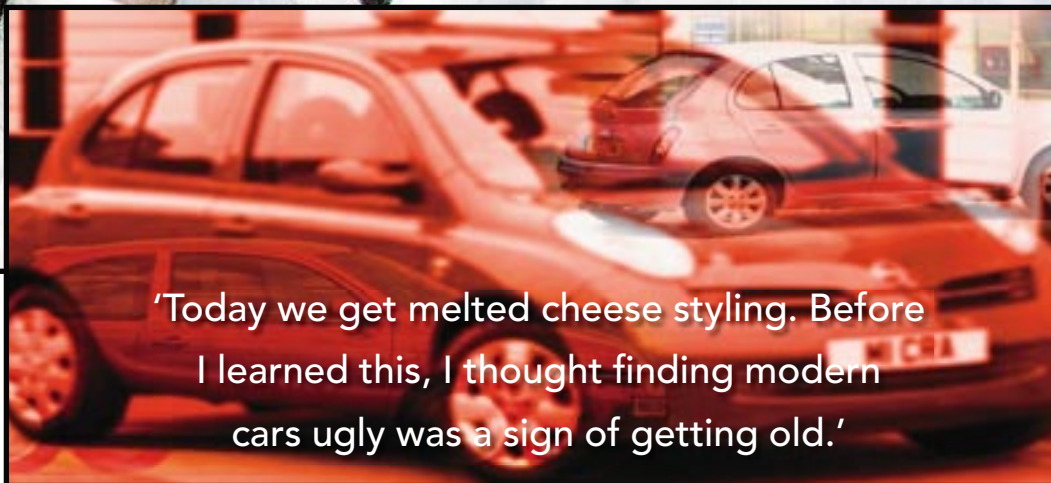


# Classic equipment

Inspired by the leader in the last issue, **JOHN WATKINSON** is intrigued by the notion of 'classic' and considers the entry qualifications and why digital remains so poorly represented in the league table of great and famous gear.

john watkinson



'Today we get melted cheese styling. Before I learned this, I thought finding modern cars ugly was a sign of getting old.'

**WE SAY THAT THINGS** come in threes not because they do, but because when the third one comes along we are reminded that from an early age we were taught that things come in threes and so we find it falsely significant.

In my case the most recent of these experiences was restoring a couple of Quad ELS-63 electrostatic loudspeakers. I would argue quite strongly that these

are classics. Although we don't expect to agree on a full definition of classic, there must be some basic criteria and if most of them are met then classic it is. In the case of the Quads we start with the fact that they were way ahead of their time. Ultra low harmonic distortion leads to an absence of listening fatigue that even today is unusual.

However, some of the features that we now know

are important in loudspeakers are also there. Take phase linearity, for example. The Quad is a minimum-phase speaker and correctly reproduces the time information in transients that 99% of today's speakers destroy. Take directivity. The Quad emits sound that has substantially the same quality in all the directions in which it is radiated. Again most of today's speakers simply do not achieve that.

The build quality is also there, and these things can go on forever and indeed many of their owners want them to.

So it emerges that one of the definitions of classic is that some aspect of the device reached a pinnacle of performance that subsequent devices fell short of, probably for economic reasons.

Experience two was giving a well-respected friend a ride in my 1978 Jaguar XJ-S. Wafting along in comfort and silence the question came: 'How old is this thing?'. Following my answer there was a pause before the reply came: 'What has the motor industry been doing for the last 25 years?' I suspect Zen will indulge me on this because he used to have an XJ-S.

The answer to my friend's question is that the motor industry exists to make money first and cars second. Today's cars are cheaper to make and they all suffer from it. Technical quality has been replaced by hype. A good example is the way Jaguar bangs on about the lightweight aluminium construction of its latest models. Unfortunately the new XJ saloon with its alloy engine and body weighs about the same as the XJ-6 of 1968 with its steel body and iron engine.

An engineer knows that aircraft went from wood to alloy and then to steel, so why are cars going back from steel to alloy? Simply because it is cheaper to make complicated assemblies by casting in one piece instead of assembling pressings by spot welding. But cast aluminium isn't as strong so it has to be thicker. No one told the marketing people.

The Luddites didn't like the XJ-S because it did not resemble any previous Jaguar, but in my view it's a classic. Certainly from a vibration and noise suppression standpoint it holds its own today. From a crosswind stability standpoint it also takes some beating. After all, it was designed by an aerodynamicist at a time when most of the motor industry couldn't even spell the word. I suppose using 12 cylinders in an engine was an early form of oversampling. But then the engine had to be smooth because there isn't room in the engine bay for it to vibrate!

I think the XJ-S falls into Zen's definition of classic: '.....they have to be built well or be so beautiful that they encourage humans to preserve them.' Jaguars of that era were not built well. The politics of the work force made Trotsky look conservative. They could rust for England and there was a competition to see if the rainwater leaks could outnumber the oil leaks. But we do preserve them. Last year I had the pleasure of waking up to find half the population of an Italian village staring at the XJ-S. Most of them were Lamborghini drivers, tractors, that is.

Car styling has suffered two-fold in recent years. First, when all the good shapes have been done, the relentless search for novelty has to embrace the bad. Secondly computer aided design screens do not show the designer what the car looks like in the street. What you see is not what you get. In the old days, a full-sized clay model was made that could be wheeled outside to see how daylight played on it. Today we get melted cheese styling. Before I learned this, I thought finding modern cars ugly was a sign of getting old. It used to be all fields round here, you know.

I think it is well understood that there has been

## slaying dragons

classic audio equipment. Certain valve-type condenser microphones represented a leap in quality because they offered lower distortion than moving coil types and more choice of directivity than ribbons. More recently I regard the Soundfield microphone as a classic.

But it seems to me that most if not all of these classic audio devices are analogue. Despite my obvious association with digital audio, I have a lot of time for analogue technology, especially when it is done well. The biggest restrictions in analogue audio are in recording, transmission and random access. Analogue recording media cannot be made perfect, nor can analogue transmission channels and random access is almost unknown in analogue audio, unless you include the Mellotron.

Those areas aside, analogue can do very well. Microphones, loudspeakers, amplifiers and other real-time devices can excel. The signal path of a mixing console can be very finely implemented in analogue, but the problem comes when people want features such as recall.

I have mentioned elsewhere that since the invention of PCM by Reeve in the 1930s the convergence of audio and computers has been inevitable. Once audio is digitised it becomes data and only differs from generic data in that a certain timebase is implicit in its reproduction. The situation then is simply that professional analogue audio equipment is built

in small numbers whereas general purpose digital processors are built in staggering volume. With such economy of scale there is no contest.

Let's suppose we are designing a new tape recorder and we decide to simulate it using a computer. The design is rapidly perfected but before we go into production someone realises that the computer doing the simulation is cheaper than the proposed price of the tape recorder. Thus we simply sell the simulator.

The economy of scale in digital hardware is not the only factor. The other one is known as Moore's Law, due to Gordon Moore, one of the founders of Intel. Back in 1965 he observed that the number of transistors on a chip had doubled every year since the chip was invented. Nowadays it has settled at a doubling every 18 months, so this is an empirical law rather than pure physics, but it does explain a lot.

The more transistors that can be squeezed on a chip, the more powerful it becomes. As a result mathematical techniques that once were too complex to contemplate become economic on a chip. The microprocessor is one example, however to keep the relevance to our industry, the CD became possible when Reed Solomon error correction could be done on a chip. Subsequently DVD became possible when the Discrete Cosine Transform could be done on a chip.

Although not covered by Moore's Law, the economics of digital storage devices follow a similar trend, with the cost of a gigabyte falling as fast as a

streamlined anvil. These factors together mean that digital equipment tends to be commoditised to death and transitory. These factors are essentially polarised against the concept of a classic product. And no one in their right mind would suggest Windows as a classic, except of mediocrity.

I considered a few digital devices and rejected them. The DAT format had unprecedented recording density, but it couldn't shake off its consumer background and guiding the tape pack with liner sheets was a no-no for a professional device.

The digital multitrack formats were considered, but these were only digital as far as the signal path went. In all other respects they were carbon copies of analogue multitracks, right down to supporting razor blade editing, and thus were unhealthy hybrids.

So is there a digital classic? I think the great exception to all I have said has got to be the Compact Disc. It buried alive its vinyl predecessor in bandwidth, crosstalk, linearity, SNR, playing time, size and ease of access and handling. And being a classic it has endured and subsequent formats have largely been inferior. Take MiniDisc, whose compression algorithm was not perfected using Quad electrostatics. Take DAB, whose advertising hyperbole rivals that of Jaguar Cars. And take MP3, the audio industry's answer to the Nissan Micra, recently described by a motoring correspondent that I could hug as looking like one of the Mr Men on wheels. ■