

## The Audio System

The audio system can make or break the organ. Unfortunately, this part of the organ is not something that you can design on paper, put together, plug in and use -- I expect that there will be a large amount of experimentation and adjustment required before I am reasonably satisfied with the system. Not having done that yet, here are some preliminary thoughts:

First the simple stuff -- the Schober console has room in the back for a 12-inch speaker, facing to the rear. Not suitable for a realistic effect for organ sounds, but a start. Aside from the PC computer and its software, I have a Roland CM32P sound module in the system. While this has a variety of sound colors, I particularly like its piano. Yes, I know that church organs never have a piano but theatre organs do, and I intend to use it. Since a theatre organ piano is generally a point source, I intend to use that speaker at the back of the console mostly for the piano. The speaker is a 12-inch University coax unit some 40 years old, but still in good shape. It is driven by a 20-watt (supposedly!!!) solid state amplifier that I picked up surplus.

Let's now talk about reverb. For the ultimate in realism, you need to add some reverberation to the sound, otherwise the organ sounds as though you're sitting inside the organ loft. Some of the Hauptwerk samples were themselves recorded in a live room or church, and contain reverb in the samples. Others are recorded 'dry' - no reverb at all. Either way, adding some additional reverb, and making it come from other places in the room, can add a lot of openness to the sound.

Adding reverb after the computer is especially important for the theatre organ sound. Theatre organs tend to use heavy tremolo to add a lot of "shake" to the sound. But the sample theatre organ pipes recorded for Hauptwerk cannot contain tremolo because it would be almost impossible (or at least very difficult) to synchronize multiple pipes so they all shake in step with each other during playback. So tremolo has to be added during playback, not during the initial recording of samples. But you can't tremolo the reverb! Thus the reverb also has to be added during playback, after the tremolo is done first. Hauptwerk does the tremolo as it plays, but does not have the computer capacity to do reverb as well. So reverb has to be added externally to the audio output from the PC computer.

I have two reverb units available - an Alesis Microverb, and an FX-1 processor from Applied Research and Technology. Both of these have a variety of reverb and delay effects, but the important thing is that they are *different*. This adds a bit more variety to the sound.

As to speakers - I have a Schober floor cabinet with two 12-inch speakers, two AR-2ax bookshelf speakers, a Klipsch powered subwoofer (intended for home theater use, but I think satisfactory for an organ), and several smaller speakers as well, including a 40-year-old Klipsch corner horn. I also have a small Leslie speaker, but intend to give it away - I think the effect would be too artificial.

For amplifiers, I have two Schober 30-watt transistor amplifiers, one Heath Williamson 20-watt tube amplifier, and a surplus 20-watt stereo amplifier of unknown quality. Between all of these, there should be enough to produce a reasonable amount of sound.

That's about all I know about the audio system right now. I'm sure I will have to set up some sound mixing and distribution system to spread the sound around the room. I may need some equalizers as well. I am also not sure how many output channels I will have on the PC computer. There will certainly be at least one stereo pair from the sound card, but perhaps I will be able to use a second sound card for another two output channels. Who knows ... only time will tell!