Sustain

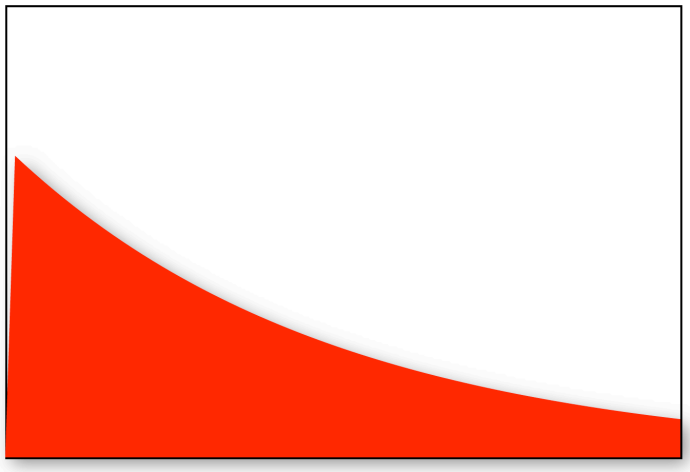
Sustain is that glorious constancy of texture, that smoothness of progression, that effortless music-making - that perfect antidote to plinky-plunky playing.

The guitar isn't a sustaining instrument - unlike orchestral instruments, all our notes die away as soon as they are sounded. But there are one or two little tricks up our sleeves that can give an ensemble the illusion of sustain. This teach-in introduces a few of the obvious and not so obvious ones.

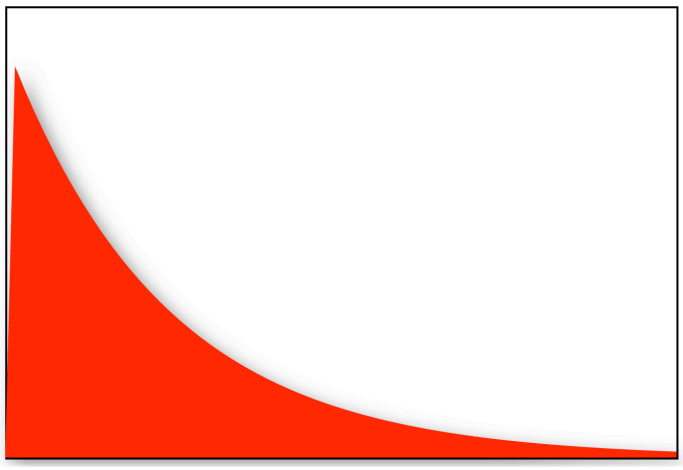
The guitar

You can't get more energy out (as sound) than you put into the string when you stretch it to one side. But as you might guess, an expensive guitar is more efficient at turning the string vibration into sound.

There is an aside - some loud guitars achieve their volume by taking the energy out of the string more rapidly, as these graphs show, which plot volume (up) against time (to the right)



Good sustain - sound dies away slowly



Loud guitar but at the expense of sustain

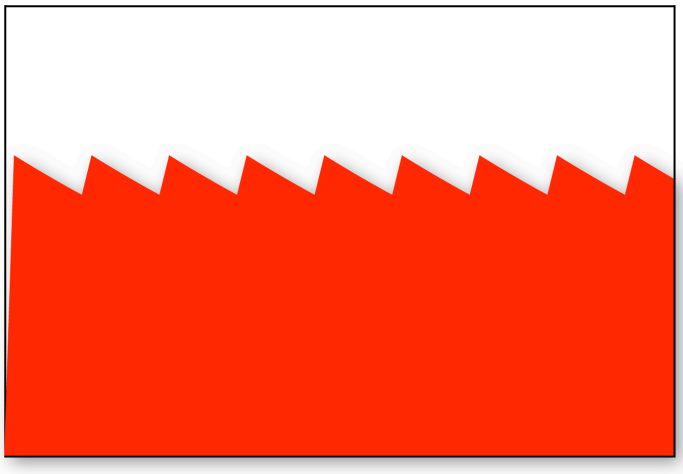
A banjo is a fine example of taking a lot of energy from the string very quickly - it's loud with minimal sustain. An electric guitar is the opposite - massive sustain because virtually no acoustic energy is being radiated. Somewhere in the middle is the classical guitar, and it's certainly true that some guitars have more sustain than others.

And here's a tip - you may well find that the 4th string has a lot more sustain than the third string, and in ensemble you might do well to take a mid-register melody up the neck to get onto the 4th string and away from the third.

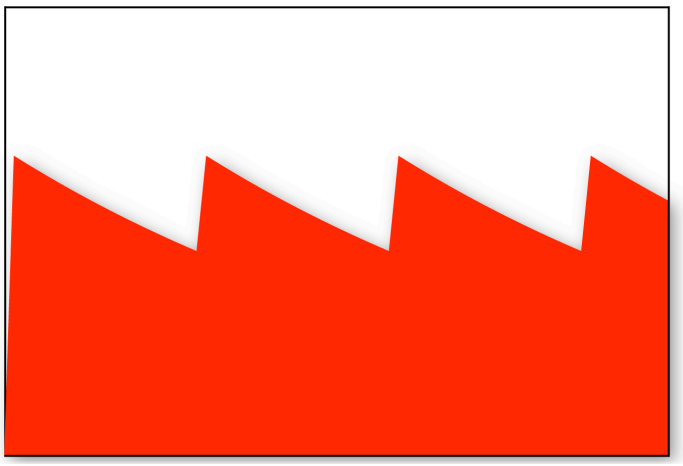
The exact opposite often applies to the 3rd string - up the neck it is gutless and muffled (because it is so thick and short). Here, you'll get more sustain if you move to the thinner, longer second string, or you can try fitting one of the more modern 3rd strings - a D'Addario composite or a Savarez carbon string.

Playing faster

Because every note dies away, the faster a piece is played, the less each note dies away before another takes its place. The effect is that each note hardly changes volume. As well as increasing the illusion of sustain, it also increases the average volume of the music, as the graphs below show.



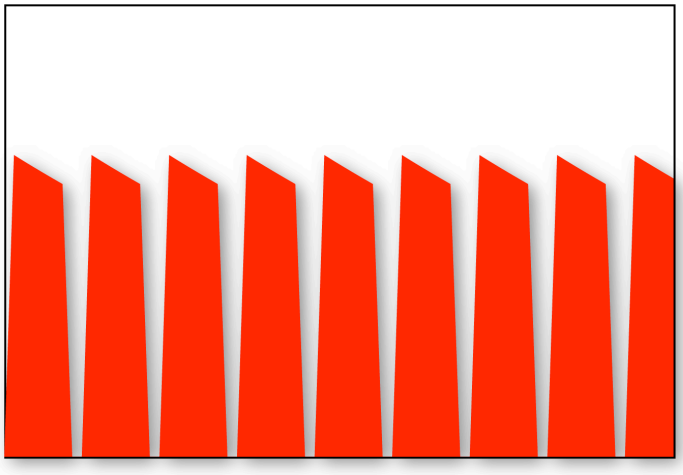
Fast playing - sound stays loud



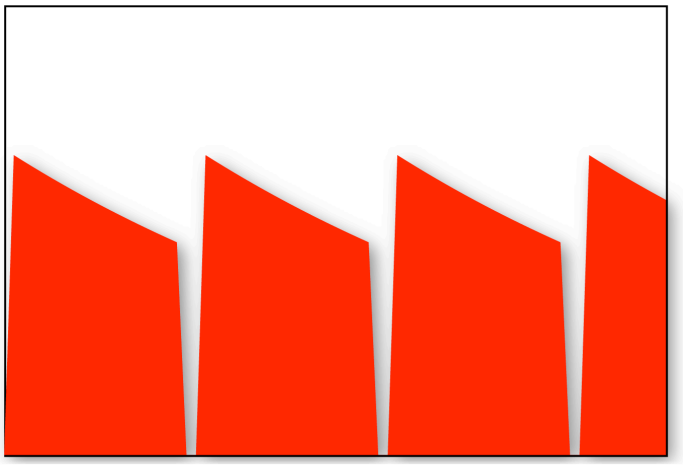
Slow playing - sound dies away

Playing slower

Now this has got to be a leg-pull surely? If playing faster increases the illusion of sustain, how can playing slowly increase it too? Well, between each pair of plucked notes on the same string there is a small silence as the new note is fingered and then sounded. When novices play, this “dead space” can be noticeable. It tends to be a fixed overhead, and so when playing short notes, the amount of dead space can significant, and makes the melody sound very staccato. Slowing down slightly improves this, as the next graphs below show.



Poor technique trying to play slightly too fast



Poor technique seems smoother when slow

Ligados

The ligado or slur, by definition, removes the gap between adjacent notes, and this can enhance the illusion of sustain, removing all the gaps in the graphs above.

Sympathetic writing

Sometimes it is possible to layer an ensemble so that different parts are plucked on different beats, or so that the lower parts move more slowly. In each case, the overall sound then has no periods of total silence and sustain is assured.

Vibrato

Vibrato is a technique that adds interest to solo lines - flute or voice, for example. Adding interest can also create the illusion of adding sustain.

The ear is not a good listener, and the brain tends only to react to changes of sound. We're all familiar with “noticing that the washing machine has finished”, and this is simply that the brain has “switched off” to the constant drone of the wash-cycle, but reacts to the change when the machine switches off.

In the same way, the ear soon ignores plain tones, and they drop from the listener’s attention. A little vibrato, however, keeps the ear interested, and the listener will consciously track the note for a lot longer. It’s an illusion of sustain, but it’s a very workable one.