

# Removing Barriers: The Motivations Of Long-Time Worship Acoustics & Systems Designer

Joseph De Buglio

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An approach that emphasizes innovative, cost effective solutions over trying to Lx every problem with high-end technology.

In each of the 1,400-plus church system projects Joseph De Buglio has worked on since the early 1980s, his goal has been to remove barriers; specifically those that exist “in the sea of air between the pulpit and the people in the pews.”

Every project comes with a unique set of challenges, the Delhi, Ontario-based acoustician and audio consultant says, citing one (circa 1989) in which a church member bequeathed a substantial sum of money – for a variety of upgrades – but with the stipulation that the new sound system be comprised entirely of components from Radio Shack, an electronics chain renowned for meeting consumer home audio needs, but certainly not for its professional-grade gear.

“It was all done with good intentions. And Radio Shack did have adequate components to create enclosures,” De Buglio adds. “They also sold 100-watt mono amplifiers and a 6-channel mixer with balanced 1/4-inch inputs. I believe we used four amps and combined three mixers to provide 18 channels, and then repurposed an Altec equalizer from the previous system for the mains.”

It’s an amusing story, but one that speaks to his approach to church sound throughout his career – an approach that emphasizes innovative, cost effective solutions over trying to Lx every problem with high-end technology.

## Getting Started

Prior to founding JdB Sound Acoustics in 1983, De Buglio worked for a time with a construction company that built churches. “I remember going to a Catholic dedication service at a church that I was a part of building and the sound was really bad. I said to the owner of the company, ‘I thought there weren’t going to be acoustic issues in this new building.’ And he replied, ‘What’s wrong with the sound?’”

Following several similar episodes, and after making multiple enquiries about who might be able Lx these problems: “Someone said to me, ‘Why don’t you do it? You’re the one complaining,’ so I thought I’d get into this line of work.”

It wasn’t De Buglio’s first audio gig. “When I was a kid my father bought me an accordion and by the time I was 15 I’d starting teaching other kids and playing with a band that performed at Legion Halls. I looked old enough that I could get into places I shouldn’t be in,” he adds, laughing. When the bandleader noticed De Buglio’s interest in audio he decided the young accordion player should do double duty. “So while I was playing accordion I’d have this 12-channel mixer to one side to mix the band. That’s how I started.”



*Joe De Buglio at Kingston Road United Church in Toronto. Credit for all photos: JdB Sound Photography.*

After becoming a Christian he quit the band, but never lost his passion for audio. House of worship work, however, required a wholly different approach; something an early mentor, John Quanz, explained to the 24-year-old fledgling audio professional in no uncertain terms. “John asked me what experience I had, so I told him. Then he pulled out a garbage can and said, “Take all that you know about sound and put it in here. Over the next two hours everything I thought I knew about sound went out the door.”

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At that point De Buglio had just sold his first church system project. After speaking to Quanz he went to his client and offered to improve the system by replacing the left/right loudspeaker configuration he’d just sold them with a single central loudspeaker. “A better one,” he says, “placed over the pulpit at the peak of the ceiling. They were resistant, but when I told them to visit a local church Quanz did with a similar solution, they asked me how quickly I could install it.”

While JdB Sound began as a turnkey audio installation company, by 1995 De Buglio turned to consulting full-time, which allowed him to increase the number of projects he took on and expand his reach in Canada and the United States, as well as internationally.

Over time, the company has worked exclusively in the house of worship market, although De Buglio will occasionally lend his talents to other projects. Most recently by aiding long-time friend, audio designer/installer Jon Jukes, with a comprehensive audio upgrade of Kitchener’s Lot 42, a converted factory with multiple performance spaces.



Figure 1 Parkdale United Church in Ottawa, outfitted with tube diffusers as well as a system that De Buglio has smartly evolved over two-plus decades.

Lot 42’s 4,000-capacity main room is the second largest space De Buglio recalls having worked on. “We’ve installed 400 panel diffusers made of Lexan polycarbonate resin thermoplastic over the windows, along with half round cardboard tubes, and it went from having 4.5 seconds of reverberation to 1.8 seconds.” Although it’s a multi-purpose venue that hosts primarily secular functions, the facility’s owners are considering mounting large-scale Christian rock concerts and actively looking for church communities who may be interested in renting their smaller spaces.

## Early Discovery

Just how integral quality sound is to the transmission of the word of God is something that was brought home to De Buglio early on in his career, when an Anglican church (looking to raise money to upgrade to new fire codes) discovered it had another issue – poor speech intelligibility – that also required attention.

“The pastor asked for ‘money’ to offset the cost, but he ended up with 700 pounds of honey,” he says, laughing. JdB Sound addressed the issue promptly and fundraising resumed. Two years later, when he returned to deliver a new wireless microphone, he noticed a new, glass-enclosed elevator. “The fellow taking the delivery said, ‘The sound system actually paid for that elevator.’ In fundraising for the retrofit, they raised enough for that as well.” That further strengthened his belief that a good-sounding church is more likely to be a successful church, one that’s driven him, both professionally and personally, ever since.

This is his ministry – one aimed squarely at solving church’s existing issues while providing them with a firm foundation on which to build their future. In service of that mission, he’s intent on demystifying sound for laymen and providing affordable solutions for clients by dealing with acoustics first.

“Sound systems amplify what the room can or cannot do – like a magnifying glass. In a poor sounding room, you have to limit the functions of a sound system to avoid exciting the parts of the room that interfere with the system’s performance,” he notes. “The worse the room, the less the system is able to do.”



*Figure 2 The inexpensive cardboard concrete forms, cut in half, that have proven to serve an extremely useful purpose in upgrading the acoustical signature of large spaces.*

Putting loudspeakers closer to people helps but doesn’t solve acoustical issues that impact speech, congregational singing, and instrumental music. “People often think buying audio hardware is cheaper than fixing the room, which is something I’ve been trying to fight.” In that struggle he’s armed himself with scripture describing Solomon’s Temple, specifically 1 Kings 6:29, which reads: ‘Then he carved all the walls of the temple all around, both the inner and outer sanctuaries, with carved figures of cherubim, palm trees, and open flowers.’

“I wondered, ‘Why palm trees?’ They disintegrate once you remove their source of water, so they’re no good for long-term construction.” But given their similarity in shape to ASC tube traps, De Buglio reasoned they served an acoustical function, and, by extension, that inexpensive cardboard concrete forms deployed as described in 1 Kings would be a viable substitute. “So I bought a bunch of 16-foot tubes at Home Depot, cut them in half, and went from church to church to experiment.”

Other perfectly serviceable yet more expensive solutions were available, but many primarily provide high-frequency absorption – “which a church with carpeted floors and padded seating already has,” he says. He relies heavily on diffusion, managing sound in the low frequencies and preserving high-frequency energy to enhance intelligibility of speech and encourage congregational singing.

## First Things First

The tubes (which are branded “Sono tubes” by Canada-based Sonoco) have a broad range of uses for sanctuaries, gymnasiums, recording space and other applications. “And when you cut a \$12 tube in half lengthwise, even with labor and everything, you’re talking roughly \$20 a unit.”

Failing to deal with the room first, De Buglio asserts, only drives up the cost of the sound system. “In government and corporate work there seems to be a bottomless pit of money, but I’m dealing with many churches that can barely afford



\$20 to \$25 a seat for a sound system.” Of those, he adds, there are hundreds. “And in all the projects I do I offer to design loudspeaker systems – from the mains to the mixer – at no extra cost, which is another reason many churches contact me.”

In one such case – an 800-capacity auditorium/gymnasium used for choral competitions and other events by a Hutterite community in Manitoba – in addition to his tube diffusers, De Buglio specified three Yorkville U15 loudspeakers and a very basic microphone package. “During a play they were doing one of the kids forgot their lines, but they were able to turn the gain up on the system so that he was able to hear another kid, 15 feet away, give him the lines. That was something I never promised, but the fact they can do it using one (Shure) SM58 blows me away.”

His emphasis on low-cost materials and minimal reinforcement has also come into play at De Buglio’s home church, Tillsonburg Alliance. “What we did for hundreds of dollars would have been thousands,” he says, and in fact, tens of thousands, he adds in citing an estimate from another provider that came in at roughly 100 times the price.

## Priorities In Order

“There’s a misconception that churches are disappearing. They’re not. But smaller congregations are being underserved,” he observes. “When attendance drops to 40 percent, most churches with 450 seats and up can survive and rebuild. What’s happening nowadays is that smaller churches, when they get down to those numbers, aren’t sustainable.”

Good sound attracts young and old congregants alike; something he keeps firmly in mind when installing small-format audio systems. “If they have a subwoofer I try to configure the system so there’s one fader for the mains (with no crossover) and one for the sub (with a crossover). Often by just changing the sub level you satisfy young people, but because you’re not raising the overall volume the older people don’t get offended. From the moment a church hires me, it always acoustics first, sound system second.”



*Figure 3 Tube diffusers at the cathedral of First Presbyterian Church in Sao Paulo, Brazil helped bring excessive reverberation down to a manageable level.*

On a job for the cathedral of First Presbyterian Church in Sao Paulo, Brazil (a 700-seat church with a balcony and a reverberation time in excess of 7 seconds), for example, part of the problem was the open space between the sanctuary and the bell tower stairwells. “That added 5 seconds of noise/reverb,” he says. Installing doors to the stairs and diffusers (in this case half-round tubes of plastic sewer pipes rendered unusable by UV damage) brought the reverberation down to a manageable level. While the pipe organ’s volume increased by 6 dB, with the changes made, congregational singing could easily compete with it.

Although De Buglio travels when necessary, he primarily works remotely. “I give clients detailed instructions in a PDF. They record balloon pops in their space, and from that recording I determine the room’s acoustic signature and reverb time.”

If what he hears doesn’t make sense, he requests additional information. “I ask them to do things like knock on walls, for example. Say there’s a bass problem that I can’t put my finger on. They knock on some drywall and find out there’s 24-

inches (between studs) and no insulation. That acts like a drum. So we insulate the wall or change the physical pattern of the diffusers to address that.”

Similarly, for a church in Australia, changing the pattern and sizes of the diffusers increased their performance to the point

where they achieved 43 dB of reduction at 200 Hz. “With the tubes evenly spaced, the maximum you’ll get is 30 dB reduction,” he adds.



*Figure 4 A creative implementation of diffusers at Tillsonburg Alliance Church in Ontario.*

The tubes can be painted repeatedly and, when deployed in the type of patterns he’s describing, often enhance a space’s overall look. As for other aesthetic considerations: “There’s always a solution,” he says, mentioning times when it was necessary to transfer pre-existing frescos onto acoustic panels, or to install plywood diffusers behind paintings.

## The Long Game

“I never look at a church as a temporary facility. I see a church as something that’s going to be around for, minimum, 100 years,” De Buglio states. Consequently, he aims to provide the longest-term solutions possible, often repurposing and/or augmenting existing audio systems rather than replacing them.

As an example, he points to Parkdale United in Ottawa, a church he first worked on over two decades ago. “When their processor died I provided a new Xilica Xp4080 processor and they purchased a Behringer X32 digital mixer.” The remainder of the system continues to serve the church well, he says, adding, “And if they do decide to do something more contemporary, all they have to do is add a sub.”

That project, as so many others have been, is a particularly gratifying success story: “Within 18 months of the initial install attendance climbed by 14 percent, and it’s continued to grow.” The corresponding improvement in sound also allowed the church to begin renting space to a local choral group in 1999 who remain tenants to this day, which helps contribute much needed funds to the building’s upkeep.

It hasn’t always been smooth sailing, De Buglio points out. “There was a time when acoustical product manufacturers regularly asked me to consult on churches on their behalf.” As he began employing the 1 Kings, Temple of Solomon approach, however, their interest in his services dwindled. “My work meant smaller sound system contracts,” he says, bluntly.

While that’s discouraging, the number of churches he’s helped to clarify and enhance the message they impart to their congregation is anything but. “For me, getting involved in church sound was never about money. It’s about being a Christian,” he concludes. “If you eliminate the obstacles between the people and the message, the ability to preach the gospel is unimpeded. But preaching the gospel is the job of ministers and priests. My job is to get more people in the pews by removing the barriers that get in the way of hearing the message.”