

# Past and Current Tendencies in Technology-Based Music

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**This article will, in a broad sense, discuss technology-based music from its early radio beginnings to the current participation practices, and seek to place both technical and musical development within broader trends of social development. The introduction of new technologies in industry, composition, mediation and consumption has, in a lasting manner, changed the way most of us listen to, participate in and make use of music in our daily lives. Electronic aesthetics has finally, following a development of nearly a hundred years, started to fulfil its initial promise of becoming widely accepted and popular outside of the narrow circles of musical expertise – a ‘democratic’ music unhindered by the hierarchies of the fine arts in their different configurations. But has it really fulfilled the original promise? Is it rather not so that both the music and its promise have changed over the years?**

One thing is certain, our pre-adaptation to aesthetic experiences has undergone extreme changes over the last twenty years or so. A paradigm shift brought about by digital media and distribution, as well as the networking of things, has directed large parts of humanity towards a new existence in the cross-section of technology and humanity, an existence where cyborgian qualities increase day by day.

## 1. EARLY INSTRUMENTS AND RADIO BEGINNINGS

The instruments that emerged from the early electrification were thought by many to have the potential for becoming a bridge between amateur audiences and their desire for active participation in music as performers (Wiggen 1971; Broman 2007). The skills needed for performance of traditional art music were beyond reach of what the majority of the population could hope to develop, and the cost of good instruments also prohibited broad segments of society from taking part. The new electronic instruments were easy to play, and although they often built on the traditional keyboard interface, the tones they produced were simple, compared to acoustic instruments, but with the allure of being new and unheard. Becoming a skilled performer still required years of practice.

The early electronic instruments sought to use the new medium of electricity for the purpose of expanding the musical palette, and they covered a wide range – from the strange-looking *theremin*, which was operated only by gestures in the air near the instrument, to new control interfaces such as the

rotating dial of the *Sphärophon*<sup>1</sup> and the ribbons of the *ondes Martenot*.<sup>2</sup> More practically oriented keyboard instruments included the organs by Laurence Hammond.<sup>3</sup> These organs became popular and found their way into churches and religious congregation halls as good-sounding and relatively cheap replacements for pipe organs. Most of these instruments were capable of producing sounds that one could not easily get from acoustic instruments, and composers such as Olivier Messiaen and Paul Hindemith wrote for electronic instruments. Although the music was innovative enough, it was not often particularly radical by the standards of the day, or by today’s standards for that matter. Little of it is performed today, although exceptions exist.<sup>4</sup>

The instruments were thought to be able to draw broader groups of people into making music, and they were thought to be particularly well suited for the new media technology, radio. At the time, composers increasingly wrote or arranged their music specifically for radio, with the purpose of creating a balance between the different instrument groups particularly tailored for broadcast. Recording was not yet feasible, and the musicians needed to squeeze together in front of

<sup>1</sup>The *Sphärophon* (1927) was an electric instrument developed by Jörg Mager, much because of his interest in micro-tonality, and originally operated by handles and cranks. His further development of the instrument added conventional keyboard control, so that it could provide pitches and discrete intervals as well as changes in timbre. The instrument is described in several sources, such as: <http://120years.net/wordpress/the-electrophon-spharaphon-partiturophon-and-the-kaleidophon1921-1930> (accessed 21 August 2014) and <http://acousmata.com/post/27443169341/jorg-mager> (accessed 21 August 2014).

<sup>2</sup>The *ondes Martenot* (1928) was also first made without a keyboard interface, and where Mager used a hand crank to vary pitch, Maurice Martenot used a ribbon with an attached ring for a finger. Later, a keyboard interface was added in addition to the ribbon. See Chadabe 1997: 11–12.

<sup>3</sup>The Hammond organ (1935) adopted the tone wheel idea from the Telharmonium (1897), and developed it further by rotating the tone wheels in front of electromagnetic pick-ups. Timbre control happened through a registration interface as in pipe organs, and by way of technology with rotating speakers from the Leslie company, the characteristic phasing effects were achieved. A keyboard provided pitch control.

<sup>4</sup>Two examples: the number of pieces written for example for the *ondes Martenot* has been estimated to between a thousand and two to three hundred. The number of pieces for Helmut Trautwein’s instrument the *Trautonium* is very small.