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The ElectroAcoustic Resource Site (EARS)

Leigh Landy *De Montfort University*

Abstract

This article introduces the reader to the ElectroAcoustic Resource Site (EARS, www.ears.dmu.ac.uk). It examines the site's *raison d'être*, its history thus far, challenges encountered, and then moves on to introduce the project's future plans, in particular within electroacoustic music education for children. A key focus is how those working on EARS are attempting to make the site relevant to anyone involved in the field of electroacoustic music studies, regardless of previous experience.

Key words

electroacoustic music studies

Internet resources

online learning

access

Context

As we welcome this new education journal for music technology, a question comes to mind. To what extent are we aware of the subjects that should ideally constitute music technology courses? One of the areas within music technology is that of electroacoustic music. Its associated field of studies will be the focus of this article.¹

¹ In recent years, there seems to be a tension between the usage of the term *electroacoustic music* on the one hand and *sonic art* on the other. For those whose work is with sounds more than notes, sonic art may be seen as the better designator, but there is an awkward issue with this term. If you consider sonic artworks to

Electroacoustic music tends to be taught in music and, more recently, music technology departments, an entirely logical state of affairs. An increasing percentage of staff members of many of these music departments is now represented by technological development researchers, particularly in American universities. Again, this seems rather logical, given the two words of the phrase ‘music technology’. The humanities side, that is, the study of the music, its history, theoretical bases and its place in culture, is often seen to be a bolt-on. This state of affairs may be considered something of a shame, because the success of any type of art is the sum of its appreciation, knowledge related to it and, in our case, knowledge of the technology supporting it as well.

Perhaps the humanities side has been kept to a minimum partially due to the fact that the field of studies related to electroacoustic music is currently somewhat ill defined. How might one delineate this field? Which disciplines are involved? Does it even have a commonly accepted name? Furthermore, how easy is it for people interested in studying electroacoustic music to locate the research of others working within the same area of specialization?

At the beginning of this decade, it appeared that whenever one wanted to discover something about the technological aspects of electroacoustic music, the information was normally not difficult to trace. Similarly, there was a reasonable selection of histories

be music – and the word ‘music’ is absent from the term – sonic art gives people the opportunity to separate its works from music. Electroacoustic music, on the other hand, is not involved with, for example, acoustic sound works, and also includes a fairly significant number of note-based compositions. To avoid this conundrum, I have recently coined the term, *sound-based music* (Landy 2007). It would be a radical step to rename EARS to take this into account at this point and, therefore, the term, electroacoustic music has been maintained.

related to this music.² However, most specialists in the field would also have been aware of the challenges facing them as well as many of their students when searching for sources related to musical issues.

Part of that challenge is relevant to education and deserves mention as part of this contextual introduction. The scholarship available today in our field is reasonably abundant as is evident given the size of EARS's bibliography; however, other than those historical overviews, to what extent do we have foundational level publications for people interested in learning more about electroacoustic music from the musical point of view? Taking this one step further, to involve pre-university students: to what extent are we developing electroacoustic music courseware of all sorts for entry-level students at secondary (or even primary) schools? The fact that a good deal of useful foundational material is missing has done the field of electroacoustic music studies little good.

EARS: Why it was needed

EARS has come into being due to the issues just raised: the difficulty one encounters in finding sources related to a musical area within electroacoustic music studies and the fact that the discipline has not yet been properly delineated nor been provided with a widely accepted framework. Such a framework could be easily integrated with studies in electroacoustic music making, relevant aspects of computing and other forms of technology, etc. In short, it has direct bearing on our music technology curricula.

² Regarding these histories, note that many of them miss two opportunities: (1) they tend to focus on art or pop music – few look across electroacoustic music's broad horizon; and (2) they tend to be technology-driven or person- or studio-driven, but rarely combine historical, musical, technological and socio-cultural developments, all of which contribute to electroacoustic music history.

There is one further subject that deserves some discussion before presenting the EARS site, another issue of foundational importance. To what extent do we, music technology specialists, use our terminology in a consistent manner? Let's start with a curious example, 'computer music'. Granted, this term is not used very often in the United Kingdom; but it is quite common in many countries around the globe, not least in the United States. But what does it mean? Ages ago one was taught that computers could be used musically as assistant composers, such as in algorithmic composition and/or to produce audio, as in computer synthesis. The 'and/or' is quite important, as the first-known computer composition was the 'Iliac Suite' for string quartet by Lejaren Hiller and Leonard Isaacson (1957). In other words, traditional instruments can perform computer music. However, many use the term 'computer music' to mean music produced and performed by a computer. To complicate matters further, there is the annual International Computer Music Conference in which everything ranging from any technological development related to computers and music, music cognition and computational analysis and much more are all welcome, and thus form part of computer music. Yet old analogue electronic or electroacoustic works that are not digital do not fit under computer music – but how many are aware of this? Is this separation of any particular relevance today? 'Computer music' is but one of many terms that are highly problematic.³ Of course, even the term 'electroacoustic music' knows several variances in its definition. For the purposes of this article and to avoid any further ambiguity it will now be defined in its broadest sense: 'Electroacoustic music refers to any music in which

³ Regular readers of the CEC Conference forum (www.concordia.ca/cec-conference/index.html) will be aware of how many terms are causing problems similar to what is presented here.

electricity has had some involvement in sound registration and/or production other than that of simple microphone recording or amplification' (Landy 1999: 61). Suffice it to say that not everyone uses the term this way. Such terms are indeed at the foundation of our field, and without some consensus, the rest of that foundation may remain difficult to construct.

This lack of consensus regarding terminology usage was a further stimulus for creating the original EARS site. The idea was to find a way to provide the general public an unbiased view of the state of play in terms of our terminology, create the architecture for the field of electroacoustic music studies and use this architecture to help interested parties find research results in their particular area(s) of focus. These goals are reflected in the site's glossary, its structured index and its bibliography respectively; they will now be introduced.

EARS: Its development up to the present

Initially, before embarking on this rather ambitious journey, colleagues were contacted around the globe and asked what might be needed on the site. Clearly, future advisers were being sought. Other than the UQAM (Montreal) *Dictionnaire des arts médiatiques* (www.comm.uqam.ca/GRAM/), which consists of a modest glossary of terms relevant to new media, including electroacoustic music,⁴ there was nothing available that was comparable to what was being planned. The general view was that there was a need for EARS and that, as suggested, it should focus on terminology and resources.

⁴ The UQAM team, led by Louise Poissant, now has plans to expand its project into an 'Encyclopédie des arts médiatiques' (see www.teleinfo.uqam.ca/projets/gram/).

Funding was received from the then Arts and Humanities Research Board (now Council, AHRC), the first of three grants that EARS has received from it thus far. The goal was to set up an international consortium, define the goals of the EARS project and suggest a planning scheme for its initial phases. This was achieved by 2001, the original consortium consisting of Kevin Austin (Concordia University, Montreal, Canada), Marc Battier (Sorbonne, Paris, France), Joel Chadabe (Electronic Music Foundation, EMF, Albany, New York), Bernd Enders (University of Osnabrück, Germany) and Simon Waters (University of East Anglia, Norwich, United Kingdom). It was decided to attempt first to create the glossary and structure a subject index that would help delineate the field, before embarking on the much more ambitious bibliography project. The discussions also involved creating the parameters of operation of this steering board.

The second grant supported a six-month part-time postdoctoral research fellow, Simon Atkinson (who has since become co-director of the project). Some 360 defined terms, 165 referred terms (see 'x') and 375 keywords were collected in the initial index, a number of which appear more than once.⁵ The point of departure was to include terms that could be called upon as keywords regarding electroacoustic research related to the music, thus not solely technological. Granted, within acoustics, for example, there are literally dozens of terms to choose from, obviously a selection was made. This notion of music-related research remained the key criterion for choice because otherwise the project would simply have become unfeasible. Wherever possible, multiple definitions

⁵ A reasonable proportion of the 360 terms were for the glossary only, as we did not expect articles to refer to them specifically. In 2006 it was decided that this was an inefficient approach. A few terms were turned into referred items, as they were relatively obscure; most of them were added to the index.

have been included to illustrate eventual inconsistent word usage. Preferences are not suggested; the focus is simply on current word usage.

Making sense of the entries in terms of creating the index structure was a marvellous exercise in finding an optimal solution. It took months before the site's six main headings were chosen. They were (and still are):

Disciplines of Study (DoS)

Genres & Categories (G&C)

Musicology of Electroacoustic Music (MEM)

Performance Practice and Presentation (PPP)

Sound Production and Manipulation (SPM)

Structure, Musical (Str)

The first heading underscores the interdisciplinary nature of electroacoustic music studies. The listening experience is important to the second and third, although there are exceptions such as poietic analysis,⁶ that is, analysis based on construction based; furthermore there is an another exception as many categories name the technology used in making a work, thus having little to do with the reception. The final three categories could easily be identified as typical categories related to computer music. They all belong to what might be called the creative practice, not to mention the technological side of electroacoustic music.

⁶ For a discussion concerning the poietic in music, see, for example, Nattiez 1990.

We will now briefly look at the six headings individually. The first, Disciplines of Study (DoS), currently lists 21 sub-headings, clearly illustrating how electroacoustic music and its field of studies is informed by many disciplines. Many of these represent clusters, such as Complex Systems and Interdisciplinary Studies. The subject areas range from science to philosophy. More predictable entries include Acoustic Communication, Acoustics, Audio Engineering, Cognitive Science, Computing, Music Education and Psychoacoustics. Musicology is treated separately (see below). Less predictable, but extremely pertinent entries nevertheless, include Archiving, Critical and Cultural Theory, Linguistics and Media Theory. Areas such as Gender Studies and Semiotics appear at the third (sub-sub-heading) level. A close look through this list demonstrates the amazing breadth of the field. It raises another question concerning how much our students need to know of each of these areas in electroacoustic music studies as well as in more general music technology courses.

Genres and Categories (G&C) is an essential part of the site, as it is here that many a battle has been fought and will continue to be fought in terms of much of our basic terminology. When the site was originally set up the same approach to nesting terms hierarchically was used as is the case throughout the rest of the EARS site. Some terms ended up appearing several times under broader categories. However, given the fact that many terms had no unique definition, these decisions were often based on one of the definitions of a higher-level term. In 2006 a decision was reached whereby terms were no longer hierarchically placed; the 80 terms are currently listed alphabetically. The search for cohesion among the genres and categories will need to be achieved in a different manner than for the other five areas.

What is most peculiar about the G&C list is how few genres one is able to identify. The vast majority of terms are categories, many of which are reliant on descriptions of the technique or technology involved (for example, Granular Music or Tape Music). This lack of genres may be influenced by the fact that electroacoustic music developed in the middle of the postmodernist era, when schools of thought were generally avoided at all cost. Still, it is to be hoped that, as interested parties work on terminological issues, we may be able to construct some relevant genre terms that will be useful in terms of bringing much of the repertoire into a cohesive structure. This would aid both the education and appreciation of electroacoustic music. For the sake of completeness, it should be noted that genre and category terms that have had an extremely ephemeral existence have not been included. The index would simply become too cumbersome and there would be a risk of bibliographic items' keywords not working efficiently. Through referral, these terms do appear on the site; a less ephemeral genre or category is called upon to represent the area in question.

The Musicology of Electroacoustic Music is, in many ways, the heart of the EARS site. A list of the second-level (sub-)headings is useful in terms of gaining a view of the types of areas represented.

Aesthetics

Analysis

History of Electroacoustic Music

Music Criticism

Music Theory

Philosophy of Music

Socio-cultural Aspects of Electroacoustic Music⁷

The third level (sub-sub-heading) under Music Theory includes:

Classification of Sound

Discourse within Electroacoustic Music

Listening Experience

Schaefferian Theory⁸

Much of this represents to the study of electroacoustic music what general musical studies represent to students in music departments. The key difference here is the integration of these areas of focus with the other disciplines that appear under the DoS heading.

The Performance Practice and Presentation heading is fairly wide ranging. It considers issues from collaboration to new forms of virtuosity,⁹ real and virtual

⁷ Socio-cultural aspects include access and impact issues as well as culture-theoretical issues, among others.

⁸ Pierre Schaeffer is singled out as the most prolific author, not to mention one of the earliest, to have contributed to electroacoustic music theory (see, for example, his most-cited work, *Traité des objets musicaux*, Schaeffer 1977).

⁹ The Russian constructivist term *faktura* has been found to be of importance as one means of discussing this subject (see, for example, Battier 2003: 249–55).

environments, spatialization and venues as well as electroacoustic performance techniques ranging from live electronics to turntablism.

Sound Production and Manipulation (SPM) is the key technology-based EARS main heading. It covers a vast area, ranging from electroacoustic devices and instruments to synthesis and resynthesis techniques, sound shaping and associated aspects such as recording and mixing. Jumping to where the EARS site is today, the number of items listed in the EARS bibliography that appear under SPM is smaller than the list of terms may suggest. This is due to the selection process. EARS has developed a policy of including published works that in some manner address essentially technological subjects from a musical point of view. Let's take a look at an example. Physical modelling is one of many areas of development in the area of sound synthesis. Annually dozens of papers are published on the subject. Of those, at most a handful discuss musical issues or potential musical application of, for example, physical modelling, but not one single example demonstrating both technical and musical content analysis comes to mind. It is only this minority group that is of interest to us. Similar examples can also be cited within the Performance Practice and Presentation and Structure, Musical headings.

Analogous with concepts of sound production and manipulation are those related to musical structure (Str). Musicians involved in the application of formalism in electroacoustic music, such as algorithmic composition, will find a number of relevant terms in this list. Structure can be approached at different levels. The sub-headings Macro-level and Micro-level Structure assist in this differentiation. Of course, an increasing number of people are creating formalisms that work at several levels, so some of their writing may fall under more than one Str header.

These six main headings and all entries under them delineate and define the structure of electroacoustic music studies. The terms delineate the field; the disciplines and subjects of inquiry form the site's contents. Clearly, there are things that have been missed. As EARS is an Internet resource, what's wrong can always be put right with little or no delay. It is for that reason that user feedback is essential to its success.

The original LaTeX-based EARS site went public in 2002. The following year UNESCO adopted it as part of its DigiArts initiative (portal.unesco.org/digiarts). As will become clear below, EARS is now working even more closely with UNESCO, reflecting the desire that EARS's content in the future become even more relevant to people in developing nations.

In 2004 a third EARS-related grant was received from the AHRC. This time substantial funding resulted in two postdoctoral researchers joining us over the period 2004–2007. Pierre Couprie joined the project in 2004 and Rob Weale a year later. During this period the creation of the bibliography has been the key focus.

Pierre Couprie redesigned the site immediately, using SPIP (www.spip.net) for the organization of the site's data. This has led to significant improvements, although it is hoped that a future version will allow for the implementation of an even more sophisticated form of search protocol than that currently available.

Throughout this period, the glossary and index have undergone dynamic changes under the editorial direction of Simon Atkinson, including a major updating process in 2006/2007 when the number of glossary terms exceeded 500. Still, the main task during the period was to create the site's bibliography.

During the first two years, all bibliographic items were entered solely in English, regardless of the original language. Where relevant, translations of titles and, for books, chapter titles are included. As more and more entries for non-English-language publications were entered, it became clear that it would be useful to be able to look up these works in their original language as well. Therefore, today, for example, Italian-language publications' abstracts and keywords appear in Italian and in English; French, Spanish and German texts are similarly treated. To facilitate this, translations of the index and, wherever possible, of the glossary were needed. Thus far the glossary has appeared in French (Pierre Couprie) and Spanish (Ricardo Dal Farra). At present a possible Mandarin translation, requested by UNESCO, is under investigation and a German translation is planned. The index is also available in German (Martin Supper) and Italian (Laura Zattra). Consortium member Marc Battier proposed the publication of an international thesaurus of terms. The thesaurus can currently be found on EARS in five languages.

At the time of writing, EARS is approaching its three thousandth bibliographic entry. In English and French, at least, the phase has been reached where those involved in the project are dealing with items that are more difficult to obtain, as well as with the normal abstraction of newly appearing publications. Items in other media that are of relevance to the project continue to be sought.

The project has been significantly internationalized during this three-year period and the intention is that this will continue in the future (see below). This internationalization is reflected in today's consortium in which Battier and Chadabe continue alongside Ricardo Dal Farra (National University of Tres de Febrero, Buenos

Aires, Argentina), Kenneth Fields (Central Conservatory of Music and University of Peking, Beijing, China), Rosemary Mountain (Concordia University, Montreal, Canada) and Martin Supper (University of the Arts, Berlin, Germany).

One of the frequently asked questions about EARS is how its editorial policy was created. A question often accompanying this is why the project does not use a Wiki approach to data acquisition. Part of the answer has to do with user feedback: in terms of catching minor errors on the site, making suggestions for new terms, adding new definitions and, of course, new items for the bibliography. These suggestions, alongside the work of the core EARS team and the network of researchers affiliated with the project, have led to the current total of 3,000 bibliographic entries and the large-scale glossary. Still, a majority of the suggestions made for references to be entered onto the site concern technology-only publications, something that was decided early on not to include, as they would have made the project too large and too unfocused. In this way, project members act as a filter for incoming suggestions, more than as editors. Team members do consider themselves to be working on an open platform, albeit one without direct Wiki-like user input.

Recently the opportunity to publish relevant texts on the EARS site has been established. The first publication was Antonio de Sousa Dias's Portuguese translation of Schaeffer's *Solfège de l'objet sonore* from 1967 (Schaeffer, Reibel and Ferreyra 1998). John Dack and Christine North's long-awaited translation of Michel Chion's *Guide des objets sonores* (Chion 1983) in English is expected in the near future. Chion's text treats all major Schaefferian terms introduced in his *Traité des objets musicaux* (Schaeffer 1977). The site obviously will not focus solely on Schaefferian texts; there are plans to

publish EARS-related materials, in the widest sense, more frequently as time goes on. EARS-related articles for which rights have been obtained have also been recently republished on the site.

What has been gratifying for the EARS team is to watch its usage statistics rise year on year. After one of my talks on EARS in 2006 a lecturer came to me and said: ‘We are all grateful to you for creating this resource, but it is also upsetting as it has made our students’ lives so easy. They are constantly quoting it.’ The usage statistics can, of course, be a bit difficult to comprehend. Nevertheless, the trend has grown enormously throughout the years and the ease whereby EARS comes up under major search engines supports the view that EARS is a much-used portal in today’s field of electroacoustic music studies. Another reason for increasing usage is the fact that in 2007 UNESCO funded a project whereby all relevant information on its DigiArts portal became hyperlinked to EARS and vice versa.

In the autumn of 2007 the three-year AHRC funding came to an end; plans have been developed for an even more dynamic future for EARS. As this article is being written, EARS finds itself at a crossroads. This has partly to do with future funding opportunities, but more significantly to do with its having grown in importance so rapidly. Those involved with the project have decided to: (1) continue the work of the project as it is, perhaps altering it, taking into account new approaches to semantic web design; and (2) start a large-scale project provisionally called ‘Pedagogical EARS’. These plans form the subject of the next two parts of this article and bring us directly back to the subject of music education.

Moving forward 1: a greater global focus

So far as the continuation of the current work is concerned, it is clear that EARS can no longer rely on British support, because the site's weaknesses can be found to a large extent in other language areas rather than in those that are already represented. The project is now reliant on the goodwill of the current team as well as network members working with the team to achieve language-area funding. For example, a bid of Martin Supper's was supported by the Universität der Künste Berlin as this article was being prepared. This means that the German translation of the glossary and further bibliographic work can be expected in the not-too-distant future. Similar initiatives are under way regarding Mandarin, Greek and Portuguese translations.

EARS will and must continue to internationalize its presence in all three key areas of the site. It will also pursue its recent efforts in terms of increasing the list of online publications that can be downloaded from the site. Finally, in collaboration with Kenneth Fields, opportunities will be investigated within the realm of new approaches to ontologies. In a recent article (Fields 2007) he asks several relevant questions concerning the somewhat traditional presentation of EARS, and illustrates current alternatives including 'folksonomies' that are now on offer. The EARS principle will not change, but its design will, it is hoped, appear more intelligent. This part of the project will take place in collaboration with the University of Peking.

All of this will allow EARS to become accessible to a greater number of interested people around the globe; its usage and user input should develop similarly. As access has always been part of EARS's *raison d'être*, it has, furthermore, been decided to work towards the creation of Pedagogical EARS.

Moving forward 2: 'Pedagogical EARS'

The story of Pedagogical EARS started at UNESCO's offices in Paris. Jaco Du Toit, former member of the DigiArts team, asked: 'Would it be possible to create a version of EARS with a reduced number of terms for people starting out in the field?' This single question started the ball rolling, leading towards the design of a three-part project that will be developed in parallel with the current EARS site. This project is being prepared specifically for the young – and other interested parties of all ages – and will go several steps beyond serving as a structured Internet portal for information.

Du Toit's question made complete sense and the EARS team's immediate reaction was positive, especially given today's lack of opportunities available regarding electroacoustic music instruction at pre-university levels and the fairly 'how to' approach applied to music technology education in many schools internationally. Pedagogical EARS could potentially offer a clear, educationally innovative alternative. Although making the key decisions concerning which terms to retain and which to drop for this project will be extremely challenging, it is clear that definitions adopted for those with no prior knowledge can be created and supported, where relevant, with sound examples and with relevant opportunities to try out concepts, such as the various types of filters and of visual representations of a given recording. In other words all online¹⁰ new media and hypermedia aids can be incorporated, something EARS does not yet provide – a truly exciting opportunity.

However, it is logical to suggest that creating a pedagogical form of EARS solely based on its current format may not be sufficient. The reason for this can be found on the Groupe de Recherches Musicales's CD-ROM entitled *La musique électroacoustique*

¹⁰ An offline, stand-alone version could eventually also be created.

(Ina/GRM-Hyptique 2000). This superb new media publication offers the user three choices upon opening: *connaître* (understand), *entendre* (hear) and *faire* (do). This tripartite approach is extremely sensible, focusing on the comprehension of concepts and gaining historical knowledge; supporting music appreciation through documented examples, with evocative scores providing users something to hold on to when first hearing music that is possibly totally new; and allowing learning to take place through creativity, by providing users the opportunity to manipulate sounds.

This approach is holistic; its holism would be essential to support the request made during that meeting in Paris. EARS is therefore planning its own tripartite project, all based on current initiatives of the Music, Technology and Innovation Centre (MTI) at De Montfort University (DMU). It, too, involves an *understanding* aspect on what has been named “EARS II”, an adaptable *listening* methodology supporting access and appreciation, part of the MTI’s ongoing Intention/Reception (I/R) project and a ‘learning by *doing*’ aspect by way of the Sound Organiser audio software program currently under development for any novice user group. All three are introduced below.

Supporting Understanding: EARS II

This first part of Pedagogical EARS has already been described. Of the approximately 500 EARS terms, a much more modest set will be chosen, definitions adapted to the audience of young people and adults with no previous experience, and examples will be provided in the form of listening clips, interactive opportunities to try out concepts, and hyperlinks to sites related to the subject at hand. An influential example of this multimedia approach to learning concepts is Barry Truax’s *Handbook of Acoustic*

Ecology (Truax 1999). An associated learning plan will also be developed. Nevertheless, some flexibility in this must be allowed for, so that different didactic approaches and culturally based sound examples can be included wherever possible. Clearly, it is hoped to have EARS II translated into as many languages as possible. In this way, the intention is to make learning basic concepts accessible to as many people as possible and to provide an enjoyable means of learning at the same time. In 2007 funding was obtained from De Montfort University's Institute of Creative Technologies to support a research studentship directly related to the EARS II project. However, this part of Pedagogical EARS is not to exist in isolation.

Supporting access and appreciation: the intention/reception approach

The second and third parts of Pedagogical EARS are worthy of their own articles in this journal. For the present, summaries will have to suffice. The I/R project commenced in 2001. Since then it has led to a Ph.D. dissertation and several articles, the most important of which are Weale (2006) and Landy (2006). Although the project has existed happily in isolation thus far, its future version is best integrated into this broader holistic context.

The project has two goals, one of which is more pertinent to the current discussion. Firstly, it has investigated whether listeners with varied levels of experience with this musical corpus are receiving composers' intentions during the listening experience of electroacoustic compositions. More important in this context is the project's aim to gauge how accessible electroacoustic works are, in particular to inexperienced listeners. The hypothesis at the foundation of the project is that much

electroacoustic music has become marginalized in today's society for a number of reasons, and that this position is unmerited.

The publications cited discuss the project goals and methods at length. For our current purposes a short summary will be provided that largely excludes the aspect of the intention/reception loop. Until now compositions have been chosen in which real-world sounds are heard or perceived. The reason for this restriction has to do with a long-held view of mine: people are more likely in general to find connections through personal experience with works that include (perceived) real-world sounds than with works that include only abstract sounds. Electroacoustic compositions have been chosen within the range of soundscape composition, that is, works involving overt references to source and context, to works in which most sources are not directly identifiable, such as acousmatic ones in which the aspect of not being able to see sound sources or causes is vital. Of course works have been chosen in between these two extremes. From the so-called inexperienced listeners groups, including both non-musicians and musicians who have had little to no exposure to electroacoustic music, the I/R project researchers have yet to encounter a composition where, after one single listening, fewer than a majority of listeners wanted to hear the work or similar type of work again. In some cases, the percentage was over three-quarters of listeners. These results are far higher than the original expectations and provide ammunition for those who believe that electroacoustic music should be given more attention in schools and on our communications media. In terms of intention, listeners are provided the opportunity to listen to works three times, the first time (after which the question concerning the desire to hear such works again was posed) with absolutely no information at all; the second listening is preceded by

giving listeners the title of the work or, if that was not relevant, one aspect of its importance; before the third listening, all participants are provided the composer's intention, information based on a previously received questionnaire and any other available information. Inexperienced listeners largely found being provided with this type of information very useful in terms of their finding new works accessible to them.

Recently a different type of intention/reception project, involving contemporary dance, was discovered that took place in Australia (see Grove, Stevens and McKechnie 2005). Catherine Stevens of the MARCS Auditory Laboratories at the University of Western Sydney has been advising the project, providing input from a psychology point of view. Her empirical methodologies go well beyond the more traditional sociology-based questionnaire approach applied in the I/R project thus far. Through the addition of such methods to the project, the idea is to gain greater insight into the listening experience of people new to electroacoustic music. As with the understanding aspect, EARS II, the I/R approach will be developed to take cultural circumstances into account whenever possible so as to facilitate interest in local electroacoustic works. Chronologically, the I/R aspect of this tripartite project comes first, and continues as people gain more confidence with electroacoustic works.

Supporting creativity: Sound Organiser

The third and final 'doing' part of Pedagogical EARS takes the form of an audio software package that is currently being developed, provisionally named Sound Organiser. The object here is that the package functions in a manner similar to computer games, something many people using it will already have experienced. The higher the level one

reaches, the more skills, opportunities and artistic challenges will be introduced. To cite an example of how this works in context: some schools may not be able to offer children the opportunity to record sounds. Properly recording sounds is not something one learns early on when learning how to organize sound. Therefore, recording is offered after many levels have already been achieved and, in fact, an alternative will be on offer in situations where recording is not possible.

The approach is as user friendly as is possible. Unlike current software, there is no assumption that one can handle several windows at once, comprehend a Fourier graphic image, understand acoustic concepts or be literate in music notation when one uses Sound Organiser for the first time.

DMU's Centre of Excellence in Performance Arts (one of the United Kingdom's Centres of Excellence in Teaching and Learning) originally funded the Sound Organiser project. A prototype of the initial level of Sound Organiser was developed by John Anderson and the author to demonstrate the direction of the project, and tested in schools around Leicester. Interest for the next, main phase of development has come from the Groupe de Recherches Musicales in Paris and the above-mentioned Institute of Creative Technologies. The Central Conservatory of Music in Beijing has offered to produce a Chinese version of Sound Organiser and take the package into Chinese schools for testing, while investigating whether the package is culturally adequately flexible. The Sound Organiser will be usable as a stand-alone program or within the context of networked (Internet) performance for more advanced users.

Obviously, the three parts of this project will be harmonized so that aspects learned on Pedagogical EARS can be heard in context in the I/R environment and applied

creatively on the Sound Organiser platform. As more and more countries move towards including various forms of music technology onto their schools' curricula, Pedagogical EARS will be ready for use by younger students. Sound organization is already part of their aural experience and they are extremely open to discovery at late primary/early secondary school age. By using an integrated, holistic system such as the one proposed here, scientific, IT and graphic concepts can be developed alongside electroacoustic musical ones.

Brief conclusion

'Somebody had to do it' is the answer to the query, 'Why did you all embark on the EARS project in the first place?' As stated at the beginning of this article, the field of electroacoustic music studies was discovered to be somewhat ill defined. Its related curricula are extremely diverse: some are more related to media, some to traditional music and some to directly vocational aspects. EARS, a project that might have taken place within a library science department, has become increasingly gratifying to those involved as the years have gone by. Its need has been proven through its usage. The field of electroacoustic music studies no longer seems like an odd concept. Now the time has come for people in the field to find holes in areas of scholarship through searching the EARS site. The MTI, for example, plans to develop a large-scale electroacoustic music analysis project in an attempt to discover which analytical tools are most appropriate in which circumstances. Alongside such high-level research, specialists must also ensure that the foundation of the field is solid, something that is hardly the case at present. Both

EARS and Pedagogical EARS will represent a contribution to the creation of that foundation for interested people of all ages.

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Contributor details

Leigh Landy is a composer and researcher in an area that he calls sound-based music. He has written five books, including the recent *La musique des sons / The Music of Sounds* (OMF/MINT Sorbonne, 2007) and *Understanding the Art of Sound Organization* (MIT Press, 2007) and is editor of the journal *Organised Sound*. He is director of the Music, Technology and Innovation Research Centre at De Montfort University and co-founder/director of the Electroacoustic Music Studies Network. He is also Artistic Director of the company Idée Fixe – Sound and Movement Theatre. Contact: Leigh Landy, Music, Technology and Innovation Research Centre, De Montfort University, Clephan Building, Leicester LE1 9BH, UK,
E-mail: llandy@dmu.ac.uk