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ORIGINAL ARTICLE

Relationships of sonification to music and sound art

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Abstract The definition of sonification has been reframed in recent years but remains somewhat in flux; the basic concepts and procedural flows have remained relatively unchanged. Recent definitions have focused on the objective the important uses of sonification in terms of scientific method. The full realization of the potential of the field must also include the craft and art of music composition. The author proposes examining techniques of sonification in a two-order framework: direct and procedural. The impact of new technologies and historical roots of that work argues that framing this broad topic should be in terms inclusive of scientific method and craftsmanship and art. The expressive use of sonic time-based data flows needs to be refined and expanded. The unexamined territory of how a broad-based population of listeners on a subjective, as well as objective level needs, have to be included in this new field.

Keywords Sonification · Composition · Sound Art

> Music, which should pulsate with life, needs new means of expression, and science alone can infuse it with youthful vigor-Edgar Varese (Kostelanetz and Darby 1996).

Sonification has the promise to revolutionize a major area of the human computer interaction environment, but only when it is framed in a generalized cross-cultural way that is fully inclusive of its entire potential. The path to fully integrated sonification experience is to include the heavily culturally embedded concepts of taste and style into the design of a sonification interface if it is expected to earn any long-term adoption. The history of the realization of sonification is very young, but it is clear that these considerations are not yet a substantial aspect of the design parameters in this field so far.

A recent attempt at a definitive definition reads (Hermann 2008): "Sonification is the data-dependent generation of sound, if the transformation is systematic, objective and reproducible, so that it can be used as scientific method."—This concise definition is preceded by the statement, "Sound Artists and Musicians, who have been using data for compositional purposes for a long time, now start to denote their compositions as sonification, which raises the question what criteria need to be fulfilled for a sound to be called a sonification."

Work that is not truly based on the conversion of time-based data streams realized into audio should not be mistakenly called sonification, but equally framing it in terms of "scientific method" is also as grave a mistake. Science is one aspect of the work, but not the only one. There is a culture of expression using technology that has grown around the creation of systems and processes that should not be discounted or ignored. As information technology has evolved and become more sophisticated, the new means of manipulating information and data flows has created an abundance of meta-tools that are general purpose and designed to be used in expansive and unpredicted ways. Visualization is our culture's default data representational process, but other senses, particularly our sense of hearing, have always provided rich unique paths to augment our understanding of reality in both scientific and spiritual ways.

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