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Abstract:

# Synesthetic approaches on painting of non-tonal sounds – how do visual elements correlate to physical features?

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Synesthetic painting frequently focuses on depictions of music and musical sounds. In the auditory environments of daily life, however, non-tonal sounds play a major role, whether they are consciously perceived or not. Functional sounds help to control technical processes and provide alarm signals. These signals are designed to convey various parameters, such as velocity and potential danger of approaching vehicles. Due to the frequent occurrence of sounds in daily life, synesthetic visualizations of such auditory events can be found in literature or are presented at synesthesia conferences. This contribution reviews noise-related artwork and its characteristic elements throughout one century. Can specific characteristics be found? Which differences regarding painting of music are evident – if any?

In order to provide prerequisites for any systematic analysis, the physical properties of non-tonal sounds will be summarized. A central subject matter is given by the different nature of random processes as compared to periodic events. The central limit theorem of statistics is crucial for understanding random processes of noise generation. It is an essential element of daily sound experience. Furthermore, psycho-acoustic evaluations help to understand the influence of sound parameters on perceptual details. However, no analysis of physical data currently exists to provide a full holistic description of what is heard.

Things become further complicated when random noises and tonal components are combined. Such combinations often occur. They are typically generated by numerous technical sound sources. Although complicated, the description of the tonality of random noises is essential to provide the full picture. Numerous sound examples bring the perceptual experience close to the audience.

The author combines application of elaborate concepts for systematic analysis of synesthetic art with own experience in painting of music and sounds. Visual elements are set in correlation to the typical features of noise stimuli. This analysis is supported by the author’s long-term experience in acoustic measurement techniques, signal analysis, and psychoacoustic evaluation, which he applied for technical and musical acoustics, multi-sensory analysis, and sound design.

The principles made available in this study enable in-depth systematic evaluation of presumed root-causes for synesthetic perception and artistic references to noise and functional sounds of daily life.

Keywords: synesthetic arts, random noise, functional sound, auditory perception, signal analysis

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