Reviewing the musicology of electroacoustic music: a plea for greater triangulation

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Both electroacoustic music and its associated musicology are a half century old. Although the number of relevant technological developments during this time could be said to be extremely high, its music has known relatively few heroes, at least within contemporary art music, and written scholarship demonstrates a bias towards formalism and therefore much less of one towards the contextual, aesthetic, reception, etc. The previous sentence implies an imbalance worthy of addressing. This article is less a survey of what exists in the area of electroacoustic music scholarship than one looking into delineating the area and suggesting where the 'holes in the market' might be and how they might be filled. Are the fields of sonic art and its musicology intentionally avoiding coherence? And why do musicologists of the music of notes continue to avoid the musicology of the music of sounds? Finally, triangulation, i.e. the use of feedback and evaluation so rarely applied in electroacoustic music(ologogical) contexts, is promoted as a means to greater cohesion and understanding, avoiding what is called an 'island mentality' demonstrated by many individuals working in all areas of the sonic arts.

1. INTRODUCTION

The electroacoustic music community is one of great diversity. This was well demonstrated in *Organised Sound*'s **2**(1) issue on that very theme. It consists of novices to highly advanced specialists, composers and performers to all sorts of developers, architects of new complexities and new algorithms to sound shapers and techno DJs, not to mention its audience. The members of the electroacoustic community involved in scholarship[1] consist primarily, although not solely, of people working within the area, be it on the development and/or creative application side(s). This point may be considered to be advantageous; it has led to many interesting and useful treatises on subjects based on personal experience or of a more general nature.

Nevertheless, the fact that the vast majority of scholarship emanates from within the community might not be an ideal situation. The terms emic and etic, which are used in ethnomusicology and fields having an association with anthropology, come to mind. The former approach refers to 'an analysis that reflects the viewpoint of native informants' (Nattiez 1990: 61); the latter, 'an analysis accomplished *only* by means of the methodological tools and categories of the researcher' (ibid., my own emphasis). As you can see, the latter need not *necessarily* imply an outsider, but does suggest detachment. The only 'outsiders' generally writing about the subject are journalists and the occasional musicologist.[2] The former group is useful for providing general contextual feedback, but not much more normally. The latter is so unusual that these people are more or less automatically taken into the electroacoustic practitioners community, perhaps reducing the detachment referred to above.

It therefore appears that very few people look into the scholarly areas of electroacoustic music from 'without', meaning that relatively little triangulation takes place concerning, for example, intention – creative, technological or otherwise – and reception. Before going on any further, one might raise the question: What is the relevance of this scholarship in the first place?

2. THE IMPORTANCE/ROLES OF SCHOLARSHIP

The word 'scholarship' is not a comfortable one to use. It certainly is not trendy and in many countries it covers a vast territory including the areas of creativity and technological development mentioned separately above. The intention here is by no means to turn scholarship into a narrow area; instead 'scholarship' is being used within this text to refer to the use

[1] The local definition of the word 'scholarship', one that is based on the written word in the first instance, can be found at the beginning of section 2. Furthermore, it is assumed that the reader has a basic acquaintance with current electroacoustic music scholarship. The word 'electroacoustic' will be used throughout referring to any music in which electricity has had some involvement in sound registration and/or production other than that of simple microphone recording or amplification. 'Sonic art' will be used to represent the art form based on sound as its unit measure. Many will consider sonic art to form a subset of music (or, ironically, vice versa).

[2] Most of these musicologists write primarily, if not solely, within the area of electroacoustic music. Please refer to section 6 for further discussion.

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of the (written) word and associated image towards facilitating a greater understanding of what we in the electroacoustic community are doing, contextualising this and drawing links between a huge diversity of technological developments as well as musical artefacts and approaches. It is assumed that neither the reader nor this writer uses the term solely in this manner.

Let us reflect on the scholarship question empirically and introduce an example which will reappear as part of a list of relevant areas of scholarship below, namely that of the emancipation of the sound as unit measure for music. We need not rehearse the prehistory of electroacoustic music to recognise the importance of how the following sentence indicates how quickly and how far things have evolved. It is a fact that the majority of music people hear today includes some form of involvement of electricity; it is also true that a fairly high percentage of today's music acknowledges the ability of a sound, beyond those sounds known as notes, to be part of a musical corpus.

It is my view that the redefinition of the unit measure of music from the note to the sound represents a form of emancipation no less vital than that of the movement as unit measure in contemporary dance – to stay with the arts – or the emancipation of gender, race, age, religion and ability in a growing number of today's cultures.

Many will agree that all of these are worthy of celebration, but do we know why? Scholarship may have a good deal to offer regarding such questions, yet the research into the impact of the emancipation of the sound is fairly sparse, the Canada-based World Soundscape Project (WSP – see Schafer 1977 and Truax 1984) and its younger partner, the World Forum for Acoustic Ecology forming notable exceptions. Yet for obvious reasons they only deal with certain elements pertaining to the emancipation question such as classifying sounds, finding them and investigating how they function in environmental 'soundscapes', researching the level of noise or sound pollution in cities and in the countryside. These points hardly address the question itself.

Why is something so essential to most developments within electroacoustic music taken for granted or simply ignored? Might the lack of scholarship in this area have a bearing on the lack of understanding of certain contextual and cultural aspects of electroacoustic music by potential practitioners or listeners? If so, there is little wonder that the appreciation of some varieties of electroacoustic music is so small.

This is only one of several examples that could be called upon to demonstrate an incomplete landscape of relevant scholarship. One of the hypotheses that led to the writing of this article is that there are two primary reasons why there are so many holes in electroacoustic musicology. Firstly, what is taught to students is too often technology and/or theory driven (read: not music driven), if not dated. This implies particular biases or foci potentially being imprinted on future specialists that perhaps are in need of modernisation/being further evolved – see the following paragraphs. Secondly, too many texts regarding today's electroacoustic music are too specialised or at least written only for a chosen few. For instance, why do many of us create all of those International Computer Music Conference (ICMC) papers that seem to live in glorious isolation often without any attempt towards verbalising potential application? Furthermore, why do many members of this particular community – i.e. one involving many music technology developers – avoid writing introductory publications for a general public and why is there so little work being done in the 'middle ground' between the two?[3] Please refer to the sections on triangulation and on systematic electroacoustic musicology below for further elaboration of this second point.

3. AN APPROACH TO THE TEACHING OF ELECTROACOUSTIC MUSIC THAT ONE STILL ENCOUNTERS[4]

Depending in which country you study the history of electroacoustic music, you might have been informed of two to three centres of birth: France (GRM/*musique concrète*), Germany (WDR/*Elektronische Musik*) and possibly your own country if it was not one of the above two. It is clear that the difference between *objets sonores* (sound objects) used by the first two – any sound recordable by way of a microphone, generally acoustic in origin, and any sound created electronically – seems to create a mutually exclusive field covering the entire resource base of potential electroacoustic music. However, once one investigates this early history a little more deeply, one notices that within the first few years some Germans were indeed including sounds the French would probably consider their own (e.g. the voice in Karlheinz Stockhausen's *Gesang der Jünglinge*) and vice versa.

As one continues along the rapid tour of development, the analogue voltage controlled (VC) studio, often also known as the synthesizer, has its *acte de présence*. The digital age is announced first in the form of computer-generated scores for acoustic

[3] It is my belief that many useful texts have not been adequately appreciated due to the 'ivory tower' allure scholarship has traditionally been expected to offer. The question here is: Can populism and 'academic' discovery be allowed to gel?

[4] For those who do not teach or have been taught a curriculum dissimilar to the one presented here, please treat the first paragraphs of this section and later references to them as anecdotal.

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instruments.[5] Then computer synthesis is born, allowing for any sound to be used and totally defined in music as well as making our 'tedious' analogue studio techniques more 'efficient'. For live contexts, digital synthesizers and live electronic (term now extinct) developments both analogue and digital are presented as forerunners of what is used today in, for example, interactive contexts. Etc., etc., etc.

The liberal instructor, having followed the above contemporary art music curriculum, will mention a few developments in popular music during this historical overview. The popular music instructor, on the other hand, will cover all of the above in an hour and move on to the relevant areas within music that people *have* heard. The Venn diagram representing the two teaching approaches is likely to demonstrate an overlap in the form of a thin sliver when in fact historically many of these technological developments have an enormous overlap (e.g. the history of the synthesizer); their musical applications often do as well.

Are these milestones the right ones? For example, rewinding the tape, are we overemphasising a little the relevance of the exciting 1948–50s period half a century later? How useful, for example, are the key, sometimes cryptic texts of the GRM's early pioneer, Pierre Schaeffer, to today's member of the electroacoustic community, student or otherwise? They were the first of their kind, but are they the best? Why, for example, are the texts offered to us by a fellow GRM member, Michael Chion, who has attempted to make some sense of Schaeffer's writings, not more often cited?[6] Taking this one step further, is it not true that only a few of Schaeffer's theories have been truly evolved by others? If not, how useful are these texts to us today?

Setting the theory and technology-based milestones aside, how does the history of electroacoustic music itself fit into this curriculum? Does it suffice to illustrate theory or studio equipment or do we need to know more about how the music has been constructed, how it fits in with nonelectroacoustic music of the same period and how we hear or receive the music? The moral to this part of the story is that this type of taught history will serve us primarily if dealt with holistically, i.e. making the music a full partner, updated where necessary (theories, not historical facts) and presented in terms of its relevance to today's user or enthusiast.

[5] N.B. This example forms part of music technology, but does not form part of electroacoustic music according to this writer; it is computer-assisted composition.

[6] Please note that at the time of writing this article, there are no translations into English of any of the relevant key texts of Chion in this area, some already fifteen years old. Furthermore, translations of much older Schaeffer treatises are indeed under way. Perhaps it is a question of a queue. Funny how the technology advances quickly and the corresponding theory, or at least its translation into other languages, so slowly.

Please note that this and several of the following examples concern, and to an extent, criticise Schaeffer's theory. Pierre Schaeffer is not being singled out in this text, nor does he deserve to be; instead, similar examples have been chosen for cohesion. There are numerous analogous examples which can be easily discovered outside of the realm of *musique concrète*.

4. THE IMPORTANCE OF TRIANGULATION, LINKAGE OF SCHOLARSHIP TO PRACTICE AND DEVELOPMENT

One part of the hypothesis introduced above concerns the amount of individual/small group effort going into development and scholarship (as well as composition, in fact) in isolation. One approach not yet introduced is that of scholarship based on any form of feedback. Research methodology in many subject areas allows for some sort of triangulation to be included. In recent years, particularly in the field of education, the notion of 'action research', i.e. research which incorporates acquired feedback evaluation of one's own (creative) work throughout the creation of that work and afterwards, has grown in importance (see, for example, Elliott 1991). Within electroacoustic music scholarship, in contrast, how many articles and treatises have we read based on an individual's own vision or formalism? Avid readers of texts concerning electroacoustic music will agree that the answer to this question will be located in the ninety plus percentile. In short, triangulation in electroacoustic research is the exception, not the rule.

This imbalance, and there is no other word for it, represents an issue linked to the emic: i.e. individuals staking their claim to an idea, an approach or some such often without adequate contextualisation, but more importantly here without adequate or any feedback or consistent correlation, using methodologies that are often self-referential.

Let us look at this problem in a different manner. Is the potential body of scholarship of electroacoustic music primarily based on its technology, its theories and its musical processes developed in isolation? I doubt it. Without looking into relevant application, reception and, yes, understanding, there is no closed loop. Ironically, Arts Councils, at least the one in England, expect evaluation to take place throughout a funded arts project. (Arts) Research Councils seem to be well behind in this respect.

One need not conclude that we are wasting our time on the scholarship we are producing. What is being suggested here is that triangulation might contribute to debates concerning pertinence/applicability of development, and furthermore that the intention/reception loop should be investigated where relevant.

A bit of polemic: I suppose that those uninterested in these loops believe that when they, themselves, feel their scholarship to be relevant, that is sufficient. If this is so, I wonder whether we might introduce the

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notion 'scholarship for scholarship's sake' (previously known as scholarly licence)? Those who believe in this in the electroacoustic music field should read no further.

For those still reading, let me provide you with an example based on personal experience. In 1993, a conference was held at City University (London) on the subject of 'Timbre Composition in Electroacoustic Music'. I offered a paper there (Landy 1994) entitled, 'The ''something to hold on to factor'' in timbral composition'. This paper looked into elements of reception that might provide a key to open the door to enter the world of timbral, often electroacoustic work for relatively inexperienced listeners. To do this, I had to come up with my own system and then triangulate with other listeners as well as with at least some of the numerous composers themselves to identify whether loops existed between intention and reception in terms of listening strategies. The results can be found in the published version of the paper. The methodology pursued in this modest project represents just one way of investigating what is being proposed in the above paragraphs.

5. THE THREE MAIN AREAS WITHIN MUSICOLOGY AND THEIR RELEVANCE WITH REGARD TO ELECTROACOUSTIC MUSIC

So far the problems of area have been introduced avoiding lengthy discussion of any existent paradigms. It is not the intention of this article to be critical of past practices and scholarly achievements, but instead to investigate a more coherent and holistic future within the scholarship realm.

At this point, musicology will take the lead. We will investigate how electroacoustic music's areas fit in. To do so, the currently generally accepted three-pronged division of musicology will be introduced.[7]

In recent years, musicology, at least on the European continent, has known three key divisions: historical musicology, systematic musicology and ethnomusicology. The former division is fairly clear in terms of its delineating parameters, although it is sometimes uncertain where 'history' ends. The latter one involves the study of music as a cultural phenomenon. It is the division in the middle that seems to have inherited the rest, including areas such as critical theory and even aesthetics, which occasionally seem anything but systematic. Leaving the imperfections of the system aside for the moment and applying the division to electroacoustic music, we can now look at current as well as potential scholarship in each of the three.

5.1. Historical electroacoustic musicology

As technology seems to be at the heart (it does represent at least a limb) of electroacoustic music, it comes as no surprise that its history is often presented within a technology or theory-based wrapper. Yet, as said, the history of this music (and its prehistory)[8] is not solely technology based or even necessarily technology driven. Technology represents one aspect of a whole. The music itself certainly represents another.

Let us return to our early history, looking at an idea from Pierre Schaeffer's theory as well as the early French and German schools. The example has been chosen to investigate something many have been taught in terms of theory that could quite possibly be found to be contradictory with reference to other knowledge associated with that period. It concerns Schaeffer's strategy leading to an *écoute réduite* (reduced listening – see also section 5.2 below). Michel Chion defines this term as 'a way of listening in which attention is directed to the inherent part of the sound itself by disengaging possible sources, meanings, values or messages that might be indicated' (Chion 1983: 33). If this were to be taken literally, a thought contested within electroacoustic music circles, what difference would it make whether a given *objet sonore* is based on something within *musique concrète's* boundaries or an electronically generated sound? Yet the material was crucial to the compositional approach according to our history treatises. Obviously, if it were to be demonstrated that the choice of sound source is of little relevance, much of that early history would need to be rewritten. Alternatively, if we knew more about the reception of music of that time (or later) within the realms of Schaeffer's notion, the relevant theories would perhaps have been further developed in subsequent scholarship and, in consequence, amended in historical surveys. Thus what appears to be a contradiction might have been disentangled for us in recent decades, but has it?

Remaining with this period, one thing is clear: most music made in Cologne and most music made in Paris in those early years did demonstrate certain separate similarities in approach and sound. These were not necessarily technology driven. The French approach (something which could be stated about several French composers' instrumental music throughout the centuries) was quite personal, not (highly) formally organised. The Germans were

[7] It is clear that the conservatism illustrated by selecting existent divisions in musicology might be found to be disappointing, if not potentially dangerous in this context. The ongoing critical debate concerning musicology's current subdivision is best treated in another context. This subdivision, nevertheless, will facilitate the discussion of all relevant individual areas.

[8] Hugh Davies provided us with an exceptional list in 1968 which unfortunately is hard to find today (Davies 1968).

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extremely influenced by and involved in the developments in postwar serial music using organisation principles as a backbone. What does either approach say about the sound materials used? Nothing in the first instance would be my view: serial *musique concrète* could have been composed. Somewhat subjective electronic music has been composed a great deal since, but was not the trend in Cologne in the early 1950s.

Students tend to learn about which sources and tools were available to the two groups and how the pioneers, including Schaeffer and Herbert Eimert, who led the accompanying theories, made certain claims at the time. These claims and tools represent only parts of the whole, the music another, and, as said, crossovers took place between those opposing theories within a few years of their being launched anyway.

This demonstrates, I believe, how easily one can be technology or theory led. A theory is generally quantifiable; the fact that some music or some sounds do not fully represent a theory can easily be glossed over in our historical documents as these deviations are often more difficult to describe or quantify.

To draw a parallel, one studies the history of the sonata and its associated forms much more than how their grammars were abused by certain composers. My contention would be that the ingredient that often made sonatas successful was the ignoring or extension of rules, not the blind following thereof. Electroacoustic music teaching seems to follow this pattern by selecting fairly obvious quantifiable – and in this case opposing – schools of thought, and discussing them even if the respective churches they represent were not terribly full at the time and are not overly relevant today given our current breadth of musical languages and technological potential.

The fact of the matter is that the technology/theory-driven history does have its place. Still, the proposal here is that historical electroacoustic musicology should also:

- take relevant aspects of systematic electroacoustic musicology into account for relevant support,
- attempt to merge musical developments with the technological where pertinent, and
- attempt to create one single history, i.e. the pop and contemporary music versions of history should fuse into one entirety.

For those who disagree with this fusion, please allow me to demonstrate its relevance as follows. In general, music technological developments were led by the marginalised contemporary electroacoustic composers and their occasional engineering friends until affordable realtime processing equipment came into being. Some early analogue synthesizers were clearly being built for popular musicians even if they were also used by composers from the other side as well. Perhaps Yamaha's DX7 and its contemporaries represent the turning point where a vast amount of technological development was invested to support a wide market, offering pieces of equipment that were also available to but not necessarily designed by nonpopular[9] composers. Without these more recent developments, musicians' ability to afford equipment would have had to wait at least another decade. For those old enough to remember, just think of the huge sums required to purchase a Fairlight or Synclavier system when they first came out.

The two histories contain a great deal of crossovers and in some cases converge (e.g. the more-or-less universal acceptance and application of the sampler and its equivalents). Granted, many electroacoustic music composers outside of popular music want to choose from a total spectrum of opportunity ideally where some popular musicians may be satisfied with off-the-shelf packages. Nevertheless, convergence is currently taking place as off-the-shelf packages are offering much more flexibility than in years past. As pop music applications of music technology seem to be becoming increasingly sophisticated, perhaps it is now improper to make the distinction at all any more.

As stated in the abstract of this text, electroacoustic music is celebrating its fiftieth anniversary at the time of writing, yet how many truly historical surveys do we have on offer from the musical point of view? Serious work needs to be done here which will clearly contribute to any increase in knowledge that is reception based.

As a bridge to the next section, take the example of the development of musical structure in recent years, whether in electroacoustic or any other form of contemporary art music. There seems to have been exponential growth in the number of types of musical architecture and musical language composed in recent years. Becoming part of a 'school' is hardly trendy in the postmodern 'Me Era'.[10] What does this mean? Historical and systematic (electroacoustic) musicologists are requested to provide a response. And how does this growth influence musical appreciation and understanding?

5.2. Systematic electroacoustic musicology

Not only in musicology is this the basket in which so much seems to be deposited; in electroacoustic musicology, as suggested above, it often feels as if 'any system will do' as far as demonstrations and publications are concerned.

[9] Unpopular? Our terminology is in need of a service.
[10] This remark does not include popular music.

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Although I do not believe in creating structures where one is not needed, it is interesting to note that the list of what fits within this particular category is indeed extremely long. The problem here is that many of the examples of rubrics below can be subdivided and subdivided again into little islands. Although not all scholarship (e.g. the notion of modelling) ends up on only one of the islands – as with some of electroacoustic music, part of our research tends to cross categories or even fall between them – the key issue to be presented here is the relative lack of linkage, supporting what I shall call an 'island mentality'.

Here follows a *capita selecta* of often-encountered rubrics that fit within systematic electroacoustic musicology:[11]

- new theories concerning sonic art
- categorisation of sounds (micro- and macro-levels)
- families of approaches/works
- sound (re)synthesis
- sound manipulation
- spectral analysis
- spectromorphology[12]
- new instruments
- interactivity/performance interfaces
- new protocols for digital control of sound
- new approaches to performance (contexts)
- multimedia
- sound and space/acoustics
- new notations/representations
- new approaches to analysis
- ordering of sound (micro-level)
- ordering of larger electroacoustic musical entities (macro-level)
- artificial intelligence
- modes of listening/perception
- psychoacoustics/cognition
- archiving information
- aesthetics/philosophy/criticism
- etc., etc.

A note of importance here is that there *is* a difference between fully formal approaches to the above and ones that are not but appear as such. I believe that, despite the term systematic, there is room for the subjective as long as it is fully contextualised and, perhaps ironically, formally treated.

Although by no means comprehensive and taking the readership as defined into account, one can conclude that most treatises on the above subjects do demonstrate solo or at best small group ventures, rarely including potential application. Similarly, there exists an island mentality as demonstrated by the remarks above concerning the 'Me Era' and composition. Although there is a place for this island mentality during the ongoing experimental phase of electroacoustic music's development, too many using this as a *modus operandi* is dangerous. An immediate solution to the bias towards isolation would involve people including the following:

- a statement of the intended relevancy of any research outcome; this could emphasise the 'why' of the project or at least contextualise it,
- the use of an action research model or at least the inclusion of some sort(s) of triangulation as part of any project, and
- applicability/linkage with regard to any outcomes.

This would ensure a greater cohesion in this vast field within electroacoustic musicology and would, in a worst-case scenario, at least allow clusters of islands to form, and in a better scenario, create much greater coherence in the above areas and other ones either unmentioned or not yet existent.

Take, for example, the huge onslaught of initiatives, many quite exciting, of borrowed technologies/paradigms/formalisms from nonmusical areas for application in one or more of the above subareas. Why does the excitement of the visual representation of a Mandelbrot set (a.k.a. fractals) or the translation of cognitive neural net information into music data form a sound basis for organising sound? Clearly there might be a rationale for this, but it is normally only tokenistically and unconvincingly portrayed. I believe that if the three points above were to be put into the equation, applicability, not to mention success, could be better supported.

Let us return to education. Formal marking is easier in an environment of formalised music (scholarship). Again, if triangulation were to be put into the equation, musicological and musical applicability would also be critically analysed. There is nothing wrong *an sich* with a reliance on theory or technology, but it can negatively influence research or musical product. Again, the three-point formula above might do wonders here.

The reader may be gaining an impression that this text is being written to criticise, not to compliment. Here follow two examples, both of which demonstrate a positive evolution in terms of terminology many of us learned as part of our study of electroacoustic music.

Schaeffer introduced us to the concept of *les quatre écoutes* (the four manners of listening) as part of his theory of *musique concrète* (see Schaeffer 1966, Chion

[11] It goes without saying that some of these categories are relevant to nonelectroacoustic music as well. This list is provided for research involving electroacoustic music.

[12] One of the earliest descriptions of this term by Smalley is: 'Spectromorphology is an approach to sound materials and musical structures which concentrates on the spectrum of available pitches and their shaping in time.' (Emmerson 1986: 61) One of Smalley's most recent discussions on the subject can be found in Smalley (1997).

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1983). Denis Smalley has re-examined the area of listening strategies throughout the 1990s. One of the things that Smalley has come up with, which Schaeffer did not describe, refers to the listening experience of figuring out what has taken place in the studio whilst listening to a given electroacoustic work. Smalley calls this 'technological listening' (Smalley 1997: 109; before he published this term, I anecdotally called this 'recipe listening'). This listening strategy can sometimes be so overwhelming that one misses (a large part of) a whole piece. This is not to discredit the good thoughts of Schaeffer, but instead it allows me to suggest that an area as vital to electroacoustic music as listening strategies does deserve more participants' views and continued debate.

Not entirely detached from the *quatre écoutes* discussion is the above-mentioned Schaefferian concept of *écoute réduite*. The notion of reduced listening is a highly emancipatory framework for listening adhered to/mastered by few. A former student of mine, Mark Taylor, invented the term 'heightened listening' during his MA studies at Bretton Hall. His view is that the acousmatic[13] situation, one present in a high percentage of electroacoustic contexts, is similar to that of a visually impaired person. It is well known how acute a visually impaired person's hearing is normally and it is Taylor's view that this acuteness is developed in a similar manner by listeners of electroacoustic music. I tend to agree that Taylor's view occurs quite often, perhaps even more for most listeners than what we understand to be Schaeffer's reduced listening strategy. Or are they perhaps talking about the same thing differently? Whatever the answer, new knowledge is highly desirable. Shortly after Mark Taylor's introduction of this term, Jonty Harrison created a similar one, 'expanded listening'. Those who subscribe to this notion have also supported a new differentiation between acousmatic *musique concrète* following Schaeffer and soundscape composition common to those allied to the WSP project and an increasing number of sonic artists. Whether this differentiation is necessary, i.e. whether there will be a more holistic future, is difficult to tell. Whatever the case, this debate and consequent evolution exemplifies how electroacoustic musicology is moving forward.

What the above is pointing to is a lesser reliance on projected formalism and a greater one on reception, part of the altered musicological landscape envisioned by today's 'critical musicologists'. As the islands become larger or island clusters are formed, perhaps as a consequence or as a next step one might be able to address a wider readership both in terms of level and background.

[13] Simply stated, not seeing what one is listening to.

Let us look briefly at a case in point. Smalley's name is synonymous with, amongst other things, the word 'spectromorphology'. The approach that Smalley has proposed here, based on Schaeffer (1966), demonstrates a far-reaching development in a key area of research starting from the tools provided by the early *musique concrète* theorists. This evolution is in itself vital to our better understanding of electroacoustic music, especially as Smalley's approach is overtly from the listener's point of view. The good news is that there are a few people now applying at least some of the terms and symbols Smalley has created for spectromorphological analysis. What is missing, in my opinion, is a treatise concerning spectromorphology and related issues for beginners. There will be similar and less similar systems developed in the future in this area, but Smalley's is by far the best we have at the moment. The problem is that there seems to be too little introductory and middle-level publications to support Smalley's continuing work. He has provided the reader, on occasion, with named sound examples, the first step towards triangulation, i.e. offering the reader who has access to those sound examples the opportunity to determine how (s)he perceives them and how they relate to his theory. More illustrated examples to help establish the validity/applicability of the system would be useful.

It is possible that we may end up one day with more paradigms than there are rubrics above. For the time being, as long as most of us are still not searching for far-reaching models, where should we be going in the areas of systematic electroacoustic musicology? The modest three-step recipe for betterment above should provide at least part of the answer.

5.3. Ethno-electroacoustic musicology

This third of the three areas is the one that has been investigated the least. Does this mean that it represents the least relevant, the least vital? In my opinion this area represents one of the principal links between the somewhat ring-fenced electroacoustic community and any other. Why is this so?

Not too many pages ago, the terms emic and etic were introduced. If we are to investigate electroacoustic music as a cultural phenomenon, we can hardly avoid questions concerning the greatest revolution in music history. The theories describing the 'what' and the 'how' of the venture have been provided to a large extent by several writers. We all know, again, that technology plays a part in the investigation of these two interrogatives, but this section focuses on the 'why' as well as the relationship between this art of sound and society. Therefore, ethno-electroacoustic musicology is involved with the impact of this music on our listening, our aural culture as well as on our relationship with all sounds

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that surround us. It is involved with those emancipation questions cited earlier. The area is totally up for grabs.

Ethno-electroacoustic musicology demands that we look into people's responses to and perhaps expectations of this music outside of the electroacoustic community. It demands as well, given the developments of popular electroacoustic dance music in clubs, that the huge acceptance of techno as opposed to the marginal one in other areas of electroacoustic music including other forms of experimental pop music deserves investigation. Does, for example, social circumstance dictate our potential appreciation? Such questions are as vast as they are relevant. As long as they are not investigated, our continuing experimentation, particularly within an island mentality culture, will continue more or less ensuring much of electroacoustic music's lack of acceptance and potential relevance due to the inward looking nature of the majority of certain groups.

Even if we accept that after fifty years we continue to be participants in an experimental phase or process, the implications of continued pockets of isolation are dissatisfying. Our (read: those not involved directly in things popular) enclosed, self-supporting structure is as endangered as the opera companies and orchestras of the world waiting for their arts (and analogously our arts and perhaps even research) subsidies to diminish if not pass away. In other words, if the work of many musicians and (to a lesser extent) researchers remains marginalised, how can people expect all forms of support to continue? The island mentality represents an archaic aspect of academe which hopefully will evolve a little in the coming decades or be deconstructed by an ageing postmodernist.

It is with this in mind that the notion of triangulation is being so strongly emphasised throughout this article. Triangulation allows information to flow between maker and 'taker'. It allows context to enter equations which usually are not terribly interested in anything but themselves, as it were. It emphasises the urgency of the articulation of the 'why' allowing us to investigate whether that which is intended and received meet adequately. It links scholarship in the broadest sense, not the narrow one used within this article, to society.

Or do we think our music should just speak for itself? If so, does this not perhaps underline the epitaph that twentieth-century art music virtually achieved?

6. TOO LITTLE ANALYSIS AND TOO FEW MUSICOLOGISTS (OF THE TRADITIONAL TYPE) INVOLVED

It may seem ironic but help is needed from two 'traditional' areas, one of scholarship, the other from the scholars themselves. Although the word 'emancipation' has been thrown around a bit within this text, this by no means implies our dropping much for which musicologists have been responsible.

For example, there still seems to be relatively too little musical analysis of note within the electroacoustic field and, in my view, too few discussions concerning which techniques are appropriate for the analysis of sonic works including those of the popular sorts.[14] Similarly, there are aspects of aesthetics, ethnomusicology and other areas that have hardly been developed within the electroacoustic music field at all, as has been demonstrated above. Why are we so analysis shy, in contrast to most other areas of music, and why are musicologists of vocal and instrumental music so shy of electroacoustic musical corpora? Regardless of how different the music might seem to be and the fact that it is not normally scored beforehand does not take away from the fact that musicologists are more likely to provide insights, if not simply good advice, concerning how to best look into analysis and other aspects of the music than anyone else. The ethnomusicologist, by the way, does not normally have a score to begin with either, as a good deal of music studied in ethnomusicology is based on aural traditions.[15] Let us look at it this way. Are not most historical musicologists involved with analysis able to 'dissect' a medieval isorhythmic motet just about as expertly as a lengthy late romantic Bruckner work (or vice versa)? More importantly, does not a great deal of contemporary instrumental and vocal music of the latter half of the century deal with problems similar to those of electroacoustic music of the same era despite differences in terms of materials and tools used in the making of these works?

It is clear that we need to develop analytical tools to further the cause of electroacoustic musicology. Some of these tools may be quite innovative; many will be revised tools that have proven track records. Analysis is one way to investigate what is going on in music from the receiving end. It allows for triangulation in the same way as triangulation is relevant to the electroacoustic music maker. Contextual and aesthetic tools can be developed in a similar fashion. This will best take place inclusively, i.e. with musicologists (they, too, are often musicians as well) who can represent a learned perspective of scholarship thus serving well to triangulate a maker's articulated intention.[16]

[14] It is useful to point out here that *Organised Sound* has encouraged contributions in this area. See, for example, elsewhere in this issue as well as in **2**(3).

[15] This sentence is important as many may believe that musicologists shy away from electroacoustic music as the vast majority of the music knows no (traditional) score. Ironically, the vast majority of music worldwide knows no score, either. Therefore, ideally this should be a non-issue.

[16] It goes without saying that similar inclusion of other . . . ologists, that is, sociologists and the like, in terms of collaboration, can potentially be beneficial. This often happens in terms of technological development, less often in terms of electroacoustic music scholarship.

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In a sense, what is being proposed here is like the third phase of a thesis – antithesis – synthesis triad. Although electroacoustic music is not really the antithesis of its predecessors, as this particular author would hope to believe, a synthesis can still be reached when people from both/all sides can participate in scholarship that is to everyone's potential benefit. Otherwise the coexistence of parallel oppositional – dare I say provincial – factions will get in the way of many areas' potential development, not only in terms of scholarship but of music appreciation in general, which is a fairly frightening thought.

7. WHERE DO WE GO FROM HERE?

Admittedly, journals such as *Organised Sound* cannot be expected to keep their audience if their breadth includes differential calculus, music in the community, the legalities of plundering sounds and even social context. Or can they? Is that not the breadth that most of us are dealing with in our current post-modern pluralism? Some might find the numbers daunting, others are afraid to confront the world at large, but for many in electroacoustic music, these seemingly incompatible bits are parts of our holistic diets.

If you can agree with the above, why have we therefore avoided so many areas so significantly and embraced the formal so passionately? This question points a finger at what is wrong with electroacoustic musicology. It is primarily a search for a pure science based on an art of application. This contradiction forms the foundation for many of the somewhat awkward examples scattered throughout the text.

Critical musicology, a branch of critical theory, represents a current wave of activities challenging musicology's (and other . . . ologies') past. It is posing challenging questions such as: Why don't we look at how the sonata was abused as well as how it has been used? Why don't we look at the subjective as well as the objective? Why is the maker more important than the taker? These questions (or their translatable equivalents) are also applicable within our own area. We in the electroacoustic music community have basically created a microcosm of traditional musicology. We have often searched for an inward-looking type of knowledge that *is* relevant, ideally quantifiable, but that is *not* the only information worth knowing.

Before reaching the moral to the story, allow me to end with a final 'food for thought' example which again questions our acquired knowledge. The example concerns a keynote speech that Trevor Wishart gave at the 1994 International Computer Music Conference in Århus, Denmark. He played a sound example of a piece and asked whether anyone could guess who had made it. The fragment demonstrated inventiveness. Many people inevitably thought that the piece had been made by 'one of us'. In fact the piece had been made during a community residency with the elderly, people who had never heard this type of music before. This single example represents many of the points I have made above. It suggests access where it was assumed impossible, sophistication when it is not necessary, a group process when individuals think they must work in isolation, and triangulation as they all needed to make their adventure in sonic art work for each other. I doubt that any formalism went into the construction of that work either. What is important is that Wishart launched a challenge in 1994. I believe too few have taken it on since then.

The moral to the story might be a consequence of the previous example. It is assumed that many people do desire to bring some cohesion to the broad areas of the musicology of electroacoustic music, and yet the percentage of 'difficult' stand-alone publications remains exceedingly high. There does seem to be a higher density of activity concerning broader, accessible writings in Canada and the UK than in most other countries.[17] Is this perhaps due to these countries' investment in modernising music education for the young and music in the community?[18]

Remarks are being exchanged, particularly on discussion lists (e.g. the sometimes chatty but often informative Canadian Electroacoustic Community, CEC list – cecdiscuss@concordia.ca),[19] concerning the need for the types of information discussed above to be further developed, which is a positive sign. The time has come, not to replace the key texts of the past, but to either revise them so that they fulfil some of the criteria of greater relevance presented above or are paired with new texts that serve that purpose. In this way we can start making some sense of this emancipatory art form and perhaps reach a broader readership and listenership (that is, public and community) as well.[20]

[17] For those in countries whose publications are unknown to me, who believe that their country belongs on this short list, I offer my sincere apologies.

[18] Yet even Trevor Wishart fell into the access trap as the original version of his important text dating from 1985, *On Sonic Art*, was re-edited recently to make it more accessible (Wishart 1996). This title represents a large terrain within the musicology of electroacoustic music. Wishart has offered a number of ways to approach the subject, reflecting his own compositional preferences which is his right. His text represents an excellent starting point. Triangulation is now left to others.

[19] Ironically, at this article's time of writing – late 1998/early 1999 – about one third of the CEC discussion concerns interpretations of the 1950s, particularly Schaefferian terminology supporting worries articulated earlier concerning our continued leaning on electroacoustic music's initial concepts. Fortunately, a few of the people involved in the conversation are primarily interested in how this history can support our future dynamically.

[20] Please note that the contents of this article have been presented on more than one occasion, including talks at the Sibelius Academy in Helsinki and at the 1999 annual Sonic Arts Network Conference at Huddersfield in the United Kingdom. The feedback gained from 'trying out the contents' forms part of the triangulation that took place during its preparation.

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