

# Hi-Fi Myths: Tone Controls

PETER THOMAS SPENT DECADES IN PROAUDIO BEFORE FOUNDING PMC AND ENCOUNTERING THE SUPERSTITIOUS WORLD OF HI-FI. HERE HE BEGINS TAKING A POP AT SOME OF HI-FI'S 'SACRED COWS'.

PETER THOMAS

The three building blocks required for the exceptional reproduction of music are a good recording, good equipment, and a good acoustic environment in the listening room. (Perhaps the fourth is a good brandy.)

If you achieve even two of those, you are very lucky. Poorly balanced recordings, inferior product designs and poor acoustics all conspire to reduce the enjoyment of many of those who have invested the price of a small car in order to enjoy their music.

This first piece on Hi Fi Myths, looks at one feature of our hi-fi systems that could mitigate the above effects, and help us get on with the important task of enjoying our music. It's something that has disappeared from hi-fi equipment for over 25 years. Even its name conjures up pictures of ancient radiograms, reducing many to sniggers and derogatory comments. It's a word not to be uttered in hi-fi circles. It is, in fact, the humble tone control. The reasons why it is so mocked and out of fashion is explained by history.

Since the very earliest days of radio and radiograms in the 1930s, most equipment featured a simple tone control, usually a single rotary knob which made the sound brighter or duller and could be set to the personal choice of the listener. Often its primary function was to reduce the distortion and noise from disc or radio sources by rolling off the high frequencies to provide a more mellow tone.

By the late 1950s, with the specialist hi-fi scene growing, such controls had evolved into much more sophisticated devices, allowing separate adjustment of low and high frequencies (identified as Bass and Treble).

As hi-fi separates grew in popularity throughout the 1960s and '70s, tone controls were primarily fitted to pre- and integrated amplifiers to correct for low and high frequency differences in recording balance. However, they also enabled some correction of any frequency imbalances inherent in the hi-fi equipment and the room acoustics. Major improvements in the standards of reproduction available in the home now revealed variations in the recordings themselves, and the correction required varied between different sources and discs.

However, as the 1970s ended, a movement within the hi-fi industry argued for the simplest signal path to reduce signal degradation, and one of its earliest targets was the tone control. Poorly designed tone controls were shown to be audibly inferior than those products without tone controls, and as the movement grew in popularity, the humble tone control disappeared from pre- and integrated amplifiers alike – in a remarkably short time, considering

they had been around for the previous 50 years.

It is surprising that such a useful feature died so quickly. Many products of the time with tone controls, such as the Lecson *API* pre-amplifier, provided a defeat switch which bypassed them. This should have satisfied both the purists and those who preferred tone controls (but they clearly weren't purist enough as these type of pre-amps still disappeared). Some cynics might observe that removing tone controls saved significant build costs, and also noted that the products did not drop in price.

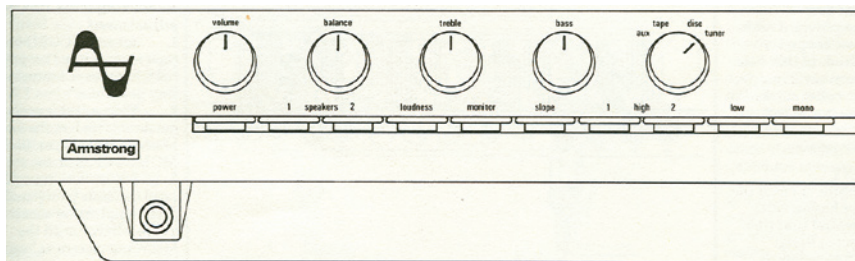
Professionals in the recording industry were amused at this move, as recording techniques had entered a period where mixing desks used several hundred EQ controls in the recording of most of the best sounding albums of the time. (EQ is the professional term for a tone control.)

If all recordings, equipment and room acoustics had achieved perfection, one could see the logic of removing the tone controls. However, the variety of balances reaching the average home through their record and CD collection continued to vary greatly, despite promises of 'digital perfection'. Furthermore, replay equipment and room acoustics were by no stretch of the imagination perfect, and these continued to provide very variable results in the home.

With tone controls, the balance of a hi-fi system can be tailored to the effects of its surroundings. A room with boomy bass can be tamed, and a room lacking in bass can have a little boost applied. Likewise, speakers that are a

*Mixing desks use several hundred EQ controls*





little bright or dull can be slightly tweaked to give a more acceptable balance. If the room and/or equipment can change the frequency response, then why can't the user be provided with a way to counteract these effects? This is no less 'purist', because the uncompensated system is actually less accurate. Besides using tone controls to adjust for system

or room inadequacies, they can also be used to compensate for the varying balances of individual recordings.

The vacuum formed by the loss of tone controls provided perfect conditions for another sector of the industry to grow to meet the needs for system balancing: cables. Especially after the introduction of bi-wiring, the balance of a system could be modified, albeit to a limited extent, by the use of esoteric cables.

Although tone controls did not solve all problems with room acoustics or the equipment, they did much reduce the effects and allow the listener to enjoy the music much more – which after all must be the goal of any home system. Perhaps it's time to bring tone controls back, although I daresay they might need rebranding with a less archaic and emotionally loaded name.

## Painting in Sound

MARTIN COLLOMS RECALLS THE GENUINE HI-FI TONE CONTROLS OF THE REMARKABLE CELLO PALETTE

### MARTIN COLLOMS



*Cello Palette pre-amplifier*

In the late 1980s I owned a product which I consider proved that tone controls can play an important role in replay sound quality. It was the Colangelo-Levinson designed Cello *Palette* pre-amplifier, based on seminal work by Richard Burwen.

Mark Levinson himself believed absolutely in the concept and convincingly demonstrated it to me. Careful study had created an instrument with a precisely calculated set of accurately stepped, finely calibrated and perfectly frequency-spaced adjusters, which were a joy to operate and seemed to encourage intuitive responses to the sound correction required.

LP after LP, CD after CD proved amenable to adjustment, and the improvement in listener satisfaction was substantial. Perseverance was required, first to calibrate each work on its first outing, and then to reset the controls correctly for each subsequent play, a procedure that needed certain level of patience and discipline, since it had to be done before playing any given disc. I still have many recordings with *Palette* frequency calibrations written on their sleeves, ready to be set correctly if played with this unit again. The *Palette*

was a great pre-amp in its day, so its amazing built-in tone control imposed no penalty.

Then came the fateful day when a new pre-amp contender arrived that supplied substantially better sound quality – better focus, transparency, dynamics, and tonal purity. The benefits of the tone control system was finally forgone in the insatiable quest for ever higher fidelity.

The *Palette* was certainly a fine pre-amp, while the extra sound quality bonus available via the finely graded, well considered and superbly ergonomic equaliser certainly made it the best available in its day.

Could something similar be done again? Although some might regard the technology as inherently unacceptable, a DSP (digital signal processing) version using rotary encoders, some DSP filtering, plus a set of memories to store calibrations, could make such a device that's much easier to use, and much cheaper to build. It might fit into a system between a server and an audiophile DAC, but would than leave out LP correction, which arguably is where the benefit is greatest.

#### CELLO PALETTE CONTROLS

Frequency	Range	Step size
15 Hz	+/-29dB	1.0dB
120 Hz	+/-14.5dB	0.5dB
500Hz	+/-6dB	0.25dB
2kHz	+/-6dB	0.25dB
5kHz	+/-12dB	0.5dB
25kHz	+/-24dB	1.0dB