

Reconnections: Electroacoustic Music & Modular Synthesis Revival

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Abstract

For many electroacoustic music composers, focus is more directed toward timbral and textural approaches rather than pitch centric domain processes and for some, physical machines can allow for more interaction and can produce a more unrestrained sense of sonic exploration and compositional thinking.

This paper examines a ‘reconnection’ to past compositional approaches via the modular synthesizer as manufacturers have been linking composers with the spirit of electroacoustic music making, returning to more physical and interactive compositional approaches. These processes are applied in my own work and mediated through the use of a Make Noise Shared System Plus Modular Synthesizer and the ‘Morphagene’, a module largely modeled on the ‘Phonogene’ (1954), a multi-headed tape instrument, used by Pierre Schaeffer and Iannis Xenakis at Radio France.

This examination asks if such as asking if these ‘reconnections’ to past techniques challenge or complement the established histories of electroacoustic music and to what end will it influence future directions within these worlds? Ultimately, as this paper attempts to demonstrate, the synthesis, transformation and organization of sound is still largely informed by aesthetic criteria, rather than the machines facilitating it.

1. Background

When asked what musical instruments they play, few computer musicians respond spontaneously with ‘I play the computer’. Why not? (Wessel and Wright 2002).

This quote is used to open up the discussion at hand. How much ‘playing’ is involved in electroacoustic music making, particularly during the process of creating material? In many ways, this is hard to analyze and quantify as sound material and its generation concerns itself more so with transformation and methods of organization. The concept of ‘playing the computer’ has a duality; in that it opens up aesthetic possibilities and imposes aesthetic constraints. As a device, the computer continues to prioritise on the refinement of the links between the synthetic and natural sound worlds and at that, it seems to have no end. The word *revival* is also in my title, quite liberally. Let me clear this up. The role of electroacoustic music making, its trials and errors, has resulted in as many new approaches to materials and structures as has its conceptualization and intellectualization. The electronic medium of sound and its

generation, is less and less concerned with the pitch centric domain, rather, toward both timbral and textural approaches and it is proposed here that the modular synthesizer, in its restoration (and/or revival) of the exploration of sound generation and manipulation techniques of the electroacoustic music making past, makes them part of current electroacoustic music making mechanisms.

Selection is a crucial framework and process for the composer, be it in the choices we make or for the problems we attempt to solve. Curtis Roads saw this as the process of choosing the right compositional problems to solve, leading to, he quotes, “a question of strategy, tactics, tools and materials” (Roads: 15). All aspects of music are both enabled and limited by available tools (instruments, composing and strategies). These tools allow the composer to sculpt the aesthetic shape of color, tone and texture in their works.

Within this, the aesthetics of techniques and how they are implemented should be considered. Herbert Eimert at the Cologne E.M.S, considered such a theory. He quotes:

(Electronic Music) is not a cautious departure from certain traditional paths but rather, in the radical character of its techniques, gives us access to sound phenomena hitherto unknown in the field of music. This bursting open of our familiar world of sound by electronic means leads to new musical possibilities of a wholly unpredictable nature (Eimert: 221).

In this sense, functional limitations have materially influenced the ways in which instruments are used. This, it is suggested, allows users of the modular synthesizer to become closer to the electronic behaviour of sound generation during its creation. One key element to the modular synthesizer is its control interface and this surface has influence on the types of sounds and gestures that can be obtained from it. Multifunctionality in other digital systems can present a hindrance of sorts within the compositional process as it possesses infinite possibilities. The control of sound with just one knob, brings about one of the modulars greatest contributions; that of the limited control of expressiveness and gesture; elements sometimes lost in translation within computer based composition.

Music technology changes dramatically in less than a decade while musical aesthetics require reflection and development, thus benefiting from longer historical periods. The democratization of technology is where, as composer Lukas Foss once suggested that, progression takes place. He quotes:

The history of music is a series of violations, untenable positions, each opening doors. Progress in the arts: a series of gifted mistakes perhaps. We owe our greatest musical achievements to an unmusical idea: the division of what is an indivisible whole, “music”, into two separate processes: composition, the making of music, and performance, the making of music (Foss: 45).

Here we have to question electroacoustic music history itself. Why is there a limited number of musicologists and theorists who study music as a sonic, spatial or psychoacoustic phenomenon? Why is electroacoustic still a subculture of the musical world and why does it not enjoy high culture prestige and funding on par with other musical trends?

Who is its audience, its listener? Gerard Grisley in 1987, wrote about the ideal listener, commenting that:

The ideal listener only exists like a utopia that allows us to create in the face of and in spite of everything (Grisley: 111).

Electronic music production (be it in a more popular mode) is largely supported by a diverse industrial base devoted to its marketing and development and in such the current range of modular synthesizers available perhaps allows, as this paper suggests, composers to bring electroacoustic music making (and its tonality of sound) more closer to wider audiences. What role does the commercial industry play within this and can a new wave of both manufacturer and sound makers contribute and develop new models and approaches of electroacoustic synthesis techniques of the future?

2. Physicality, Gesture and Feedback

Technology develops autonomously; we embrace its progression, its efficiency, as it propels culture at breakneck speed toward a future that's hard to see clearly. This has facilitated the composer to take a more functional role within composition, by simply becoming a controller, allowing either the computer, synthesizer and its mechanisms to become the primary compositional voice or voices. Again, this is dependent on varying compositional approaches.

In this situation, an awareness of, and the creative appropriation between the composer's approach and an instrument's physicality, can influence some musical instrument design approaches. Musical performance, in a cultural context, has always been inextricably linked with the body, its physicality is evident. This paper proposes that the current aesthetics within modular synthesis design attempts to re-integrating the body into the production of EA music and its performance. Further to this, the modular interfaces are more gestural than conventional human computer interface devices, allowing for a heightened sense of interaction for its users.

Reconnections

As an instrument, its design history can be traced back to the early 1960s in the US when east coast (Bob Moog) west coast (Don Buchla) manufacturers began with a modular approach to sound synthesis and soon, due to economics, turned to more fixed architecture and consumer based approaches.

Methodologies within instrument design and architecture, that stretched back fifty years, exploit traditional signal processing applications (processing through modules) but also add to these via the emulation of process and methodologies of the past such as tape emulation, time stretching and granular synthesis approaches.

One manufacturer that encapsulates such design is that of Make Noise (USA) and their Shared System Plus (fig.1), is one that is utilized by the author. What is compelling about using such a machine is this; having both sound generation and filtering modules close at hand, it is possible to navigate the histories of electroacoustic music making in an instant and in a sense, it's close to composing with history. Duality again comes into play as the instrument allows for *and* inhabits two worlds: the absolutely passive (in which the performer or composer is in charge of every smallest detail) and the fully autonomous (i.e human independent).



Fig 1. Make Noise Shared System Plus modular synthesizer.

One such module that exploits both of these worlds is Make Noise's 'Morphagene' (fig.2) This module presents the 'reimagined' tape machine to the user. It uses reels and splices of sound to create new sounds from those that already exist and includes the ability to splice recorded audio and manipulate playback speed and direction, using a Vari-Speed function. Further to this, the module allows for the granularization of sound in real time using a Time Lag Accumulation function.



Fig 2. Make Noise Shared System Plus Morphagene module.

Make Noise's Morphagene is based on the Phonogene (fig.3), as used by Pierre Schaeffer and others at Radio France during the 1950s, a machine capable of modifying sound structure significantly by varying the playback speed significantly. This paper's ambition is not to describe, in depth, the functionalities of modular systems. What's key to understanding the significance of the Morphagene module by Make Noise is this: if we emulate the past, what kind of aesthetic considerations does this open up for young, current and future electroacoustic makers? One such consideration is that technical methods cannot, in themselves, resolve all problems of musical expression and organization.



Fig 3. Pierre Schaeffer and the Phonogene.

Part of what makes listening to early tape music rewarding is its linkage to romanticism, of hearing histories, of techniques and machines that echo electroacoustic music making histories. Do these and other boutique modular synthesizer makers reconnect with the past and open up new doors of production, or are they just ones that juxtapose techniques of the past and combine them into future modes of making? Or are they just piggybacking on cheap revivalism? This paper supports the argument that these instruments have the potential to contribute and add toward electroacoustic music's trajectory, allowing it to grow, morph and to reinvent itself, while self-referencing its own history.

It would seem that cottage industry manufacturers, such as Make Noise, are not just simply concerned with the making of instruments rather they are particularly involved in extending the reaches of soundmaking. This is supported by the fact that users and developers engage with forums online, discussing best practice usage and sound making strategies. What occurs within this process, I believe, is a process of linear evolution, a mechanism between making, composing and playing and as such, the modular synthesizer has the power to further explore the continuum between instrument and object, virtuoso and the naive.

Perhaps the modern music conservatory is online and its ethos is sonic exploration, exploitation and inquiry, done so with collective mentalities. Here's another loaded word: liberation. It's not the purpose of this paper to throw around the word liberation is more suited to another paper. Electroacoustic music making has helped liberate sound but perhaps it was already free, as Earle Brown eloquently clarifies. He quotes:

Where there is so much talk of "liberation" there are sure to be very disturbing reverberations within the world of established, acceptable criteria. The "liberation" of words, objects, sounds, ect., should be seen as different from the confusion surrounding the idea of making them "free". They are already free, before anyone thinks of using them. The idea of them being "liberated" is relative to the use that they have been put to (and enslaved by) in the past (Brown: 49).

3. Virtual Systems

On a personal observation, one of the stumbling blocks in electroacoustic music making, in relation to the use of hardware mechanisms such as the modular synthesizer, is that of simple economics as the Shared System currently costs the price of a small family car. Currently a number of companies are producing virtual modular synthesiser products that allow users to add and modify modules for relatively low costs. VCV Rack (fig.4), is an open source programme, features software versions of some of the most popular Eurorack modules. VCOs can be used to create customizable frequency modulated synthesizers or wave-shaping oscillators.

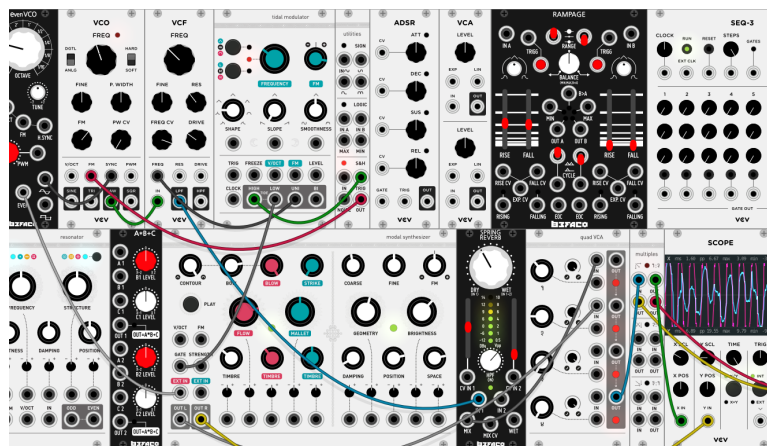


Fig 4. VCV Rack.

Owners of hardware modular synths can also use VCV Rack to expand their own system. Alternatives include Native Instruments Reactor Blocks and Softubes Modular. Virtual systems such as these represent another further example where technology is again facilitating electroacoustic music makers the chance to engage,beit within a computer, with the possibilities of sound manipulation via the modular synthesizer.

4. Conclusion

This short paper has attempted to frame some personal observations in relation to the modular synthesiser, its role within the many modes of current electro music making and how its current resurgence brings about new (and or old) processes, reconnecting to the past and providing outlets for gesture feedback and physicality in both compositional and performance paradigms. Throughout the history of software synthesis, obsolescence has put hardware devices into the backrooms of studio and research labs. Further to this, some of the operation systems that run hardware synthesizers can rapidly go obsolete, leaving their usage limited. Key to understanding the role of the modular synthesizer is its sense of independence from the operating system, in that it allows the machine to become immune to the rapid pace to technology as most of their architecture and inbuilt circuits remain fixed and autonomous, unreflective of change. In the pursuit of reconnecting electroacoustic music making to a wider audience, I believe that it is this sense and power of immunity from issues such as technological

retirement, allows the modular synthesizer to potentially act as conduit of expression for current and future electroacoustic music makers to engage more fluidly with their practice. Examples of these include an array of British, European and American electroacoustic music and live electronics ensembles that incorporate the modular synthesizer into their performances and currently the author has also established in Ireland, the Temporary Modular Ensemble, who perform live electroacoustic music with modular synthesizer in order to gain a wider audience, awareness and appreciation of electroacoustic music making. Further to this, as an educator within the field, I use the modular synthesizer as a teaching device for a more tactile and physical approach to teach the fundamentals of synthesis. Ultimately, what will remain, is that the synthesis, transformation and organization of sound is *still* largely informed by aesthetic criteria, not the machines facilitating it.

5. References

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