

EARS II: Time for a new approach to electroacoustic music

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Background. Contemporary music, in particular electroacoustic music, is not very well known in today's society. Musicians and researchers should have confronted issues related to making this corpus of music accessible to a wider audience; however, there are only very few projects available that explain electroacoustic music to non-specialists. The PhD project "EARS II" focuses on this as well as on detailed research about the fundamental concepts of electroacoustic music. At the Music, Technology and Innovation Research Centre there are two existent projects that are related to and will be integrated into the research: The original EARS project (ElectroAcoustic Resource Site, www.ears.dmu.ac.uk), which provides academic information for researchers in the realm of electroacoustic music, and the Intention/Reception (I/R) project (Weale 2006), which has investigated and shown ways of presenting and introducing electroacoustic music to new audiences thus demonstrating its potential accessibility.

Aims. The goal of the PhD project is to develop a web-based resource for children (11-14 year olds in the first instance) with an accompanying curriculum based on the current website EARS I. EARS II will introduce and explain the main concepts of electroacoustic music to inexperienced listeners using relevant multimedia tools and applying different forms of navigation based on the learning situation and the ability of the user. It will offer diagnostic information to users and will also involve user-generated feedback and tagging systems. It will call on elements related to music appreciation (I/R project) and creativity (new 'Sound Organiser' software). The research will focus on the understanding of concepts related to electroacoustic music making and associated research.

Main contribution. In these times of far-reaching isolation of a great deal of contemporary arts within society, the project EARS II is designed to help close the gap which has increased for the better part of a century. The I/R project demonstrated that by introducing children and inexperienced listeners to the basics of electroacoustic music carefully, one important result is a better understanding and appreciation of this music. The implications for EARS II are: the need to address children in particular is important; they are not only often more curious but also more willing to learn about new realms. Furthermore, it is easier for this focus group to accept new ideas, as they do not have necessarily deeply formed foundational assumptions about what music is. In this paper the goals of the project and further details concerning its content and method will be presented. Furthermore, the employed innovative learning methods will be introduced together with the learning outcomes for this web resource.

Implications. The outcome is to have a website which can be used as a stand-alone learning tool as well as a classroom-based learning facility. Most projects, which introduce children to contemporary music, do not include electroacoustic music. Furthermore, no other project currently exists in which this integrated holistic approach involving learning, listening and making is offered in a similar manner.

Today, society faces the problem that contemporary music is not very well known. There are several reasons for this, one, and maybe the most important, is most people's lack of knowledge about it. However, it is art and therefore part of our culture. As culture can be defined as the memory of the society (cf. Luhmann 1997) to ignore at least 60 years of music history would mean to ignore 60 years of an important – but often overlooked – part of our society. Art reflects the society and humans in general. To ignore this mirror means to ignore an important tool of expression.

With the development of recording technology listening to music became very easy. Once a work was recorded, it was saved and therefore more available. The result has been that audiences did not forget recorded pieces as quickly as others. The rapid alteration of life through far-reaching changes of technology (industrial revolution), two world wars, divergent and changing political systems also caused people to prefer to deal with familiar things – including familiar music. This transformation ranged not only over technology but also over music and the

other arts. While in music before the 19th century only one or two different styles per epoch can be found, in the late 20th and 21st centuries the personal style of every composer is defining structuring element. Starting with the Tristan-chord from Richard Wagner and going to Arnold Schönberg's dodecaphony a fundamental change was made in a development lasting approximately 50 years. While Wagner is widely accepted by now, the dodecaphony approach is still received with difficulties. This is of course a very rough overview. But it attempts to show the basic developments, which have led to the fact that some parts of contemporary music are not well known and not well liked in today's society.

During all of this change, society lost connection with a large amount of its own art music. It preferred familiar tunes and melodies. Popmusic took over the role of *Gebrauchsmusik* (i.e. music for general use) and by that time, Theodor W. Adorno drew a distinction between U- and E-music. U-Music stands for *Unterhaltungsmusik*, i.e. music for entertainment, E-Music on the other hand stands for *ernste Musik*, i.e. literally serious music. This distinction was drawn in many heads of the society (cf. Adorno 1996 and 2005).

Being trapped in the middle neither to be part of the widespread art music and nor being *Gebrauchsmusik* – except in some attempts of film music (famous examples include 'Birds' by Oscar Sala (directed by Alfred Hitchcock) or the title music to the UK series 'Dr. Who', written by Delia Derbyshire) – electroacoustic music could not manage to penetrate into the known repertoire of society.

One attempt to bring this music into society is to explain it to potential listeners. The Intention/Reception project has shown that this approach can assist in terms of reaching that goal (cf. Weale 2006). Explanation about music is necessary where not enough knowledge is gained by the general public. Naturally, this should be the task of musicologists, music teachers as well as dramaturges and music outreach staff at concert halls and for opera companies. However, there is a lack of knowledge in all these realms of music research.

Musicology. The percentage of teaching about electroacoustic music in German speaking countries is small.ⁱ Furthermore, most of the current lectures are related to technology, for example inductions to Max/Msp, to Jitter or to programming music in C and C++, as well as on analysis, and introductions to electroacoustic music in general. However, there are far too few lectures about aesthetics, pieces, concepts, composers and so on.

The problem described above was already discussed in 1999 by Leigh Landy. If one can find something like electroacoustic music studies in musicology, it is mostly limited either to discussion of technology or to questions about notation or analysis. The music itself does not play a major role in this research (cf. Landy 1999). This means that with exception, we still deal with the same issues today as we did 10 years ago.

Music teachers. Another problem appears as a result of the lack of research at universities: Music teachers learn most of the knowledge they will later teach during their own studies at universities. If they do not have a chance to learn much about electroacoustic music, they cannot gain a good qualification to teach it.ⁱⁱ Music curricula in school are therefore still restricted to music until the mid-20th century. They are focused mainly on learning notes and singing songs. According to Thomas Phleps, a German musicologist and music pedagogue, the few attempts to integrate electroacoustic music in a school lesson have been failing. The problem is a missing theoretical foundation, which is concealed by integrating practical elements in lessons, without the necessary theory (cf. Phleps 1994, 157)ⁱⁱⁱ. On the other hand, there is also a strong focus on technology, which is one part of electroacoustic music, but cannot describe the entire music. Although the subject Music Technology is an A-level subject in the UK (however, it does not even exist in Germany) is a good start to decimate the problem, but this curriculum is not enough to solve the problems described above and again far too focused on technology (cf. Landy 2007).

Pedagogical projects related to concerts. Who else could teach about electroacoustic

music and therefore help close the gap? Concert halls and opera houses have the duty to teach about their repertoire. So music pedagogues or dramaturgs organise pre-concert talks, workshops on special types of music and school concerts. Sometimes they also go into schools to speak with pupils about music. Approaches for presenting music can vary, but again, electroacoustic music is not covered sufficiently. This is true for two rather obvious reasons: firstly, the aim of this educational approach of concert halls is to reach new audiences. This is an important aim. However, it comes along with the natural commercial interest, concert halls need to survive. This leads to the second reason: generally, only music which is performed in concerts is introduced. As non-specialist concert halls are interested in reaching many people, contemporary music is only a small part of their repertoire and electroacoustic music is an even smaller part or is simply not included at all.

This is a vicious circle, as people who do not get in contact with electroacoustic music do generally not develop the desire to conduct research about it. To break this vicious circle in trying to close the gap between electroacoustic music and society, the *Pedagogical ElectroAcoustic Resource Site* project has been designed in believing that addressing the young is the best basis to reach this goal. The project is based on the current *ElectroAcoustic Resource Site*, which will be introduced in the next paragraph.

EARS

EARS I: Basic introduction

The *ElectroAcoustic Resource Site* project was first established in 2001, with the aim of providing academic information for researchers in the realm of electroacoustic music. It has been co-ordinated by Leigh Landy and Simon Atkinson at the *Music, Technology and Innovation Research Centre* (MTI) of De Montfort University Leicester and is supported by the MTI as well as an international consortium.

In 2002, the first version went online containing an English language initial glossary and an index. Today, the website presents a multi-lingual glossary with definitions of

about 500 terms, which are organised under six headers (Discipline of Studies, Genre and Categories, Musicology of Electroacoustic Music, Performance Practise and Presentation, Sound Production and Manipulation, Musical Structure), as well as an extensive bibliography of over three thousand items and a thesaurus. Furthermore, it provides online publications. Currently, the website is translated into five languages: English, German, French, Italian and Spanish. In a collaboration with the university of Beijing a Chinese version of the website is in progress (the project is called CHEARS, which stands for *Chinese ElectroAcoustic Resource Site*). A Greek translation is also being prepared.

Although in the description of the ElectroAcoustic Resource Site it is stated that "the project will cite or directly link to texts, titles, abstracts, images, audio and audiovisual files, and other relevant format" (EARS 1), the project is mainly text-based. Audio files or other media formats are only available via links. As the EARS website addresses researchers and experienced listeners (such as composers) in particular, this is sufficient information.

Further information about EARS I can be found in Landy 2007a and 2007b.

EARS II: Basic introduction

In a second part of the project (from now on called EARS II) a new web-based environment will be developed, which addresses the inexperienced listeners, in the first instance children at key stage 3 of the National Curriculum in the United Kingdom (aged 11-14). As text is not appropriate as the sole means of presenting information to children in that age group, EARS II will use the information from the current EARS website (EARS I), but will present it now didactically within a multimedia environment. While the information on EARS I is organised as a reference, EARS II is based on a pedagogical approach, which means that the organisation and presentation of the information must be adapted. Not only is knowledge transfer related to electroacoustic music necessary; also an understanding must be gained of how it is composed and of course how it sounds: this leads to a better acceptance of electroacoustic music. To realise this aim, the

project contains three important components: learning about this music (understanding), listening to it (appreciation) and making it themselves with the help of the software, Sound Organiser (creating). In combining these elements, EARS II is unique amongst the other few pedagogical projects about electroacoustic music.

EARS II

Aims – Content – Method^{iv}

Aims. Being an equally challenging and in equal shares entertaining platform, EARS II is intended to broaden the mind of all users (pupils and teachers). Presented as a mix of learning, listening and making electroacoustic music it is planned to be placed on the curricula of secondary schools internationally. The most important aim of EARS II is to introduce children and other inexperienced users to electroacoustic music, as it is an important part of our music culture. Not only is knowledge about this music necessary, but also understanding of basic theories and concepts, information on how the music is composed and of course how it sounds, leads to a greater acceptance of electroacoustic music. To realise this aim, the project contains three important components: to provide knowledge, to explain, how to make this music and allows users to listen to this music.

Learning Outcomes for EARS II. The following list presents the learning outcomes a user can achieve in learning with EARS II. As the amount of outcomes is huge, naturally not every user will achieve all outcomes. However, it shows the wide ranges of skills and knowledge which can be gained within the EARS II environment.

1. Broad aim

A society whose members are not afraid of electroacoustic music, but instead understand it and can appreciate it and/or make it.

2. Concrete social objectives

- a. familiarity with the body of electroacoustic works
- b. broad but discriminating musical tastes

- c. awareness of basic musical design and the general outline of its evolution
- d. ability to compose or improvise with sounds
- e. participation in musical activity appropriate to one's interests and talents

3. Program objectives

Knowledge of

- a. a repertoire of electroacoustic music
- b. basic functions of the Sound Organiser
- c. musical vocabulary and meanings in the realm of electroacoustic music
- d. electroacoustic music's development the principal concepts and key figures

Understanding of

- a. issues in electroacoustic music concerning technology and theoretical discussions (e.g. performance, notation, ...)
- b. the general concepts related to the construction of electroacoustic music

Skills in

- a. running the basic functions of the Sound Organiser
- b. being aware of the sonic environment
- c. reading a graphic representation of sound
- d. speaking about electroacoustic music
- e. hearing and identifying the main elements of musical compositions
- f. being aware of listening strategies

Attitudes of

- a. musical broadmindedness and the discrimination of quality
- b. respect for electroacoustic music as an art and a profession
- c. intention to improve one's musicianship

Appreciation of

- a. skilled and tasteful performance
- b. good music in any medium, style or genre

User initiatives

- a. frequent and efficient visits to EARS II
- b. searching for more about electroacoustic compositions on the Internet, libraries, radio, TV, and attending – where possible – concerts

(adapted from: Leonhard and House 1972, 189-199)^v

Additional to the list above, the users will acquire knowledge about:

- Electroacoustic music
- Following from above: a broader understanding of the term music

- Manipulation of sound
- That sounds are potential musical material
- Pieces
- How some technical devices work
- How to listen to electroacoustic music
- How to use the Sound Organiser (which can be also seen as an example for other music programmes, in this case for beginners)

Content. Although history is more integral to the pedagogical approach of EARS II than in EARS I, the content of the website will not be presented chronologically. Not only has the development of this music been very rapid, there have been also different styles developed at the same time. The plan is to introduce electroacoustic music by focussing on its key concepts. A concept can be, for example, the sonic material used in the production (e.g. using real-life sounds or generated sounds) or how it is performed (e.g. live performance or recorded on a fixed medium) or both. That said, history will not be neglected. In EARS II music history will be presented by way of a timeline. This timeline contains everything that is introduced in the website. By clicking on a date the users get links to every topic that is related to that year. So the chronology of everything that happened during this time is still present.

Method. The information on the website is organised as a huge repository designed as part of a Research Informed Teaching project by John Anderson; it contains two different methods of imparting knowledge. The first type are Tutorials, the second are Information Boxes. To start with the latter, an Information Box is the smallest unit of offering knowledge and contains information about a topic. It can appear in any level and is not bound to another Information Box. The content can be a model of a technical device, a work with a description, or a theoretical text. This information can be presented via any media file that can be included. Tutorials consist of a chain of Information Boxes. The main difference is that a tutorial follows a teaching strategy. Therefore it is always based on an initial question and includes a task for the user. According to Diana Laurillard, it is important not to use too many narrative

media in a tutorial as the user should always have the feeling of 'doing something':

"The presentational qualities of multimedia allow tutorial programs to offer brief introductions to the content being studied, but these are unlikely to use any lengthy narrative form. The style of study required for apprehension of the structure of a narrative an through that, of its meaning, is not compatible with the style of study required for ICT [information and communications technology]. Because computer-based media are minutely controllable and interactive, the student inevitably expects continual prompting whereas a passage of text or a video sequence requires sustained attention, but no action." (Laurillard 2002, 136)

She draws hence the conclusion in quoting a study carried out from Brooksbank:

"However moving from an adaptive medium of continual activity, to a narrative medium of continual receptivity is a disquieting jump for students. The sit-forward/sit-back media do not make a happy combination. For that reason, the video used in conjunction with tutorials is usually shown in very small clips, of a few seconds or so. Text as well, aside from the difficulties of reading text on a screen, is kept to short passages in well-designed programs. Otherwise, there is an observable tendency for students to ignore it, or become impatient with it, a point confirmed in an evaluation of the WinEvon materials (Brooksbank et al., 1998:49)." (ibid)

This means that one of the main tasks for EARS II is, to choose media, which equate to Laurillard's 'sit-forward'-media.

Access to the website. To offer the user also broad possibilities of website usage, there are two differing types of access to it. The user has the possibility either to enter the website in a single-user-mode or in a multi-user-mode.

The single-user-mode. As it is not clear with which motivation a 11-14 year-old youth is entering a website, one of the aims must be to spark and to retain their interest.

Sparking interest. With the aim to have users explore the website rather than just to gain knowledge, they could for example have the opportunity to draw an action card which contains a task for the user.^{vi} They can then

use the search function to find the solution or to find out more about the topic. They can also follow a provided link or find their way about without a guide. A tagging system will be integrated so that the user can create associations between concepts, thus leading to the possibility of following these tags. (The tagging system will also be made available to others interested in these associative routes.) The user can decide at what point s/he wants to receive a new question.

Retaining interest. To retain interest it is important, that the user is regularly receiving feedback. As a website is not a one-to-one-tutorial providing feedback can be fairly tricky. Feedback can be divided into extrinsic and intrinsic feedback. Similar to the better known distinction of intrinsic and extrinsic motivation, intrinsic feedback is feedback that is given within an action. The action itself is not commented upon but instead its result. Every time the website is changing because of a user's action, the website is providing intrinsic feedback. This can be moving of the mouse cursor as well as loading of a new page after clicking on a link.

Extrinsic feedback judges more the frame, than the content. Or as Laurillard says: "Extrinsic feedback is the feedback that operates at the level of descriptions of actions, and is therefore common in educational contexts." (Laurillard 2002, 56) So, extrinsic feedback is given not on the moving cursor as itself, but on how useful it was to use the mouse to do a special action. In pedagogical contexts a common solution for providing extrinsic feedback is, to assign tasks and to 'judge' the results. For EARS II this means, when the user finishes a tutorial s/he will be presented with questions. These questions can either be multiple-choice questions or their answers can be typed onto a notepad. With a full-string search it is possible to search for keywords and to give feedback. This feedback should not be a judgement like 'right' or 'wrong', but rather states the right answer in one sentence. The users then can compare their solution with

the provided answer. Using multiple-choice questions only might seem to be much easier, but it is too risky as the users might attempt to build up a logical argument leading to a wrong answer. (cf. Laurillard 2002, 135)

Laurillard recommends so-called 'concealed multiple choice questions', which use a keyword identification for an open-ended answer:

"The matching algorithm may be more sophisticated, e.g. allow mis-spellings [...]; or allow certain synonyms. However, with this method it is always possible for the student to get a right answer that the program cannot recognise. The feedback should therefore be cautious about right/wrong judgements. A common solution is to say something non-judgemental, but making explicit the correct answer, such as 'In fact it increases demand'." (Laurillard 2002, 136)

Assuming the questions on the action cards will spark interest, they should differ from schoolbook's questions: they could rather be like little riddles, like an invitation for a time journey or a mission, and so on. This is designed more like a computer game. Furthermore, the questions are organised in three levels: these levels equate to the levels in which the content is organised. In this way it would be possible to guaranty that the user is dealing with content of the right level.

The multi-user-mode. Every function, which is available for the single-user-mode, is also available for the multi-user-option, which offers a few more features. While the single-user-accounts are administered by the EARS II team, the multi-user-option allows for a moderator (who could be the teacher) to administer the class' accounts (setting up, organising passwords etc.). The moderator can also control all functions of the pupils' account, such as switching sound on and off, and monitor, where the user is on the website. The moderator has the rights to pre-structure the website as they need it for their lessons (i.e., create a particular curricular navigation path).

Why teaching with a website?

Diana Laurillard distinguishes in her book *Rethinking University Teaching. A conversational framework for the effective use of learning technologies* between learning and academic learning. As learning is obtaining knowledge of the world, academic learning is receiving knowledge about descriptions of the world. Academic learning has therefore a second-order character, because the natural environment, which affords “learning of precepts through situated cognition” (Laurillard 2002, 23), is missing. She demands therefore that

“teaching must create artificial environments that afford the learning of ‘precepts’, i.e. descriptions of the world. The implications for the design of teaching are that:

- academic learning must be situated in the domain of the objective, and learning activities must match that domain;
- learning environments must be designed with features that afford the learning of precepts, the affordances for academic learning;
- academic teaching must help students reflect on their experience of the world in a way that produces the intended way of representing it. (Laurillard 2002, 23-24)

Learning about electroacoustic music belongs to the category of ‘academic learning’. For learning about music in general it is necessary to listen to the music. Following the aims, firstly to reach a great part of our focus group, and secondly to teach based on the combination of learning, listening and making (as it has been already described), this leads to the consequence that an environment must be created that is able to provide a holistic approach. That means that the learning material must include a programme for making and presenting the music, thus involving a significant amount of media files. A website, in comparison to most of the narrative media such as texts or audio, proposes the possibility to include several types of media and also include a number of different ways of learning. From the table Laurillard provides on page 90 (see figure 1) it can be seen that every media form can be covered by a website, with the exception of communicative media.

Learning experience	Methods/technologies	Media forms
Attending, apprehending	Print, TV, video, DVD	Narrative
Investigating, exploring	Library, CD, DVD, Web resources	Interactive
Discussion, debating	Seminar, online conference	Communicative
Experimenting, practicing	Laboratory, field trip, simulation	Adaptive
Articulation, expressing	Essay, product, animation, model	Productive

Figure 1.

As electroacoustic music is not well known in today’s society, a second reason for teaching by way of a website is that not all teachers have sufficient knowledge to create their own material. (see also, the introduction) A website, which offers a complete environment including the teaching itself, and is flexible enough to allow the teacher to choose what will be introduced, can be an invaluable tool for them to work with.

Although Laurillard writes: “Without a clear personal goal, students will tend to iterate through the resources without either reflection or adaptation. Interactive hypermedia do not necessarily offer a productive learning environment.” (Laurillard 2002, 110)

However, one of the main advantages of a website is, that it is universally available. That means it is easier to use this than teaching material, which has to be ordered, for example, as a book or a film. A public website presented within an e-learning environment provides the chance to reach more people. And finally, the teaching methods on an e-learning platform are so diverse, that it can be much more interesting than just a film or a book about a specific topic. A website can also contain several different types of media. As everybody has different ways of learning (one prefers learning by hearing, one by reading and so on), it is therefore possible to reach a greater number of users, than it would be possible with having only a book or only film.

Summary

Starting with an overview of the problems electroacoustic music faces in terms of reaching out to new audiences, the analysis at the beginning of this text has shown that one of the main reasons for this is a lack of supporting research and knowledge in musicology and educational tools, specifically made for music teachers.

Although EARS II is not yet finished, this introduction of its aims, its contents and its pedagogical background shows how useful this web resource can be to support teaching and learning about electroacoustic music. It can help close the gap between electroacoustic music and society, and thus offers this body of music its rightful place in today's and tomorrow's cultural map.

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- ⁱ See also the overview of all lectures and seminars of Germany, Austria and Switzerland in *Die Musikforschung* 3/2008: From 1276 lectures are 97 on topics related to electroacoustic music (as far as titles can show) and from this 97 lectures, 48 take place at the Department for Electronic Music and Acoustic of University of Music and Performance Art in Graz, Austria.
- ⁱⁱ Of course there are open-minded music teachers, who are able to do this.
- ⁱⁱⁱ Interestingly, this is only mentioned in a small part of this rather general article, and it is very difficult to find literature about this very problem.
- ^{iv} This paper deals only with the understanding/learning part of EARS II, as the author is responsible for this within the project.
- ^v The authors included a 4th section called *Instructional objective*, which is not appropriate for EARS II as it offers no classical music training.
- ^{vi} The idea about offering action cards to spark interest is only an example for this paper and needs to be tested with the focus group. As the website will mainly consider a user-centred design, it is not possible to say yet, how the interest is sparked best. By the time of writing this paper, these tests have not yet been conducted.