

Diatribes 189

Digitised Nonsense.

If you have the misfortune of having to drive a car and you look down on the instrument panel, you will see some instruments which have a pointer which shows the state of a parameter such as temperature, fuel level or oil pressure, and others showing digits such as the odometer or trip counter showing kilometres traversed since the car was new or since the counter was last reset. The pointer-equipped ones are called analogue and the ones showing figures are called digital.

There are good reasons for this difference in display. Analogue displays generally settle at an established figure; for instance, radiator temperatures at about boiling point. Road speed or engine revolutions expect to be limited to a certain figure by the driver but the range of these can vary within wide limits. The pointer positions of these gauges imprint themselves on the mind of skilled drivers to an extent where any deviation from normal rings alarm bells as it ought to do.

Against this, digital instruments show quantities which have no finite limits such as kilometres. When they reach full count they pass back through zero. Digital instruments have another limitation. For changes smaller than one jump of the least significant digit they indicate no change. If you want to adjust the indicated quantity to a maximum or minimum the digital instrument is of no use whatever.

Why do I bore you with this technological nonsense? Simply because it is nowadays commercially fashionable to somehow, as they put it, regard digital technologies as the 'next step' which is somehow 'superior' to analogue techniques. In a previous life when I worked in the automotive industry at a time when there was a general introduction of electronics to cars my fellow engineers didn't understand the advantages and disadvantages of digital instruments and felt that digital speedometers and tachometers would take over. As they were into car racing, I asked them how you would turn a digital tachometer around so that the red danger line was facing to twelve o'clock, a common practice in car racing. This example proved my point that there was a place for all sorts of technologies and sometimes none.

This was then, some forty years ago. By now, things have got out of hand even more. The term digital no longer means a type of signal encoding but has become embedded as an alternative for the expression 'better'. As you would know, the term 'better' means nothing at all. When they tell you a car is better - which they often do in ads - it generally just means it is more expensive. What is meant when they talk about digital radio, which is the latest imposition?

For an explanation of this we have to go back a long way to when radio was first introduced to domestic listeners in the 1920s. Once it was discovered that electricity moves along wires at great speed and you could light up globes with it, it was on the cards that you could send messages with it. After Mr. Morse invented his famous code, telegraphy proliferated by leaps and bounds or should I say by on-off dots and dashes. Radio waves could perform the same trick and wireless telegraphy soon linked ships on the ocean. Please note that telegraphy was a form of digital communication, and that it demands the use of a code, which is one of the distinguishing marks of digital transmission..

Meanwhile Graham Bell experimented with using varying current in a form of microphone to transmit speech waveforms to encode voice signals over wires. This was the first analogue transmission and, as it was a much faster variation of the current intensity in the wires than the on-off signals of Morse code, it needed a whole heap of new fancy technology which we can't enter here.

This fancy technology had to be duplicated for wireless transmission which previously relied on switching a spark on and off in the rhythms of the Morse code. The science and technology of electronics never looked back. Analogue and digital encoding both allowed whatever quality of reproduction you wanted to provide. It clearly depended on how complicated you wanted to make the code applied to the signal, which in turn depended on how much of the frequency spectrum, the amount of space taken up on the band, you wanted to devote to it.

And, as time went on, ways had to be found to transmit a great variety of signals: still and moving pictures, first in monochrome and later in colour, data, engineering drawings and so on. Most of this simply cannot be encoded in analogue signals, not easily, anyway.

If you wanted to believe the present-day hucksters, there are two ways of transmitting audio signals – analogue and digital. As I tried to show so far, there is an infinite number of ways audio signals can be encoded. The only unencoded way of transmission is by standing on the roof and shouting. The actual decisions as to which encoding system is used are more commercial than technical, and the main pressure on digital audio transmission lies in the nature of the transmitted material other than audio. Whether drum roll or bugle call, the same message can be conveyed.

If you are listening to this diatribe on one or the other radio station, the chances are that in the complex chain of equipment that brings my speech to you, there are numerous items of equipment both analogue and digital. From the CD player which picks up a digital code and the microphone which turns the sound-wave of my voice into an analogue electrical signal, through numerous other devices which modify the signal in various ways, it arrives at your radio to be taken through another chain of equipment of which some is analogue and some may well be digital. For instance, if you are listening through a car radio, it is almost certain that it will tune to the station digitally and you will select the station by push-button. Once upon a time you may have had a mechanical system driving the analogue dial, but now it's electronic or what you might call digital.

Why the change? Not because it gives you better sound or greater convenience, but because the electronic tuning is cheaper to make. It comes in an integrated chip which contains many more components than your entire radio used to contain. Because of its production technique, this complex chip only costs cents to make. However, you as a user probably couldn't care less and most users wouldn't know the difference.

Precisely the same is true of the re-incarnated digital radio. Just one part of the total transmission chain is digitised in the currently approved system. Other components may well have been digitised a long time ago, and some will remain analogue. The questions to be asked why do they want to digitise this part of the chain and why do they push it so hard at such great expense?

Yes, folks, you guessed correctly. It's all about money. The new system allows many more stations on the air. That should mean more advertising revenue. And who wants the new system? The owners of the newly created spectrum. What will it mean for users? Bugger all. You will either have to discard your existing radio or have yet another item of equipment cluttering your shelf. If you discard your existing component system which gives you, apart from AM and FM radio through reasonable quality loudspeakers, you will instead get the miserable tinny sound you now get from other similar-looking portable mantel radios. This will cost you around 200 bucks. The answer is: Don't even think about it. And, if our government really has the money to spread around as they are doing on "digital" radio, how about a bit of locally produced radio drama on the ABC in the way we had "Blue Hills" in the old days. Just dreaming!