

## The Carver Challenge

By J. Gordon Holt • Posted: May 11, 2009 • Published: Oct 11, 1985

Is it possible to make a \$700 "mainstream-audio" power amplifier sound exactly like a high-priced perfectionist amplifier? Bob Carver, of Carver Corporation, seemed to think he could, so we challenged him to prove it.

The question posed above seems laughable. If it were possible to make an average, modestly priced amplifier sound just like state-of-the-art, wouldn't it already have been done? Of course it would. State-of-the-art sound would thereby become much more affordable, and high priced power amplifiers would become as extinct as *Diplodocus* (footnote 1). That is the conventional wisdom. Bob Carver, founder and personification of Carver Corporation, has never been noted for his conventionality.



Ever since he introduced the first high-powered solid-state amplifier in 1971, Carver has been laying waste to conventional wisdom with one brilliant design innovation after another—the "magnetic amplifier," the "peak unlimiter," the "sonic hologram generator," the "auto-correlator," the "asymmetrical charge-coupled FM Detector," and the "digital time lens" (footnote 2).

But everyone has his limits of capability, and pride goeth before a fall; when Bob claimed, some time ago, in conversation with *Stereophile* Publisher Larry Archibald, that he could make his \$700 Model 1.0 amplifier sound "indistinguishable from" any amplifier of our choice, we were confident that he was finally out of his depth. Carver Corporation is, after all, a "mainstream" manufacturer, not a "high-ender". Bob's designs are unabashedly aimed at the mass market, notorious for its lack of aural perspicacity. What, then, could he possibly know about the design subtleties that make a Stasis 500 sound different from an Eagle 7A? Bob's claim was something we just couldn't pass up unchallenged.

Our first task was to come up with a "reference" amplifier that would represent a genuine challenge—one as different from, and as superior to, his solid-state Model 1.0 amp as possible. One obvious contender was a large tubed amplifier we had on hand, but we soon realized that our choice would not be all that simple.

There were, it seemed, some peripheral considerations.

We knew that Carver couldn't possibly pull this off, at least not to the point where none of us would be able to distinguish between his modified 1.0 and our reference amp. After all, some of the most highly trained audio ears in the world would be listening for the differences. What worried us was the possibility that Carver might come so close to matching the sound of our reference amp that its designer/manufacturer would be embarrassed, chagrined, and outraged. And, while not normally concerned about offending a manufacturer in a product, we are concerned about fairness.

In order to select a reference amp for this experiment, we would be obliged to "single out" one model of one manufacturer's line. If Carver then managed to even approximate the sound of that amplifier, its manufacturer would quite naturally ask "Why us? Why did you single us out for ridicule?" And we would be hard put to answer without appearing unfair.

So, we decided to make an exception to our usual policy of forthrightness. We decided not to reveal the "reference" amp's identity, saying only that the reference unit is a high-powered, very expensive stereo unit with a strong and unique sonic "personality," and a penchant for being very finicky about the loudspeakers it works with (footnote 3). It was, we were gleefully confident, likely to be very dissimilar in sound from Carver's own designs, and probably much more unpredictable in terms of its behavior with a given loudspeaker.

We then turned to the matter of loudspeakers. Again, we wished (with no implied malevolence) to make things as difficult as possible for Carver, and were fortunate this time in that two speakers which seemed to

meet that criterion were among the six then in-house for routine testing. We're not going to identify them, either. Suffice it to say that both are exceedingly revealing of subtle details in the sound, are in different ways "difficult" loads for an amplifier, and between them, excel in every aspect of loudspeaker reproduction (footnote 4). We were confident that we had effectively stacked the deck against Carver's success.

## Getting Started

Although both Larry Archibald and J. Gordon Holt had met Bob Carver several times before, this was to be our first one-on-one association. We didn't know what to expect. It turned out that Carver, too, had misgivings about us, based on past experiences with the "underground press and a normal anxiety about whether his success at meeting our challenge (about which he had no doubt) would be fairly reported. We found Bob to be a friendly and personable gentleman, powerfully built, outgoing in manner, and just as serious about the reproduction of sound as are we. It took only an hour or so of relaxed banter before he confessed that he, too, was pleasantly surprised—to find that we didn't have horns or cloven hooves. Before Bob started work in earnest, it was necessary for us to all agree on certain ground rules, so that we could ultimately agree as to whether or not he had succeeded in accomplishing his goal. After some amicable discussion, we agreed on the following:

- The objective was to make the two amplifiers sound absolutely identical, or at least similar enough in sound that none of us could tell one from the other with better than 50% (pure chance) consistency.
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Footnote 1: Diplodocus was a dinosaur who hasn't been around for about 80 million years.—**J. Gordon Holt**

Footnote 2: Brilliant innovations some of them may be, but their names are notable more for catchiness in the marketplace than for descriptiveness of engineering innovation.—**Larry Archibald**

Footnote 3: I believe it appropriate nearly a quarter-century later to identify the reference amplifier as a Conrad-Johnson Premier Four.—**John Atkinson**

Footnote 4: One of the pairs of loudspeakers was the Infinity RS-1B, but with the Conrad-Johnson or Carver amplifiers driving the midrange/treble panels only.—**John Atkinson**

- The reference amplifier should not have a higher power-output capability than the Carver. If it had, Bob would be obliged to beef up his own power supply, which would take additional time and prove nothing. (If cost-effectiveness is no consideration, any knowledgeable designer can put together a "perfect" power supply, given time and the necessary parts.)
- If we felt there was any audible difference between the amplifiers, Bob would be allowed 48 hours to eliminate that difference. If he proved unable to do so within that time, we would declare the game over and him the loser.
- If Bob felt that he had duplicated the reference amplifier, and we still heard differences, we would be subjected to a blind A/B test in which the only criterion would be whether we identified the reference amplifier correctly more than 50% of the time.

Because none of us figured that this project would be rapidly concluded, we had reserved a room for Bob in Santa Fe's La Posada hotel. After Bob and his 15 numbered cardboard cartons of equipment were settled in, we unboxed one of his M1.0 amplifiers and headed to my place for some preliminary listening.

We were pleasantly surprised. The Carver amp had none of the usual "mass-fi" solid-state hardness, but was, in fact, very listenable, with good depth, quite good detail, and only a modicum of that high-end dryness and laid-back midrange which characterize medium-priced solid-state amps.

Not surprisingly, the reference amplifier sounded very different and, in our opinion (shared, in most respects, by Bob), much better. We noted, with interest, that he immediately heard every difference that we observed between his amp and the reference.

## The Approach

I had assumed that Bob would simply listen at length to our reference amplifier, make a measurement or two, then try various means to duplicate what he had heard and measured. His approach turned out to be much less scattershot than that. I don't think we had listened for more than an hour when Bob suggested that he "get to work." We transported him and the two amplifiers back to his room, leaving him to his own devices for the rest of the day.

Next morning, Bob called to say he had something for us to hear. How soon? As soon as we could get down to his room.

The hotel room was a shambles! Across one end was a long table buried in oscilloscopes, distortion analyzers, voltmeters, the two amplifiers, a soldering iron, a white noise generator, two unidentifiable chassis full of inductors, resistors, and capacitors, a large table fan (there was no air conditioning), a half-

dozen partially-drained Diet Coke cans, and perhaps 50 feet of audio cables, test leads, and clip-lead interconnects. The adjacent sofa and table were covered with countless little plastic bags of resistors and capacitors, several schematic diagrams, and sheets of paper crammed with arcane numbers and calculations. On the floor under the table was a Rogers LS3/5a loudspeaker which appeared to be connected to both amplifiers at once.

Bob explained that this would be a different kind of listening test. We would not be listening to his modified 1.0 or our own reference amplifier. We would be listening to the difference between them. He explained that he had tacked two identical loads, each approximating a loudspeaker, to one channel each of his and our amplifiers. He had then connected the LS 3/5A and a sensitive voltmeter between the Hot or Plus terminals going into those dummy loads. This simple hookup would allow him to hear and measure the amplitude of any differences between the signals appearing at the amplifier outputs.

If both amplifiers had exactly the same gain (amplification), and were fed exactly the same signals to their outputs at exactly the same instant, the signals appearing at one amp's Plus terminal would be exactly the same as those appearing at the other amp's Plus terminal. That is, there would be no voltage difference between those terminals, and no signal would appear across the monitoring loudspeaker and voltmeter. No sound would be heard and no voltage would be read on the meter. Any sound, or voltage reading, would thus reflect a difference between the signals at the amplifier outputs—a difference which is now Bob's stated objective to eliminate.

In essence, this is a test of the ability of one amplifier (the Carver) to cancel the output signal of the other (the Reference). Or, as Bob expressed it, to compare the transfer functions of the two.

A transfer function is nothing more than a statement of the relationship between the signal fed into a device and the signal that comes out of it. For example, a frequency-response specification is a description of the transfer function telling us how much an input signal of fixed amplitude and varying frequency will vary in amplitude at the output.

Bob's test hookup would show much more than frequency response differences. In fact, one of his most interesting statements, for those of the "every amplifier is the same except for frequency response" school, was that varying frequency response between the 1.0 and the reference amp made up only about 25% of the significant differences. Relative phase shift, source impedances (damping factors)—in short, every electrical difference between the amplifiers—would produce a signal at that test point between the Plus output terminals. When the amplifier outputs were identical, in all respects, there would be total cancellation—a null—of the difference signal. Bob's goal was a 70dB null, or an 0.03% difference between the two amps. Just to indicate how ambitious a goal this is, Bob quoted a figure of 48dB as the null you might normally hope to produce between two channels of the same amplifier! The meter would measure the voltage difference between the two hot terminals, and thereby the degree of cancellation in decibels; the speaker would reproduce this signal to give an idea of how audibly significant the differences were. (To check how loudly the music produced the difference signal, you had but to disconnect one of the hot leads; in that situation there was a 0dB null.)

This output nulling technique is not a Carver innovation. It has been known for years to be a possible way of comparing amplifiers, at least in theory. But it could never be made to work with amplifiers having slightly different group delay and phase-shift characteristics, because any loss of signal synchronisation impairs the effectiveness of the cancellation. In other words, it wasn't used because all amplifiers are very different—the test was too sensitive! But phase shift happened to be only one of the many parameters for which Bob planned to compensate. Hearing of this level of sophistication made LA and I begin to suspect that Bob just might be able to pull this off after all (footnote 5).

We were still pretty confident that he couldn't, though. After all, 66 years of amplifier design have still not resulted in any way of pinning down the subjective effects of every measured imperfection—even if we had measurements for them all, which we don't. The beauty of Bob's approach, however, was that he didn't need to know what all those objective imperfections were doing; all he had to do was eliminate them.

Neither LA nor I had any idea what "adjustments" would be involved, but I, for one, was convinced that the area that would ultimately stymie Bob was that of harmonic distortion content. I have long believed that some of the major sonic differences between amplifiers were related to the relative and absolute amplitudes of their harmonic distortion components. (It is known, for example, that the amplitude of the high-order harmonics—the third, fourth, fifth, and sixth harmonics—become progressively weakened in the signal from a tubed component, and remain relatively constant from a solid-state device.) I was a little shaken when I learned that a half-dozen small potentiometers that Bob had wired into his amplifier were "distortion pots," which enabled him to change the amplitude of any "spurious" harmonic as desired, independently of the other harmonics!

That first listening test in Bob's room was an ear opener. He had already achieved a surprisingly effective null—a 50dB reduction below the level measured at each amplifier's output. But there was still a substantial amount of sound coming from the Rogers speaker, and that sound was some of the filthiest, dirtiest crud I have ever heard!! Bob explained that he had nulled out most of the things that both amplifiers were doing

right, leaving only such things as distortion and frequency-response deviations. Yes, I thought, and those are going to be the hardest things of all to null out.

Bob explained that a 50dB null meant that the difference between the two amplifiers amounted to about 0.3% of the total output of each. The dramatic audibility of that 0.3% came about because he was driving the amplifiers to rather high output levels, and because of the ugly nature of what was left in the sound.

At this point we ran into a problem. The AC line voltage at La Posada was quite low, meandering around 106 volts much of the time. This would quite obviously throw off both amplifiers, enough so that they would probably not perform the same way with a more normal line voltage. I loaned Bob my Variac.

The next day he had managed to boost that 50dB figure to 70dB, and felt ready to try some listening. By this time the difference signal between the amplifiers was audible only with an ear glued to the Rogers LS3/5A, even with the output of the amps cranked up. There was no doubt that Bob had achieved something impressive, but we questioned whether it would translate into true duplication when driving real-world (and difficult-load) loudspeakers. We moved the project to my listening room.

### **The Listening Comparisons**

The signal sources for our listening tests were to be both CDs and LPs. The CD player used was a Sony 520-ES, the analog player a SOTA Sapphire turntable with Well-Tempered Arm and Ortofon MC-2000 cartridge, with Ortofon's T-2000 step-up transformer. The preamp was a Conrad-Johnson Premier Three. Program sources were as follows, for the following specific sonic attributes: "The Portrait" and "Peter the Hermit," from *Growing Up in Hollywood Town* (Sheffield CD-13 and Lab 13) for depth and perspective, HF naturalness, bass heft and tightness; Respighi's *Church Windows* (Reference Recordings RR-15) for breadth, depth, bass range and control, and massed string tone; Beethoven & Enesco Violin & Piano Sonatas (Wilson Audio Specialties W-8315) for tonal accuracy, depth, and imaging specificity and stability; "Improvisations" by Jim Keltner, from *The Drum Record* (Sheffield CD-14/20) for high-end openness and timbre and low-end attack, control and range; and McBride's "Mexican Rhapsody," from a badly worn copy of *Fiesta In Hi-Fi* (Mercury Living Presence SR90134) for treatment of HF stridency and mistracking.

We made no effort to do A/B testing, since we feel it does not replicate normal listening conditions, and there is still insubstantial evidence that A/B testing reveals small differences as well as does prolonged listening to each unit under test. In our tests, one amplifier would be wired into the system and auditioned as long as we wanted, using a wide variety of program material that always, however, included the material listed above. Notes were made of anything we heard that we thought different from the other amplifier, and those specific points were checked again when we went back to the other amplifier.

### **A Good Beginning**

We were not too surprised to find that there was no longer a dramatic difference between the Carver 1.0 and the reference amp. In fact, what surprised us was just how similar they sounded. They were almost a perfect match, except for a slight difference in perceived depth and perspective, a marked difference in low-frequency range and control, and a noticeable difference in high end smoothness. We were pretty taken aback by the similarity, but, because the differences were reliably audible, we were still confident of our abilities to hear differences between the two amps. And, because the differences were important in type, though small in degree, the expensive reference amp was unthreatened.

In spite of the really amazing feat he had pulled off so far, Bob was disappointed. With 70dB of null, he assured us, they should sound identical. They didn't; it was back to the test bench and soldering iron for Mr. Carver.

It took another day to find the source of the trouble and work on correcting it. The trouble, it seemed, came from my Variac, which could not deliver enough current to meet the brief, but very high demands of the reference amplifier when playing music into demanding loudspeakers rather than mockups. Back at the hotel room, Bob had been trying to match his amp to one that was working with one hand tied behind its back. The matching that had produced a 70dB null in the hotel collapsed to 35dB in my home, so it was necessary to produce a new model of the reference amplifier as it performed with adequate current availability.

Fortunately, my line voltage was normal (115V), so the Variac could be dispensed with. Bob was discouraged at having to do his entire analysis and modeling over again, but glad of a problem concrete enough to be addressed.

### **A Second Stab**

After another day, Bob seemed convinced that he had done it. We gathered for another listening session, and, indeed, it sounded as if he had. The high end stridency we had noticed in the 1.0 was gone (or, as it turned out, was just as present in the reference amp). Depth presentation, midrange solidity and 3-

dimensionality, imaging, high-end sweetness—in short, all the characteristics one normally finds important in amplifier evaluation—were identical.

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Footnote 5: Actually, I was impressed—but I still doubted the relevance of the null test to the actually driving of loudspeakers. Bob's imitation loudspeaker might not stress an amp or store energy and feed it back to an amp to nearly the same degree that our real reference loudspeakers would do. Plus, I had once upon a time picked up the differences between ½" of steel lead from a capacitor to a crossover as opposed to ½" of copper lead—and these two amplifiers had much bigger differences than ½" of wire.—**Larry Archibald**

But, as we relaxed with a Sheffield jazz record, we thought we picked up a difference between the reference and the 1.0. With the reference, the low range of the guitar was a bit ill-defined; with the 1.0, you could "count the cycles." Granted, in this respect the 1.0 was better than the reference, but that was beside the point! We were looking for duplication.

Bob reached into his bag of tricks and dropped the output of the 1.0 from 500 watts below 30Hz, to a mere 65–100W. Believe it or not, even though we were listening at subdued levels, that did the trick: the 1.0 was now a bit muddy and ill-defined through its lower range, just like the reference.

More interesting, though, and disturbing, was that the soundstaging had now changed, and the two amps were no longer the same. It turned out that Bob had to go back and diddle some more, exhausting his 48-hour limit.

### **The Final Achievement**

After this last bit of tweaking, where Bob was able to reinstate his 70dB null while driving a very difficult load, we now had what sounded like two absolutely identical amplifiers. No matter what speakers we used, every "difference" we thought we had isolated turned out to be there, in equal quantity, when we swapped amplifiers.

This time, the listening went on through the whole afternoon and much of the evening, until all of us were listened out. More leisurely listening, refreshed by a good night's sleep, failed to turn up anything. As far as we could determine, through careful comparisons and nit-picking criticisms, the two amplifiers were, in fact, sonically identical. It is a gross understatement to say that we were flabbergasted!

The next morning, I told Dick Olsher over the phone what we had found. "Bull- shit!" was his reasoned response. "That just can't be." But it was, it was then that we started to realize that, in reporting the outcome of this Challenge, we were going to have more to contend with than outrage and wonderment. We were going to have to contend with incredulity.

On the face of it, what Bob Carver pulled off should be impossible. You can't make a silk purse from a sow's ear. What about the audible differences between transistors, capacitors, internal wiring—all the things that we know contribute to the superiority of no-holds barred amplifiers? What about all the things that amplifier designers have learned during the past 20 years, which enable them to build better amplifiers (at whatever price) than have ever been built before? How could all of these things have been factored into the relatively quick and painless transformation of an average amplifier into a world-beater? But, of course, the "factoring-in" was the key to all this.

You see, Bob didn't have to concern himself about quality capacitors, minimal internal wiring, gold connectors, or any of those things; all he needed to do was duplicate, at the output of his amplifier, the sum of their effects at the output of the reference amp. Once he had obtained the necessarily deep null between those amplifiers, it was his belief that ears were not going to pick up on what was left. To do this, he needed only (!!) to know how to change practically any parameter of his amplifier's performance—a knowledge which we must now acknowledge is his.

After the second day of listening to his final design, we threw in the towel and conceded Bob the bout. He packed up his equipment and limped triumphantly back to his Lynnwood, WA home base. (He had single-handedly hoisted the hefty reference amp onto a table at one point during the proceedings and injured his back.) The question remains whether or not we might have eventually picked up some miniscule but repeatedly audible difference between the amplifiers, had we been able to listen longer?

Somehow I doubt it. We had thrown some of the most revealing tests that we know of at both amps, and they came through identically. Even on the subliminal level—the level at which you gradually get the feeling that one amplifier is more "comfortable" than another—we failed to sense a difference between the two amps.

It is true that there were no "controls" here—no double-blind precautions against prejudices of various kinds. But the lack of these controls should have, if anything, influenced the outcome in the other direction. We wanted Bob to fail. We wanted to hear a difference. Among other things, it would have reassured us that our ears really are among the best in the business, despite "70dB nulls."

There were times when we were sure that we had heard such a difference. But, I repeat, each time we'd put the other amplifier in, listen to the same musical passage again, and hear exactly the same thing. According to the rules of the game, Bob had won.

### **Disquieting Implications**

The implications of all this are disquieting, to say the least. If, after only four days of work, it is possible for someone—design genius or not—to make a \$700 amplifier sound exactly like a state-of-the-art amplifier costing many times as much, what does that say for the cost-effectiveness of the latter?

Carver claims that the original, unmodified M1.0 amplifier had been designed to sound "the way he wanted it to." If, in fact, he could make it sound any way he wished, as seemed to be proven with his success in this experiment, why then did he elect to go with a typical mid-fi "solid-state sound" instead of emulating the sound of one of the best-sounding solid-state or tubed amplifiers on the market? There were, it turns out, some good reasons.

Bob admits that he is not sure himself about the audible effects of some of the parameters he juggled to match the transfer functions of his amp to that of our reference. Had he been using this trimming technique to produce a certain desired combination of sonic qualities, using only his ears to evaluate what was going on, the task would have been quite a bit more difficult and time-consuming, the results far less predictable. This, in fact, is what he did with the 1.0 amplifier, which in his opinion still sounds excellent on the loudspeakers with which it will most likely be used (if not on the loudspeakers we used).

Secondly, Bob had never before had a chance to listen critically to a "world-class" amplifier like the one we chose as our reference, and ended up admitting that there were things about its sound that he preferred to his own amp. He might, he averred, "do some things differently in future designs."

Does that mean that Carver Corporation might consider producing, commercially the modified 1.0 whose "sound" Bob had, quite literally, pirated from that state-of-the-art amplifier? Maybe yes, maybe no.

### **Is It Theft?**

The possibility of Carver's manufacturing his modified amplifier raises some very knotty questions concerning morality and legality. Does an amplifier manufacturer who designs something from scratch, coming up with a sound unique to that product, have the exclusive right to that sound? In other words, is it dishonest or even illegal for someone to use a technique such as Carver's transfer function analysis to duplicate that "unique" sound, without having done all the usual homework involved in designing an amplifier from scratch?

There has never been a legal decision about this, but an analogy from computer software may shed some light. Some years ago, a firm called Micro Pro started marketing the first automated spreadsheet for microcomputers. Called Visicalc, this program allowed a vast number of rows and columns of figures to be set up, by the user, to perform in mere seconds spreadsheet calculations that would have taken an accountant hundreds of hours to do with pencil and paper.

When Visicalc came out, there was nothing else like it. Within months, however, it was followed by the first of what soon became a flood of imitations, each capable of the same functions as Visicalc, but each using somewhat different ways of accomplishing the same end. Those "copycat" programs are still around, because the law deemed the functions which could be performed by Visicalc to be not copyrightable; only the specific program for accomplishing that function could be copyrighted. Thus, it is likely that Carver, or anyone else with his technical smarts, would be legally free to duplicate the sound of any amplifier, as long as different circuitry was used to do it.

But whatever Bob, and others who can match his technical virtuosity, choose to do with the results of this project, I think that the field of high-end audio amplifier manufacture will never be quite the same again. High price and high status will continue to be handmaidens in audio, but the knowledge that high performance and high price need no longer be inseparable cannot help but impair the glamor of cost-no-object power amps. We're still a little bewildered around here about how all this turned out. Not the way we expected. But that's the way it was.

### **Carver Challenge Responses**

#### **Responses to the 1985 "Carver Challenge" (from February 1986, Vol.9 No.1):**

**Publisher's note:** We anticipated a far stronger response to Bob Carver's duplication of the sound of our chosen reference amplifier (Vol.8 No.6), but the two comments below were the only official replies we received. On the other hand, many people in the industry spoke to us off the record, some in admiration,

some in envy, some with a kind of disgust. I'm sure other amplifiers will come along that seem to defy duplication; perhaps Bob will be up to another challenge in a year or so.—**Larry Archibald**

**From Charles J. Gatton, Bay Port, NYB**

Editor:

Bob Carver's feat was stunning, but foolish. Why give away ideas worth vast amounts of money? Moreover, it seems to me that he could have gone on to make his unit sound *better* than the reference. Man, what an opportunity squandered for ego's sake.

No moral or ethical issues are involved—only those of legality. No one invents out of thin air; everyone advances from previous knowledge. (Ask Tom Edison when you see him. His phonograph evolved from A. G. Bell's work on the telephone.) By the by, was Carver's amp 1.0 or 1.5? You give both designations. [*Larry Archibald made a grievous error in changing the 1.0s in the original text to 1.5s; not all were changed back. The amp was the Carver 1.0.—Ed.*]

Thanks for the article.—**Charles J. Gatton**

**From Harvey Rosenberg (New York Audio Labs)**

Editor:

The ego-secure among us will admit that Bob Carver (BC) is an innovative designer, a red-blooded American hero, a paradoxical showman, and deserving of every bit of the great success he has achieved in the mid-fi market. I have even inquired about licensing his patented power supply design.

As we all know, it is a cruel world; if BC can replicate the sound of a state-of-the-art transformer-coupled tube amplifier (which seems to be the model in this experiment), or a Futterman OTL amplifier, at a fraction of their cost, then tough darts on Audio Research, Conrad Johnson, and New York Audio Labs. The savage laws of competition rule the world. On the other hand, is there any substance to these periodic Carver amplifier challenges?

After finishing the *Stereophile* article it struck me that I had read a technically more sophisticated version of it three years ago—except that it was written by Peter Aczel, editor of the defunct (even at that time) *Audio Critic* magazine. For new members of the high-end audio community, it should be noted that during its operation, *Audio Critic* was considered a serious underground publication. Two Mark Levinson ML-2 amplifiers were used in the 1982 Carver Amplifier Challenge. I also found a 1981 article about BC's replication of a Bedini, and demonstrating it at audio clubs. In other words, the Carver Amplifier Challenge seems to have begun five years ago. Sherlock Holmes (disguised as a manufacturer of tube gear) put on his snooping cap; something seemed manky with the *Stereophile* article.

Slinking down to a local high-end hi-fi emporium that sells both Levinson and Carver, I picked up a batch of Carver literature, including the *Audio Critic* review (copy enclosed), and took the time to listen to the Carver 1.5t—which, according to Carver/*Audio Critic* literature, is an exact replica of the \$7000 ML-2s. The *Audio Critic* article says, "According to Bob, the production version is identical to the prototype he took back to Seattle from our laboratory, and nulls perfectly against it in the bridging test. He has also acquired a pair of the latest ML-2s, and is using them as his quality control standard against which every M1.5t is nulled. This means that you can now buy the ML-2 kind of sound at less than one-eighth the price, and with ten times the power."

This is where I need *Stereophile's* help. What I heard didn't resemble ML-2s. Perhaps my golden ears are tarnished. Gordon Holt, can you lend me your ears? I am curious. Your readers must be curious. The thousands of owners of Carver M1.5ts must be curious. Are M1.5ts replicas of the ML-2s like BC claims? The *Audio Critic* article, entitled "The Deprogramming and Reformation of Bob Carver" (Winter 1982–83) ends, "It should be added in conclusion that Bob is a changed man as a result of the t-mod project. His reformation is so complete that he simply cannot understand why he had not come to the same conclusion years ago, and acted accordingly. [*Here Peter Aczel is talking about BC's concern for sound quality.*] It takes courage to admit past mistakes and omissions freely, without excuses, and to allow one's present work to stand as the severest critic of previous efforts. For this, as much as for the quality of his engineering mind, BC has earned our sincerest admiration."

Dearest Editors, how does this reconcile with *Stereophile*, Vol.8 No.6, p.44: "Secondly, Bob had never before had a chance to listen critically to a 'world class' amplifier like the one we chose as our reference, and ended up admitting that there were several things about its sound he preferred to his own amp. He might 'do some things differently in future designs.'"

Arrggh . . . Some would say that consistency is a trait of mediocre minds, but I must ask the following questions:

1. Is there more than one Bob Carver?
2. Are the ML-2s world class amplifiers?
3. What happened to Bob's 1982 reformation, something he has been promoting to the public?

4. Did BC give the *Stereophile* editors copies of the *Audio Critic* article and describe previous amplifier challenges?

Many serious practitioners in high-end refused to take the "Carver reformation" article seriously, especially since the *Audio Critic* ceased operating about a year before Carver printed and distributed an estimated 100,000 copies of this article. I understand from Peter that this issue of the *Audio Critic* was typeset and ready to print, but he could not afford the publishing costs. Bob was able to convince Peter (one of the world's most interesting audio cynics) that he was dedicated to state-of-the-art sound now that Peter had shown him the light. Peter felt that the production of the 1.5t was a very significant event, and gave Bob permission to reprint the article. Curiously enough, it appears that as soon as BC started to distribute these articles, Carver products ceased being available for review by the underground press. (I need confirmation from Harry Pearson, Peter Moncrieff, and Gordon Holt on this.) Current Carver advertising still shows the ML-2s, and quotes from the nonexistent *Audio Critic*. Many of us in the high-end community feel that this isn't kosher.

While I never doubted the validity of the null test in experimental environments, I always doubted that the procedure would be applied to production amplifiers. Yet this is what BC claims. The current amplifier challenge in *Stereophile* still makes the same error as the *Audio Critic*'s. You did not rigorously examine your own implication: Can an experimental amplifier be duplicated in production? You have three years of Carver 1.5t production to test your implication.

Dearest Editors: Can you understand my confusion when BC admits to *Stereophile* that he makes mid-fi products, having already stated, in the Carver/*Audio Critic* article, that he knows, understands, and is committed to replicating exactly the same high-end sound standards of the ML crowd? Even tube devotees recognize that the boys at ML are no slouches. Am I in the audio twilight zone, or is something rotten in Denmark?

Oddly enough, I hope this replication process has succeeded. I would love for BC to produce some genuine red-blooded tube amplifier replicas. It will accelerate the growth of NYAL because it would increase the public's awareness of the unique virtues of tubes. *Imitation is the highest form of flattery*. If BC helps us bring this awareness to a larger music-loving public, I will personally give him a big hug and a juicy kiss (just like our midrange).

### **State of the Art Audio Coconuts Challenge**

It seems that everyone has missed the greatest potential public benefit from the null test. As most engineers know, the beauty of the null test is that it quickly demonstrates real-world *audible* differences in electronics, differences almost impossible to ascertain by conventional measuring techniques. For example, the differences between any two amplifiers can be demonstrated by using the null procedure (see the *Audio Critic* article). It's not important what the difference sounds like, but rather that every amplifier design sounds different. Why doesn't BC demonstrate his concern for naive music lovers, and take this test to *High Fidelity* and *Stereo Review*? BC certainly can use his economic power to end, once and for all, the sham promoted by the world's mealy-minded musical mid-fiers.

Here is a simple, elegant demonstration that will make it impossible to claim that "electronics that measure the same are the same." What a fine way for BC to justify Peter's pampered pearls of praise. Of course, this would require very, very large, state-of-the-art, audio coconuts (footnote 1).

### **The BC, Give Us Your State-of-the-Art Stuff If You've Got It, Challenge**

It is hard for the high-end audio community to reconcile BC's contradictory behavior. Here is a man of formidable design talents who makes some of the most extraordinary claims for his products, uses a defunct audio publication to validate his claims, won't submit his products to the underground press for review, and makes periodic amplifier challenges. We are still waiting for the Carver Amplifier Challenge to begin.

For the serious practitioner of our art, this is how the high end audio community works: Any designer who thinks he's got the right stuff, technically and musically, submits his products for review, taking a risk with the underground press. It can be observed that, in spite of disagreements, drama, and a great deal of imperfections, the underground press has a unique integrity, and is very consistent in its judgments. Why doesn't BC stop copying others, and create his own assault on the state of the art?

### **A Leadership Challenge to BC**

Our industry needs exciting new products. We need to stimulate the music lover by provoking his imagination to higher levels of musical expectation. BC should create exciting new audio gizmos that challenge us—this is how every industry grows. We invite your challenge. Your charisma has been misused. I do not believe that your gifts are intended to make you an audio copier. Act like a leader. Let your deeds

and work set a new high standard. Join the club, pay your dues, stop hiding behind amplifier challenges, and show us your musical stuff. Go ahead, make my day!

I root for your success because you have the power to convert thousands of mid-fiers to high-enders. I'm getting so excited I can smell the green stuff already. As a reward for this, I will cover your head with a flowered garland, and carry you on my shoulders through the cheering CES proclaiming "Long live Bob Carver, our fearless leader, long live Bob Carver, our fearless leader . . ." ARS gratias artis.—**Harvey Rosenberg, NYAL**

*Stereophile is grateful that Harvey Rosenberg has taken the time to address this issue so fully. In fact, we could have been better informed, but plead ignorance of the original Audio Critic article. Apparently we should spend more time reading Carver Corporation literature! Bob did not provide us with a copy of the article, though we had read the excerpts he used in his advertising. I would have put it more strongly than Harvey re. the use of an unpublished article in advertising: I think it's unethical, but it's Peter Aczel's bone to pick, not ours.*

*Reading over the Audio Critic test, which didn't in any way seem "technically more sophisticated" than ours, I was struck by a number of differences. Most important, the purpose of the Audio Critic article seemed to be to enshrine the Carver 1.5t as a "Levinson for the masses;" Stereophile was not testing a production, or proto-production, amplifier at all, nor were we endorsing the possibility that such an amplifier-matching feat could be pulled off on a production basis. Harvey's finding that the stock 1.5t doesn't sound like a pair of Levinson ML-2s is not surprising. And, in fact, Mark Levinson Audio Systems has had no objection to the publicity they've received at the hands of the Carver advertising budget; their sales have not been affected negatively.*

*Next in importance was the fact that Peter Aczel did not primarily use listening tests to evaluate the amplifier; he accepted the null test as a proof of amplifier identity. Sticking to our conviction that in-use application is the only way to effectively evaluate audio components, we insisted on listening tests. It turned out to be a good thing: the null test using imitation loudspeaker loads was not good enough when it came to listening, and the results of the null test were not transportable from Bob's hotel-room "laboratory" to our listening room.*

*In other respects I agree with Harvey. I'm somewhat chagrined to find Audio Critic quoting Bob's "reformation" statements several years before we heard him say more or less the same things—with no apparent reformation having taken place in the interim. We were unaware of the earlier statements, and can't testify as to their veracity; nor are we, of course, responsible for Bob's behavior at any time.*

*I'd love to see High Fidelity or Stereo Review deal with the sounds they get on a null test from any of the amplifiers they test! Rosenberg's right. (By the way, the Audio Critic article contained an error in describing a "musical" result from the null test as an indication that amplifier differences are innocuous, and an "amusical" result as an indication that the differences are important. In fact, the null test will always yield an "amusical" result, even when both amplifiers sound terrific.)*

*Most of all, I agree with Harvey's statement that Bob Carver should not be imitating amplifiers. Though our reference amplifier was, I think, better than a pair of Levinson ML-2s, it hardly matters: neither reference came about through conscious imitation of another product. In fact, all manufacturers of great amplifiers are in a constant state of ferment as they strive to make their products better at achieving the sound of live music, and not the sound of rival electronics. They are creators.*

*Perhaps we'll see the day when Bob Carver takes his obvious technical genius and turns it to creating his vision of a great amplifier. We at Stereophile will then join the cheering CES procession . . .—*

**Larry Archibald**

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Footnote 1: In case you're wondering, dear reader, I think he means money.—**Larry Archibald**