

# FROM A LUTHIER'S NOTES: "SUSTAIN, OR THE METAPHYSICAL POSITION OF THE CLASSICAL GUITAR IN ORGANOLOGY"

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Under this rather monstrous title, I would like to share some thoughts I have about one of the most important aspects of sound which we commonly call "sustain".

Other than acousticians, a guitarist or lute player talking about "sustain" usually refers to the duration of a played note, while in acoustics, the term „sustain" refers to the part of the note where the amplitude is rather stable before it decays - a part which by definition doesn't exist in any plucked sound. Or does it?

Let me quote Julian Bream:

*„I think there is something fascinating about plucked sound. The plucked instruments, most of them, if not all, come from the east, and perhaps it has to do with eastern mysticism and religious experience, but plucked sound has a remarkable quality, because the actual pluck is the apex of the sound, and thereafter it dies. And if you are playing a phrase of, say, six or seven notes, you're dealing really with six or seven births and six or seven deaths. We hate death and we don't know how to deal with it. So, in fact, we sustain our lives as long as possible. The excitement is also in the spaces between the notes. And therein lies the perk of plucked sound.”<sup>1</sup>*

Another, more prosaic, way to describe plucked sound would be to say it is a percussive sound with a clearly audible pitch. Generally, when we look at musical instruments under the aspect of sustain, there is a continuum from a drum sound on one end to a flute sound on the other. Simplified for clarity, the drum produces all kinds of frequencies and even though it does have a pitch, it isn't heard much. A recorder (flute) would be an example on the other end of this continuum, with a harmonious, sustained sound. Where exactly a particular instrument would be placed along this continuum, is one of the most defining properties especially for plucked instruments.

Although by nature a plucked instrument's sound is short-lived, in a guitar, a long sustain is generally considered a very desirable property. This is too general a statement, though. For example, in a flamenco guitar, too much sustain is counter-productive, because the details of the complex, rhythmic strumming patterns would get slurred. Similarly, there is a type of Arabic oud where a long sustain would be considered "wrong". However, sound ideals do change over time, and now most oud players want more sustain<sup>2</sup>. The same happened in the development of the modern flamenco

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1 Julian Bream in a film about his collaboration with Hans Werner Henze about his Royal Winter Music. <https://www.youtube.com/watch?v=-4y1DN6lxSQ>

2 In this case, it might not only be due to a change over time, but also in space: in oud music, the attention has slowly shifted a bit away from arabic, and more towards Turkish and Persian music.

guitar: the players want a guitar which at the same time has a punchy, percussive sound, while also producing sustained, lyrical *falsestas* (melodic phrases) – a great challenge for the guitar maker. But before I indicate (more would go beyond the scope of these notes) an approach to solve this contradiction, I would like to call your attention to the class of instrument we are discussing here: if we classify acoustic musical instruments in regard to their sound production,

Class	1 oscillator/note	1 oscillator with 1 amplifier/note	1 oscillator/note with 1 amplifier for all notes	1 oscillator for all notes with 1 amplifier for all notes	Several oscillators for several notes each with 1 amplifier for all notes
Example	Xylophon Pan flute	Marimbaphon	Harp Piano	most wind instruments	Guitars Lutes, Ouds bowed instruments

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we notice that guitars, lutes and ouds belong to the most complex class. But things are, of course, even more complex: a natural sound consists of many partial notes, and herein lies the solution to the seeming contradiction of building a plucked instrument which is both percussive and has a long sustain. The instrument maker can assign, as it were, different properties to different bandwidths of partials. He/she would, for example, build a fast attack with fast decay, i.e. little sustain for the fundamental frequency range, but at the same time incorporate a potential for a long sustain for the higher partials. He/she would also make sure that the instrument responds in a great variety of vibrational modes, but with different on-set levels. If the instrument maker achieves all this well, a good player can, by means of a good vibrato technique, create a note that appears to grow louder – in theory an impossibility with plucked sound. You may notice that now we should add another column to our table of instrument classes, because we actually treat the „1 amplifier<sup>3</sup>“ (the body of the guitar) as if it were several – the metaphysical class, as it were. This complexity is one of the main reasons why there simply aren't that many truly good guitars, lutes and ouds.

When Bream says that „we hate death and we don't know how to deal with it“, he certainly has a point. But I would like to suggest another way to look at the phenomenon of plucked sound: More than any other musical sound, it incorporates silence, which is the essence of all sound, music, and actually everything. To strive to give it sustain is adding an aspect of transcendence to it, and I suppose it is this aspect Bream refers to as “mysticism and religious experience“. Thus, you could say the guitar, as well as some types of lutes and ouds, strive to transcend their nature of being a plucked instrument. I cannot help noticing a parallel here to what it means to be a human being, and maybe that is part of the great attraction many people feel for these wonderful instruments. And what a blessing to build them!

*"Alles Vollkommene in seiner Art muß über seine Art hinausgehen, es muß etwas anderes, Unvergleichbares werden. In manchen Tönen ist die Nachtigall noch Vogel;*

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3 It would be more correct to use the term „transducer“ but I found „amplifier“ clearer

*dann steigt sie über ihre Klasse hinüber und scheint jedem Gefiederten andeuten zu wollen, was eigentlich singen heiÙe."*

*„Everything perfect of a kind has to transcend its kind, it has to become something new, incomparable. In some notes the nightingale is still a bird; then it rises beyond its class and seems to indicate to every feathered creature what singing actually means.“*

Writes Otilie in Goethe's „Die Wahlverwandschaften“ (II,9) in her diary. Transl. S.Stenzel

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