

About this issue

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When we imagined to dedicate the XVI issue of *Music/Technology* to sound synthesis, we aimed at investigating if this area of research was still so lively as it used to be in the 70s and 80s, the time of the pioneering inventions of new synthesis techniques, like frequency modulation, or waveguide, just to mention two of them.

As the content of the articles is implicitly showing, research on synthesis has mostly shifted since then from universities to the industry: nowadays, it is possible to find a plugin for almost every synthesis or sound processing issue, and new plugins continue to appear on the market. However, most of this software is to be used as black boxes, with strong limitations and little or no programming potential. It is only possible to control what the designer has decided to make available.

Radically distant from the above-mentioned restrictions, Giovanni De Poli shows the importance of approaching synthesis from the perspective of abstract “sound models”, in order to “represent and generate whole classes of sounds”. The notion of “computational model” is essential for every composer who wishes to imagine and control sound without constraints, but his or her own creative imagination.

Before delving into the research on sound models carried at the Centro di Sonologia Computazionale (CSC) of the University of Padua, where he had been active for several decades, De Poli also analyses the importance that control has when dealing with synthesis models. A synthesis model without powerful control strategies is like a car with an engine, but without a body!

To celebrate the 100th year of birth of Iannis Xenakis, Agostino Di Scipio concentrates on his eight works that totally or partially use sound synthesis techniques. What strikes in Xenakis, is the continuous relationship between the technical issues he had to cope with and their direct connection to his compositions. Still today, Xenakis remains a rare example of a composer where scientific knowledge and creative power are harmoniously blended into a unique theoretical and musical outcome.

The only article exploring an innovative approach to sound synthesis is by Panayiotis Kokoras.

Provided with extended references to historical and theoretical frameworks, Kokoras, a composer himself, defines the intriguing realm of “Fab Synthesis”, a prac-

tice where “a sound performer agent effectively applies energy to physical resonator(s)”. The “resulting acoustic signal is recorded by conventional audio recording means”.

Kokoras’ work connects itself to the tradition of physical electro-mechanical instruments, from Scriabine’s “Keyboard of Light” for Prometheus, to Russolo’s “Intonarumori”, or the various analogue synthesizers up to Ondřej Adámek’s and Carol Jimenez’s “Air Machine”. However, “Fab Synthesis” is not conceived to be performed in concerts, but to generate sounds for further processing as recorded material.

We would have expected a larger presence of state-of-the-art physical modelling research, a presentation of current AI/DL (Artificial Intelligence / Deep Learning) techniques or of quantum computing and musical creativity which are starting to find their way into the world of sound synthesis. However, in spite of some preliminary results, these areas seem still too experimental to produce convincing theoretical and compositional results.

We are also persuaded, that future research on “Metaverse” and other virtual realms might enlighten further paths of development since computer-generated sounds find a natural place in these environments.

However, it might take years, if not decades, before an active community of scientists, engineers and artists find the adequate medium to fully express their creativity.