Fab Synthesis: Performing sound, from Musique Concrète to Mechatronics

1. Introduction

Since the beginning of Pierre Schaffer's research at Radio France studios in the 50s', recording sounds outside or in the studio was an essential part for a lot of tape music at that time. This tradition has continued to attract the composers' interest until today where composers in search of new sounds and ways to control them have incorporated new technologies such as digital fabrication, cybernetics, and mechatronics[1]. It is the synergy of human dexterity and expressivity with the precision of electrical, computer and mechanical technologies where instruments make sound themselves or extend human agility. The aim of the present study is two-fold. Firstly, to explore and identify the implications of sound performance and expression as a building block in electroacoustic sound composition. Secondly, it attempts to introduce and describe Fab Synthesis as a sound synthesis, design and performance practice that facilitates uncompromised sound expressivity and encourages the combination of human and electromechanical agents to interact seemingly.

The binding element of this interaction is the sound as the sole bearer of musical experience; a sound virtuosity and musicianship that is embodied in the sound alone, within the context of music for fixed audio projected on loudspeakers with no live intervention of instrumentalist(s). However, the luck of instrumentalists on stage has opened ongoing discussion weather removes something from the music experience or not. This question continues today even if we enjoy listening to our favorite compositions via our home audio system without complaining that our favorite band or orchestra is not sitting right in front of our living room. So why the electroacoustic music community is still battling with this issue? Is there something that possible missing, and if yes is this the luck of the performers on stage or something else? McNabb writes "The reason that a lot of tape music sounds unsatisfactory is not because there is no performer on stage, but simply because there is no performer at all (McNabb, 1986)." When a composer goes around, and record sounds for the next piece the moment the rec button is on to record the sound the composer becomes the performer of it. Performing sound is essential to get expressive sounds with depth, detail and full musical potential without sounding generic. The stage is everywhere, in the kitchen, in the studio, in the forest or the construction site, all it needs is a performer to capture the moment with expression, musicality, and virtuosity. Further audio editing and processing effects may follow as the composer crafts the piece, but this article will focus on the way the sound is made.

In electroacoustic sound-based composition, the relationship among composer, instrument[2], performer, concert hall and listener often collapse into one holistic aggregate. The composer is often the performer and the listener; the one who makes or founds the instrument, the one who discovers a tiny machine sound or a serene deep soundscape, and the one who defines the properties of the imaginary space in the piece and the physical arrangement of the speakers in the concert hall. The composer is responsible for the conception of the sound, the design and implementation of the instrument, the performance and finally the recording of each sound.

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[1] Mechatronics is best defined as the synergistic use of the latest technologies in precision mechanical engineering, controls theory, computer science and electronics in designing improved products and processes (Ashley, 1997). Principal elements of mechatronics systems are as follows: Mechanical, Electromechanical, Electrical/ Electronic, Control Interface/ Computing Hardware, Computer (Kapila, 2010).

[2] For simplicity reasons any kind of musical instrument, instrumental device, physical object, found object or mechanical device that produces sound in a broad sense will be called instrument. However, the purpose here is not to play music but to generate sound.