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w/ Wu-Tang Chamber Music

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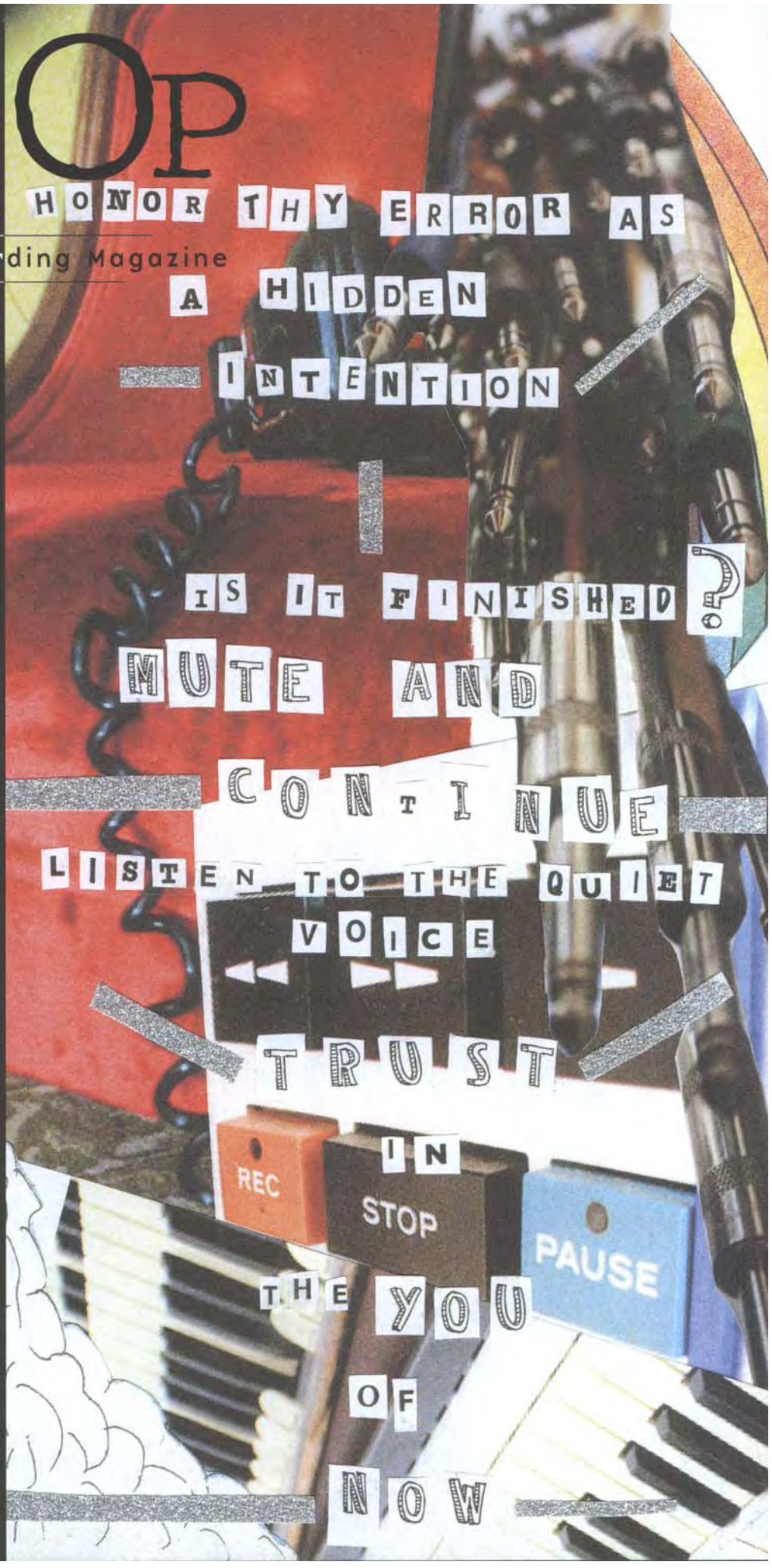
Music Reviews
w/ Buddha Machine

Gear Reviews



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Radial Engineering

Workhorse 500-series rack & mixer Shuttle Insert Loop

Radial Engineering sent both LC and AH a *Workhorse* and a selection of 500-series modules. Neither of them has had the time to try out all of the modules, but they both got in some quality time with the *Workhorse*, and Larry also had a chance to try out the *Shuttle* module.

LC: Radial Engineering seems to like solving pro audio problems. At Jackpot!, we have their reliable J48 active DI box (*Tape Op* #49) and J+4 balanced signal driver (a great way to monitor iPhones, laptops, and many other items). Both solve impedance and level-matching issues with great sonics and rugged construction. So when I heard that Radial was building a 500-series rack, I was curious, because I assumed that this rack would be overbuilt, well thought out, and versatile. I was right. The damn thing looks like you could drop it off a truck and it would survive, but there's a lot more to it than that.

AH: I've purchased many "problem solvers" from Radial Engineering and its sister company Primacoustic. They can't seem to leave well-enough alone! Oftentimes, they take what might otherwise be a mundane, standard product; add unique features or functionalities; and turn it into something that makes the product into a must-have.

LC: I currently have no 500-series gear outside of two custom-racked, vintage API 550A EQ modules. As more companies have introduced 500-series modules in recent years, I've thought about acquiring a rackmountable chassis or a "lunchbox" to power and interface these units in order to try out modules. API is the company that originated this format, initially for use in their fine consoles, and they currently make a 10-space rackmount and 6-space lunchbox unit. (BAE, A-Designs, Purple Audio, and Atlas Pro Audio also make excellent racks for this series.) Over the years, most racks have basically featured power and rear panel I/O, and this is where the *Workhorse* is quite different. With eight slots (compared with six to eleven for other units), they've left room on the right-hand side for a mixer. Really. And this is pretty cool, 'cause you can bus some or all module outputs down to a stereo mix or even use it for summing of other sources from a rear D-sub connector. This mixer's front-panel controls are basic and simple, featuring level and panning knobs with on/off switches for eight channels. Each module channel and its corresponding D-sub channel are first summed together before going through the level, pan, and on/off controls on the way to the mix bus. On the other end of the mix bus, there are main and monitor output attenuation controls and a headphone section too. Note that the main and monitor outputs are the same stereo mix — there's certainly no room for an auxiliary mix on this little mixer! On the rear panel, the mixer's main (Jensen transformer isolated) and monitor outputs both appear as separate XLR and 1/4" TRS jacks, and two front-panel headphone jacks allow for easy monitoring. Note that the Main output even has an unbalanced insert jack. There's an expansion bus that will allow more *Workhorses* to gang together and share one unit's mix bus output. The module channels have plenty of I/O, with separate in and out XLR *or* 1/4" TRS jacks, Pro Tools–compatible D-sub connectors for audio interfaces or patchbays, and Radial's "Omniport" jacks for custom I/O. The rack has an outboard power supply with a decent 1200 mA of current, and it's compatible with any 500-series units that follow the VPR Alliance specs. But wait, that's not all. You can also flick "Feed" switches on the rear panel to daisy-chain one or more modules left-to-right to create a custom channel strip. And link switches allow for stereo linking of modules (like two channels of compression) that support that feature via their card connectors.

AH: Feature-wise, the *Workhorse* is pretty impressive, but I love how the folks at Radial Engineering get the little things right. For example, unlike other 500-series racks, the *Workhorse* has a platform with "slides" to align the modules for easy insertion; without it, positioning a module so that its edge-connector mates correctly with the back of the rack can be a hit-or-miss proposition. Thoughtfully, the platform accommodates single and double-wide modules, and it's removable if you have modules that are incompatible with it. On the back of the Workhorse are two grounding lugs to interface your rack to your studio's grounding scheme — one for the chassis and one for the circuit ground. And the dual-headphone outputs have a mono check switch. All very cool.

LC: So what can you do with this new take on a 500-series rack? A lot:

1. Mix eight mic preamps together with panning and a stereo output for live tracking.
2. Record off eight preamps into multitrack, yet monitor through the mixer.
3. Create custom mic preamp–based channel strips (mono or stereo).
4. Create custom DI-based channel strips (mono or stereo).
5. Sum 8-channel mixes (or more with extra *Workhorses*) direct into the mixer.
6. Sum, but run some channels through the modules and sum.
7. Set up complex re-amping situations, plus have a mic preamp or two available to track.
8. Use the summing mixer and a mic preamp or DI to do overdubs and monitor.
9. Set up a vocal chain through stompboxes in parallel or series blends (live or studio).
10. Create a wild instrument rack with versatile DI outs, amp feeds, and effects loops.
11. Parallel processing by bringing signals into the mixer *and* through one or more EQs, compressors, or other modules.
12. Oh yeah, go old-school and run eight 500-series modules with independent I/O.

Keep in mind that once the *Workhorse* is loaded with modules, one could pull and swap them as needed in recording scenarios. You could have eight preamps for tracking, swap them out, and then mix back through a combination of compressors and EQs.

AH: I think a lot of engineers and producers will use the *Workhorse* for "remote" overdubbing, as Larry mentions in point 8 above. Imagine you have all of your rhythm tracks recorded in the studio, and now you want to go home or head to the practice space to lay down some guitar solos and vocals. With a laptop, audio interface, and a *Workhorse* filled with your choice of modules, you've got everything you need to play back what's already been recorded, record new tracks to the DAW, and monitor the takes with zero-latency on headphones (or powered speakers if you've got them). And you can do all that with minimal patching. You get to assemble your favorite channel strips, marry them to the built-in mixer, and grab the one box and go!

LC: I tried the mixer out, summing channels from Pro Tools for a mix I had previously done on my Rupert Neve Designs 5088 console (*Tape Op* #73). I'm not gonna lie and say that the mixes were equal, but I will say that this little 8x2 mixer sounded pretty damn good, with exceptional clarity and strong low end. I could imagine calibrating all the channels equally and panning odds and evens for a recallable summing mixer. But with mixing, one concern that I would have with this device is that the signal from each module is summed with its corresponding D-sub input before its mute switch. In other words, if you leave a bass plugged into a DI on channel 1, the DI output is blended in with the signal from the rear D-sub for channel 1. This can be avoided by removing any modules with an output present, or turning ones with attenuation controls all the way down; but it also seems to be something that wasn't quite thought out. I would have rather seen the eight mute switches apply to the modules only.

AH: I understand Larry's point, but personally, not having mutes for the modules independently of the D-sub inputs hasn't been a problem for me yet. I find the D-sub inputs most useful for two use cases: the overdubbing scenario I called out earlier, in which the mixer is being used for monitoring; and parallel processing through the modules. In this latter case, I can send a signal from the DAW to both a module input and the corresponding D-sub input, process the signal through the module (or chain of modules), and sum the unprocessed signal coming in through the D-sub — as Larry mentions in his point 11. For example, one of my favorite vocal mixdown chains goes like this: feed the vocal track to a filter or EQ and take out the highs and lows so all that remains is midrange, then squash heavily with a compressor; in parallel, feed the same vocal to a second compressor set for light, full-band compression; and finally, sum the outputs of the two compressors along with a bit of the unaffected vocal. This kind of processing is second-nature with the *Workhorse*.

And speaking of Larry's Rupert Neve Designs console, it's worth mentioning that the *Workhorse*'s expansion bus can be used with other devices that have similar functionality — not just other *Workhorses*. The manual specifically states that the "virtual earth mix bus" scheme was chosen to be compatible with the RND Portico line.

LC: The rack I reviewed came with a bunch of excellent new Radial 500-series modules to try out, and I'm hoping we can get reviews of these in the future to give them a fair shake. But I do want to mention the simplest of the lot, the *Shuttle*. This unit allows you to create three insert points — one balanced and one unbalanced via front-panel TRS jacks as well as one more on the rear-panel Omniport. All are switchable in and out. These inserts go across the main I/O on the rear panel but also (and this is important) via the Feed function. In other words, you could take the output of a mic preamp or DI, feed it into the *Shuttle*, loop in a run of balanced or unbalanced line-level effects boxes, then perhaps feed a compressor module — or whatever you desire — yet still have a clean, balanced output. If you have an older 500-series module that doesn't feed signal to the mix bus pin on its card connector, you could mount a *Shuttle* next to it and use the Feed switch to send the module's output to the *Shuttle*, which in turn could assign the signal to the mix bus. Or if you just need a patch point to get your MP3 player into

the *Workhorse*'s mix bus, the *Shuttle* comes in handy. It's a basic device, but it opens up some interesting interfacing possibilities. Another nice thing is that it's really affordable — almost presented as a courtesy to *Workhorse* users.

AH: I'm excited to demo all of the 500-series modules from Radial Engineering, including the PowerPre mic preamp with three selectable voicings; the JDX Reactor guitar interface, which you can use to record a guitar directly or place between a guitar amp and speaker; the EXTC for looping guitar pedals into your processing chain; and the TankDriver for driving and amplifying spring reverb tanks, like the ones in the back of guitar amps.

LC: I keep having visions of racking up three *Workhorses* with patchbays and a snake. You could have a pretty cool mobile rig that could handle a lot of routing possibilities. The *Workhorse* is so much more than just a rack that provides power, rackability, and I/O for 500-series modules. It's a veritable problem-solver that could be used in many recording and mixing scenarios, and it could potentially be the heart of a powerful yet portable studio rig.

(Workhorse $1399 street, Shuttle $129; www.radialeng.com)
–LC & AH