

RODGERS

[PDF™ Stereo Imaging v. Stereo Reproduction](#)

[Definition](#)

According to the Oxford dictionary, stereophonic (more commonly referred to as stereo) is defined as follows: *“adj. (of sound recording and reproduction) using two or more channels of transmission and reproduction so that the reproduced sound seems to surround the listener and to come from more than one source.”*

[Perception](#)

Most people think of “stereo” in terms of their home sound system. The warmth, pleasing to the ear and seemingly non-directional factors give “stereo” its universal appeal over “mono.” For optimum effect in this environment the listener is in relatively close proximity to the speakers. The speakers are on either side of the listener, so the music literally surrounds the listener. This rather limited area is often referred to as the “sweet spot.” An equally important part of this “home stereo sound” system, however, is the fact that the sound is usually captured by two microphones on either side of the sound source. The stereo field captured using this recording technique is then played back in the home stereo system expressly designed for this type of reproduction. Although this is true of most recordings and home systems, it has little to do with the sound reproduction and stereo image created with Rodgers’ exclusive Parallel Digital Imaging™ technology.

In digital organs, there are a limited number of speakers that produce the sound, unlike a pipe organ where there may be hundreds or thousands of pipes. So the sense of space has to be created electronically. Over the years there have been a number of methods used by different manufacturers with varying degrees of success.

[Other Manufacturers](#)

In an effort to remove the sterile or monaural flavor of sound, some manufacturers tout systems that use two speakers delivering adjoining notes (i.e.: C from the left, C# from the right, and so on) as a new state-of-the-art sound delivery system. In fact, this technique or “ping ponging,” as it is often referred to, is actually based on concepts patented by Don Leslie in 1952. Revolutionary for its day.

More importantly, this system is not in the least similar to how a pipe organ delivers sound. Think about a pipe organ chest. The pipes are spread across 8’ to 14’ typically, not grouped at extreme ends of the chest.

The “ping-pong” method also has an annoying side effect if you are sitting close to the speakers. The notes bounce back and forth between the two speakers as you go up a scale, creating an unnatural sound. This is most noticeable on self-contained organs and in small rooms. These organs often have complex reverb systems that attempt to mask the “ping-pong” effect and add a greater sense of space. Additionally, if the listener is close to only one of the two speakers, then only half of the notes are heard clearly, which is even more disconcerting.

Parallel Digital Imaging™

Imagine you are in a room crowded with people having conversations. You can focus on one particular conversation or another, and distinguish that conversation from all the others going on. Now imagine doing that same thing, with an earplug (or a cold) in one ear. It would be difficult if not impossible to make out an individual conversation, especially if every speaker’s voice was the same volume. We have this ability to recognize individual sounds because of our two ears, and the ability of our brains to measure time between the sounds at each ear. We perceive this time difference as a sense of space, receiving individual sounds from various spatial locations. At Rodgers, we refer to this sense of space or spatial location as “stereo imaging” as opposed to stereo reproduction.

The patented PDI™ process uses time displacement to create acoustic space between notes as they’re played. As in the crowded-room example, time displacement allows us to localize individual sounds. In addition, the unique sense of stereo imaging created by PDI™ is perceivable over a wide area and not restricted to a narrow “sweet spot.” Two generators and two speakers are used per note, but where PDI™ differs from stereo sampling is that PDI™ requires only one sample. Rodgers’ proprietary sampling techniques use multiple microphones for the purpose of capturing the full character of the pipe – NOT to introduce or capture a stereo field for stereo reproduction.

Modeling a Pipe Organ

The resulting samples have the appropriate time-displacement algorithm applied to each note by a skilled sound engineer in the voicing process on each individual rank. The time displacement is adjustable individually for every note of each voice on the organ, creating a theoretically infinite number of sound placement combinations. The values assigned match the location of pipes on their original windchest, thus modeling the layout of a pipe organ to create the unique PDI™ stereo image.

This technological improvement offers superior flexibility and dispersion when compared to stereo recording and reproduction for home systems. The stereo imaging of PDI™ is designed to work in large spaces such as churches and eliminate the problem of small sweet spots found in typical home systems. With each pipe in its own aural position in the overall soundscape, a rich, warm, lifelike pipe tone is created. The unique stereo imaging of PDI™ is one more reason Rodgers organs offer the most realistic pipe-like sound available today.

RODGERS

PDI STEREO IMAGE

