



Sunday – September 22, 2024

The Theology of Musical Thunder

Dear Thomas,

Most of us have heard organ grinders at county fairs, exuberant organ flourishes at baseball games, and even **sinister-sounding organs in theaters** (think *Phantom of the Opera*). But relatively few people have heard an actual massive pipe organ played to its fullest virtue in a church.

A music teacher in my youth once told me that the coordination it took to play a large pipe organ was **equivalent to the skills needed by an astronaut**. It's a machine that only the most talented of musicians can master.

It requires superior hand-eye and even -feet coordination as well as the ability to play on multiple keyboards at once while also **pulling out stops, pushing buttons, and turning pages**. All of this is in addition to the actual skill needed to play the music!

The Command Center

If you look carefully at the console of a standard pipe organ, you get a sense of the complexity of the machine:

- Three or four **keyboards**, called *manuals*, i.e., for the hands (with lots of little buttons arranged directly below the keys),
- A large, wide **pedalboard** for the feet (with numerous pedals and knobs to magnify and change sounds),
- Banks of **dozens of buttons** on either side of the keyboards (called stops because they stop the air from going through the pipes that are not playing), and also
- A stand at eye level **to hold the music** being played.



(Incidentally, the largest organ in the world has **seven keyboards** and more than 1,200 stops on either side of the console—not to mention **33,127 pipes!** More on this below.)

The pipe organ is **the largest musical instrument in existence** and it is for the organist almost a 180-degree experience of musical complexity. Even if you've mastered the *music*, you still need to master the *machine*. Hence, my teacher's comment about the skill of an astronaut.

There is nothing quite as impressive as watching a skilled organist bring a monster organ to life and **make it sing up to its fullest voice**. *It is literally man-made thunder.*



Theology of a Machine

And right there you are introduced to the *theology of the pipe organ*. It is the king of musical instruments because it echoes and re-presents all the sounds of creation. And when used for **the purposes of sacred music**, it becomes a magnificent voice of the redeemed world in the worship of its God.

In this, I am simply reflecting the **words of Pope Benedict XVI** from a speech he gave when he dedicated a new pipe organ for Regensburg University in Germany in 2006:

The organ has always been considered, and rightly so, the king of musical instruments, because it takes up all the sounds of creation...and gives resonance to the fullness of human sentiments, from joy to sadness, from praise to lamentation. **By transcending the merely human sphere, as all music of quality does, it evokes the divine.** The organ's great range of timbre, from piano through to a thundering fortissimo, makes it an instrument superior to all others. It is capable of echoing and expressing all the experiences of human life. The manifold possibilities of the organ in some way remind us of **the immensity and the magnificence of God.**

These insights are quite astonishing. The Holy Father went on to note that the coordination of all the sounds in an organ composition **reflect the human voices and personalities** in the life of the Church.

Theoretically, they all work together in harmony and synchronization for the greater good of the whole. That **unity of purpose** makes for the Church's pure worship of its Creator and Lord. *Theoretically* is the key word here!

Music Machine Par Excellence

But the point about the human dimension behind the instrument is well taken. Making music in this machine is an equally delicate effort to pull off, mechanically.

Think about **what it takes to make an organ function** on many levels:

- Someone first has to **build the organ** and make sure all the different types of sounds are represented in the ranks of pipes.
- The wind that flows through the pipes requires not just a musician but **an engineer who manages the mechanism** for keeping sufficient air pressure to create the sound and making sure those pipes operate precisely with the movement of the keys.
- Even before the organist sits on the bench, **someone needs to tune the pipes** so that they all sing in harmony!
- One [master organ builder noted](#) that his team worked 12 hours a day, 6 days a week, for over two months

to tune the 4,300 pipes of a mid-sized organ.

- And of course, **individuals of great skill** have to compose the music and then play it.

Some form of the pipe organ has been around since the Greeks invented the air-pumping system in the third century BC. In fact, **the word organ comes from the Greek *organon***, meaning “instrument” or “tool”.

It may not be evident at first glance, but the pipe organ was easily **the most complex human machine ever built prior to the modern age**. I suspect that most of these magnificent engines of music will also be around and working long after our electronic gadgets have been tossed onto the scrap heap of history.



All Shapes and Sizes

The human analogy—a community of different voices all working in coordination—is apt on many levels. Like every gathering of humans, you’ll find that **the organ’s pipes also come in all shapes and sizes**.

Well, I should say that the *shapes* of the pipes are pretty much limited to two: **round and square**.

But the *sizes* range from a tiny half-inch pipe to *a gigantic sixty-four foot pipe*, which is installed in only two organs in the world (one of which is in the **Atlantic City Board Walk organ** featured two of the videos below. That single pipe itself **weighs 3,350 pounds** and is 30” square—wow!)

The *girth* of the pipes also varies throughout: the smallest is the diameter of a thin pencil while **the largest can be the size of a 55-gallon drum**. For example, the 32-foot pipe (numerous of these are pictured below), is so wide that it

emits a sound inaudible to the human hear. Its sound can only be *felt*—*yikes!*

One expert described it as similar to the rump-rump-rump **sound of a helicopter** that you can feel more than hear. An excellent image!



[Screenshot from the video: [A Virtual Tour of the Largest Pipe Organ in the World](#)]

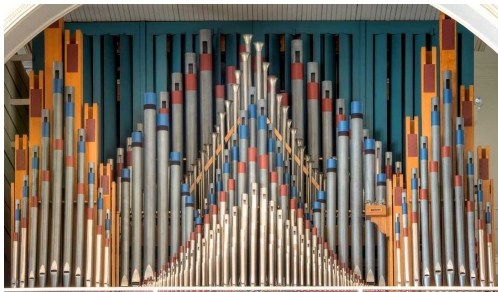
The experts also say that **every pipe organ has its own unique personality**. Each one has to be built from scratch and is therefore different from every other instrument. There is no cookie cutter design from which pipe organs can be made.

Every Sound Imaginable

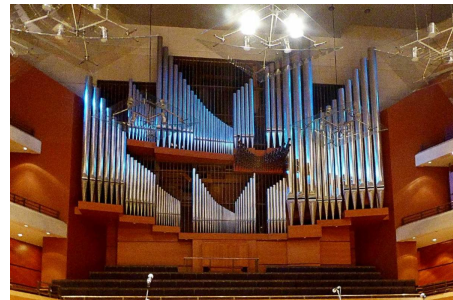
We don't have space here to go into all the technicalities of the pipes, which create the diversity of sounds, but here are the general types you will see if you ever walked into the area behind an organ:

- Round and square pipes **made of pine or fir wood** for the reed instruments;
- **Lead, tin, and zinc pipes** for the flute, oboe, and clarinet sounds;
- Other wooden pipes that create the sounds of **string instruments**; and
- Tin and zinc pipes for the **brass instruments** (horns and trumpets).
- The Royal Albert Hall in London even has **a bass drum** in the middle of all its pipes, which can be struck with a mallet by pushing a key.

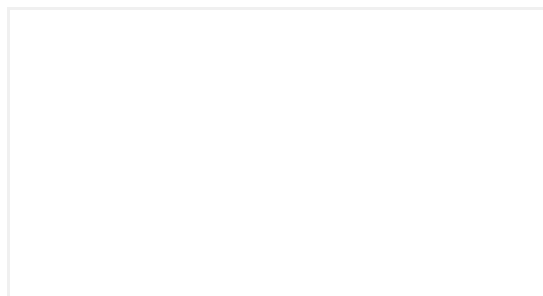
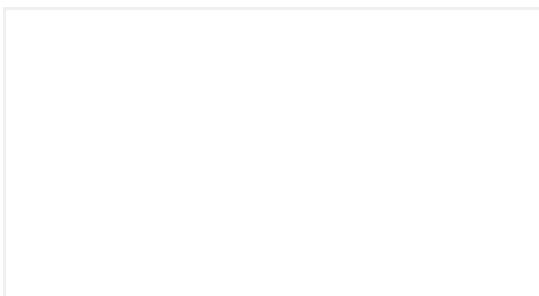
These pipes **can create every sound imaginable** at the hands of a skilled musician. And the musical effort can be loads of fun too. One organist described the workings of a huge pipe organ this way: "It's basically is a big box of toys!"

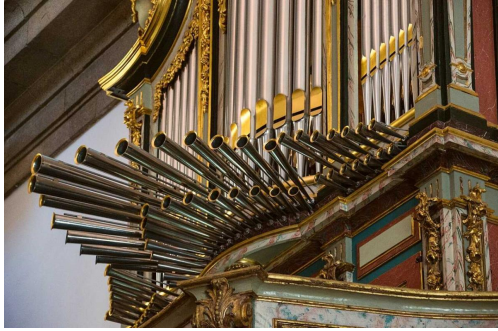


Central Moravian Church, Bethlehem, PA



Bridgewater Hall Organ, Manchester, UK





Igreja da Misericordia, Porto,
Portugal



Mormon Tabernacle Choir, Salt
Lake City, Utah

A Forest of Pipes

But be careful how you interpret the array of pipes you see in the impressive **displays high up in church balconies**.

These are **just the window dressing** of the full organ, usually just a few of the larger flute or horn pipes that are placed in symmetrical arrangements on the outside for show. They can be immensely beautiful, but they are not the full pipe organ, by any means.

The real work of creating the organ's sound is **all done behind the scenes** like good stage hands whose invisible work enhances the performance of the actors on stage.

As you might imagine, thousands of large and small pipes occupy quite a lot of space and they have to *be* somewhere, which is usually **in a chamber behind the console** where the organist sits.



When you enter that area, you see the full extent of the organ pipes arrayed in their various ranks. Walking through the narrow passages between the ranks of pipes is something akin to **walking down the pathways of a small forest**. Just don't do it when the organist is blasting away at any composition of Johann Sebastian Bach!

*(The fascinating [video of Royal Albert Hall](#) below shows two people walking through such a forest of pipes and explaining what they see. **The organ has 9,999 pipes** and the tour through it is well worth the seven minutes needed to watch it!)*

Beauty and the Bach

Johann Sebastian Bach (1685-1750) was by far the greatest musician of his day. His instrument of choice was the **harpsichord**, but his *instrument of work* was the pipe organ because **he was a church organist** for his entire career.

At left is the organ in the church of his first assignment in Thuringia, Germany—it is **3 stories up!**

In the 1700s there was no way to make a recording of his music, but **one contemporary wrote that "he played like fire"!**

My own musical teacher, whom I mentioned above, said that Bach would play his magnificent compositions so robustly that **people complained** to the pastor that they found it impossible to pray after the services! (That's a problem I'd like to have in our churches today.)

Historian Paul Johnson notes that **Bach was the hardest working of all the great musicians** of history. He probably composed over **1700 pieces of music** in his lifetime.



Concerning Bach's particular genius for music, Johnson simply says, "the man was a copious, gushing, unceasing fountain of creativity" (*The Creators*, 86). And indeed, **creativity is a true sacred window** reflecting our wondrous Creator.

Transcendence

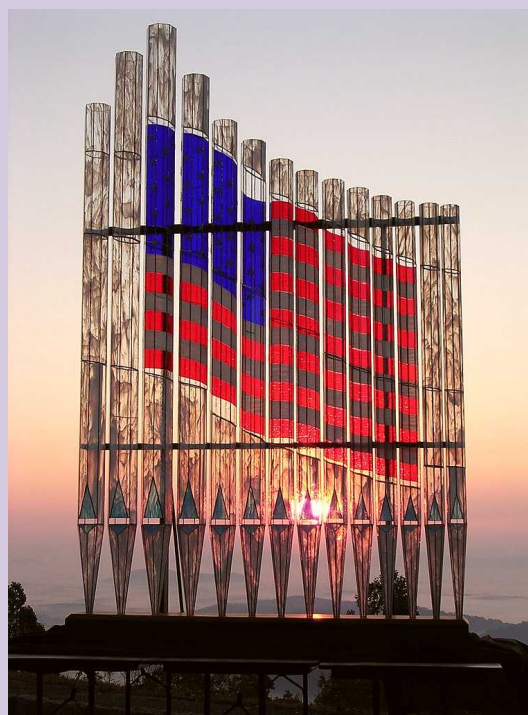


To boil the pipe organ down to its most important dimension, we have to return to Pope Benedict's insights. From a human point of view it is an impressive creation, but **the purpose of a church organ is deeply spiritual**: to inspire

and lift us up so that our hearts can "transcend the merely human sphere."

It inspires such transcendence by its amazing mechanical complexity, the beautiful symmetry of its pipes, the diversity of its sounds, and of course by its **power to send a chill up your spine** when played to its fullest grandeur.

If you doubt what I mean, listen to even a few minutes of *Bach's Tocatta and Fugue in D Minor* in the video below, and you're likely to have an experience of transcendence!



The only GLASS pipe organ in existence, by an Austrian organ builder as a 9/11 tribute. (Visit the [website](#).)

Featured Videos

The World's Largest Pipe Organ Explained (2:18)

Bach's Tocatta and Fugue, Atlantic City Organ (9:06)

Walking INSIDE the Royal Albert Hall Organ (7:31)



God bless you and your family!

Peter Darcy

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