

Book Review**Peter Elsea
The Art and Technique of
Electroacoustic Music
A-R Editions Inc. 2013***by Laurie Radford*

A-R Editions' Computer Music and Digital Audio Series has provided many titles over the past decades that focus on computer music analysis, composition and research. Many of these titles continue to serve as important study guides and reference. Peter Elsea's 2013 contribution to the series, *The Art and Technique of Electroacoustic Music*, adds a title that attempts a broad overview of the concepts and technologies employed in electroacoustic music production and performance. Elsea is well known in the Max world for his widely read MaxMSP and Jitter tutorials and for his LObjects collection of Max objects.¹ He is also known to more than three decades' worth of students as Director of the Electronic Music Studios at the University of California, Santa Cruz from 1980 to 2013. A visit to his (retirement!) webpage provides a glimpse into his teaching activities, research and compositional output, and a sense of his personal

engagement with the computer music community. His tutorial page begins with this statement: 'These are tutorials I have written over the years for various courses in Max. These papers are usually written in a hurry, so errors inevitably creep in. [Heck, errors are inevitable in papers written slowly, and things like books which get reviewed dozens of times before publication.]' One is advised to keep this statement in mind when reading through the 500+ page *The Art and Technique of Electroacoustic Music* as some errors have indeed "crept in."

In the Preface, Elsea chastises other books about electronic music and audio production for their exclusive coverage of science and technology. Yet, *The Art and Technique of Electroacoustic Music* focuses almost exclusively on the 'technique' in the book's title with little discussion of 'art', little mention of the composers and practitioners that work with the techniques covered, or representative repertoire and performances that they produce. The book resembles a lab manual and covers an enormous breadth of material. Perhaps the 'art' referred to here is that of the apprenticeship and mastery of a technological skill set as an art unto itself? The author provides some justification for this by stating that most of the repertoire of electroacoustic music is available online or via some available media. Unfortunately, the single reference

media. Unfortunately, the single reference to these resources is to emf.org which no longer handles audio sales. A better choice might have been electrocd.com which provides an extensive offering of historical, recent and new electroacoustic releases. The author identifies a number of target readers for the book and by doing so provides a good indication of the objectives, contents and the strategy of presentation: composers wishing to move beyond pre-packaged sounds and production environments, who strive to expand their skills to incorporate advanced and powerful recording and sound transformation/generation techniques, and who wish to develop their technical and musical listening skills. Therefore, it would have been beneficial to provide some guidance to the practitioners and the work accomplished in electroacoustic music (in an appendix or as part of the Resources for Further Study), especially given the author's identification of a potential self-learner readership for the text.

In addition to providing a compendium of diverse information and guidance for conceptual and technical issues in electroacoustic music, the book also serves as an illustration of Elsea's pedagogical method(s) in the area with his 'custom textbooks for each course' clearly serving as the foundation of many chapters. It also, for the most part, represents the

academic and home studio experience of the 1990s and 2000s. As such, new practices such as DIY, circuit breaking, and telematics performance that have emerged during the publication of the text are not considered.

The book offers 19 chapters that cover six areas, including: Building the Studio, Fundamental Concepts and Techniques, Music Store Electroacoustic Music, Synthesis, Research-Style Synthesis, and Live Electroacoustic Music. Building the Studio opens the text with a general overview of the main considerations in creating a suitable environment for electroacoustic music production. One finds this type of introduction at the beginning of many books on audio production and sound recording and it is an important area to explore in such texts, especially those that are targeted at the self-learner. In this case through, there are terms such as 'band-limited' and 'scrub' that are introduced in this first chapter that are not explained in sufficient depth until later chapters, a fact which reduces the effectiveness of the immediate discussion and may even cause some confusion for those employing the text as an introduction to the discipline. Another example is this statement in another early chapter: 'many of the features in professional-grade mastering applications are not essential to composition'. Mastering is never again mentioned in the

the book. The assumption that a neophyte reader will understand what is meant by 'composition' (later referred to as 'pure composition') is also problematic given that the concepts of sequencer/loop style mixing techniques on one hand and sound exploration, montage and transformation on the other are mentioned in passing early on in the text without clear historical or social definitions.

This calls into question the intended genre of music making under discussion and the target audience for the book. On one hand, the compositional exercises and suggestions seem to assume an exploratory avenue of creative work as a norm. On the other hand, the prevalent use of conventional pop music terms and concepts such as 'bass line', 'backing track', 'lead line', 'beginning-middle-end', and a prevalent concern for tuning and pitch as well as conventional rhythm in sequencing, belies a kinship with popular music writing and production. (The statement 'in electroacoustic pieces the concern is usually more about getting pitches to match in the first place' is puzzling but also revealing in this regard.) The mix of basic sound recording and pop music production terminology with conceptual and composition advice that arises from more exploratory strains of electroacoustic music results in a lack of clarity in regards to the type of music and sound and music production the book is

in fact discussing. Then again, it could be read as an attempt to cover the range and breadth of practices gathered under the electroacoustic banner, to erase the lines between genres which in fact currently employ many of the same software and hardware tools.

Part 2 consists of a series of chapters that serve as introductory guides to working with sound. These cover the basics of acoustics, sound recording, sound processing, audio mixing and useful references to general compositional applications of some of these concepts and techniques. Components of sound, recording technologies and equipment, audio editing techniques, a host of processing types including EQ, compression, reverberation, distortion, modulation, the digital audio workstation and audio mixing are discussed with clear descriptions and ample illustrations for conceptual reinforcement. By necessity, the discussion of such a great many concepts is introductory; yet they are clear and orderly in presentation. As with a number of areas in the text, some terminology, for example 'dither', is employed in passing and not sufficiently defined. This could prove problematic for those coming to the discipline for the first time and the inclusion of a glossary could have solved this issue and provided a useful reference component for the title. (That said, a quick online search for most

of these ill-defined terms will serve the same purpose now.) The tutorial origins of some of the texts include step-by-step instructions for software interface use. At a time when young and new users are reasonably adept at the use of computer interfaces in general, the plodding nature of some of these instructions (i.e. a lengthy, step-by-step guide of how to use a transport control on an audio recording application) seems unnecessary.

Part 3 and 4 of the book cover a variety of software and synthesis concepts and make a distinction between 'Music Store' and 'Research-Style' modes and cultures of technology-based music making. The Music Store section consists of seven chapters covering MIDI, Sequencing Programs, Samplers and a series of chapters on various synthesis methods. It is somewhat puzzling that the discussion of FM, additive, spectral, granular and modeling synthesis are housed under this Music Store rubric given that all of them originated in, or at least have been highly developed at research centres and were subsequently taken up by commercial enterprise for wider exposure and distribution. The discussion of MIDI and sequencing in this part of the book is extensive and covers details of the MIDI protocol, typical MIDI studio routings, the main parameters and interface affordances of a MIDI sequencer as well suggestions for efficient and creative use

of a MIDI-enabled environment. The discussion of various aspects of MIDI messages and routing could have benefited from the typical schematics for clarity, and the discussion of hardware versus software synthesizers takes a disconcerting turn when plugin synths are introduced without any explanation of what they are or how they function.

A concise chapter on Samplers offers an introduction to the historical origins of sampling instruments and many of the conventional parameters and functions that have been implemented in these instruments over the years. Two topics that receive extensive discussion and tutorial treatment in this part of the book are Voicing Synthesizers and FM Synthesis. The author uses Absynth as an example of a typical softsynth and discusses its architecture, menus, oscillators, filters, and envelope generators in detail but in a general enough fashion to be applicable to most other synthesizer modules. (As mentioned later in this review, the discussion of software and hardware synthesizers, divided into separate non-adjointing chapters in the book, seems unnecessary and potentially confusing to first-time users.) FM Synthesis receives the most detailed discussion of any individual topic in the book. FM is obviously an important technique in the author's palette given the comprehensive and clear presentation of

of FM generation, control and use. Yet, the statement that FM synthesis and sampling make up 90% of the synthesized sound in use today may be true for the latter, but perhaps not so much for the former. Analysis/resynthesis, additive and granular synthesis, phase vocoding and image mapping techniques for synthesis, as well as physical modeling are only briefly discussed at this point relegating these powerful and by now quite well-known techniques to a novel category that interested readers will hopefully further explore in other appropriate literature.

One wonders if parts of *The Art and Technique of Electroacoustic Music* will be of use in the not too far off future given the many technical issues stated as fact that, in fact, are no longer such: the use of Protools (an old version at that) as the paradigmatic example of a DAW given the current wide-spread use of many other, more diverse products by younger electronic creators and performers; the statement early on in the text that there are MIDI sequencers and then there are audio DAWS and that someday they might be combined when, in fact, this has been the case for most products for decades; the restriction of a discussion of automation to gain changes in a mix without mention of the extensive affordances provided by automating many, if not all, parameters of plugin processing; the suggestion that ‘the

practical low end for widely distributed music is 60Hz’ at a time when current practice in numerous genres of electronic music worships prominent compositional components below that frequency and the market is flooded with affordable subwoofers; an almost flippant approach to spatial design as an integral component of electroacoustic music (‘pans are set at the start and seldom moved again’; [the reverb] control...will probably not move during the mix’); and the inclusion of products such as the ‘Walkman’ as contemporaneous with the iPod! One suspects that Elsea was well be aware of the period-specific nature of many of these statements given a comment featured on his website, ‘I use published texts from time to time, but they become dated quickly, and of course can’t address the unique aspects of these studios’, and chose to present his tutorial materials ‘as is’, a testament to his long, dedicated career to teaching electroacoustic music. From one perspective then, *The Art and Technique of Electroacoustic Music* acts like an auto-ethnography, foregrounding the personality of the author amidst the concepts and techniques that he obviously cherishes.

One of the most successful sections of the book is the introduction to ‘Research-style Synthesis’ methods including Common Lisp Music, Cmusic, Csound, the Composer’s Desktop Project, Rtcmix,

Supercollider, Impromptu, Pd, Csound, ChucK, and MaxMSPJitter. Most of these are only mentioned in passing, often in reference to their connection to the historical lineage of Max Mathews’ Music series that kick-started music computing in the 1950s. The last three programs cited receive a more thorough overview and an introductory tutorial. The basic functions and syntax of Csound and ChucK are discussed and accompanied by ample code examples that provide a point of entry for those interested in investigating these powerful open source programs. The author also succinctly covers some basic computing concepts (variables, operators, library functions, loops, arrays, unit generators, Markov chains, etc.) that provide a framework for the computing skills required to employ these programs. The real-time potential of live-coding in Csound and ChucK is mentioned, but especially in the case of ChucK, greater emphasis and illustration of its live-coding affordances should have been offered. In addition to the static examples provided, a short example of a live work flow in ChucK could have been included as an example of this growing area of live electronic music practice. The many online video examples of live-coding in action could have been mentioned since they provide a much clearer illustration of this practice than anything a mere description can do.

Elsea is well known for his MaxMSPJitter tutorials that many new (and experienced!) users of the software have visited online for guidance. The chapter on Programming with Boxes and Lines draws upon these succinct tutorials and provides a basic introduction to the program and its basic functions covering most concepts and details that a fledgling Max user would require to get started. The substantial changes to the program since Version 7 are not reflected in the discussion or illustrations given that the reference here is Version 5. Nonetheless, the fundamentals of control flow, routing and timing in Max, principles of audio, recording and synthesis in MSP, and ‘A Hint of Jitter’ and interconnections between image and sound provide a rapid flyover of this paradigmatic composition and performance environment.

Upon initial reading, it seems somewhat puzzling that a chapter on programming Synthesis in Hardware would follow the lengthy introduction of code-based methods, especially given Elsea’s opening statement: ‘Is hardware dead?’ As noted above, a discussion of both softsynths and hardware synths could have been combined and provided a clearer picture of the commonalities and differences between them. And yet, this chapter may very well provide valuable advice for exploring the hundreds of abandoned synthesizer and sampler modules that are

on offer at low prices at many pawn shops and online second-hand sale services, and that feeds the cyclical, retro phenomenon of current hybrid electronic music practices. The lengthy discussion of the Kyma system in this chapter, enhanced by several illustrative video documents, serves as a representative example of a self-contained hardware-based composition system; but the claim that it is used by most professional electroacoustic composers is exaggerated and misleading. The space would have been better dedicated to a discussion of the many currently available control surfaces and tablet-based systems that are fusing the paradigms of software and hardware in the studio and on the stage.

The last two chapters of the book discuss details and issues regarding Live Electroacoustic Performance and Composing for Electronic Performance. The first of these begins with a short paragraph implying that the acousmatic tradition is a thing of the past and was 'never popular', and that audiences for electroacoustic music remain few and lack patience for anything that doesn't provide conventional markers of liveness in performance. Given the dizzying number of electronic and media festivals, acousmatic concerts, emerging live electronic music practices, journals and texts discussing these creative activities, and the substantial support for these

events by audiences all of the world, it is difficult to take this view seriously, and undermines much of the subsequent practical advice that is offered. The chapter proceeds with a brief survey of conventional sources of control for live electronic performance (keyboard, guitar, wind, string, percussion) and devotes a mere third of a page to circuit-bending and one page to the world of NIME. A discussion of the author's teaching activities employing piezo transducers offers a brief glimpse into the engaging and undoubtedly inspiring pedagogical atmosphere he maintained throughout his teaching career. It makes one wish that more examples like this, drawn from more than three decades of experience, were included in the text. The final chapter provides a cursory survey of several main paradigms of Composing for Electronic Performance including classic instrument plus tape, instrument plus processing, as well as some of the practical and notational issues involved. Some examples of capturing performance data such as pitch and tempo via MIDI for player control of processing and temporal aspects of a performance are discussed and illustrated. Pitch detection and score-following functions for live performance are mentioned (with promising recent research in these areas not considered), and several examples of employing random number generation and distribution procedures in Max for use in

distribution procedures in Max for use in performance (once again via MIDI) brings the chapter and the book to a close.

The words of wisdom for which Elsea is known online (and in the classroom) lose some of their coherence when combined in this lengthy and sometimes rambling tome. Qualitative observations and critique about products, practices and concepts remain very personal throughout the text, and draw upon the author's lengthy and intimate experience with the creative objectives and technologies under discussion. That personal touch lends an inviting tone to the text, as if by reading it one can still take a class with Peter Elsea! The check list of practical tips for "Putting Your Show on Stage" that concludes the chapter is the advice of an experienced practitioner.

The wealth of audio examples provided on the accompanying DVD contributes to the usefulness of the text for teaching and learning. A variety of single sounds, synthesis examples, signal processing examples (including video examples of actions in plugins and other software interfaces), brief sound etudes, and comparisons of various audio characteristics and situations are provided to illustrate examples and discussions throughout the text. At this point in time, the sound and video examples would be more useful if they were available in an

online repository, especially given that many users no longer have access to CD/DVD drives. Most chapters conclude with suggested Exercises for exploring the concepts and techniques introduced and Resources for Further Study are provided as a starting point for further reading.

Returning to Elsea's webpage statement regarding 'errors creeping in' and 'books which get reviewed dozens of times before publication', it would have been beneficial if A-R Editions had followed this advice to guide some of the content and discussion to a more succinct, focused and up-to-date state. Nonetheless, with some judicious and up-to-date guidance, suitable supplementary materials and information, both technical and historical, as well as links to practitioners and repertoire, *The Art and Technique of Electroacoustic Music* could serve as a principal or reference text for an introductory undergraduate electroacoustic music composition and techniques course or for the self-learner who wants a bird's eye view of the electronic music terrain.

Notes

1. See <http://peterelsea.com/maxtutorials.html>)
2. http://artsites.ucsc.edu/ems/music/PQE/More_PQE.html