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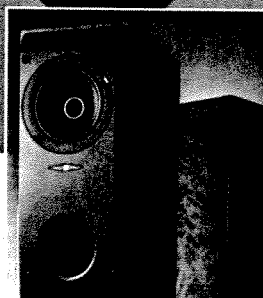
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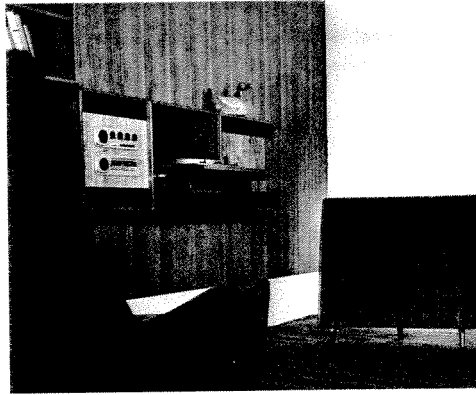
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*There is nothing better
than a pair of the
original Quad ESLs,
except possibly two
pairs...*

by CHRIS BEECHING

*Mono or stereo?
This early publicity
shot shows a single
Quad Electrostatic*



DOUBLY ESSENTIAL: MORE ON THE ESL

Of course, no one should forget just how far ahead of its time the Electrostatic really was. It is, perhaps, ironic that since the introduction of the ESL63 in 1982, the original speaker has risen in many people's estimation

Quad's original Electrostatic is still one of the most revered loudspeakers in hi-fi. Ever since its introduction in 1957, it has wooed many, and once you've lived with it, it's hard to get used to anything else. In a previous article ['The Essential ESL', Nov 93] I described some ideas for updates and minor mods which do not alter the basic character of the speaker. But it is possible to take things a lot further!

I would never pretend that the Electrostatic (now retrospectively designated '57' to avoid confusion with the current ESL-63) isn't flawed. But the speaker's inherent strengths outweigh by some considerable margin any weaknesses. In fact, if you ask a non-owner, or someone who hasn't listened to them, you'll find the list of supposed 'weaknesses' long, and probably inaccurate.

First to be mentioned is the speaker's dipole configuration, but it could be argued that this is one of the speaker's strengths. As with anything worthwhile, a little bit of effort is needed to get the best out of it, but it would be wrong merely to dismiss the panel's rear radiation as 'unwanted'.

The diaphragm in the treble panel is often said to be too large to perform well. The bass diaphragms are not large enough, and not mounted rigidly enough, to couple effectively and efficiently with the air in

the room at low frequencies.

In general terms, to produce high volume levels at low frequencies a speaker diaphragm must be able to move a lot of air, which means that the cone or diaphragm must be large, or (as is the case with modern long-throw drive units) must move back and forth quite a long way. In the case of the Electrostatic, there is a practical limit to the deflection of the diaphragm, as the perforated plates must be relatively close in order to exercise their charge over the whole surface of the diaphragm to get the thing to work.

But the historical perspective is also important; the Electrostatic was designed and developed at a time when the bandwidth of audio replay systems was much more limited than it is today.

In the 1950s, although hi-fi amplifiers could reproduce low frequencies cleanly, contemporary turntables produced relatively large amounts of rumble. If not filtered out in the amplifier, such unwanted very-low-frequency signals could cause speaker cones to flap uncontrollably, or, in the case of the Electrostatics, large movements of the diaphragm, which could cause arcing as the diaphragm came too close to the charged plates. Like other manufacturers, Quad designed its pre-amp (the 22) with limited low frequency extension, in

order to protect the loudspeakers. A really extended upper frequency performance was not part of the design equation, either. Hi-fi systems of the time were limited at the extreme top end by the tracking abilities of pick-ups, and in any case a response to 15kHz was regarded as ample. Thus, the Electrostatic's designed strength is in the mid-range, and its response extends typically from about 70Hz to perhaps 17kHz.

In valve days amplifier power was at a premium, with only about 20W available even from the more adventurous makers. With a sensitivity of around 86dB, the Electrostatics could give good results from around 12W (Quad's matching II power amplifier was rated at 15W). Nonetheless, the Electrostatic was criticised for being less sensitive than contemporary conventional speaker designs.

One early review commented that when the cat walked past for the first time while the Electrostatic was playing, its fur stood on end. This may have been caused by the electrostatic charge: but it could have happened just because the speaker did (and does) have the ability to recreate uncannily accurate and life-like sound images in the home.

STACKING QUADS

Some users, while appreciating the Quad's unbeatable realism, have attempted to overcome its limitations by stacking two pairs. This in effect creates a very large bass drive unit, and providing both speakers in each stack are driven by the same amplifier to ensure phase integrity, bass power and extension can be noticeably improved. Also, by connecting them in parallel the overall impedance curve is considerably flatter, and hovers around 8 to 12 ohms rather than the 15-going-on-30ohm curve for a single panel.

Over the years, the advocates of this approach have included many

*Quad worker
assembling an ESL*



notables of the hi-fi world. SME founder Alastair Robertson-Aikman, who over the years has striven to create the best possible replay system in his superb purpose-built music room, began with just one pair of Electrostatics, then used a stacked pair, and somewhere along the line used eight pairs per side, arranged in a continuous symmetrical arc. Mr Robertson-Aikman's system now uses two pairs of Quad ESL-63s, again with one pair facing forward while the other pair are positioned outside these and facing across, facing across the room. The '63s have been modified to give better structural rigidity.

On the other side of the Atlantic, one of the true luminaries of the American audio scene also experimented with Electrostatics. In the early 1970s, having just founded the company that bears his name, Mark Levinson built systems using stacked Quads. He appreciated the relaxed performance, utterly transparent midrange, and that 'window on the concert hall' feeling. Despite all this, Levinson felt ultimately that the Electrostatic did have other failings which he could not tolerate. The sit-

Mark Levinson was an early advocate of stacked Quads, which he used with his own electronics

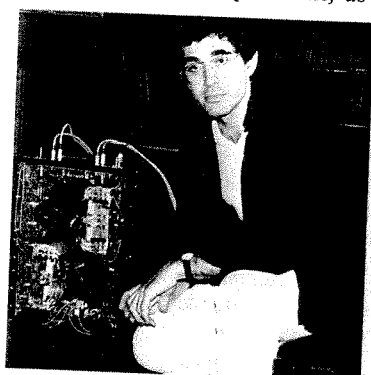
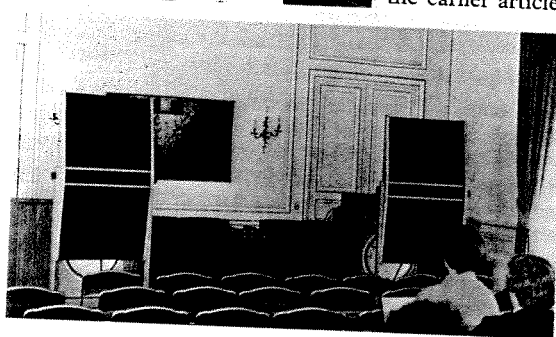


diagram suggests commoning the mains supply, and parallelling the speaker feeds from the amplifier.

Room placement is a subject for experiment, as the low frequency cancellation effects will now occur at different points to those found with a single pair. Be prepared to spend time getting it right in the room. Once this is achieved, the imaging improves considerably too. As I mentioned in the earlier article,



higher than the standard small wooden feet.

One improvement, not desperately expensive, is to power each panel with its own HT supply. Russ Andrews (RATA) can supply an upgraded single power supply with higher-quality components, or supplementary HT blocks. Once fitted with these, the speaker took on a completely new guise, being subjectively faster, more dynamic and with a greater degree of transparency. Overall sensitivity changes little, whilst becoming a little more 'amplifier friendly'. For full information on RATA's Quad mods, call (0539) 823247.

A completely new crossover unit, to be connected to the transformer in place of the original, has been on sale in the USA since 1979. This is The Quad Mod by John Koval of California. Koval claims that this gives a flatter frequency response through the mid/treble: the bass is not significantly extended, but it is said to be improved. The overall result is a brighter sounding speaker, which received favourable comment from Dick Olsher [again, *Stereophile*, Aug '87]. Sensibly, John Koval urges owners to make sure the speakers are working properly before making any mods. He can be contacted on (0101) 714-838 6555.

Some owners have undertaken still more drastic alterations to the original design. There arose in Bristol a (notorious?) band who proceeded to strip down Electrostatics and rebuild them on more rigid frameworks. One enthusiast, Dave Park, even changed the orientation of the panels. He placed the bass ones horizontally and put the tweeter across the top [as illustrated in the Nov '93 article]. The timber framework was much heavier and more substantial than the original, and the panels were very rigidly mounted. Triangulation struts added further rigidity to the structure.

Subjectively, the performance characteristics were now quite different to those of the standard model, and the speaker acquired a new 'get-up-and-go'. Bass response, though probably no deeper, also had more weight, probably due to the increased rigidity of the frame which would allow the diaphragm to wholly drive the air and not end up moving the frame as well.

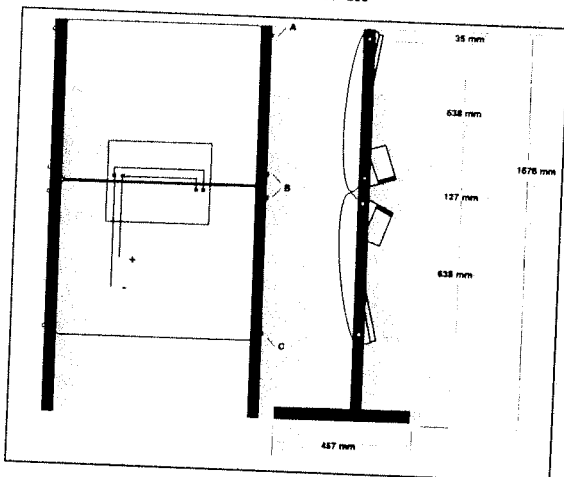
Dave Park has experimented with many configurations of panels including the equivalent of two stacked speakers per side. He added a new dimension to the performance by the judicious application of (horror of horrors) a graphic equaliser in the system, just to tailor out a small hump in the response at about

removing the front grilles will also improve matters, but beware the dangerously high voltages laid bare.

OTHER MODIFICATIONS

Experimenters in search of the ultimate transparency have removed the hessian-type absorbent material behind the bass units, with mixed results: Dick Olsher [writing in *Stereophile*, Aug '87] suggested that this produced a trade-off between transparency and bass control, but he warned against removing the felt padding behind the central treble unit. (Note that if this is removed, care should in any case be taken to insulate the exposed HT connections against possible shorting.)

Writing three years earlier, when the ESL-63 had been launched but the old Electrostatic was still in production ['Panel power', *HFN/RR*, June 1984], Martin Colloms reported that he had achieved improvements by removing the padding behind all the units, provided the speakers were far enough (say 1.5m away) from the rear wall. The absorbent material is there to soak up at least some of the rear radiation from the panel, and this is necessary when the speakers are fairly close to a wall: otherwise, wall reflections will colour the sound. However, the material itself must produce some reflections, giving audible coloration and a loss of transparency. In the same article, Martin explored the largely beneficial effects of raising the Quads on stands somewhat



From Quad's information sheet: 25mm square Speedframe or similar material is used to build the double-height frame. Screws must only penetrate the wooden framework of the ESL to 0.5in

ing limitations, limited dynamic range and sensitivity to high-power amplifiers (with possibly damaging results) eventually led him to abandon the Quads in favour of 'more rewarding' designs. The stacking idea survived, though: in 1986, when Mark Levinson developed the Amati speakers for his new company Cello, he used a special version of the Acoustic Research LSTs.

Quad acknowledges that stacking Electrostatics can bring about performance gains, and has provided information on how it can be done. The side pieces are removed and replaced by a single taller frame, in which the two speakers are mounted one above the other. The lower speaker is upside down, so the connections are brought conveniently close together. Quad's connection

LOUDSPEAKERS

2kHz. However, Dave has now settled on a different design. He has retained just two bass panels per side. This, he says, is to retain the clarity of the bottom end: 'with four bass panels the bass tended to become too overpowering in comparison', he says. The treble panels are doubled up, and face slightly outwards. The whole lot is bi-amped, with a modified Audio Research valve amp driving the treble panels, and a Quad 606 driving the bass. Each panel is separately powered by its own HT supply, and each has its own audio transformer too. The sound is quite unlike their (at this stage, crude) appearance, being lucid, dynamic and tremendously transparent and detailed. Dave still uses a graphic equaliser, just to tailor the 1-2kHz band by a single dB which certainly makes them perform well: if set to a flat response instead, they do lose just a touch of 'involvement'. I felt that these are perhaps the cleanest pair of Electrostatics I have ever heard, and the bass, for once, has all the right perspective and weight: the slight 'but' hanging in the air is that they will probably not sound as good in another room.

Turning the other cheek, Dr Mike Hopkins has a completely standard

pair of stacked Electrostatics, stacked as per Quad's 021 Information Sheet. Hopkins found that stacked like this they become less sensitive to room dimensions and type, so this may be the answer for many. The reason for the apparent reduction in room-sensitiveness may be that the speaker is larger, and so, essentially, is more in control of the air in the room, the room, conversely, has less effect on the speaker. Thus, the speaker drives the room more than the other way round. But if ultimate performance is your holy grail, a compromise between minor modifications (as in 'The Essential ESL') and complete reworking as per Dave Park might be the best answer.

No one should forget just how far ahead of its time the Electrostatic really was. Even since the introduction of the ESL-63 in 1981-2, the original speaker has risen in many people's estimation. Whether they are seeing it through rose-tinted spectacles just because it is no longer manufactured, I don't know. But it has a beguiling sound quality which many find superior to, or should I say more acceptable, than that of the newer model. And of course, credit must go to Quad for continuing to supply most of the spares for this



wonderful creation: at the time of writing, the only part you can't buy from Quad is the wooden frame.

There seems to be some consensus among enthusiasts that the 'more than one pair' approach is ultimately the best. Having now heard several pairs in various configurations, I have to agree; one pair is no longer enough on its own, but finding space for two pairs is currently beyond me. Never mind; when I move, I'll put a large enough room on top of the priorities list. If you can, listen to a stacked pair. You'll be in for quite a shock — and then there's no hope for you.

The ultimate? This 1963 demonstration by Griffin Radio at Solihull Civic Hall used 12 ESLs per side, each driven by a Quad II amplifier!

Supplier:
For spares and service, Quad Electroacoustics Ltd, Huntingdon PE18 7DB
Tel (0480) 52561

sidelines

Despite my Berlioz enthusiasms I listen to a fair amount of chamber music, mostly string quartets. My favourite venue for live performances is the recital room of Harrison House in Halifax, which has steeply tiered seating, a high ceiling, and a solid reflective wall behind the players. One can also sit close enough to gain the intimacy for which a good deal of chamber music was originally conceived.

At the other extreme I've heard quartets where a large hall dictates that even the nearest seats are set well back. At one RNCM concert, for instance, I estimated that the players subtended a listening angle of a mere 20°. This still grants sufficient visibility of instrumental exchanges to aid listeners in following the musical argument, but doesn't permit differentiation of that same information to any worthwhile extent via ears alone. Thus insofar as sight can aid sound, a blind person (and we are all blind when listening to recordings at home) is disadvantaged if the performers aren't spread over a sufficiently wide angle for the ears to provide recompense.

Contrary to cautious BBC-style conventions, I therefore suggest that

small chamber ensembles should be recorded to occupy the full soundstage. Certainly in my case a real quartet would easily fill the space between the loudspeakers, and while I'm not suggesting that a domestic acoustic could accommodate the equivalent of live performances, there's no intrinsic reason why the conventional 'add-on' effect achieved by providing some ambience behind the players should not be allied to a firm, stage-filling image. A timid central smudge does poor service to a great art-form.

Paradoxically, I was prompted to set down these thoughts by a category of chamber music to which they don't apply. During a recent holiday in Ireland I was sitting in a pub in the town of Ennis sipping my Guinness, when a quintet of folk players suddenly settled along a bench facing my table. They started a three-hour marathon of traditional Irish dances. Guitar, banjo, two flutes and accordion were so arrayed that if I'd had a crossed-pair microphone clipped to my jacket it would have been perfectly placed for the players to occupy the full soundstage of a recording.

Those seated at our table were

privileged indeed, but while our nearness made each instrument's contribution very distinct, this was hardly necessary (loudness and immediacy apart) for appreciation of a music without pretensions to melodic or harmonic sophistication.

There was a degree of jazz-like extemporisation, and every so often a tune's minimalist repetitiveness would be relieved by a key change. But while I loved its huge energy, it would have been just as comprehensible *qua* music heard at the sort of distance I find frustratingly unrevealing with Haydn or Shostakovich.

Instruments apart, I wondered whether it had changed very much since 1800, when the local theatre was the birthplace of Harriet Smithson, wife-to-be of Hector Berlioz. I had discovered this Ennis connection earlier that same day, and was intrigued to find that the building had its walls covered with information about the actress and composer. They were thus very much in my thoughts that evening, so whenever Berlioz's Irish links come up in future they'll be associated with foot-tapping jigs and reels, heard at close range in a crowded pub.

John Crabbe

Contrary to cautious BBC-style conventions, I therefore suggest that small chamber ensembles should be recorded to occupy the full soundstage