DIY

DIY: AN INTRODUCTION -- R. Scott Varner

DIY is a standard British acronym for Do-It-Yourself. In America we're more likely to say self-built or home brew. Either way, doing it yourself usually generates visions of much work with little to show. Barely acceptable wiring in grey hammertone cabinets complete with tape labeling deserves this image. However, there's the possibility of rising above this; the accomplished builder knows there's a thin line between home-made and custom-designed. It's the latter result which justifies the effort.

For the quadraphile, DIY takes on a special importance. You've no doubt noticed that your local hi-fi salon no longer stocks the latest Ultra-Logic Variable Matrix Octaphonic receiver, or surround records. Oh yeah, there is both hardware and software to be had (some of it even new!), but it is indeed scarce, so Surround Sound Survival in the Eighties may mean using your own talents to suit your interests. Pursuing sonic excellence can mean more than reading equipment reviews and playing records. With this in mind, let's take a look at construction philosophies and how DIY can benefit you.

There are two sets of points worth making right off. First, there are only two major reasons for taking the time to build: to produce an item not otherwise available, or to have a better quality item than what you can buy. Cost is not a factor, because in small quantities the individual parts will always cost the experimenter more than they do the large manufacturer. But an audiophile's sound system is very personal and unique, so he has much to gain from constructing something which fits his particular needs. And, if a high-end approach is taken, very high quality results can be obtained. The success of such magazines as The Audio Amateur testifies to this. Commercially-produced equipment, even average products, can be improved and upgraded with careful modifications. (Warning! This will void the warranty, so beware.)

The other points have to with the construction itself. There are only two major aspects to building audio equipment: internal (electrical) and external (panel layout, etc.). Many otherwise successful projects have been aborted because of the designer's failure to balance these concerns. The design work comes first for both. If you can't think them out on paper first, you won't be able to build the project. Working from a supplied circuit or kit will save these sets, but some changes are usually necessary to fully achieve your desired results. So, KEEP RECORDS!! Write down any changes for future reference. If all you only want to build is a crystal radio, then any old method will suffice. However, custom designing top-notch audio equipment requires a disciplined approach. It might require a lot of work, but doesn't everything worthwhile? Also, smoke test any new project before patching it into major audio gear. Radio Shack or Continental Specialties prototype boards are excellent for this. Then hard wiring with wire-wrap or PC boards comes next. (PC boards are the most reliable for long-term use.)

Physical layout and cabinet work follow. These are common stumbling blocks easily overcome by forethought and planning. Get a design that looks good on paper, and be open-minded about unusual approaches. I prefer to build several projects into one larger enclosure in order to eliminate numerous patch cords, power supplies, etc. You can even

incorporate existing commercial units into your own enclosure with DIY circuits, although not recommended if you place emphasis on the status of the manufacturer's name! Wood or plastic materials require shielding protection by using foil or such. DATAK, Letraset and others make rub-on lettering indistinguishable from factory silk-screening. The first step is to use your imagination, and the second to apply your ability.

Hopefully, if the readers show interest, MCS Review will continue to publish construction and upgrading projects. These will most likely center on the theory and electrical aspects and leave the rest up to you.

Even the most intricate designs consist of basic building block circuits, and a comprehensive technical library is to be encouraged. Don't forget the dozens of suppliers, like ETCO, Jameco, Old Colony, Trancendental Audio, etc., who can make your work go faster and better. Source and supply is a large part of the greater whole.

Building your own equipment isn't guaranteed to be as much fun as LISTENING TO THE MUSIC, but it can be an extremely satisfying means to an end.

We enthusiastically support Mr. Varner's proposal for making "DIY" a regular feature, presenting kit-building, equipment modification and surround-sound system design ideas by many different contributors. Please send manuscripts to the Editor, MCS Review. Schematic diagrams need not be print-ready, but should be clearly drawn and all parts clearly labeled. Mr. Varner is also interested in hearing from readers interested in surround-sound equipment designs. Write to: R. Scott Varner, Box 10151, Kansas City, MO 64111.

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A VARIABLE PRE-SYNTHESIZER FOR MATRIX DECODERS -- R. Scott Varner

How many times have you longed for a bit more control over your matrix decoder's action? Often there's a need to open up a dull recording with more rear channel activity, and other times a stronger frontal image is desired. The circuit described here is very simple to construct and does much more than balance controls. Similar to Sansui's method, it produces a completely variable Hall to Surround effects with a neutral point in between. This is based on in-phase and out-of-phase blending. So, on to circuit analysis.

IC1 is a dual op-amp that serves as an input buffer stage and also offers an unaltered two-channel output for other uses. Tracing the signal to the wiper of VR, the signal loads into differancing amps IC2, B and C. Rotation of the pot allows smooth transition from phase-inverted or non-inverted output at pins 7 and 8. At the maximum counter-clockwise position, a non-inverted output is mixed with the signal of the opposite channel, thereby reinforcing the frontal information. At the other extreme, the signals are inverted and blended to increase rear channel activity. Dead center produces zero output and the decoder functions totally unaltered. The capacitors form a high-pass filter to prevent bass frequency cancellation at the surround side.

Construction is straightforward. Use your choice of PC board, perf board, etc. Tight tolerance resistors are suggested, including the dual-linear pot; otherwise, balance may lean heavily to left or right. Direct couple if possible for best results, but, if DC volt-