

## **ACOUSTICS2008/1632**

### **Experimentation in physics-based sound modeling**

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Since 2001, as part of the Sounding Object and CLOSED projects, we have been developing physics-based sound models for everyday events and processes. The procedure of describing a sound-producing phenomenon in physical terms, building a model, and accessing its parameters, easily gives the illusion of controlling sound production in the most effective and convenient way. For example, it is trivial to connect a force sensor to the rubbing pressure variable of a friction model. However, one soon realizes that it is often difficult to predict changes in perceived sound in response to physical changes, and that robust models are difficult to achieve. These issues can partially be addressed with experimental research in perception, psychophysics, and phenomenology. Although this approach is inherently time consuming, it will eventually lead to sound models whose parametric layout is more suitable to human manipulation and control. Conversely, in the practice of designers we find that problems are tackled by rapidly producing a multiplicity of attempts, or sketches, and by critically comparing them. In our practice of sound modelers, there are several examples where both approaches, the one based on experimental psychology and the one based on design, proved to be compelling and useful.