born.

With hindsight, was the move from audio to video production a good business strategy at the time?

It was a very savvy move if I say so myself! A lot of people knew me through my audio work so I was able to start working immediately for IBM, other major international corporations and Wall Street firms that needed corporate video work. I wound up with five editing suites, an animation suite and three road crews, so we were busy little bees. But at the end of 2004 another shift began taking place because some of our customers had started handing out Sony Handycams to their people and telling them they could produce videos themselves.

So, the commoditisation of corporate video prompted another career change?

Fortunately, we were by now getting requests from local police departments to do whatever we could to improve their audio and video so again, after encouragement from a brilliant former FBI Special Agent and now very good friend, I flipped the business. I took every technical course on audio and video analysis that I could find, whether on the East or West coasts. I soaked up the training like a sponge. Because I had audio and video experience, it came very easily for me. As a result, I was able to hit the ground running and had immediate success on behalf of law enforcement.

Working with audio for legal cases might not seem as exciting as music production to some people, how do you motivate yourself?

I was really buoyed by the prospect that I could be effective in this world and help get to the truth, and talking with my counterparts in the industry I understood that I couldn't make a go of it if I dedicated the company solely to law enforcement. I decided to broaden my target market and accept defence as well as civil work.

Working on both sides of the fence, I could see how misunderstandings and misinterpretations led to confusion at trial. Most lawyers had no idea about how to interpret their audio and video evidence properly. Instead, they tended to go with their preconceptions. But I knew if I could provide clear, intelligible evidence, I could give jurors something that they could understand and agree with.

Your work is very specialised, what type of audio analysis equipment do you use?

I often felt that there was something lacking in the world of audio and video technology. The market is relatively small so manufacturers need to develop equipment on a budget. I was always bumping into cases that couldn't be solved using the existing technology, so I developed relationships with some manufacturers and started making suggestions. Some of them listened and some of them didn't.

I first discovered CEDAR at an AES convention and we quickly fostered a close working relationship. At the time, I was actively looking for solutions that were more effective than what I had. My other systems were either



/ CEDAR forensic noise reduction module FNR is Sanderson's most essential tool

too time-consuming to use or not robust enough when processing longer surveillance files. So I took a leap and decided to purchase a CEDAR Cambridge Forensic System. CEDAR's business model of constantly improving filters which people pay for just once is a big deal for me.

Do some specialist media authentication equipment manufacturers deploy prohibitively expensive charging structures?

A lot of manufacturers in this industry charge annual maintenance. Independent labs — even state police labs — have budgets and they can't afford these fees. I look at this as paying rent on my own equipment and it's untenable.

Which type of audio are you dealing with day-to-day?

Many of today's covert recordings are made on inexpensive digital recorders. Typically, we find that the wanted speech and other human sounds are either extremely low in volume or overdriven to the point of distortion. Noise reduction is the most requested activity at our lab. Removing buzzes, clicks, pops and interference while maintaining speech intelligibility is a real challenge. It can't and shouldn't be done with off-the-shelf software or in a recording studio because it requires equipment designed specifically for speech extraction in a forensic environment. That means not changing the speech.

So you need to keep track of the processing applied to background audio — while making speech more intelligible — but without altering the wanted audio from voices?

The new CEDAR Cambridge forensic noise reduction tool FNR is the most useful and essential tool I have. However, I never use just one module. Forensic analysis is like finding a needle in a haystack, so for many projects I use almost every module. I suppose that if you are new to this and you're looking to push buttons and just turnover work, well, you may have other choices. But if you're looking to do real forensic analysis — which isn't just pushing buttons but interpreting the material properly — that's where Cambridge shines. It digs deeper into the noise to extract more usable speech and utterances. Result: speech is more intelligible but most importantly, the speech



/ Sanderson in his Poughkeepsie studio

content remains unchanged so the interpretation of it is as accurate as possible.

I suppose the audio files you work with might be quite large?

I work on audio clips ranging from a few seconds to many hours and I need an audio processing system that can contend with heavy demands while providing fast processing speeds. With CEDAR Cambridge, I can leave extremely long audio processing overnight, wake up and it will be done. It also generates a full report of just how the material was processed. So, this is my equation: I need to be on the cutting edge of technology, I need better technology, innovation and I need reliability.

What type of audio evidence court cases do you work on?

My business is mostly violent crime, large environmental accidents and horrific personal injury cases. I also deal with surveillance that often needs to be addressed right away, so we have a steady stream of jobs with short deadlines. It's fascinating and it's challenging but if you're thinking about making a difference, it's the place to be.

My clients now include Attorney Generals,

District and Federal Courts, Public Defenders, police departments, big brand companies, private investigators, most insurance companies as well as other governmental law enforcement organisations around the world. Sorry, but I can't talk about actual projects.

How would he sum up working in the audio forensic field?

More and more, video and audio go together and there are components from both areas that need work on a given piece of evidence; audio rarely stands alone. Because I have a background in both it really helps my clients because they don't have to go to two separate experts.

This can mean a lot to them because whenever they engage an expert, they are actually taking a risk and it's either on their own or their client's dollar. They want to minimize that risk as much as possible. Regarding CEDAR, I'm very proud of the relationship that I have with the guys. Their technology leads the way and I no longer have to use filters that were built twenty or thirty years ago. Since CEDAR isn't that well known in the USA I sing their praises whenever I can. 📞

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