

Fig. 1 Digital-to-Object conversion

The PhD research project *Tangible Signals* investigates the dynamic physical representation and haptic feedback control of computer music and sound data using motorised or actuated objects. Tangible interfaces, e.g. Reactable or SoundFORM (Fig. 3, 4), have significantly expanded the interaction modes and thus the spectrum of music making. However, when it comes to digital music-making, the

processing, e.g. in digital audio workstations, is still mostly GUI based, the musical content is usually converted to analog sound and played back via loudspeakers. That excludes particularly visual-impaired musicians. This project attempts to expand the GUI-based workflow by exploring not only a static physical manifestation (e.g. Fig. 2), but a dynamic physical representation and manipulation of sound (see Fig. 1).

TANGIBLE SIGNALS

Physical Representation of Sound and Haptic Control Feedback

Research Questions:

- How can the physical representation of sound and haptic feedback control contribute to the process of sound generation, sound processing and artistic performance?
- How does the physical representation of sound and its haptic control feedback open up new inspiration and creativity in artistic-musical expression?
- How does the interaction with the physical representation of sound and its haptic control feedback compare to GUI-based workflows?

Research Methods:

- Iterative design of multifunctional prototypes
- Qualitative analysis based on observation of musicians (sighted & visually impaired)
- Cooperation with the Institute for the Blind in Vienna incl. Lectures & Workshops
- Artistic Research Methods, e.g. artworks and stage-based performances
- Symposium with artists, musicians, scientists from neighbouring fields.
- Scientific publications at conferences (TEI, NIME, etc.) and journals



Fig. 2 Sound Shifting



Fig. 3 Reactable

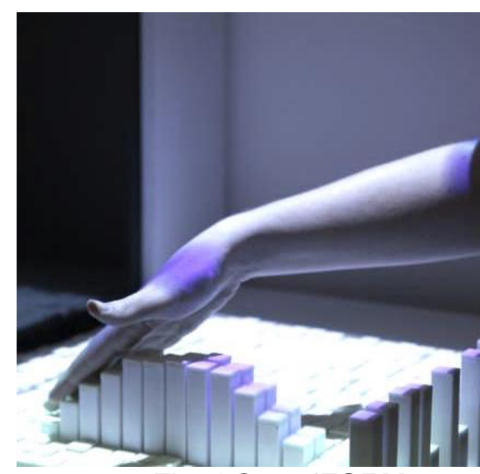


Fig. 4 SoundFORM