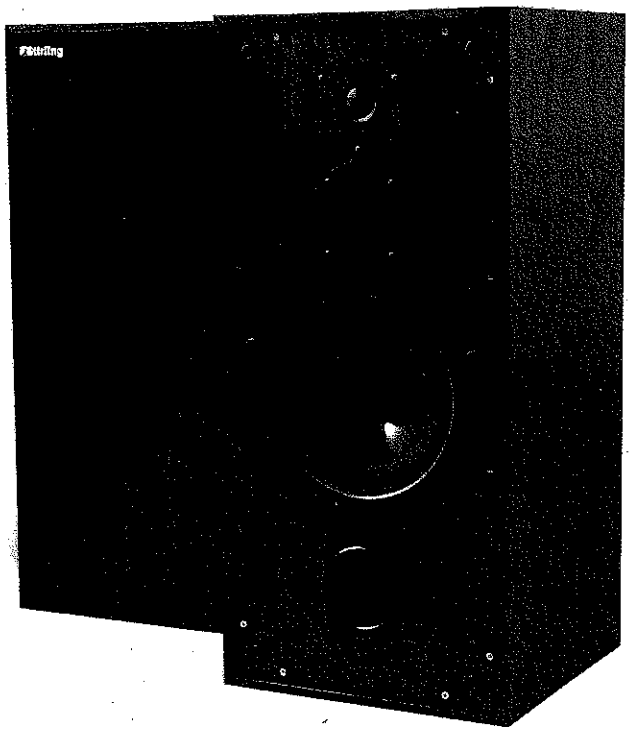

Stirling Broadcast LS3/6

An Oldie But A Goodie

Robert E. Greene

One of the grand chapters in the history of audio was the BBC research program some decades ago into how to make speakers with a truthful sound. The BBC had the worthy idea that it would be good to know exactly what its broadcasts actually sounded like, and it undertook to develop speakers that would do the job, commercial models not being sufficiently accurate nor reliably identical. The BBC was in effect seeking the absolute sound before there was *The Absolute Sound*. The most famous speaker to come out of this program was the popular LS3/5a. At least this was the most famous in the U.S., where it joined the Volkswagen as something to show that one was European-with-it. But the best speaker that came out of the BBC program in those days—the late 1960s and early 1970s—was the LS3/6, the BBC version of the speaker marketed to begin with as the Spendor BC-1.

The detailed history is a bit convoluted. In summary, Spencer Hughes, who was working in the mid -1960s for the BBC research program, developed vacuum-formed Bextrene cone drivers and designed the BC-1 speaker around one of them as a bass/mid driver. (The company name Spendor comes from Spencer plus Dorothy, his wife's name.) The BBC refused the speaker at first, this being a time when, in looking for loudness for rock, it was losing its otherwise mostly good sense. (The BC1 was not a large-signal speaker.) But respect for quality prevailed and the BBC decided to offer for license in their LS series their own version of the BC-1, the LS3/6. The LS3/6 was essentially the same speaker as the BC-1. You can find Spencer Hughes' own description of the history at http://www.cicable.de/pdf/bc1story.pdf. Long time passing!

When TAS started up in 1973, attention was naturally drawn to the BC-1, with HP calling it "the one and only." On a personal note, I bought a pair of BC-1s not long afterwards—my first really serious speakers, and my reference when I joined the TAS staff.

The BC-1 and thus by implication the LS3/6 acquired an almost legendary status. Later speakers from Spendor also earned rave reviews and high reputations. But somewhere in the back of the mind's ear, to borrow HP's phrase, the midrange in particular of the BC-1 remained something of a standard—to this day.

Now, Stirling Broadcast, well known already for reissuing the LS3/5a, has undertaken to reissue a modern LS3/6. Almost poetically, it asked Derek Hughes, Spencer and Dorothy's son and a distinguished speaker designer in his own right, *auteur* in particular of the remarkable Spendor SP1/2, to undertake the design work. And design work was required since the drivers of the original BC-1 are no longer available and have not been for some time. This was more than a touching gesture. Derek Hughes is in a unique position to understand what was involved in making a speaker to match the LS3/6 specifications. And match it it does. The Stirling Broadcast LS3/6, in fact, earned on test by the BBC an official license, all these decades later, as meeting the specifications of the original licensing of LS3/6. (The BBC policy was and is to offer its models under license to any manufacturer who will undertake to produce the speaker as specified.)

Of course the question uppermost in mind must be whether this is just a charming exercise in nostalgia, a Proustian remembrance of things past, or whether it is a loudspeaker of excellence and vitality in today's world. I say with no hesitation at all that it is the latter. No speaker today could be the unprecedented phenomenon that the BC-1/LS3/6 was when it first appeared, redefining as it did what was possible in low coloration for box speakers. But the Stirling Broadcast LS3/6 is a great speaker without question in my mind by contemporary standards, as well

as a worthy tribute and successor to the original. (Hereafter, I shall just call the speaker the LS3/6 since historical discussion is now largely concluded.)

HOW CAN THIS BE?

We live in a world of rapid change and nominal progress, sometimes even real progress. So one has to ask one's self from the start how can it be that a speaker that is in effect a modernized version of a design from more than forty years ago is still among the best speakers available. How can the LS3/6 compete in today's world?

For one thing, while audio has changed, acoustics is a mature science and has been for some time. Great acoustic ideas of the 1960s are great ideas now. Second, the main change in speaker design, with all due respect to developments since, has been in improvements in driver behavior, and the LS3/6 uses modern drivers. The drivers are proprietary and custom-manufactured to specifications for Stirling for the LS3/6. Stirling is reluctant to reveal what company actually manufactures the drivers and I respected its privacy to the point of not pressing the point. But the bass/mid driver in particular, the heart of the speaker, is a superb one, to the degree that it seems to me really competitive with the Harbeth bass/mid driver, which is to say, with the top of the class. (Indeed, if I had not known that Harbeth's RADIAL material is proprietary to Harbeth, I would have suspected that this material was used, so similar are the drivers in sonic character to my ears.)

It is worth pausing for a moment to appreciate what the seemingly eternal acoustic ideas are that, combined with the superb drivers, contribute to making the LS3/6 a design still among the best of today.

First of all, the speaker covers the whole range up to 3kHz with a single driver. This means that it has a kind of coherence that escapes multi-way speakers with crossovers somewhere around 500–600Hz, say. In the LS3/6, the whole range of musical fundamentals and a good portion of the harmonics of most musical notes emanate from a single driver. Of course many two-ways follow this pattern, but the LS3/6 has a large enough (7") driver and box that it is much more convincing in the bass and the lower mids than small two-ways. While for large music to be played really loudly in very large spaces, one might want to add a subwoofer or two, the LS3/6 is convincing on its own with orchestral and rock music. It will play quite surprisingly loudly without difficulty, and it has in-room bass extension sufficient to cover the normal orchestral range as well as most rock.

Moreover, the box shape—the classic two cubic foot box, a foot square and two feet high—is tried and true. I always like to hazard a scientific explanation for these things, but I am not really sure of the reason that this particular shape and size work so well, but the fact that they do has come rather emphatically to my attention over many years (the BC-1 itself, the Spendor SP1, the Spendor SP1/2).

In addition, the use of two tweeters offers benefits. The LS3/6, like the other related models, has three drivers but two are tweeters, one crossed over to at 3kHz and one much higher, at 13kHz. This idea, which is all but unique to this series of speakers, makes it possible to have a large lower tweeter which is operating with ease down to the crossover point and a smaller higher tweeter which has a wider pattern than if one ran the main tweeter all the way up. Originally, as I understand it, the two-tweeter arrangement arose out of the need to simply cover the whole range cleanly and completely, but in fact there are advantages even in these days when very wide-range tweeters are available.

HOW THE LS3/6 SOUNDS

But if these general principles are worth noting, still in the end the devil is in the details. One could surely make a speaker of this general type that would not have the remarkable sonic quality of the LS3/6. Derek Hughes has done a wonderful job of carrying the unforgettable sound of the original into the modern era. And most wisely he has firmly resisted the idea of modernizing the speaker in the negative sense of making the bass amusically tight and removing the warmth and fullness of the original. While the bass is less loose than my recollection of the Spendor BC-1, the LS3/6 still gives a warm full sound, indeed, with good pitch definition as well. The LS3/6 will please the appreciators of the low mids/upper bass of the original and at the same time will make new converts among those not coming at it from past glories. Similarly, the LS3/6 remains determinedly not excessive in the top end. Top-end extension there is, but aggression that is all too often the modern style there is not. (Strictly speaking, there is a little perceived roll-off at the truly extreme top, but this is musically inconsequential and perhaps even advantageous in practice.) And the midrange itself remains in the top echelon for a combination of clarity , resolution, and neutrality. And perhaps most of all, coherence—there is no crossover like no crossover, and the LS3/6 speaks with one voice over what amounts to almost the whole range of music.

Since one of the strengths of the BC-1 was string sound, I decided to play as my "first impression" the Budapest Festival

SPECS & PRICING

Type: Three-way (dual tweeter) stand-mounted loudspeaker
Driver complement: 7" bass/mid driver, 1.75" tweeter, 1" tweeter
Crossover frequencies: 3kHz, 13kHz
Power handling: 90 watts continuous, 150 watts short term
Maximum SPL: 107dB/pair/2m
Sensitivity: 87dB
Frequency response: 45Hz–17 kHz +/-3dB
Impedance: 8 ohms nominal
Dimensions: 12" x 24" x 12"
Weight: 40 lbs.
Price: $4095/pr.

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Orchestra/Fischer recording of Dvorák's Nocturne for String Orchestra on Philips, one of my current string-sound favorites. Talk about putting a smile on one's face! This is the kind of music I play myself all the time—I belong to a chamber orchestra that plays a lot of pure string music. And the real sound was much in evidence here. The feeling of hearing the sound I hear at my rehearsals was considerable, to say the least.

Next I tried Bis' masterpiece of piano recording, Freddy Kempf playing Rachmaninoff's transcription of Kreisler's *Liebesleid*. The realism of the piano was most striking, and the beauty of it, too. And the micro-structure of the piano notes, their complex attack and decay and interplay of overtones, was remarkably convincing. Indeed, one could not help feeling that there is some real magic in having a single driver cover so much of the musical range—and cover it so well.

On orchestral music, the LS3/6s has both a compelling tonal naturalness and a striking level of what I might call "informativeness." Often speakers give perceived detail because of an exaggeration of some area of high frequencies. But the LS3/6s offered unusually detailed information about complex music without treble exaggerations. Indeed, this persisted even if I deliberately turned down the treble with an EQ device below its natural, correct level. The LS3/6 really does have, it seems, an intrinsically high level of information-transmission on complex music. Every individual instrumental line in the Rachmaninoff *Symphonic Dances* (Proarte, Dallas, Mata) and in the Dvorák *New World* (Delos, New Jersey, Macal) was made extraordinarily clear, as was the reverberation of the individual lines. Things like the separation between say a trumpet call and the hall's response to it were revealed exceptionally well. Textures were all naturally presented and very cleanly articulated. But none of this involved any aggression in the sound at all—it was just detail as it naturally occurs.

Attached to this is an unusual kind of perceived dynamic punch. Speakers seldom exhibit literal dynamic compression until quite high levels are attempted. But things like snare drum strokes come out especially well-defined on the LS3/6. Even at low levels, where literal compression could not be an issue, the LS3/6s give a special articulation that comes across as dynamic excitement. Perhaps this is attached to the fact that the signal is undivided over most of the range, with the sound coming from a single driver. In any case, for what ever reason, the effect is there. This and the sonic impressions of the previous paragraph suggest yet one more time how well the BBC "lossy" cabinet construction idea actually works, a point that tends to escape most contemporary designers, who are enamored of "rigidity" on what often seems a reflexive basis.

You can hear the effect I am referring to on that old standby, Opus 3's *Tiden bar gaar*, where the drumming and plucking have unusually clean and articulate character and sound unusually "dynamic" for lack of a better word (though dynamics are not what is literally involved), without being over-etched in the least. And comes to that, the (Swedish) words are unusually well articulated as well and the voice has a very natural quality.

And the LS3/6s can play loudly, as noted above. They are easily capable of satisfying orchestral levels in a room of moderate size, with dynamic capacity to spare. With well over 100dB levels possible without strain at 2m, I felt no dynamic constraints at all in my 14' by 27' living room. I could blast away if I wanted to, with headroom to spare. With a subwoofer or two, volume capability could be extended even further but for me, adding subs would be for only ultra-deep bass extension, not for the sake of higher levels. The LS3/6 is a much more robust speaker than the original Spendor BC-1 and plays far louder without difficulty—one of the things modern drivers can do better than earlier ones!

The LS3/6s deal successfully with the floor interaction in the low midrange and upper bass. They sail down from 300Hz into the 40Hz region with no dip and no weakness, in contrast to the "floor dip," the hole in response between 100 and 300Hz, that all too many other speakers exhibit. The LS3/6s thus give the orchestra the proper weight, substance, and solidity. And as with the Spendor SP1/2, DSP correction here finds nothing to correct. And this happens with almost any reasonable setup: It is not a matter of inch-by-inch tweaking. This is a design that just works, although, of course, like any speaker it has to be placed reasonably. The proper performance in the 100 to 300Hz region is crucial to the correct perceived balance and feeling of realism and musicality of full-range music. And here you get it. Bravo!

Incidentally, while the grilles of the LS3/6 can be popped off without much difficulty, I recommend not doing so. Grilles off brings up 6–7kHz a little and makes the sound less accurate tonally without actually giving any more in the way of real detail. To the extent that the (lower) tweeter is not absolutely smooth, it has a little hint of excess around 6–7 kHz, and to remove the grilles is to bring this to the fore. With the grilles on, much better, indeed excellent, smoothness is attained. And the removal of the grilles exposes edges in a way not, I should think, to advantage in terms of diffraction. Leave them on!

I do not have a pair of BC-1s or original LS3/6s in functioning condition. But I do have a pair of Spendor SP1/2s in good order, Derek Hughes' design from the early 1990s in the same general style—same driver configuration, same box size, itself a lineal descendent of the original BC-1/LS3/6 design. The speakers are similar but the exact balance is a little different, with the SP/2s having a bit more energy in the 1–2kHz octave than the LS3/6. Even within neutrality as commonly understood, there is room for variation! The LS3/6 has a more precise, slightly crisper sound, with a little more perceived definition, the SP1/2 has a perhaps even more precisely correct rendition of instrumental sound and a slightly smoother treble, set at a slightly lower level. A close call to choose between the SP1/2 and the LS3/6, down to the point where room conditions would make the difference perhaps. Both great speakers, and clearly from the same family! (The current Spendor model called SP1/2R2 is a quite different speaker: see Issue 218.)

RADIATION PATTERN AND IMAGING

When the LS3/6 first appeared, speakers that were close to neutral were a rarity. Nowadays, quite a few speakers offer an essentially flat on-axis direct arrival, though far from all of them do. In this context of speakers that are in general terms flat, additional importance becomes attached to the radiation pattern of the speaker, to how it projects sound into the room and what the resulting in-room sound is like. And of course possibilities abound, ranging from omnidirectional MBLs to the ultra-beamy Sanders 10b electrostatic, to take some obvious extremes. On the

corresponding Web sites, you can read what the advocates of each approach have to say. Stereo playback has no real paradigm: stereo sounds weird anechoically, at least as stereo recordings are actually made, and failing that, user's choice comes into play as to which kind of radiation pattern into a non-anechoic environment (which we all live in anyway!) gives the most satisfying stereo or, for that matter, the most exact tonal character.

Here the current LS3/6, like its ancestor, occupies a middle ground but is even so somewhat distinctive. The LS3/6 is, like all boxes, omni in the bass and switches to primarily forward radiation further up. But it becomes a little beamy above 1kHz because of running quite a large (7") bass/mid driver up to a 3kHz crossover point, stable near the axis but rolled off at angles beyond say 45 degrees.

On the practical level, this means that the ideal performance is obtained for a centered listener with the speakers aimed directly at the listening position. And for the listener in that ideal position, the radiation pattern has considerable advantages. Whereas with wider-radiating speakers, one is, as it were, running away from 3kHz energy (right around the frequency of maximum hearing sensitivity); with the LS3/6 one is, as it were, trying to get enough of it, since there is something of a droop there in the overall room response.

There are theoretical reasons beyond the ken of simple-minded engineering criteria for not having too much 3kHz energy in terms of sonic naturalness (you can find a detailed discussion here: http://www.linkwitzlab.com/xo_eq.htm). And the proof of the pudding is here in the LS3/6—it sounds natural and non-aggressive with orchestral music at considerable volumes, allowing closer to close-up live levels than one might tolerate otherwise. (Three-thousand Hertz off hard walls really sounds yucky when it is loud—not happening here, even if you have hard walls!)

Returning to the stereo question as such: The narrowing of the pattern in this range has the apparent effect of enhancing image focus. A wide pattern can generate a sense of "spaciousness": the threshold for enhancing spaciousness via sidewall reflections is lower by a good bit than the threshold for altering timbre so one can get the spaciousness without altering the basic sound. But this spaciousness is generated at the cost of de-focusing of the individual images. (There is a good bit written round and about how wide uniform radiation makes for good stereo imaging—but this depends on what one means by "good.")

The LS3/6 has very precise image focus. And when big space is actually on the recording rather than being potentially promoted by sidewall reflections, it is admirably presented. Space in the true sense is of course a matter of locating things precisely, not just having some sort of sense of things all over the place—hearing the boundaries of the hall and so on is what real spaciousness is about. And here you get this. Listen for yourself, centered and with the speakers aimed at you. Remarkable stereo, indeed.

IN SUM

To say that I like and admire the LS3/6 is to understate the case. This speaker seems to me a true realization of a dream that many audiophiles have held for a long time: a modern (and available) speaker with the unique virtues of the Spendor BC-1/BBC LS3/6—the extraordinary articulateness and neutrality in real listening rooms—but without its dynamic limitations. The Stirling LS3/6s delivers the goods, and it is satisfying in musical terms at a very high level. This is a sound that is both attractive in its own right and true to the real sound of music in a way that most speakers do not approach at all. And when one looks at the price, the idea of a wild bargain comes to mind inevitably.

Speaker design has changed over the decades since the original LS3/6s appeared. Floorstanders have largely replaced stand-mounted speakers, narrow fronts have largely replaced wider fronts (for no better reason than visual fashion), ever wider radiation patterns have become popular—the list goes on. In some of these senses, the LS3/6 does not look contemporary. But the sound of real music has not changed. And the things that made the original LS3/6 so truthful to the live experience remain as valid today as they were then. If the word "great" means anything in speaker design, the new LS3/6 is a great loudspeaker. **tas**