# Cable Controversies *(Part 2)*

IN THIS SECOND PART OF HIS MAGNUM OPUS ON HI-FI CABLES, MARTIN COLLOMS EXAMINES THE ISSUES OF CABLE DIRECTIONALITY AND BI-WIRING, AND REVIEWS 16 TYPES OF SPEAKER CABLES, FROM THE SERIOUSLY CHEAP TO THE SHOCKINGLY EXTRAVAGANT

MARTIN COLLOMS

The first part of our audio cable coverage examined some of the basics of construction, together with the equally important issue of radio frequency interference – not just the audible kind (ie recognisable noise from a radio station), but also its more insidious forms, which can result in loss of quality without obvious audibility. This second chapter will begin by looking at two further aspects of cable performance, directionality and bi-wiring.

Differences between cables might well not seem too relevant for an average audio system in an average state of tune, and one can forgive those who prefer to devote resources on buying more music instead. Those who are keen and perceptive, routinely expecting and achieving high performance from their systems, will appreciate that cables have become an increasingly important part, and will hopefully find our findings useful.

**Directionality**

This difficult subject deserves deeper treatment than is possible here. Directional effects are generally quite subtle and may be confused with the simple consequences resulting from unplugging and reconnecting a cable, which may involve several changes. Simply moving a cable can affect the sound, as it may or may not be touching something which might carry sound-induced vibration. It might be closer to the hum field of a nearby mains transformer. It might have been physically stressed, and some cables take a while to relax and run in before achieving a stable sound. By breaking and remaking the connection between plug/spade and socket/binder, some oxidation may be removed, giving an increase in freshness and clarity. All these factors can complicate a test in which a cable is reversed to try and assess its polarity or directionality – ie which end sounds better connected to the source.

However, a clear cause of directionality is down to the cable designer, and the choice of shielding and RFI suppression, if fitted. Shielding is usually not symmetrical, ie it is generally connected to the sending end only. Where this RFI suppression is terminated may therefore affect the sound of the system. For interconnect cables, the pre-amp grounding is usually the best place to centralise, since power amplifiers often have higher distortion, poorer high frequency characteristics, and are more susceptible to RFI. For speaker cables fitted with suppressor units or terminators, these will be asymmetrically placed along the cable length, and may sound different if the cable is reversed, since the termination is now out of position relative to the amplifier output, and the cable length might act as an unwanted radio aerial.

**Bi-Wiring**

I am not altogether convinced by bi-wiring, but since the concept, originally patented by Toshiba in 1976, has become quite common, its behaviour and ramifications cannot be ignored.

I agree with David Wilson of Wilson Audio, in believing that a complex high performance loudspeaker can only be finely balanced when as many variables as possible are controlled. One example of this is the provision of a single high quality connection to the loudspeaker. Splitting this into separate connection pairs for each electro-acoustic section of the speaker crossover might allow extra cable runs from the amplifier to be used, but it also introduces the possibility of disturbing the balance of the speaker, due to possible impedance and other differences for the different sections of cable. Such variables (even disregarding the extreme possibility of a customer wiring the frequency-separated sections in random phase) may well seriously damage the original intended result.

A loudspeaker with multiple inputs for bi-wiring must also have a group of terminals, and these must be appropriately linked with wires or jumper straps for single wire use. As supplied, such links are often of marginal quality, and losses associated with the additional terminal contacts, the risk of insufficient tightness, and the possibility of longer term corrosion, are all potential problem sources. Loudspeakers have quite high vibration levels and can easily loosen connectors. Furthermore, the most exotic audiophile jumper wires can be surprisingly costly items.

Anyone in the market for speaker cables might well consider bi-wire (or tri-wire) types because the two (or three) sections will be matched, properly colour-coded, and terminated with a good chance of making correct connections to the compatible loudspeaker. The multi-wire cable option usually has some price advantage over two separate pairs, and worthwhile sound quality improvements that are not illusory are possible once all is in order.

First those jumper links are now obsolete. Secondly, most audio components benefit from handling a smaller part of the frequency range. Each section of the

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loudspeaker crossover draws current through the cable according to the frequency range it's looking after. The treble section therefore selectively draws power from the treble connection and vice versa for the low frequency section, regardless of the fact that both cables see the full frequency range voltage at the amplifier output. While audio voltage will have some interaction with the cable, the associated current component seems to be the more significant, suggesting that magnetic and vibration effects will be more important in bi-wire cable design.

The sound quality improvement from bi-wiring can be worthwhile, and even with relatively inexpensive cables one is immediately aware of greater clarity and definition, more soundstage transparency and depth, better focus, a purer sounding treble, and a tighter, more dynamic bass. Of all the possible cable upgrades, going bi-wire with a well designed cable assembly and a compatible loudspeaker is likely to have the greatest cost/benefit ratio, though some may find the sound slightly less coherent overall for rhythm and timing.

The degree of benefit is not easily explained in terms of overall system operation, which is awkward for scientists. Keith Howard looked at the subject in Hi-Fi News October 2006, discussing two plausible effects: where the drivers act as microphones; and consideration of the current draw of moving coil drivers (which must include distortion components resulting from both inherent electromagnetic and physical motion nonlinearities).

The first suggestion is that the array of drivers, all coupled to a common acoustic load at the front panel, necessarily interact, and audio power from one driver is coupled to another to some degree. Since the moving-coil speaker principle is reversible, this reverse acoustic coupling will result in stray current ultimately flowing back down the cable to the amplifier. There is some theoretical opportunity for the coupled current contributions to mix, or intermodulate across the amplifier/cable interface.

The second suggestion, where potential distortion currents flow down a common path, is more compelling. Even if these do not mix at all via cable imperfections (assuming that the cable is purely a perfect, low resistance conduit), some interaction will occur in practice, because the physical length of the wire must possess a finite resistance. While there is not space here to prove audibility, consider a bass-mid or midrange driver with typically 0.2% of third harmonic distortion, humming away on a 2kHz audio signal. The drawn current drives around the cable loop to the amplifier, and now appears as a voltage due to cable and contact resistances. The dominant third harmonic lies at 6kHz, smack in the treble range, and is therefore happily reproduced by the tweeter. Thus a harmonic which probably could not be heard directly from the mid driver, due to its falling response at higher frequencies, might now be reproduced by the tweeter. Audio signals some 90dB below full level are audible when correlated with music, and calculation suggests that for inaudibility we would need to aim for a common path resistance of less than 0.1 ohm (including the amplifier output impedance), which is rarely achieved.

For example, consider a 4ohm tweeter with 0.4 ohm of total loop resistance. The distortion current component of the midrange will be at about 1/10 or -20dB when reproduced by a standard efficiency tweeter. Operating at 100dB SPL [about 95dB in-room for a stereo pair], the level of mid distortion from the tweeter will be about 74dB less (ie 26dB), where the aural sensitivity threshold, ignoring masking, is about 0dB. There is clearly the potential for audible effects, which would be partly mitigated by the separation of current paths resulting from bi-wiring.

On the subject of audibility thresholds, a few years ago I carried out an informal test working with 22-bit dithered audio material, stored in a 24-bit format. Using a high quality bit changer with a dCS DAC, we listened to the changes that resulted from successively reducing the number of bits from 24. It was a surprise to find the change from 24 to 22 bits was audible, even though in theory the bulk of this change would be occurring at more than 110dB below peak signal level – a tiny 0.0003% distortion, despite listening through speakers no better than 0.15% distortion. Piano became very slightly harsher and more metallic, with less harmony in the chords, sounding slightly more processed and mechanical. This got progressively poorer with further reductions in bit resolution, and like comparable JPEG image data reduction, the addition of dither only hides the artefacts , while the loss of information continues. We can hear remarkably subtle effects.

In their latest book *Loudspeakers for Music Recording and Reproduction* (Focal Press, 2007), Newell and Holland devote half of a chapter to cables, quoting sophisticated tests which show the complex currents, including distortion components, which flow between amplifier and loudspeaker, and which are affected by the cable interface. RFI issues are also covered here. (Impedance matching and more on cable distortion will be covered in HIFICRITIC No 3)

To summarise, if your speaker has bi-wire terminals, it is probably worth using them, and relatively low cost dedicated 'bi-wire' cables can perform this function quite well.

**Cable Tests**

The industry responded generously to our request for review samples. A mix of interconnect and speaker cables

arrived from Kimber, Monster Cable, QED, van den Hul, Wireworld, Russ Andrews, Nordost, Transparent, Van Damme and Cardas. Indeed, so many examples were received we have had to split the results, and will cover the sixteen loudspeaker cables first. A selection of interconnects, and mains cables will be reviewed in the next issue, together with late arrivals.

**Sound Quality Context**

Auditioning cables is something to put off until you have to do it. It is worth doing when it is worth doing; when you have enough product and feel properly committed to the task. Sometimes, listening to order can be a trial, and where fairly small subjective differences are involved, you have to feel properly dedicated to the task, and usually undertake some preliminary trials to set the stage.

Cables from a few pounds per metre to two or three hundred pounds a metre are assessed here. In order to ascertain their differences they were auditioned in a very costly reference system, and the cables used had undergone lengthy comparative tests to establish that they did not compromise the test system.

Set against the top scores achieved in this system, the low cost cables will inevitably appear disappointing. However they may still represent good value in a more modest system.

The method may be criticised by pointing out that the differences between cables are much less noticeable in a low cost system, and that the absolute ratings given here are simply not relevant. Our reply is simple: do we really want to know how the cables perform, or should we over-contextualise, and consequently sweep the differences under the carpet?

My aim is to try and seek the truth, namely what is their relative merit? The reference system cost around £50,000, and was quite obviously degraded if connected with the worst cable tried, to a degree where much of the musical point and the notional investment in the system had been lost.

With this survey, which also includes relevant historic designs, we have the opportunity to establish a comparative scoring system which has a top value of 100, set by the best in the test. When better cables are found, this limit will be increased according to the degree of improvement found. Loudspeaker cables are mostly auditioned in 5m metre standard lengths, and the lab results are also scaled to this.

The sixteen speaker cables covered here are arranged in ascending price order, to make it easier to perceive the relationship between performance and cost.

**The Reviews**

## VAN DAMME CLASSIC (2x1.5mm 'Twin Axial')

*(About £20 per 5m pair, unterminated)*


From an experienced studio cable maker, this modest loudspeaker cable is available in 1.5 and 2.5mm conductor grades, and is a simple twin axial construction in good quality copper and studio grade, 'easy flex' PVC insulation. It lays flat nicely.

With quite pleasant midrange tonality and focus, low level detail was masked, dynamics perceptibly softened, and the bass was lighter and lacked the impact of better cables. Some soft grain was evident in the mid treble, and a gentle but somewhat false sparkle in the high treble. The overall sound quality was not unpleasant, which is promising at this very low price. And it beats the proverbial bell wire, or the stuff you get in DIY stores, by a considerable margin.

Dielectric loss was poorer than average at 0.07 (PVC dielectric). Capacitance was medium at 700pF, inductance low and resistance medium (0.11 ohms). I would suggest using the 2.5mm grade for longer runs.

The sound quality score of 14 is perfectly respectable at this budget level and makes this design good value.

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## QED SILVERLINE ANNIVERSARY XT

*(Approx £25 per 5m pair, spades)*

This inexpensive and popular cable falls in the budget group, has no audiophile pretensions, yet helps define why it may be worthwhile to spend more on cable or not. This simple parallel-twin or 'shotgun' multi-strand design has a generous helping of silver plated copper conductor and a tough high quality PE insulator.

And if the following criticisms sound harsh, bear in mind that this cable is being judged in a top class system. The sound was moderately uneven, with less precision of placement in the soundstage, and a 'forward', slightly rough treble. Bass was below average in definition and tune playing, the sense of timing was just average, dynamics were below average, and image depth was clearly constrained. Voices showed some excess sibilance.

In the lab, resistance was fairly low at 0.12 ohms, loss factor very good at 0.0007, inductance and capacitance low at 250pf and 3.3uH respectively.

Taking its modest price into account, this cable does just

fine. Its performance is tolerably well balanced overall, and a score of 17 justifies its position as a market leader.

## WIREWORLD LUNA 16X4 INSTA-WIRE

*(About £50 per 5m pair, spades)*

Delivering a strong first impression, this compact cable sounds taut and focused with good depth and precise image control. The patented construction comprises paralleled ribbon conductors each a lay a flat line of conductors 2.5mm equivalent, with extruded polyethylene insulation. The soundstage was wide and stable, and both rhythm and dynamics were well expressed. It was quite neutral.

In the lab, resistance was a low 0.007 ohms, capacitance was higher than average at 1.3nF, with virtually zero inductance, so it may not be Naim-compatible. Dielectric loss was fine at 0.0087.

The overall score of 33 is very good for the price, so this cable is strongly recommended.

## QED XT 400

*(£100 per 5m pair, spades)*

Using '5 nines' copper with separated stranding in a coaxial configuration and polyethylene insulation, *XT400* came fitted with airlock spades which keep contaminants out of the wire termination.

Surprisingly, this more costly QED loudspeaker cable did not do as well as its cheaper stablemate. Constructed differently from *Anniversary XT*, it seemed to have less depth and clarity, and sound less forceful and involving. Generally neutral there was some residual roughness in the treble range, while dynamic and rhythmic performance was rather below average.

In the lab it was clear that more money had been spent. Resistance was down to 0.042 ohm/loop m, though the dielectric loss was a higher 0.005; capacitance and inductance were still fine.

Scoring just 12 marks overall, unless *XT400*'s low resistance over longer lengths is required, QED's *Anniversary XT* is much better value.

## VAN DEN HUL ROYAL JADE HYBRID

*(£100 per 5m pair, universal spades/4mm)*


I first encountered this shotgun-style spaced-twin cable a few years ago, and it has continued to perform well in lower priced systems. With a fresh sample, fitted with screw on spades, it went up against the latest competition. The construction includes a fair amount of VDH silver-clad copper-stranded wire with a semi-conducting foil insulation and Hulliflex synthetic polymer outer structure. In contrast to some budget cables, this one has class, and is clearly a 'junior audiophile' product. The image has significant depth and width, crisp focus with pleasing perspectives, and while it's not the fastest sounding around, it does have sufficient rhythm and upbeat character to help the music flow. Nit-picking, there is a trace of grain in the high treble, it is slightly dry on low level detail, and a little 'polite' dynamically, but it's also essentially well balanced and musical.

Resistance is quite low at 0.062 ohms, inductance and capacitance are negligible, and the loss factor is also good at 0.002.

This cable scored a very creditable 28 overall, and remains a reliable good value performer, well suited to systems costing up to £3,000.

## WYREWIZARD DREAMCASTER

by Nordost

*(£143 per 5m pair, spades)*

Normally used as a bi-wire cable, but wired on test as a single pair, this twisted-quad, single strand cable with FEP (fluorinated ethylene propylene) insulation looks plain enough, but scored well for its price, with good transparency and image depth. The sound was quick and clear, had some rhythm and drive, interesting dynamic resolution, and a tuneful if slightly light bass. Focus was just average plus, leaving room for improvement here.

In the lab, capacitance was a higher than average 300pF, the loss factor was average at 0.015, inductance was negligible, and resistance is about 0.09 ohms per 5m loop, which is not ideal for very low impedance speakers.

The overall score is 31, which is quite promising, confirming good value and recommendation.

## RUSS ANDREWS/KIMBER CRYSTAL 24

*(£600 per 5m pair, spades)*


This helically wound cable lacks an inner core, and its hollow construction may deform a little if mishandled, though it can be pushed back into shape. Designed by Russ Andrews and made by Kimber, it uses high purity copper in Teflon insulation in sets of 24 wires. It will drive high power low impedance speakers with ease. We were impressed by a top to bottom integrity, nothing out of place, all parameters working in concert to deliver a quite deep soundstage, strong focus, natural perspectives, fine rhythm, good dynamics, strong crisp bass, and clean treble. Low in listener fatigue it looks like a new reference at this price level, providing a good slice of the luxury *KS3035* at a much lower price.

Technically, resistance was quite low at 0.07 ohms, loss factor a good 0.0025, with capacitance and inductance (140pF and 3.8uH respectively) also low.

Scoring high for the price at 47 points, it costs about one tenth of the top references, and is an easy recommendation.

## WIREWORLD ATLANTIS 5

*(£800 per 5m pair, spades)*

This established cable has already shown promise in earlier contexts, with a neutral sound free from emphasis in any part of the frequency range. Construction is balanced co-ax, with silver-clad OFC strands totalling 6.25 mm, and a foam polyethylene dielectric. Sounding quite like the references, its mildly leaner bass and some loss of detail and image depth is largely offset by an upbeat character and pleasing dynamic resolution. Detail retrieval is 'good plus', and its tidy coherent character also helps deliver a good result.

It has low resistance, medium capacitance, very low inductance and moderate high frequency loss. An overall score of 42 makes it worth considering.

## KIMBER MONOCLE XL

*(£1,500 per 5m pair, spades)*

The more costly of the *Monocle* series, this cable is terminated with Kimber anti-vibration rhodium-plated spades. Teflon insulated, high purity, multi-strand copper conductors are arranged in sets of 24 in a cross-woven helix, stabilised on a large diameter core, which is also mechanically damped. Wide bandwidth and good rejection of RF interference is claimed, while bi- and tri-wire versions are also available.

This cable divided opinion. It's clearly of audiophile quality, and pressed more of these buttons than *Crystal 24*, but it also showed a mild shift from neutrality. The tonal balance was perceptibly thinner than the references, with a more forward, up-front perspective. The more 'obvious' treble (which might run in a bit more in time) will require careful system matching if its virtues of fine dynamics and depth, a strong, well defined bass, and an involving upbeat character, are to be successfully exploited.

On test, the dielectric loss was a very low 0.0011, as was resistance at 0.065 ohms. Capacitance was a moderate 2nF, and inductance negligible.

Had it sounded more neutral, this high power cable would have scored about 50; in the event the final overall mark was 40.

## TRANSPARENT MUSIC WAVE PLUS

*(£859 per 5m pair, spades)*

Relatively inexpensive by 'high end' standards, this cable's Teflon insulated helical-wind construction is derived from the now replaced XL cable, and it shows. While there is a little coloration in the upper mid, with slight wiriness on massed violins, it sounds lively and dynamic, with high resolution and impressive image depth and transparency. Focus is very good, as is stage width, while the bass has strong impact and weight. Compared to the very best, there's just a touch of high frequency grain, but not enough to spoil the result.

Loop resistance is very low thanks to the generous copper content in this fat cable. Capacitance is moderate, inductance negligible, and the loss factor is low. Scoring a very creditable 70 marks, this winning combination is a top value recommendation for audiophiles.

## NORDOST FREY

*(£2,300 per 5m pair, spades)*


I have to admit to not much liking some earlier Nordost cables, finding the copper types generally rather undynamic, and the silver series rather bright. I also tried the outgoing *Valkyrja* series, and was not sufficiently impressed to go into print, but the new *Frey* series and also the more economical *Wyrewizards* have changed my view.

This flat ribbon cable has an improved silvered copper conductor finish and an insulating FEP intermediary, which reduces dielectric interaction. Improved gold-plated beryllium copper spades are also fitted. It uses 28 strands of 24 AWG single strand, '6 nines' silver-plated copper conductors, individually wrapped.

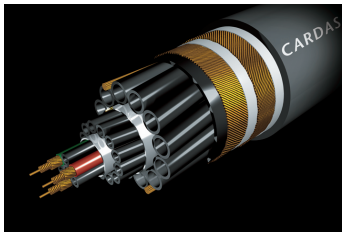
The sound was slightly small in scale, a little less dynamic and expansive than the references and not quite as clear or well focused; in fact it's a bit quiet and restrained. On the plus side all the other quality parameters were rated above average, with a pleasing tonal balance, including a refined, well balanced treble.

On test, inductance is higher than average but still a quite low 3.8uH, loss factor (10 kHz) is low at 0.0025, capacitance is very low at 140pF, and loop resistance is also low at 0.07 ohms.

No one could object to this well tailored design, which scored 35 marks overall, though it is too costly to recommend.

## CARDAS GOLDEN REFERENCE

*(£ 3,200 per 5m pair, spades)*




George Cardas makes play of the golden ratio concept which the ancient Greeks favoured for architectural proportion, and which does make for pleasing room acoustics. He uses these geometrical relationships in the physical design of his cables (www.cardas.com).

It's a wide-band cable of high purity copper, of Litz construction, mainly air-spaced with Teflon stabilisers. Rhodium-plated spade connectors were fitted.

This cable is clearly one of the best, providing a very neutral and spacious sound consonant with the Cardas *Golden Reference* interconnect and also *Gold Cross*. Bass definition and precision were both rated 'very good', while space, clarity and focus were first rate, comparable with some of the finest loudspeakers made.

I measured a negligible 0.1uH of loop inductance, a low 120pF of capacitance, and a low resistance based on an equivalent 5 AWG conductor gauge.

Dynamics and timing were also most rewarding, giving an overall score of 90, and ensuring firm recommendation.

## VAN DEN HUL SUPER NOVA

*(£3,450 per 5m pair, universal connectors)*


Normally supplied in 3m lengths, this transparent crimson clad cable with huge gold plate terminations looks spectacular. There's lots of copper, it weighs a ton, and is as stiff as a steel hawser. A four-conductor cable using copper strands with silver extruded coating, when run as standard single pair it has a super low resistance of 0.003 ohm per 5m.

Perhaps predictably it gave a strong impression with ultra-firm and powerful bass slam. Focus was also very sharp, and stage width was also excellent. Clearly a classy cable, ultimately it did not hit the big time due to a shade of mid timbre leanness, plus an up-front, rather close perspective, sounding a bit larger than life, yet also masking some micro dynamic details: it wasn't very subtle on subtle sections. Finally more depth and transparency is expected in this price class.

Capacitance was higher than usual at 960pF. Dielectric loss was a very good 0.0014, and we managed to measure about 0.005 ohm for a 3m non bi-wired loop on my bridge, say a comparable 0.008 ohm for 5m, the lowest yet. The overall score is 35, which is respectable but not inspirational, though it would look great in a custom car audio setup (actually suggested by vdH).

## KIMBER KS 3035

*(About £5,700 per 5m pair, WBT spades)*

This hybrid silver and copper cable is a variant of the legendary *Black Pearl* and has been a stalwart for some years. Built on a low resonance stabilising core, the Teflon insulated vari-strands are built

as a close tolerance helical transmission line.

Reassessed here, it performs as strongly as ever, with a delightfully neutral tonal balance, excellent clarity, and deep image perspectives. Focus is very good, combined with wide spacious images and a pure treble. It is dynamic and involving, with powerful bass, just slightly softer here in ultimate impact than the most costly references. Loop resistance is very low at 0.07ohms, capacitance is low at 1nF, inductance is negligible, and the loss factor is also a quite low 0.011.

Of the *KS* series, this is the best value, and while it remains very costly, a high score of 72 confirms its high standard of performance.

## TRANSPARENT REFERENCE XL

*(£9600 per 5m pair, spades)*
Teflon helical spaced

I have used the outgoing *XL* for some years and had not found a convincing replacement. Now in *Reference* guise, the new *XL* shows incremental but perceptible improvements over the original in almost every sphere.

The old *XL* was regarded as a sledgehammer design with high neutrality and quite exceptional focus and transparency. Dynamics were also very good, and it had substantial musical entertainment value in a high end system context. Happily, this new cable has significantly less coloration and is still cleaner, with deeper imaging and better focus, revealing still more in the program. Resistance is very low, and like its predecessor it has an RFI terminator which improves sound quality consistency. Dielectric loss is low, capacitance moderate and inductance negligible.

It conveniently sets the reference score for this group of speaker cables at 100 points – which is not 100%, as better cables will eventually and inevitably emerge. Highly recommended for its obvious high end performance.

## TRANSPARENT REFERENCE MM

*(£15,000 per 5m pair, spades)*

Substantially less expensive than the eyewateringly costly *OPUS*, this cheaper design would still be top of the line even for very wealthy mortals. In pure hi-fi terms it is top for me, in definition, clarity, image depth and with top class transparency. It also has superb bass and amazing focus. Yet it was marked just slightly below *XL Reference* due a slight shift from neutrality, a more forceful, up-front quality which means more careful system matching. In some systems it may well be the best, but in attempting to define a balance of perfection, this one is just slightly off key.

This RFI terminated cable has vibration insulated feet for the filter box and very low 0.007 ohm resistance, above average capacitance of 1.34 nF, and low dielectric loss. Inductance is almost zero. This cable will be an effective partner for high power speakers with current-hungry bass sections.

The score of 93 is true reference quality, though it should be auditioned in the intended system context, and those with systems costing less than £100,000 should not apply.

**Conclusions**

Putting cheap cable in a big system can quickly cut it down in size, creating confusion and criticisms of image clutter, loss of clarity, grain and roughness, alterations in timbre (such as midband coloration), and high frequency excess. The sound is likely to be more two-dimensional, with weaker bass, a flat stereo image, and a lack of dynamics and detail, all of which will serve to demonstrate that the potential performance of high quality audio components will only be unlocked by sensible choices of interconnect and speaker cable.

Invidiously perhaps, a top class reference system will continue to operate with the cheapest cable. Without experience of what is possible, one might think: “Not a bad sound; powerful, large scale; perhaps it’s not properly aligned and adjusted.” Changing the speaker cables or interconnects alone will not do, as one will mask the other. Do both and the transformation can be revelatory.

Cable choice is complicated by some degree of system dependence. Cables often have a degree of ‘character’ which may complement or fight against a given system. Strong, low resistance cable is often better with big low impedance speakers, and here I find that spades are definitely better than 4mm spring loaded terminations.

In my opinion, only the very best systems will require costly cables priced at more than £200 per stereo metre. However, in the context of a well balanced £70,000 system, an extra £5,000 spent on loudspeaker cables of sensible length was clearly money well spent in terms of total system sound quality.