

BY STEPHEN MURPHY

Judging by the range of questions I get asked on the subject, the acoustic treatment of small rooms remains a black art of sorts. For many, the amount of data, graphs, tutorials, products (and accompanying claims from manufacturers) combined with measurement and testing equals confusion, inaction or the improper application of treatments.

While the complete study of wave interactions within an enclosed space is indeed very complex, addressing just a few of the key issues can yield dramatic improvements. With the aid of RealTraps' Room Kit (\$1,690) and a few additional traps, I was able to bring an unruly room under control in about a day.

IN AND OUT

The acoustic properties of a room can be divided into two general categories: the first is the behavior of sound within the room, and the second is the acoustic isolation of the structure itself. This seems to be a common point of confusion (typical question: 'What product should I put on the wall so my music doesn't bother other people?') worthy of clarification.

The latter category, isolation, concerns the acoustic transfer of sound to and from the enclosing structure. Typical problems in this category are sound transmission from the studio to adjacent spaces (the neighbor's apartment for instance), external noise entering into the studio (neighbor shouting to turn it down) and structural transmission (a. the neighbor banging on the wall because, b. the bass from the studio is shaking his picture frames).

Structural transmission problems require structural solutions, such as redundant vibration-isolated walls, floating floors, sound-locked entrances and a liberal amount of caulk. For most project studios, disruptive and costly construction is not an option.

Fortunately, problems within the first category (the acoustic behavior within the room) are far easier to correct and do not require a physics degree, construction crew or financial benefactor. While no pre-existing room will ever match a properly designed and constructed studio room, a modest investment in proper treatment can improve the acoustics dramatically.

REAL SOLUTIONS

One of the things I admire most about the RealTraps company is its no-nonsense, direct approach to improving acoustics. RealTraps' products are not a la carte, by-the-square-foot

Hands On: RealTraps Acoustic Treatment



Lifestyles of the rich and famous studio owners - Steve Murphy's SmurphCo Productions overlooking Washington, D.C. Note the strategically placed RealTraps. (Photo courtesy of SmurphCo Productions)

foam products prone to misuse or over use; they are self-contained high-density monoliths designed to be placed across the room's corners and joints (where bass frequencies congregate), or mounted along the walls to reduce early reflections at the listening position. The RealTraps design is very similar to the traps and gobos used at my commercial studio (designed by John Storyk) – a design I know to be highly effective.

In short, the main acoustical problem in any room is the interaction of sound waves coming from the speakers with those reflected off the structural surfaces. Additionally, wavelengths directly related to the dimensions of the room create natural resonances (modes) throughout the room.

These reflected waves add and subtract with each other. Depending on the frequency, amplitude and phase of the reflected waves and the room's natural resonance modes, peaks and valleys are created throughout the room, in all dimensions. This is true of all rooms, even those created by top acoustic designers.

A properly constructed room, however, will employ a height-width-length ratio designed to evenly space the room's natural modes across the frequency range, minimizing the severe and extended peaks and valleys created when modes occur at proximate frequencies.

For those of us using an existing room, there is little we can do to correct the spacing

of modes. But we can attenuate the destructive effects of reflected waves, and at the same time, mitigate some of the effects of modal interference.

The detrimental interaction of bass frequencies reflected around the room is by far the number one culprit in poor studio acoustics. It negatively affects all other frequencies across the full range (bass frequencies and related harmonics will mask and interfere with higher frequencies). If you successfully reduce the amount of bass bouncing around the room, your overall acoustics will improve immensely. This is a main tenant of RealTraps' approach – one that is as true academically as it is effective in the studio in which I am sitting.

MICRO, MINI AND MONDO

All products in the RealTraps line are based on a similar design: rigid fiberglass plus a dual-layer membrane enclosed in a slotted rectangular metal frame and covered in fabric. Different sizes and absorption properties are what define the various products.

All are designed to be spaced slightly away from the wall or across corners to take advantage of absorption from both sides of the trap – one of the components that make them so effective.

At first blush, RealTraps are not inexpensive, but considering the fact that they meas-

ure to be six times more effective in the critical range below 125 Hz than the competition (measured during the same tests), they are possibly the best value.

Measuring 2 feet x 4.75 feet and 4 inches deep, and weighing in at 28 pounds, the MondoTrap (\$280) is the Papa Bear of the RealTraps line and is intended for use in a corner, where it will be most effective.

MiniTraps (\$180) measure 2 feet x 4 feet, are 3.25 inches deep and weigh 18 pounds. Like the MondoTraps, MiniTraps are best utilized across corners or anywhere two surfaces join (e.g., wall and ceiling).

MicroTraps (\$120) measure 2 feet x 4 feet, are 1.25 inches deep and weigh 8 pounds. MicroTraps are for general mid-to-high frequency absorption, and are perfect for creating a reflection-free zone at the listening position. Adding MicroTraps immediately to the left and right (and above, when appropriate) of the listening position reduces the onslaught of early reflections that obscure the stereo image.

Consult the RealTraps website for the full range of sizes and options available. Also on the website is a wealth of excellent articles written by company principal Ethan Winer, who explains the subject matter in plain English and with far more detail than I am able to include in this article.

PAUSE FOR REFLECTION

Let me get right to the point: I really like the RealTraps products. Unlike typical foam products glued to surfaces, RealTraps use the same effective approach to acoustic control found in most top studios – one that I was already familiar with from my own studio experience. Also – and this is not an exaggeration – I believe it would take all of the foam that came in a competitor's starter room kit to equal the mass of a single MondoTrap. While design plans to build similar traps are widely available (even from Ethan Winer's own site – a clear measure of good will if I have ever seen one), I abandoned all such thoughts when I unpacked the RealTraps.

Balancing the \$180 required for a top-performing, well-built and attractive MiniTrap against the cost of the raw materials and the many hours (or days for a carpentry-challenged sort like myself) spent procuring materials, assembling the unit, finding the first aid kit, and cleaning up the sawdust-and-fiberglass mess, the decision was easy.

Although the RealTraps are fairly substantial in size, the Mini and MicroTraps are light enough to easily hang from wall and ceiling surfaces using standard picture-hanging hardware. The hefty MondoTraps, on the other hand, are better suited for floor or stand mounting (stands are available from RealTraps).

In addition to the obvious acoustical improvements realized by the installation of the RealTraps, the aesthetic benefit of the products is not to be discounted (see photo of my installation). In moving the traps about during the installation and rudimentary testing, another benefit of RealTraps occurred to me: you can take them with you if you relocate, and they'll most likely look as good as the day they arrived.

Typical home and office rooms are not ideally suited for professional audio purposes, yet, by necessity, that is exactly where the bulk of project studios and suites are situated. Despite the obvious pitfalls of mixing in such a room, many people pour all their resources into gear and give acoustic matters little or no regard.

RealTraps are an effective way to improve the acoustics in any room, require very little effort to install, yield an attractive and professional look and are built to last.

Contact: RealTraps at www.realtraps.com.

PAR Studio Editor Stephen Murphy has over 20 years production and engineering experience, including Grammy-winning and Gold/Platinum credits. His website is www.smurphco.com.




- Acoustic Design and Planning
- Room Acoustics and Surface Treatments
- Acoustic Testing and Measurement
- HVAC Noise, Lighting, Vibration Control
- A/V Design, Planning, Integration
- Sound Isolation


ARCHITECTURE

 ACOUSTICS


WSDG
 Walters-Storyk Design Group
www.wsdg.com
 USA · EUROPE · LATIN AMERICA · BRAZIL



Surround Monitoring



Mic-Pre



www.lipinskiound.com
 tel 301.286.4300