

---

Subject: Re: Huygen's Principle...

Posted by [Wayne Parham](#) on Sat, 07 Aug 2004 05:34:27 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

Hi Bill, I think these guys are talking about Christiaan Huygens, a mathematician/physicist who proposed wave theory. I don't know if that's the same Huygens you are talking about or not. I understand the point you are making. Curved ducts and flares pass sound through them if the ducts are dimensioned as to work as a waveguide. You can actually take a vacuum duct and bend it in a variety of ways and still clearly hear voice spoken in the other end. The curves and bends don't attenuate the sound, and that's the principle you are using in your horns. That's how the wave passes through them at frequencies where the duct acts as a waveguide. I also know from experience that angled reflectors are effective at high frequencies. The trick is positioning the reflector to direct the wavefront. If horn folds are angled so that reflected energies are directed towards the mouth, then the folds don't attenuate high frequencies, and instead, sound is directed outward. Most bass horns don't use reflectors because only low frequencies are wanted. The folds attenuate high frequencies. At low frequencies, wavelengths are large enough that the folds don't act as reflectors and the energy passes right through. As frequency rises, the walls at each fold become reflectors, but they don't reflect sound towards the mouth, so it is attenuated. It literally bounces back and forth inside until the energy is dissipated. Wayne

---