

# Stan's Safari Part 5

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**This month I'll take a break from amplifiers** mainly because I've been working hard on two new designs of my own, so I felt I needed a rest from the topic. This hectic design activity also led to me re-immersing myself in the world of measurements by spending some time over Christmas calibrating my test equipment, an activity which is always something of a chore as well as being something of a revelation. We quite happily quote figures to 0.1 dB in total confidence because that's what it says on the computer screen yet I wonder how often magazine reviewers across the world have their test equipment calibrated !

However that's a particular stone I'm unwilling to lift this month so I'll return to the original topic of this series which was; "How re-create the sound heard in the control room of the studio when the final mix of a piece of music is laid down onto tape?" And in my first column I said; "Not too difficult an ambition to achieve I hear you say. After all if you take a stack of the best high-end equipment and connect it up with the finest and eye-wateringly expensive cables then the end result will be a sound that will be within a gnat's whisker of the original. How can it not be? Surely the CD is a bit-to-bit exact copy of the original recording and the rest of the equipment, as the magazine reviewers never tire of telling us, is as close to perfection as makes no difference."

Well as it happens I spent some time in the studio recently re-mastering an old album for re-release on both CD and vinyl. Yes we retired rock stars are experiencing something of an unexpected revival with, in my case, Amazon listing two CDs, two LPs and some compilation tracks in its catalogue. Indeed if this carries on I might eventually make some money out of rock music. Surprisingly though this is not a plug for all readers to go out and buy, buy, buy, and modesty prevents me saying much more except that those readers familiar with my Yorkshire pig-breeder's visage may be surprised to see the

pictures of a rather cool and slim rock musician. No, the story I want to relate is that of my experiences upon being able to audition original master tapes; CD copies; vinyl cuts and digital conversions side by side.

You know it is a curious thing because if you look at the performance of an analogue tape recorder objectively you soon reach the conclusion that their performance is, to be polite, somewhat indifferent. Distortion, noise, frequency instability (wow & flutter) and frequency response limitations are all there to be measured indeed heard, yet this self same medium has been the vehicle for most of the finest music recording ever heard. Personally I know that throughout the 1970s I hardly considered record players to be worth the shelf space and always used tape recordings for auditions and demonstrations. Time was when favoured manufacturers could talk to the record companies and receive superb 2<sup>nd</sup> generation copy master tapes without any concerns of piracy or other legal complications. Indeed at one stage I had a huge stack of copy masters including the LPO-Previn's version of Holst's "The Planets" and the Eagle's "Desperado" album. Unbelievably I lost the lot over several house moves or job changes; they didn't seem that important at the time. But what I'd give for them now.

So back my recent experiences in the studio. I started off with the 1968 analogue 2-track master tapes; a good quality vinyl pressing (re-mastered some years ago by Abbey Road no less) and a commercially manufactured CD. In isolation the LP was pretty good but, as so often is the case, falling well short of what I was looking for. The CD was quite different but ultimately not satisfying. And the master tape? Well the sound was head and shoulders above the other two sources. I won't drift off into a list of superlatives; it just was so much better, delivering everything I wanted from a recording.

The next step was to establish at least some of the more obvious differences so the two analogue sources were converted to digital using the studio's well-regarded converter and immediately differences could be seen on the computer monitor, never mind heard. In the process of mastering the vinyl disc recording had been compressed in dynamic range and the bass levels

had been reduced and in my opinion that was more than enough to degrade the sound. The CD also proved to be mildly compressed and that was a surprise. Next we listened to our three digital recordings. The converted vinyl recording was a waste of hard drive storage space; harsh but true. I won't bore you with all the changes and combinations we tried but one thing was clear; even in the best case there was a degradation during the analogue-to-digital conversion process that, whilst small, somehow changed the character of the recording. A degradation, dear reader, that we shall return to later in this discussion.

For as long as I can remember there has been a huge gulf between the attitudes shown to sound quality by recording engineers and those who might be termed hi-fi audiophiles. The engineers generally take sound quality seriously but also happily take their master tapes from studio to studio to work on the production or the mix down. Now with each studio having different monitor speakers; amplifiers; mixing desks; tape-recorders, and their state of alignment; the audiophile will claim that there is no way the sound quality will be consistently good; and that is before we get onto the thorny subjects of cables, connectors and which way the wind is blowing. The engineers in turn are known for regularly muttering comments about "snake oil salesmen" and "land of the fairies" when they hear talk of audio grade capacitors and interconnects which cost £200 and up per metre. We've all heard the comments that the studio happily works with 7 miles of cable often chosen on the basis of the best RF screening or for value-for-money; whilst the audiophile frets over the choice of a one metre length of interconnect cable. Throw in the old measurement versus subjective arguments and you have a cultural gap of biblical proportions.

Yet this same gulf could be the key to something that might be quite vital in understanding what hi-fi design is all about or perhaps understanding just what it has become in the past two decades. Because the recording engineers are right in what they say and it is their ability to reproduce a satisfying sound in most scenarios when we hi-fi people are messing around with cables and support platforms; that has, for me, been a source of

increasing frustration. And so although I have performed the exercise many times in the past, I decided revisit the world of analogue recording again by lining up an array comprising of my Revox A77 and Revox A700; together with a borrowed Tascam 2-track and that monster of a studio machine, the Studer A810. After stepping back in time I cleaned the heads and taught myself to remember never to leave tapes on top of Marshall speaker cabinets if you ever want to hear any high frequencies again. Then time was spent to carefully set them to give the same output levels and I was able to audition, or more correctly as it transpired, enjoy the playback of the same master tape recordings.

Now I know the two Revox machines intimately well; particularly after being involved in the development of one, and I can assure you that they have completely different circuits and components in the signal path. The other two machines are less well known to me but are certainly different again. Furthermore a quick alignment check revealed that each had a different frequency response; each acceptable in its own way but certainly different. Yet when listening to the tapes the essence of the music was all there; the coherent sound; the involvement; the true dynamics; yes everything I look for in my enjoyment of recorded music. But the important thing is; it was there whichever tape machine I used. Yes the sound balance was different, almost as though someone had been tweaking the tone controls, but it didn't make a great deal of difference. The fact is I'd be happy listening through whichever machine was loaded with the tapes.

Let's stop and take stock at this point. What we are saying is that a man who has earned his living designing products that sound that little bit better than the products made by another guy down the road, is taking a recording and saying it doesn't really matter which equipment is used; it still sounds good. Well I don't know about you but it certainly gave me pause for thought.

If that is the case then surely a damn near perfect digital copy of the master tape would exhibit the same resilience wouldn't it? Unfortunately not. When auditioning my digital copy I soon found I was back in a world where

everything in the chain made a difference and therefore needed to be “optimised”. So it seems on the basis of my admittedly rough and ready, yet consistent experiments that something happens in the process of conversion to another medium. In the case of a transfer to a vinyl cut that is perfectly understandable because there are so many mechanical influences and variations it’s a miracle the system works at well as it does. I often wonder why we finished up with such a crude format and were persuaded to devote so many millions of man-hours into trying to improve its performance. But we are where we are so let’s concentrate on our digital world.

It seems to me that the conversion from analogue-to-digital and back again clearly has some way to go if my ears are not deceiving me. Certainly I’m going to dig a little deeper in the coming months because I feel that somewhere, just beyond my intellectual reach, there is an answer. Could it be that if the conversion process reached some stage on the road to “perfection” then a digital copy of the recording would show that same resilience and tolerance as an original analogue recording?

Certainly it is a topic to muse on because if it ever came to pass we probably wouldn’t need half the hi-fi industry and half the magazine reviewers.

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