

The \$1 Million Question - Why do many old electric guitars sound mellower or dull when they get really old?

For an electric guitar, the neck is everything. Tone, sustain, feel and playability. Change a Strat's neck with another identical neck and you change the whole guitar's character. It might become better or it might end up worse.

I have bought a fair number in my years and, to my surprise, one or two have been really good necks and the rest have been relative duds by comparison. I would never have believed a neck is that important to the guitar's amplified sound... until I carried out my research and experimentation with different necks. This article is the result of this work and I wanted to share my experience.

If you are not able to work out why your guitar is lifeless, lacking treble and has little sustain, it's probably down to its neck. Mother Nature, through the wood, can be a bitch when it comes to necks, but sometimes you can find a goodun, if you know what to look for.

Fortunately, I own a number of elderly electric solid body guitars and I noticed that they sound different to new examples of the same models when played through an amplifier. *And I must stress that we are ONLY talking AMPLIFIED sounds in this article.*

Firstly, the old ones are not as bright sounding, or at least not as dynamic. When re-strung they sound quite pretty at home, but at a gig they can sadly lack punch when you play them clean or semi-clean! In deeper distortion modes, they're not so much of a problem.

Also very noticeable is that the old guitars are much brighter when played acoustically. My newish 1991 Japanese Strat sounds very dull played acoustically, compared to my 1962 Strat and 1963 Telecaster! So I began to worry about what was causing this change in my instruments.

Strangely, my 1963 Telecaster has much more vitality than the 1962 Strat, but it is still darker sounding than a new Telecaster. So the changes that are happening in the guitar are not just affecting the tone, but also its dynamic properties. This also means that while a guitar might become rather dark sounding, it can still retain a reasonably dynamic sound which is very pleasing to many players.

Was it just mine that it happened to? No, other old instruments belonging to other players that I've worked on were also affected, so it was nothing to do with how I was storing mine and certainly not down to bad luck. Simply, all instruments change in this way with age, in varying degrees. It is also a fact of life that the 'great' sounding guitar you own today, may not sound as great in the future. Or conversely, it might sound better... who can predict that, I certainly can't!

I'll be up-front about it now... I'm not mad about the way some older instruments can sound! Yes, I know I'm completely at opposites to the rest of electric guitar players, but that's the way I am. I like a bright twangy guitar sound. And, I don't play with deep distortion all the time. I guess I'm a bit of a country player at heart, but I mix it up with blues, jazz and rock. Yeah, I know I'm odd! Anyway, all this really bugged me and, as with all problem solving exercises, I started with a long period of thought, which actually went on for a couple of years.

So What Happens To Our Guitars - In A Nutshell

As the guitar ages, the neck in particular - which is the weakest part of the instrument - suffers progressive wood changes and causes the neck to absorb increasingly more energy from the strings the older it gets. As the energy is absorbed - called 'sinking' - the instrument's sustain is reduced and the tone becomes less bright when the guitar is amplified. Because the strings vibrations are altered by the increased flexing and energy absorption of the now aged neck, the pickup cannot sense the high frequency vibrations any more... so the amplified tone becomes darker sounding. The guitar can become progressively worse as time passes. Some players like it, others don't. Which is best is not the purpose of this article.



My 1962 Strat looks just like Chris Rea's above. The cracked finish is the result of the body wood drying out and shrinking over the years! This will certainly affect the guitar's sound!

Please bare in mind, I am just pointing out that these changes do occur and that players should expect changes of this kind over time. So please don't shoot me for telling you about what I have found! And, if you don't believe me, I really don't mind... that's your choice. But I am a scientific bod, so I have to have explanations based on science... not fiction or romance.

Those of us who own old guitars will know that the neck wood can change dramatically over time, because we will be aware that often the frets start to poke out from the side of the fingerboard... proving that the neck does shrink and lose moisture! The grain tends to shrink 'longitudinally', so don't worry, the scale will probably still be accurate! The wood's density, which is responsible for bright tone and long sustain, does reduce with age. Fortunately, ageing affects guitars differently though, from one to another. Not all guitars deteriorate by the same amount over time and it appears 'mainly' that the quality of the neck's wood determines this.

As we should all understand, not all wood is the same. Even wood from the same tree, but a different part, will be slightly different and might significantly effect any instrument's tone. Musicians MUST stop the line of thinking that there's consistency in guitar manufacturing that can control precisely the outcome in a tonal sense. Whilst there is excellent consistency in the manufacturing process... the materials (wood) quality is much more down to luck over time. Having said that, most guitars have a pretty good tone and are generally very usable when new, thanks to good knowledge on the part of the makers.

I have to say that the changes appear far more noticeable with Fender guitars. This is certainly down to the simple fact that they are particularly bright and twangy sounding... not that they are inferior in any way, so any small change would be more easily noticed. Exactly the same as it would be for any other make or kind of single coil pickup equipped guitars. There is no yardstick by which one can predict the effects of ageing. And unfortunately, some guitars can become pretty unusable eventually, because they have lost so much sparkle and dynamism.

Probably not surprisingly, many old guitars become very bright and resonant when played acoustically. This is because, as the neck now absorbs more energy from the strings, this energy is dissipated much more easily through the guitar's whole body... particularly from the neck. You can feel that the neck tends to vibrate more in your hand as you play it.

This is fine for an acoustic instrument, but detrimental for an electric solid body style guitar. Because the neck is soaking up this string energy, the vibrations slow down much quicker, so the pickups cannot sense such bright 'spanky' vibrations any more. Sustain tends to reduce too, as already mentioned.

Further Background Support

To help explain what affects electric guitars... you may have observed that many electric guitars these days tend to have 'stop-bar' string anchors immediately after the bridge. This helps increase sustain and gives the instrument a brighter tone... yes, players do have an obsession with sustain! But not always best for 'tone'. Anyway, this happens because the string length after the bridge is very short. On the other hand, guitars that have the traditional 'trapeze' type of tailpiece, like electric jazz guitars, will exhibit a shorter sustain and a mellower tone. Jazz players don't generally want long sustain!

In fact the Fender Jazzmaster has this exact tonality and shorter sustain characteristics. I believe Leo Fender designed it this way because the much increased string length post bridge acts as a fulcrum and allows the strings at this point to swing in the opposite direction to the string on the pickup side of the bridge. A big damper! Thus, absorbing string energy and slowing down the string vibrations more quickly, mellowing the tone and shortening sustain. So from this, we can deduce that a weak neck that absorbs energy will have a similar affect on the guitar's general tone to the Trapeze tailpiece... and often more so, as the instrument reaches very old age.

An experiment employing two Telecasters

I have three Telecaster type guitars. A 1950s Broadcaster, a 1963 Telecaster and a 2010 Telecaster. Two I have experimented with by swapping their necks around. Nothing else!

The Broadcaster is very bright acoustically, but dark sounding when amplified.

The 1963 Tele is reasonably bright amplified and acoustically.

The 2010 Telecaster is very bright amplified and quite dark sounding acoustically.

However, it's only three instruments, so cannot be viewed as a reliable experiment, but it does clearly show a trend! Therefore, to help the theory along, I have tried swapping the necks around on two of them to see what affects would take place... and the outcome was quite shocking!

Replacing the neck of the 2010 Tele with the neck of the 1963 Tele made a very noticeable difference! The 2010 Tele was then darker toned electrically... its tone became as if it were still on the 1963 body and electrics. The only viable explanation for this is that the 1963 neck is flexing in sympathy with the string vibrations much more easily. Therefore, causing the string vibrations to slow down quicker and attenuating the string's high frequency vibrations as well. All because the neck wood has dried out and shrunk a little with time. This clearly highlighting the importance of the neck's rigidity. New wood, being stronger, can achieve this much better than aged wood! Put simply, it is NOT desirable for the string's vibration energy to be allowed try and 'drive' the neck into motion itself! This will only act as a damper!

This theory needs some additional support, so here's another observation that helps to underpin my thinking. Pedal steel guitar bodies are constructed from a solid mass of aluminium, which also incorporates the neck. They have incredible brightness and sustain, thanks to the low energy absorption of the aluminium body. In fact, they are so bright, that the pickups have to be over-wound with huge amounts of extra wire turns on the pickup coil to bring up the bass output to match that of the treble!

Travis Bean guitars from the 1970s had aluminium necks and were incredibly bright too. They were sold as having ultimate sustain! So, here's another snippet in support.

It is possible to hear these affects in Gibson style guitars too. A friend has a lovely old 1963ish ES125 (a true semi-acoustic) with P-90s. The acoustic tone is to die for, but the electric tone is not so nice... it has a deep throaty bark.

I have a very nice 1964 ES335, which when put up against a newish ES335, also sounds rather dark by comparison. The 1964 has a nice tone, but it's not the same as a new one. Its acoustic tone is much more dynamic and brighter than a recent ES335, which is in line with my other findings with the Tellies.

So, from my point of view, there is little point in taking my experiments any further. From this, I don't really need to put the Broadcaster neck on the 2010 Tele, as I'm pretty certain what the outcome will be. **The guitar neck is the main cause.**

These observations are in direct conflict with what many players believe. They tend to apply this "Good acoustic tone = good electric tone" thinking which, based on what I've learnt, is not right!

If asked, my advice would be NOT to buy an old electric guitar on the basis that it sounds beautiful acoustically!

On the other hand, if you rely on an amp and effects to produce 'your sound', then much of these findings will not be applicable to you, as the guitar is being used merely to provide note, timing and vibrato information for your amp and effects to respond to.

Conclusion

Old guitars DO look cool and feel wonderful... but not always the best sounders electrically after all this time. Many are probably best used as music room decoration for collectors, as their 'best before' date may have long expired, as far as clean sounds goes!

From what I've noticed, after playing many new and older instruments, is that the best age for 'ideal tonal balance' is with guitars that are probably ten to twenty years old. After that, they start to deteriorate slowly... and many of us don't seem to notice, that's the funny side of it all. But they do!

I have to say... I would NEVER buy an electric guitar that sounds good acoustically! That, to me, makes no sense at all. For an acoustic guitar, it's a situation where the opposite is actually true! The whole idea is to sink ALL that string energy into the body to make it resonate and produce loud and rich acoustic volume! However, putting a pickup on an old acoustic guitar, taking into account what I've said earlier, WILL NOT produce wonderful electric tones to emanate from your amplifier. Sadly!

And to close, I'll leave you with this question. If you like the 'lightweight' properties of old instruments... ask yourself why they're light. Do you think that it could be because a lot of the moisture has escaped from the instrument over time? After all, we all know that water is very heavy!

Hope you found this article interesting.

© Stewart Ward – 31st January 2011
Guitar amp designer since 1967

Updated: 28th January 2017

Award-Session is a small company of qualified electronics engineers who have designed and built SESSION amps since 1979... and happen to make the fabulous ClearTone™ Custom cables too!

You can see our products here: www.Award-Session.com