Electroacoustic music pre-1960: historicity and ideology

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Historicity and Ideology

An Approach to Listening and Appreciation

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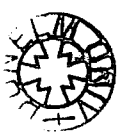

Abstract

A search for the antecedents of early electroacoustic music. An illustrative survey of ideologies and methodologies pertinent to the development of electroacoustic music of three influential musicians of the period: Varèse, Stockhausen and Schaeffer. Illustrative assessment of major works from these composers during this period. The musico-political situation and the tensions between the main protagonists. The impact of the technology of mass communication on the culture of the twentieth century and its musical appropriation.

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Background and Preliminary

Background

> Regardless of how prepared he is to answer, the composer always has to ask himself: "What makes a piece of music pleasurable and interesting? ... We listen to music only when we choose to listen. And we normally listen only to music which draws our attention"[1]

Each Sunday evening between 9:00pm and 11:00pm, Bryce Moore broadcasts on Public Radio RTR FM in Perth, Western Australia, a programme of 'contemporary classical, experimental, electronic, industrial, ambient, noise, etc.' Although this programme can also be found on the internet, the scheduling of the broadcast is quite telling. The name of the programme is 'Difficult Listening.'

The initial impetus for this study stemmed from the post-graduate course I did some years ago at Goldsmith's College studying the creative aspects of music technology. I had the notion that I was there to increase the largely self-acquired knowledge and experience of the Notator sequencing application on the Atari computer, but my studies concluded with an open-ended and unfulfilled challenge to most of my

preceding formal musical training and understanding. Through the course I had been introduced to some of the pioneering works of the electroacoustic age and it fascinated me as little else had done previously. I had previously been aware of this type of music and I had always had an interest in musical art 'on the edge' but this time the impact was far greater as it invited me to question this music's place in the canon of musical history and whether its evaluation and appreciation relative to that canon was correct. Unfortunately, I found listening to electroacoustic music difficult. I found myself being challenged as to the way I listened to this genre in particular and other music in general. Do I appraise it in the same way as established works of previous eras along with those current works based on the same traditions, referentially and analytically or does the very challenging nature of the genre require those principles of evaluation to be modified? Do I reject or renew long-acquired listening skills in order to gain the aesthetic fullness of these works? Do I simply accept Thomas B. Holmes's premise alone when he states that "An evaluation of [electronic] music has little to do with comparisons to traditional music"[2] and abandon, as he seems to suggest, all that went before it? This may appear to be perfectly reasonable in light of the latter twentieth century's predilection for dissent, change and reversal of older values and norms, but is also, perhaps, an extreme view that is not necessarily artistically wise. Anarchy does not ideally foster creativity. Holmes does, however continue by saying that electroacoustic music has "everything to do with the way in which we perceive sounds, associate thoughts with them, and use them to form an impression of our environment,"[3] and this provides an essential clue to my research.

Answering these questions was no dry pedagogical exercise for me. This music had thrown down the gauntlet to much of what I had accepted through formal study and it had to be picked up. Why and how had the western canonical view of musical appreciation developed in the way that it had, and should, or could, the whole accepted concept of musical education based on it be challenged? What does it illuminate about the nature of music itself? Does the nature of electroacoustic music's creation, where standard or traditional modes of composition and notation have been eschewed or rejected, expose an unwelcome sanitisation of any primal aspects of music? Does the electroacoustic genre provide the perfect mode of dissent or are the same characteristics to be found in more traditional forms? Conversely, is the spirit of

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[1] Keane, David: 1982, p.324
[2] Holmes, Thomas B: 1985

traditional western art music alive and well in electrical form (that is, of course, not that pertaining to mechanical/electrical reproduction of concert works)? Can you, should you, evaluate and appreciate electroacoustic music in the same way and with the same accepted principles and criteria, as Josquin, Mozart, Brahms, Stravinksy or any other composer whose output is regarded as a zenithal synthesis of previous musical creativity? Could electroacoustic music be seen as having a place in the 'evolutionary' processes of musical history and development? Is electroacoustic music, as Denis Smalley asserts (declared by him as 'spectro-morphology') "an heir to Western musical tradition which at the same time changes musical criteria and demands new perceptions?"[4] How much integrity does this sweeping statement have? Is this an elicitation of fact or a plea for justification? The last part of that statement presents little contention if the first premise is true. But if the first part is beyond doubt, where are the links to that tradition and how much has it affected or been affected by other external influences? Is David Keane correct when he expresses the view in the same book that "electroacoustic devices offered opportunities not only for the radically expanding musical expression of the mid-twentieth century, but also for disconnecting from musical tradition altogether"?[5] Can this apparent contradiction be reconciled through the apparent contradictions of electroacoustic music?

Some of the literature of electroacoustic music that I started to read had instantly given me a certain direction towards understanding several of these questions. In particularly Trevor Wishart's 'On Sonic Art'[6] whose concept that the characteristics of music itself are primarily rhythmic and timbral (as opposed to melodic) deeply influenced my own approach to playing, teaching, listening and appreciating and began to reshape my musical outlook. Even this perfunctory glance at Wishart's insights affords a deeper understanding of not only electroacoustic music, but also adds a further level of magnitude to the appreciation of 'familiar' works. This emphasis on the timbral and rhythmic, in part a resultant of extractive musicological research into non-western musics, at the expense of the melodic and harmonic, goes some way to explaining the essence of electroacoustic music. But it does so only in so far as it acknowledges the wholesale abandonment of equal temperament and

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[3] Holmes, Thomas B: 1985
[4] Smalley, Denis: 1986, p.61
[5] Keane, David: 1986, p.98
[6] Wishart, Trevor, 1996

consequently the antithesis of the melodically and harmonically dominated western art music. (See Wishart (ed. Emmerson) 1996, p.30)

Whether or not this was the answer to all the questions, what I sensed I was essentially looking for was tangible lineage, a line of descent. I didn't really feel that I could fully understand what I was listening to with electronic or electroacoustic music until I could understand its positioning within my own sphere of appreciation and experience. The aura of alienation and other-worldliness that this genre often engenders was very real to me. It was beyond my experience. (I think it is worth noting here, and certainly not irrelevant, that this sense of estrangement has not been lost on producers and directors of science fiction films and television programmes. One of the most celebrated is perhaps Louis and Bebe Barron's completely electronic score to the film *Forbidden Planet* of 1956, utilizing electronically generated music to enhance the atmosphere of planetary landscapes, space travel and cybernetics; all being beyond the experience of the (contemporary) audience.)

Historical Perspective

Nothing is ever born of itself. History and experience shows that nothing of lasting worth is created in a vacuum. Simon Emmerson begins with this very point in 'The Language of Electroacoustic Music':

> Few genres in Western music have leapt fully fledged from the heads of their creators. It has usually been possible to identify antecedents and influences in each case: a reflection of our desire to contextualize the revolutionary and thus reassure ourselves of our traditions.[7]

And Pierre Boulez, in the same book, states:

> Invention cannot exist in the abstract, it originates in contact with music of the past, be it only the recent past; it exists through reflection on its direct or indirect antecedents.[8]

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[7] Emmerson, Simon: 1986(a), p.1
[8] Boulez, Pierre: 1986, p.5

Reassurance may not be the characteristic for which I am searching, but although longevity is not necessarily the absolute arbiter of worth it is a sufficient one and we can apply this to the musical works that have survived a process of 'selection' over many years. We may arguably state that those composers who have evaluated and assimilated trends and ideas external to their own experience, and have allowed their own unique style to grow 'organically' from them, are the ones who can be afforded a degree of greatness. In order that I may be able to draw distinctions between worthy and the not so worthy, it is necessary for me to offer that which I regard as a standard for that arbitration. Great art is scarcely created by those who draw a line between history and themselves in order to establish something totally new and devoid of reference to it. Rather, it is more often created by those who draw on and filter extant resources and establish their own standing within that historical 'order' that establishes their reputations as innovators. What, then, are the origins and lineage of electroacoustic music? What are its 'parents' and influences in light of its rejection of accepted modes of composition, dissemination and performance and is this the key to our understanding and appreciation of the aesthetic experience of electroacoustic music? Or does the answer lie in the fact that these 'norms' have been bypassed?

Unfortunately, we cannot always make use of a yardstick based on longevity for works which are of a genre that is barely fifty years old but we can search for elements of this new type of music-making which allow us to evaluate its worth, if only to ourselves. Whether I like a piece of electroacoustic music is not the issue as although I may not like most of Brahms's output (which I don't) I can understand and appreciate the aesthetic reasons why his work is well known and popular through my own understanding and appreciation of his and other composer's work which use similar resources and techniques. But once again, as in other areas, the nature of electroacoustic music and its *écriture* challenge this same premise as it rejects and confronts traditional formal practices of generation, dissemination, interpretation and performance. Out of the dichotomous situation which arose from the two strands of early electronic music schools, that which challenged the prevailing continuum of musical thought, *musique concrète*, has become an accepted and widely used form in its own right. And this takes us nearer to the realisation that in order to obtain an affinity with new music we have to accept that new forms, materials, structures and resources are going to be encountered and assimilated. Time moves on. Stagnation leads to decay and new life needs to be found in order to continue the line. Does the code to its interpretation necessarily have to be found within itself? For some

contemporary commentators, content must always be allowed to dominate technique and composers must be aware of the needs, if not the desires, of any audience their work is intended for. For instance, Boulez states:

> Rather than ask themselves the double question, both functional and fundamental, whether the material is adequate to the idea and the idea compatible with the material, [musicians] give way to the dangerous temptation of a superficial, simple question: does the material ['technology'?] satisfy my immediate needs? Such a hasty choice, detached from all but the most servile functions, certainly cannot lead far, for it excludes all genuine dialectic and assumes that invention can divorce itself from the material, that intellectual schemas can exist without the support of the sound.[9]

And David Keane proposes:

> If the composer wishes to have an audience he must attract the listener's attention. Meyer suggests that the key is to create a pattern of a sort that can be understood, allowing general future outcomes to be predicted with reasonable accuracy without being obvious.[10]...If the music is sensorily attractive we have no real interest in the memory of relationships, but if the music holds a potential for cognitive attraction, we must get some aspects of the musical events into conscious focus. That is the composer's responsibility[11]

Keane additionally addresses composers as to their artist-listener relationship and gives an insight into his view of the dangers present-day composers face as they approach their art.

> Many composers consider it demeaning to cater in any way to anyone but themselves. But they must give up the nineteenth-century notion of the composer as a divinely inspired high priest who has a vision to impart, perhaps at the expense of his own well-being, for the sake of enriching the lives of those who have the sense and education to appreciate his vision. The only message in music is the experience itself...
> The responsibility of communication between composer and listener lies with the composer.[12]

How many composers would echo and affirm this sentiment I would not be able to tell with any certainty. When I touched on this subject in the course of an interview with a well-known and very active electroacoustic music composer, his response reflected a harder and more objective view than that expressed by Keane, in that he believed

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[9] Boulez, Pierre: 1986, p.9-10
[10] Meyer, Leonard B: *Explaining Music: Essays and Explorations,* Berkeley: 1973, p.48, quoted in Keane, David: 1982, p.335
[11] Keane, David: 1982, p.335

that his duty to any appreciation of his music ended at the point where the work was completed. At that point listeners are on their own, affirming that the responsibility for communication, reversing Keane's assertion, lies with the listener, not the composer.[13] This raises issues of a kind of 'moral' obligation of artists who are offering their visions to be encountered and appreciated by others than themselves. There may be many reasons for creating a work of sonic art but, presumably, getting it heard is a major one. However, a partnership between artist and audience is essential. I have commented on the propensity for composers to elevate form over content: the means justify the end, but the end result, the finished work, must stand on subjective perception if it is to be fully appreciable. The composer's additional practice of devoting a large part of the written output to the explication of the main part of the work has to many become disreputable.

> Listeners can only apprehend music if they discover a perceptual affinity with its materials and structure. Such an affinity depends on the partnership between composer and listener mediated by aural perception. Today we continually need to reassert the primacy of aural experience in music. The heritage of twentieth-century formalism and the propensity of composers to seek support in non-musical models have produced the undesirable side-effect of stressing concept at the expense of percept. Borrowing concepts from non-musical disciplines is common and can be helpful, but unless concept is cross-checked or mitigated by the ear it is always possible that the listener will be ostracized. Aural perception is fragile, fickle, empirical, and thus presents a threat to those musicians and researchers who have difficulty coming to terms with the insecurity of their subjectivity. The primacy of perception is unassailable since without it musical experience does not exist.[14]

On the other hand, this may yet be another characteristic of the ubiquitous electroacoustic divide. Artists often cite the premise of inspiration in justification of the need for explication, and that referred to by Keane may well be of the "divine" variety. Often, composers relay the notion that a work is like a child who the composer has brought to being, but which when birthed is no longer the charge of the creator. It is for adoptive recipients to discover and forge its identity and character. Alternatively, as in the case of, say, Stravinsky and his Rite of Spring, he may claim that he was the self-deferential instrument of a metaphysical source. To my mind this amounts to a form of dereliction of duty. Granted that artists of all persuasions should as a matter

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[12] Keane, David: 1982, p.335-336

[13] There is, in my view, a distinction here between this approach and the one that, for example, Varèse espouses in that he invites listeners to participate in the experimental process rather than challenges them to approve.

[14] Denis Smalley: 1986, p.62-63

of course extend the boundaries of aesthetic appreciation, but to do so in the name of elitism does not, in my view, foster the correct relationship between the artist and the audience.

The Ascendancy of Technology

In considering the nature and purpose of electroacoustic music, it is impossible to separate it from the developments that have allowed its existence. Its musical and aesthetic forms may have derived themselves out of attempts to take existing ideas to their zenith or to mould new genres from extant elements, but its life-force has been made possible by the technical and technological advances of this present century. A limited list of significant technical and scientific developments are found in Mitcham (1994) with the notion that, unlike the prevailing scientific mood of the time (that science was and would increasingly be the answer and solution to all of the world's problems), these advances, rather than the solutions, became the problems:

> Between 1945 and 1953, technology took the world stage in defiance of the human mind that fostered it up: USA A-bomb (1945), Electronic Numerical Integrator and Computer (1946), USSR A-bomb (1949), kidney transplant (1950), USA H-bomb (1951), USSR H-bomb (1952), DNA (1953). Between 1954 and 1962 the new powers were put to use within traditional frameworks, with increasingly conflictive results: USS *Nautilus* (1954), commercial electricity from nuclear power (1955), birth control pill (1955), *Sputnik I* (1957), radioactivity accidents in Western and Eastern Europe (1957), integrated circuit (1959), laser (1960), *Vostok I* (1961), *Mariner 2* (1962). [15]

He then goes on to map scientific and technological achievements and failures that have had global impact - the same (or similar) technology that has enabled all of this is also that which has enabled the music that I apply myself to here. Should it be unsurprising that I would approach this study with more than a little scepticism as to the advisability of whether this medium should be used to make music in the first place? Equally, do I accept that such a means of expressly subverting the involvement of humans should become the medium of such an intensely human activity as making music? That composers should look to the tide of innovation is not surprising, though, as this is simply what they have done throughout history.

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[15] Carl Mitcham, *Thinking Through Technology: the Path between Engineering and Philosophy*, Chicago: University of Chicago Press, 1994; in Palombini, Carlos: 1999

In essence, electroacoustic music is the process of fashioning and manipulating sounds using electricity as its raw material. Sir William Gilbert coined the word 'electric' in 1600 and electricity's properties were explored and developed through the 1800's, and it became increasingly widely available throughout that century. Through the early years of the twentieth century, ingenious and effective instruments emerged using this power source; instruments such as Thomas Cahill's Telharmonium of 1904, the Theremin (1920), the Ondes Martenot (1928) and the Trautonium (1930). Often, though, those writing for and performing on these instruments fell into the inevitable error, still prevalent today, of putting this new technology to the practice of imitating traditional instruments and treating them as substitutes for the originals. In doing so they denied the development of instruments that enabled the materialization of new musical thought that was commensurate with the innovative use of emergent technologies. It was the Second World War that provided both the technical and social catalysts to the rapid development and explosion of interest in electronic music with a language and approach of its own. The reader can no doubt reflect, as I do, on the possible ironies of such a statement that such a cataclysmic and devastating period of world, and in particular, European, history should have such consequences and implications for artists. The legacies were not, of course, confined to technological ones. Cultural, spiritual and political repercussions were in evidence also, and although it is perhaps true to say that this was evidenced more openly in the popular music genre, the classical art music world was, predictably, not immune from this cultural shift.

I have found it useful and helpful not only to explore some of the present-day works and thoughts on electroacoustic music but also to look at some of those who influenced early thinking and experimentation of this new method of music creation. No artist works in a vacuum. All are influenced to a greater or lesser degree by their environment and circumstances. This century, especially, has been the one where mass-communication has made it possible for musicians and composers to encounter other composers' work through recordings and radio broadcasts and additionally, vast improvements in travel have enabled personal audition of works, affording the opportunity as never before to share, discuss and learn from their creators. There are myriad leading figures each from whom I would be able to extract their own unique and vital contribution to the array of modern masterworks, electroacoustic works among them. But I have chosen to focus on just a few. Those whom I have found to have particular meaning and give relevant direction to the question in hand are those who had vision and imagination not only to be dissatisfied

with the situation in which they found themselves (as did many, I'm sure), but to foresee and predict a completely new musical age and contribute significantly to bringing it in to being. To this end, I do not intend to catalogue biographical data, but to attempt to crystallise the composer's contribution to the aesthetic development of electroacoustic music and his influence on its general reception. Although they may all have been fundamental to the initiation of electroacoustic music and continued to be key figures in its subsequent development, the aim is also to pinpoint each composer's relevance and contribution to the continuance of musical historicity. I have consequently chosen examples of those composers whose vision and genius help us to understand today's music by the foundations they laid for it. Nevertheless, because circumstances and chronological positioning often condition the artist's work, and because the relative order in which events occur have a bearing on their significance, some biographical considerations will inevitably need to be taken in to account. For this survey Varèse, Stockhausen and Schaeffer are to be the illustrative subjects of this discussion, indicative as they are of the formation of the electroacoustic genre and its inherent ideologies. Varèse in many ways represents the continuity between the 'older' generation and the new that I had begun to look for at the outset; Stockhausen was chosen because of his stature as one of the leading composers of electroacoustic music at its conception, and Schaeffer because of his radicalism in perceiving music in a completely new way. Figures such as Eimert and Pierre Henry also played significant parts in the electroacoustic revolution, but their relationship to, respectively, Stockhausen and Schaeffer, was largely contributory rather than generative. As such, Eimert and Henry, while being acknowledged for their contribution, are mentioned as part of the discussions on Stockhausen and Schaeffer.

Varèse, Stockhausen and Schaeffer: preliminaries

Edgard Varèse (1883-1965) was one of the first composers to embrace the possibilities of electronically generated music as the solution to his innovative compositional concepts and his vision for the future of music. He additionally provides, perhaps better than anyone else, a link to electroacoustic music's innate antecedents. Born in Paris he moved to the United States in 1916 and became a citizen of that country ten years later. Both Busoni and, with more pragmatic radicalism, the Italian Futurist Marinetti had elicited and, to an extent, brought to fruition, ideas on the art of pure 'sound' by using nontonal percussion, noise,

extratonal means and eventually electronic generation. Varèse, a pupil of Busoni, developed the ambition, by his own admission largely unfulfilled, of being able to call on the resources of an infinite palette of sounds from which to create his music. Varèse constantly felt that the finite resources of this world could not provide the sounds he was looking for. His expectation of technology was to be disappointingly unrealised. Michael Clarke, reflecting on the limitations of late twentieth century technology, comments that, "The era when Varèse gave up composition for over a decade, because the technology he required to realise his ideas did not exist, may seem very distant."[16] Many twentieth-century composers became famous for the inclusion of 'noise' in their work, either directly through the use of noise generators or through their powers of traditional orchestration. Whether they were directly influenced by movements such as the Futurists or whether they were among the increasing numbers of artists simply becoming more generally aware of the growing mechanisation of the world and society, and relating their work to it, is arguable. This particular century's music is additionally characterised by the awareness of the artistic challenges and possibilities of the musics of other cultures, antithetical to pitch-dominated western music, and the sonic by-products of the industrialised and mechanised society in which they were working.

Varèse was of the firm conviction that the physical experience of music should take far greater importance over that experienced through the understanding and acceptance of any harmonic system. The critics, however, had field days with his music, likening it variously to a fire in a zoo and flushing toilets. But, whereas the Futurists were literalists, using actual sounds and equipment, Varèse put to use the instruments that were available to him in works such as *Hyperprisms* of 1922-1923 for small orchestra and sixteen percussion instruments including siren, gongs, cymbals and 'lion's roar' (a string drum sounded by the friction of resined fingers) to link, refer and 'suggest' his music to the sounds of the outside world. This may also be an important pointer to this discussion and I quote David Toop on Varèse as evidence of his significance to our understanding of electroacoustic music, and to the legacy of his imagination.

> Varèse struggled to deliver music that could incorporate the whole world, that obliterated the equal tempered scale, the written rules of harmony, the predominance of pitch over timbre and rhythm. The ear- not numerical systems of rhythm or pitch- was the final judge of music...and when critics

[16] Clarke, Michael: 1996, p.57

> interpreted his use of sirens as a kind of barbarous programme music, a simple sound painting of urban noise pollution, he claimed that his purpose was "the portrayal of a mood in music and not a sound picture."[17]

Varèse was also instrumental in establishing the combination of electronic instruments with orchestral instruments in *Equatorial* (1932-1934), which employs a theremin, and *Déserts* 1950-1954), which opposes electronically generated sounds against the work's instrumental music. His *Poème électronique* (1956-7) was written for the futuristic pavilion designed by le Corbusier (with help from his assistant Xenakis) for the Philips contingent of the 1958 Brussels Exposition. It made use of four hundred loudspeakers projecting the sound from every point inside the continually curving structure, replaying natural, electronically altered and electronically generated sound. Varèse furnishes us with another meaningful pointer in our research as he comments on his own approach to his work by stating that, "My experimenting is done before I make the music. Afterwards, it is the listener who must experiment."[18]

Pierre Schaeffer was born in Nancy in 1910. His father was a violinist, his mother a singer and Pierre studied the cello at the Nancy Conservatoire, attended the *École Polytechnique* from 1929 to 1931 and from there went on to study electricity and telecommunications. In 1934 he was appointed to the Strasbourg telecommunications service and in 1938 wrote in the *Revue Musicale* concerning the mixing desk musician and discussed 'ordinary binaural listening and radio listening'.[19] In 1943 he established an experimental laboratory looking into radio production, the *Studio d'Essai* of the *Radiodiffusion Nationale.* Carlos Palombini relates one of the defining moments of electroacoustic music that launched *musique concrète*:

> In January 1948 Schaeffer started research into noises, which led to the five *Étude de bruits* that set *musique concrète* afoot. The *études* were broadcast by the French Radio in a *concert de bruits* on 5 October 1948. Their genesis and manufacture were narrated in '*Introduction à la musique concrète*'. Working in a modified radio studio, Schaeffer employed a disk-cutting lathe, four turntables, a four-channel mixer, filters, an echo chamber, and a mobile recording unit. Techniques at play involved variation of recording and reproduction speeds, sampling and editing by manipulation of the pickup, looping of recorded grooves, backwards playing of disks, loudness modulations, fade-in and fade-out. Sound-producing bodies sampled included, on the same footing, stokers on six locomotives with personal

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[17] Toop, David: 1996, p. 83-84
[18] Edgard Varèse, (unattributed) in Holmes, Thomas B, 1985
[19] Pierre Schaeffer. *Verités premières.* Revue musicale 184, 1938; in Palombini, Carlos, 1999

> voices and buffers conducted by Schaeffer at the *Batignolles* depot (later combined with library samples of rolling wagon wheels); an amateur orchestra at *Salle Érard* tuning up to a clarinet call thus embellished with fioriture (later combined with Jean-Jacques Grunenwald's piano improvisations live at the studio); Boulez on the piano in classic, romantic, impressionist, and atonal harmonizations of a given theme (later cut, reversed, and spliced). Closing the set, an ad libitum mix of *objets trouvés* gathered Balinese music, American harmonica, and French barge round Sacha Guitry's singing --- which the continuity-girl's coughing halted --- in a 'virtuoso performance at four potentiometers and eight ignition keys' by a techno DJ half a century ahead of the times.[20]

Consequently, Schaeffer had devised what was viewed at the time as a kind of 'antimusic'. Up to that point, music had begun as abstraction in the form of the centuries-old practice of composers imagining music and being in possession of the necessary skills to codify that imagined sound. The composer would then annotate it in a form that would relay his intentions to performers/interpreters, through which it becomes concretised as a performance. Schaeffer's *musique concrète* turned that process completely around by identifying, recording and manipulating already concrete sounds and allowing abstraction to follow. His dilemma in those formative times was whether he should forge a completely new path into almost completely uncharted musical territory or whether he should attempt to impose his revolutionary methodologies on the established and prevailing musical environment? Palombini reflects on the narrative found in Schaeffer's *À la recherche d'une musique concrète*[21] of 1952 in which Schaeffer...

> ... expanded the narrative, advanced new theorizations, and sketched an operational lexicon. To establish a new sonic domain on the edge of music or to engraft new sounds upon old musical forms? Olivier Messiaen, Henry Michaux, and Claude Lévi-Strauss urged Schaeffer to break with the past.[22]

This he did, and in so doing attracted fierce criticism. However, this resistance that was focused so directly on him and his work is offset by the fact that his work was to have far-reaching consequences on the world of music. Many of the techniques, technology and systems Schaeffer pioneered have been refined, improved and become more sophisticated and is currently in ever-increasing general use.

On the other hand, Karlheinz Stockhausen, despite having contact with and being inspired by much of the work of Schaeffer and others in Paris, developed another line

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[20] Palombini, Carlos: 1999
[21] Schaeffer, Pierre: *À la recherche d'une musique concrète.* Paris: Seuil, 1952; in Palombini, Carlos, 1999

and philosophy of electronic music. Whereas *musique concrète* had emerged as a transformational system of music, the work of Herbert Eimert, who had a vision "of a real musical control of Nature,"[23] and Robert Beyer in Cologne was developing the use of electronics as a sound generator and producer rather than a manipulator. Stockhausen had studied at the Cologne *Musikhochschule* between 1947 and 1951 and returned there in 1953 to work on synthesized as opposed to *concrète* sounds. This was not the world of sound recording and manipulation but of sound generation through the combining of electrically produced sound waves. In Paris, Stockhausen believed he had confirmed the work of Helmholtz and Fourier suggesting that any sound was a combination of pure, or sine, waves and that any sound could be recreated using collections of sine waves in correct proportions. He composed his first sine wave work *Studie I* in 1953 at the Cologne radio station where Eimert and Beyer were working, *Studie II* the following year, *Gesang der Jünglinge* for vocal and synthesized sounds on tape in 1956 and *Kontakte* for piano, percussion and tape in 1960.[24]

Electroacoustic Music: some problems

One of the vagaries of history is that it has bestowed on us the present situation that electroacoustic music is, and always has been, divided in to two specific factions. This schism appeared soon after their inceptions and is perhaps one of the fundamental aspects of electroacoustic music with which any attempt at listening and appreciation must be aware. Since the beginning of that century, musicians of all complexions were becoming increasingly aware of the impact that electricity and technology in general were having on their art. As we can see, it may easily be stated that the two progenitors of modern electroacoustic music were Herbert Eimert, and later with Stockhausen, working in Cologne and Pierre Schaeffer in Paris. Eimert was an eminent musician and composer who took advantage of spare time in the local radio station to develop his ideas, and Schaeffer, although he had a musical background, was, as we have seen, a telecommunications engineer who had transferred to work with the Paris radio. Their two approaches, despite both using

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[22] Palombini, Carlos: 1999
[23] Eimert, Herbert: 1958, p.10
[24] I realise, of course, that this does not detail the full catalogue of Stockhausen's work during this period, but serves here to demonstrate, in a very limited form, his contribution to the catalogue of *elektronische Musik* at this time

electricity as their absolute raw material, were completely different and divergent. Jonty Harrison puts it thus:

> Among English speakers, the term *musique concrète* has usually been taken to mean only that the sounds were 'real', recorded form acoustic sources *via* microphone. This definition then affords a convenient historical contrast with *elektronische Musik,* which emerged shortly afterwards in Cologne, in which the raw material originated inside electrical circuits rather than in the acoustic world of sound waves being generated in a particular space and causing the air molecules within that space to move in relation to each other.[25]

It would seem, perhaps, a little perverse now that the two camps setting out the almost inevitable 'evolutionary' and certainly revolutionary pattern of western art music (with profound if unpredictable effects on popular music and culture) should adopt such antithetical stances. But deep divisions were there, not only because of the above outlined approaches to the medium itself, but because fundamentally their roots were poles apart. Schaeffer would have been steeped in the Gallic tradition that in Debussy and Satie had asserted its aim to disassociate itself from German Romanticism. The Cologne group was striving to achieve the greatest possible potential from Webernian serialism. The Parisian approach was generally one of Impressionism and intuition, the German methodology was largely scientific and, to a certain extent, dogmatic. Doubtless it is dangerous to assert such generalisations as there will always be exceptions that ultimately testify to its core truths. There are explicit similarities between the two, but these only serve to accentuate the elemental distinctions separating them. In fact, science and dogma was actually not the exclusive confines of German composers. Messiaen had used 'rhythmic arithmetic' in the *Turangalîla* symphony. In *Mode de valeurs et d'intensités* he employed three-part counterpoint with each part using a different set of twelve chromatic pitches and twelve 'chromatic durations.' Boulez himself, deeply involved with the beginnings of *musique concrète,* also applied his music to the quest for the highest expression of serialism. There was a widespread effort to apply serialism to every possible facet of music's properties until its potential had been exhausted, heralding the end of the serial age. Many composers of the pre- and post-war years in many countries were applying its techniques to their music. It became inevitable that composers would turn to electronics to overcome the inescapable restrictions placed by fallible humanity. Instrumental performers were eventually regarded as incongruous for

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[25] Harrison, Jonty: 1998, p.117

works that were taking all aspects of sound to greater, finer and minutely perceptible gradations.

> If rhythmic serialism was fraught with difficulties, then the serialization of timbre presented still more intractable problems. It was reasonable enough to establish a scale of attacks in piano music- from intense to gentle...- but there was no obvious way in which one might place in order, for example, the sound *qualities* [my italics] of harp, 'cello, flute and horn... Stockhausen made an effort in that direction in *Spiel,* but seems to have realized that the solution would only come when composers could create timbres on tape. At the same time, the tape medium would make it considerably easier to realize durations with precision, and so to create a serial rhythm, whatever that might be, uncompromised by the needs, wishes and habits of performers. The same impetus that led to total serialism therefore rapidly took composers in to electronic music.
> Schaeffer's studio provided the first stop, since it was virtually the only place where tape music was being made professionally in Europe in the early 1950s. Messiaen, Boulez, Barraqué, and Stockhausen all composed tape pieces, though Messiaen's *Timbres-durées*- a title expressive of what concerned all these composers- was put together by [Pierre] Henry. Something of the excitement of the adventure springs from the pages of Schaeffer's essay *'L'objet musical'* [of 1952]... Following up earlier suggestions of his own, but almost certainly influenced also by the group of young collaborators he had acquired, Schaeffer proposes serial manipulation of sound objects, objects which could be transformed in precise ways; he even theorizes about procedures that were to engage Stockhausen's attention throughout the next decade, such as the conversion of a complex event in to a single sound, or the treatment of duration as a variable with the same capacity for complex relationships as pitch.[26]

What emerges from this no more than cursory exploration of the gestation of electronic music is that, although there was a definite and intense pioneer attitude to break away from the past through experimentation and research and that all those involved in those early stages contributed to a revolutionary view of music as a whole, and contemporary music in particular, it was achieved before the backdrop of an explicit or implied musical tradition which affected these people and perhaps even inspired them to achieve what they did. We do see the emergence of new forms, techniques and content in music which is based on the more primal aspect of the attributes of sound itself rather than any notions of melody, certainly, and hitherto accepted formalisations of rhythmic structure or in fact timbral content. Composers are preoccupied with sound for the sake of sound and audiences are expected, as Varèse invites them, to experiment and participate with the composer in that process.

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[26] Griffiths, Paul: 1995, p.44-45

As at all times of profound change, there will always be the danger of the tendency by the society in which transformation is taking place to reject the forces of that change and to nostalgically look to the past. There was, and still is, an ironic move to take the technologies that were being used to form new models of creativity to employ them for the ossification of the memory of the past. "Since at least the beginning of this century, our culture has been oriented towards historicism and conservation".[27] Boulez makes this assertion in the context of the background of technological advance, which has defined the past century, and which has globally affected the lives and cultures of present and recent generations. Implicit in his statement is the regret that those developments have been put to use as a means of preserving the past rather than looking to the present and future in order to extend the boundaries of aesthetic human experience. Boulez goes on to state:

> This exclusive historicism is a revealing symptom of the dangers a culture runs when it confesses its poverty so openly; it is engaged not on making models, nor in destroying them to create fresh ones, but in reconstructing them and venerating them like totems as symbols of a golden age which has totally been abolished.[28]

The sonic preservation of the past is, of course, a uniquely twentieth-century phenomenon as Michael Chanan affirms in his book devoted to examining the history and effects of electronic conservation of sound on musical practice.[29] Before it was possible to record performances or relay those performances (either recorded or live) 'remotely,' that musical activity which went before was very likely to be consigned to history and the contemporary, regarded as its natural successor, providing its replacement. (It could equally be argued that the trend of 'rediscovery' of neglected works for commercial, as opposed to educative purposes, is also a twentieth-century condition for this same reason; mass communication, having created a consumer base, requires sufficient material for its perpetuation.) More relevant to this discussion, this same technology of preservation is used by composers not to capture sound in order to collect, collate and audition at will, but to create something fresh, either from the new or from the old. Timothy Warner writes:

> Audio recording could be seen as a mere example of the desire to preserve and to, literally, 'record'. The sampler [in common with any 'sound preservation medium'] represents a creative response to the notion of

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[27] Boulez, Pierre: 1986, p.6
[28] Boulez, Pierre: 1986, p.6
[29] Chanan, Michael: 1995

> preservation: manipulating and organising bits of the old to make something new. Evan Eisenberg writes of the "freedom, once the cathedral of culture has been wrecked, to take home the bits that you liked and arrange them as you pleased".[30/31]

Here we also begin to see these modern recording techniques and equipment becoming the mechanisms of protest and dissent and the emergence of the culture of the (misguided) importance of the individual over society as a whole.

Electroacoustic music can appear to have little or no genealogy, giving listeners, experienced in classical western art music yet unfamiliar with electroacoustic music, the problem of critical assimilation with regard to familiar and established (to them) reference points. It is my contention that an even superficial knowledge and understanding of electroacoustic music's positioning within the transmutative evolution of music and its leading protagonists, can offer greater understanding and appreciation of the appraised work.

An additional obstacle encountered is that electroacoustic music challenges the concept of traditional performance practice, as, in many cases, the physical presence of human performers is absent. I echo David Keane's sentiments that composers have a duty to understand and to allow for such considerations. The 'traditional' concert performance structure of instrumentalists, of varying numbers, playing their instruments in real time, producing sounds which in the majority of instances are provided by composers and interpreting the learned symbols, is the usual expectation of the concert-goer. If we attend a string quartet recital, for example, we do so with the expectation that we are about to see the customary sight of string players drawing their bows across the strings and we associate those familiar actions with the familiar sounds we encounter. Conversely, when we hear those same sounds without the visual stimulus, our minds retain the memory of the original encounter and reproduce the visual aspect accordingly in our minds with all its associations. Simon Emmerson puts it thus:

> Most electronic synthesis is modelled on instrumental or vocal sounds and thus at a deep level few sounds are entirely free of all mimetic reference.[32]

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[30] Eisenberg, Evan: *The Recording Angel*, New York: McGraw-Hill, 1987; in Warner, Timothy: 1996, p.55
[31] Warner, Timothy: 1996, p.55
[32] Emmerson, Simon: 1986(b), p.26

Electroacoustic music also supplants or substitutes many or all of these expected elements in favour of sound generators and reproducers of one kind or another such as amplifiers and speakers which themselves become the performers and, together with the acoustic space in which the sounds are being (re)produced, the music's interpreters. This is one of the dehumanising aspects of this genre. The lack of visual stimulus can be a distracting factor for many listeners. John Cage noticed that, "even though it was the most recent electronic music, the audience was all falling asleep. No matter how interesting the music was, the audience couldn't stay awake. That was because the music was coming out of loudspeakers."[33]

Dexter Morrill of Colgate University, New York, recounts similar experiences in an article written in 1981:

> I can vividly remember doing a concert of computer music at Colgate several years ago that consisted of some tape pieces and some pieces for performers and tape... The audience reacted quite favorably to the first two pieces, but there was a sudden and noticeable increase in interest when the performer walked onstage. This phenomenon is well understood by most of us. It raises the question of roles and balance. My own guess is in this mixed-media situation the performer commands about 80% of the audience's attention and the loudspeaker 20%... I'm not as interested in the imbalance itself as in the danger that we will end up composing a kind of "music minus one." This danger is rather great when we compose for loudspeakers and performers and some considerable thought is required to overcome it.[34]

The mimetic problem is not confined to *musique concrète*; it can equally be a problem for synthesis. The vast majority of electronic instruments currently being sold are in reality anything but true synthesizers. They appropriate the technology of the concretists - sampling, the heir to Schaeffer's disc cutters - in order to replay them in the guise of sound wave creation to usurp the role of the acoustic instrument. All keyboards these days have patches relating to 'acoustic grand piano,' 'trumpet,' 'strings,' 'shakuhachi' and so on. This falls in line with the consumerist, 'General MIDI', self-advancement approach redolent of most populist electronic instruments, but not of serious musical endeavours. However, the dangers still apply. I have listened (and enjoyed) music involving live performers accompanied by taped backing, consisting of instruments identical the one being played live. The obvious dilemma of such a situation is that the question inevitably arises as to whether the soloist does not also become superfluous. This illustrates another point: that of works

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[33] John Cage, quoted (unattributed) in Holmes, Thomas B, 1985
[34] Morrill, Dexter: 1989, p.95

being fixed in time by their own medium. Would there be any difference if the mixture of electronics and live music were simply recorded and replayed in a concert hall? Would the only real difference be that the presence of a human being would allay the problem of lack of visual stimulus and have little or no musical impact?

Additionally the sound emanating from the loudspeakers has a bearing on the listeners' interpretation of what is being listened to. Real-world sounds when replayed give the impression of their environmental source - everyday stimuli naturally prompt us to refer to the earthly from which they came. As a result, rather than take us beyond the temporal to the ethereal, as most artists would claim their work attempts to do, it can have the effect of keeping the listener's feet firmly on the ground. Simple recording with little mutation or manipulation runs the real risk of being perceived as little more than radio sound effects (which, of course, may be used as an intended musical device).

> When a listener identifies the source of a sample, the extra-musical connotations (be they physical, cultural or phonographical) colour his/her purely musical response. These non-musical associations become part of the interpretive process: the listener's understanding of the piece is dependent on whether identification takes place. The highly informed listener whose lived experience is close to that of the composer may well be able to identify the samples the composer uses and then interpret extra-musical meaning to them. But is this an advantage? A culturally informed response is quite different from a musically informed response. At worst ... the identification of the samples becomes the entire *raison d'être* of the piece.... Sample identification disrupts the listening process. And ... subverts the division between composer, player and listener.[35]

> .... there is a causal relationship between the action of breath or physical gesture and the consequential spectral and dynamic profiles. The effect of long-term conditioning has resulted in a reference-pool of aurally acceptable sound-objects which continue to exert both conscious and unconscious influence on electroacoustic composition.... Musical sounds are inextricably bound up with this experiencing of time passing as interpreted through changes in spectral space, even when the sounds are not actually moving through space. If these natural fundamentals of sound perception are ignored in the composing of morphologies, in the structuring process, and in spatial articulation of structures, the listener can instinctively detect a musical deficiency.[36]

But the key to the listening and interpretive process is, to some extent, in not allowing ourselves to be distracted from the musical aspects of the piece but to understand

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[35] Warner, Timothy: 1996, p.54-55
[36] D Smalley, 1986, p.68

that hearing the sound of a familiar object or situation is quite different from encountering it in the context of a larger body of work which may also contain other similar examples.

> Therefore, one might be justified in proposing that a musical passage which suggests an analogy with a sunset ... we attempt to understand our musical experience by comparing it to our experience of a sunset. We forget that it is only our response that the two actually have in common. The two phenomena themselves are quite distinct and unrelated.[37]

The Challenge of Atonality

Contemporary music will, perhaps, always cause controversy and dissent, possibly because those reactions were the intended response in the first instance. Although electroacoustic music does not, *ipso facto*, equate with atonality, much of the debate centres on the use dissonance through atonality - a reaction to the strictures of the melodic, harmonic and rhythmic conventions in place from the time of the Renaissance. Or, as David Keane argues, quoting Morthenson commenting on the cultural environment of our times:

> Electronic music is not rejected [by the general public] as meaningless because ordinary listeners are reactionary or insensitive, but because it cannot, *under present cultural conditions* [my italics] ... be psychologically classified as 'music'.[38]

Keane additionally observes that, "Morthenson's position is not an isolated one."[39]

Dissonance, however, is of course not a twentieth-century phenomenon. Schoenberg's successes at emancipating his music from the straitjacket of conventional diatonic tonality in the use and development of the tone row, is an extension of the harmonic innovations begun with composers such as Liszt and Wagner and brought to its zenith by Mahler. Jonathan Harvey's interesting postulation that atonality has emerged in our time because this is the generation that

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[37] Keane, David: 1982, p.329
[38] Jan W Morthenson, in a paper delivered at the Third Colloquium of the *Confederation Internationale de Musique Electroacoustique*, Stockholm, 1986; quoted in Keane, David: 1986, p.97
[39] Keane, David: 1986, p.97

is ready for it is not irrelevant to this discussion.[40] The same could be said of electroacoustic music. Obviously with the abandonment of any sense of tonal, harmonic or, for that matter, rhythmic convention, the resultant effect will be one of complete atonality in the sense that there is nothing in which to find a 'centrality' with which to establish any recognisable foundation.

> Certainly here all directions are equal, the listener is not travelling down a road to a climactic destination, he is criss-crossing a field, covering it to complete satisfaction. It is knowledge, not action.[41]

Here, Harvey is discussing the twelve note serial system and adds that Schoenberg's "vision" of it "was as a picture of the world of the spirit."[42] That some composers have taken atonality to represent a world of violence and chaos, which to many it may very well be, and utilise it as the ideal vehicle of protest and dissent has alienated people and diverted them from its positive nature - its ability to direct us to that experience outside of ourselves which we aspire, Harvey's 'spirit world'.

> In a musical language which is highly ordered, and yet which floats above the seething world of tonal becoming, we have a representation of this spirit world potentially more direct and precise than was possible in the tonal era. That, and not the chaotic violence, is the essence, the positive side, the challenge of atonality. It has arrived now because we are (almost) ready for it.[43]

What I have found particularly interesting about the genesis of electroacoustic music is that it was largely borne out of radio and that its 'genetic' affinity with this medium is as pertinent, if not more so than its human lineage. Schaeffer was a telecommunications engineer working in and theorising about radio (and, incidentally about the non-visual aspects of cinema) formulating the notion of 'relay-arts'. Stockhausen spent a substantial part of his formative years under the tutelage of Eimert in the Cologne radio station workshops experimenting with exactly the same equipment that the radio engineers had used prior to them. Radio is the medium of aural stimulation and pure imagination. In a conversation I had with Jonty Harrison, he lamented the fact that we had become a largely visually orientated culture. All has to be seen to have credence. But to understand the nature of radio is, I believe, to discover an essential piece of the electroacoustic jigsaw. Many composers of the avant-garde have explored the possibilities of creating music using inspirational

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[40] Harvey, Jonathan: 1980, p.700
[41] Harvey, Jonathan: 1980, p.699
[42] Harvey, Jonathan: 1980, p.699
[43] Harvey, Jonathan: 1980, p.699

sources outside of themselves. Serialism attempts to define parameters that will loosely determine certain aspects of the work, but then allows the music to progress without the intuitive contribution of the creator. Chance is another 'tool' applied to the achievement of the same end: the throw of a dice, the turn of a card, the *I Ching*, the indeterminate order of the pages of score and so on. Often performers are directed to react to external inducements such as the broadcast on random frequencies found on AM radio bands or the behaviour of a butterfly let loose in the concert hall until it flew out of the window (one for temperate climates, this). The impact that radio probably had on the population of the first part of this century is perhaps very difficult to understand accustomed and soaked as we are in the rising technological impact of our lives. It is not inconceivable that it would have crossed the minds of many who listened to primitive radio equipment, that it was possible to catch the sounds of the ether which may have contained those sounds of the extra-corporeal: Schoenberg's spirit world or even heaven itself.

Electroacoustic music explores and illuminates the possibilities of sound itself for its own sake. In common with many other strands of contemporary music it seeks to expand the aural 'vision' of the listener and to open a world which has been an integral part of their lives but which, by very nature of its familiarity, has been unacknowledged. Cage's 4'33", inspired by time spent within an anechoic chamber where all sounds were suppressed apart from those of his own body, is, like all media which deny its very substance, the highest expression of any formalised musical art. Luc Ferrari's *Presque Rien N°1* is a veristic recording of the sounds at daybreak on the Dalmation beach near where he was staying at the time. It is simultaneously documentary, sound picture and *musique concrète* which allows us, perhaps compels us, to focus on aural stimuli that are all too familiar but which in context become meaninglessly abstract. For this reason, I'm not sure that I agree with Denis Smalley when he states that, "all listeners have considerable practice at the concrete aspect [of sound] in daily life, while an abstract approach [to sound] needs to be acquired."[44] Music here takes us not to a metaphysically higher state of wellbeing (often sentimentally misinterpreted as entertainment or whimsy) but to a greater level of self-awareness, of mindfulness of our world and our relationship with it.

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[44] Denis Smalley: 1986, p.64

Full-circle

Ultimately, such a survey as this inevitably leads to the questioning of the real essence of music – what is music? And just as inevitably, this question will not be answered within the limited scope of this dissertation. However, through searching for the meaning of electroacoustic music in particular, and contemporary music in particular, my cosy assumptions on this subject have been resolutely confronted. Consequently, I conclude this section by bringing the original search full-circle as it is not only my understanding and appreciation of contemporary music that has been exercised, but also that of all the music I have hitherto been familiar with, culminating with this enigma of what it really is I have been experiencing for so long. I conclude, then, by offering a personal note about the nature of music that does little real justice regarding true revelation, but nevertheless illustrates something of the illumination that has occurred through the research for this dissertation. I maintain that I have never been adequately presented with a satisfactory answer to this question. My own attempts to supply the elusive solution is constantly being challenged and transformed by encountering innovative methodologies and ideologies that music continues to be founded on. I find that attempts to explain the phenomenon in terms of organisation (even Varèse's 'organised sound'), and certainly those of codification, almost always fall short of the real essence of it. Not even the use of the word 'noise' can have any signification here as much that we are able to deem music includes this quality. In my view sound becomes music at the point of our response to it. Sound emanating from the radio as one eats breakfast and reads the newspaper is no more music than 'muzak' played in a supermarket. If it has little more significance than other objects in the immediate environment - the furniture, the decor, the walls or other people - the modern phrase 'aural wallpaper' is apt here. The same can be applied to listening to Mozart, or any other work, in a concert situation while being more preoccupied with extra-musical mental activity, including that that is suggested, subliminally or otherwise, by the music itself. That music which is directed primarily at a particular social sub-culture or ethnic culture can appear to be little more than simply sound, or even noise to those outside those spheres. In this way, the demands of listening and appreciating electroacoustic music scarcely differ in essence from those of any other genre. Moreover, it may be that by confronting and assimilating the demands of electroacoustic music, its audiences will ultimately augment their aesthetic experience not only of electroacoustic music but also of other genres.

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Edgard Varèse

Even a cursory investigation in to the life and work of Edgard Varèse creates a strong impression that, even in the earlier part of his musical career, he seemed destined to have the potential to exert a major influence on the music of the twentieth century. He has a particular pertinence to this survey as his questioning and critical approach to much of his own music output and that of many of his contemporaries was to have far-reaching consequences on the music of his and future generations. His stance was that of the revolutionary and often, perhaps not always graciously, dubbed 'leftist' (but one which he readily adopted). Some, nevertheless, were willing to confer that label on him for more complimentary reasons. Louise Varèse, quoting from her catalogue of memorabilia, reflects that, "Pitts Sanborn of the *New York Telegram* ... names as the radicals of the moment Carl Ruggles, Edgard Varèse, and Henry Cowell. He then declares: "The crown and the sceptre of the left, however, the power that speaks to power, and a big share of the glory are vested in Edgard Varèse."[1] His teachings, theories, compositions, writings and lectures offer an interesting insight in to the true meaning of much of the music of the middle to latter parts of the twentieth century. Varèse also reflects a real break with the traditional past in a way that not all

post-war composers were able to successfully achieve while still sustaining an integrative connection with that past which other influential innovators of the post-war musical scene were often unable to realize. These dual qualities, of at once changing the face of musical expression by the artist, and its reception, by the listener, but with personal, academic and cognitive links with the gamut of musical history, fulfils much of the researching I set out to complete. To read about his life and works is to elucidate many of the imprecise terms used for much of today's music many of which have little original clarity to the point of becoming clichéd platitudes. Terms such as listeners being 'inside the music' may be true but are as unhelpful in truly appreciating the grandeur of a cathedral with the sole advice to start inside it. This may encourage a casual regard for its qualities but only when pointers towards the details of its architectural peculiarities, constructional virtues, historical perspectives, anecdotal and annotated histories, and so on, are provided does its true aesthetic worth become apparent. Varèse's own commentaries on the structures and aesthetic endeavours of his work provide the equivalents of not only modern genres but established musics also. To look in to these aspects of Varèse's output is, for me, to see parallels emerge, and illumination of hitherto frustratingly 'blind alleys' to take place.

I intend to look into where the overlaps in his life and work occur with other composers and artists in his formative years and, to some extent, try to discover how these influences led him to depart from the accepted norms of composition. Varèse is no less an interesting character in the development of musical history of the recent or any other era due to his interaction with and musical paralleling with extra-musical inspiration, particularly that of visual art in general, and cubism specifically. These definitely had a bearing on his outlook towards his creativity. Additionally, his unique manner of musical expression amply illuminates much of the identity of the range of twentieth century musical output. This pan-disciplinary aspect may also indicate something of the unique character of the contemporary artistic culture in an ever-increasingly communicative, influential and counter-influential world; this being especially relevant because of electroacoustic music's use of the raw materials of mass communication and the artefacts of the global village. The innovations and attitude changes that he gave rise to are also of immense importance here. It seems particularly remarkable that, although Varèse was by no means the only composer

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[1] Varèse, Louise: 1973 p.254

reaching out into uncharted territory, he does appear to have possessed a singular ability to envision a completely new path for music and aspire to see others follow.

Varèse's musically formative years were spent in Paris at a time when it was very easy for a restless young malcontent to find a target for his angst. Varèse had severe parental difficulties to overcome, but eventually, in 1904, he became a student at the Schola Cantorum were the musically conservative Vincent D'Indy was principal. D'Indy took it upon himself to be the guardian of all that he held musically sacred and incontestable, not only in French music but also that of all traditional musics, and took the stance that any compositional form that was not centred principally on melody was not acceptable. Despite the fact that it had been D'Indy who had made it possible for Varèse to attend the Schola in the first place, and despite that, or more likely because of, the fact that Varèse was studying composition with D'Indy, they argued and eventually parted company over irreconcilable differences of compositional opinion. Varèse averred later that it was D'Indy's preoccupation with proselytising that, in common with many young composers at the time, eventually made the split inevitable. Varèse was insistent that he should not become a D'Indy clone, one D'Indy being enough. Varèse here displays his fiercely independent character and even at this very early stage in his career is showing indications of his evolving theories of purely gestural and motivic composition techniques.[2]

One wonders, though, where Varèse found inspiration for such ideas at such an early stage. Debussy had made a determined effort to maintain distance between himself and the traditionalist musical hierarchy and to break away from the Germanic influence on French music. He had also allowed himself and his music to absorb musics of other cultures and was very influential on the musical culture of the time, especially to impressionable young musicians forging their uniqueness outside the musical establishment. Though Varèse was later to establish a firm friendship with Debussy and Satie, from whom he sustained a great deal of encouragement, it may

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[2] It is also interesting to note that Varèse's early years are very similar to those Berlioz who Varèse saw as one of his musical heroes, championing many of his works - his appearance on the American musical scene was precipitated by conducting a performance of Berlioz's Requiem soon after arriving there. Both were from provincial backgrounds, both encountered parental, though more specifically paternal, conflict before pursuing their preferred career in music. In each case the friction with the father was exacerbated by the insistence that they follow the father's career, medicine in Berlioz's case and architecture in Varèse's. Both were true to their intensely personal ideals in commenting on their colleagues works, both needed to command their responses to criticism concerning their output within their lifetimes and both defined new expressions of instrumental treatment and musical form in addition to formulating a new musical aesthetic.

be difficult to determine how much of his own radical ideas were dependent on Debussy's, or any other composer's, output. He would certainly have known both composer's work such as Debussy's *La mer*, *Reflets dans l'eau*, *Jardin sous la pluie* and *Poissons d'or*. His friendship with Debussy and Satie was also shared with that of Picasso, Jean Cocteau and Marinetti's fellow-Futurist, Russolo. These, though, are of course not nearly radical enough to form the foundations of Varèse's innovations, even after taking to account Satie's or the Futurists' differing radicalism. He attended the premieres of Schoenberg's *Pierrot Lunaire* in October 1912, and Stravinsky's *Rite of Spring* in May of the following year. Busoni was also exerted a strong influence on Varèse. Marinetti, an extremist poet, author and musician, published the *Futurist* manifesto in 1909. His ideas, that art should reflect the increasing industrialisation and mechanisation of society, with its inherent sounds, found limited accord with Varèse's own inclinations. Varèse would eventually take issue with the imitative aspects so intrinsic in the movement's philosophy, but found much in their approach to the use of noisemakers as way of conceptualising his own aspirations to liberate music from the constraints of the tonal and tempered systems.

Varèse's output of musical works represents, in purely numeric terms, a small contribution to the music of the twentieth century. However, it holds, together with that of his opinions, articles, teachings and his promotion of modern music, a degree of influence over the artistic development of his and subsequent times proportionally far greater than their numerical strength. Moreover, Varèse provides many of the solutions to the challenges laid down by contemporary music in general and electroacoustic music in particular which I am seeking to assess, and additionally presents himself as one of the links between the 'old' and the 'new'. This last statement may provoke a quizzical response on first reading as for much of his life Varèse was regarded as the musical arch-anarchist and champion of all that was 'leftist' in the search for new musical expression. This is, of course, perfectly true, but his sincere attempts to build new paths for both composers and listeners to a higher level of artistic experience were firmly founded in the principles of the past. His studies at the Scola Cantorum and the Paris Conservatoire may have proved to be turbulent but they nevertheless confirmed him as an excellent scholar. He excelled at counterpoint and held a fascination for mediaeval and renaissance music that he sustained throughout his life. Later, Kenneth Curwen, the London publisher was to comment that Varèse, "has his own standards of value, and is accustomed to do his own thinking. And when such a man bases himself not on a contempt for his predecessors, but on encyclopaedic knowledge of the past and an intense

appreciation of its beauties, it is idle to say, "This is not music.""[3] Paul Rosenfeld also commented, in an article for the June 1926 edition of *Dial* magazine among Louise Varèse's personal collection, on Varèse's *Amériques*, one of his earliest extant works, that "It is possible that in Edgard Varèse we have another virtuoso with the orchestra in his veins."[4] Varèse, throughout his life, found that the limitations imposed by the traditional scales and harmonies were too constricting. His vocation was to liberate music. One of the ways intended to achieve this was by emancipating the hitherto unused tones found between the divisions of chromatic scale, which in itself he regarded as being doubly constrained by the tempered system. *Amériques* is to all intents and purposes his first major, large-scale work and although it does not employ any electronic means of sound production, it does use sirens.[5] These are used, not as examples of the of the outside world brought in to the concert hall, but as a means of experiencing tones in a paraboliform configuration rather than step-wise mode, a portent of the electronically produced frequency sweeps of electroacoustic music. As Jonathan Burnand comments, quoting Varèse:

> Photodynamism can be regarded as analogous to Varèse's employment of sirens in an attempt to use the spaces between the semitones of the tempered scale, not only in the first of his works to include sirens in the instrumentation (*Amériques*, completed in 1921) but also in experiments made long before, in Paris:
>
> > When I was about twenty ...my thinking began then turning round the idea of liberating music from the tempered system, from the limitations of musical instruments, and from years of bad habits, erroneously called tradition. I studied Helmholtz, and was fascinated by his experiments with sirens described in his *Physiology of Sound.* I went to the *Marché aux Puces*, where you can find just about anything, in search of siren, and picked up two small ones. With these, and using also children's whistles, I made my first experiments in what later I called *spatial music.*[6]

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[3] Varèse, Louise: 1973, p. 194
[4] Varèse, Louise: 1973, p.247
[5] *Amériques* was one of Varèse's first original works that the American public encountered. Although Grout (Grout, Donald Jay & Palisca, Claude V: 1996, p.776-777) may be reflecting a widely held view that through it Varèse 'celebrated his adopted country' he himself saw the title as representing the possible 'new worlds' of the mind - a chance to start again, with new thinking imposed on established norms. Also, Grout's description of the two bar fragment of *Intégrales* as being 'the music of urban noise an clashes, reflecting the midtown New York scene that Varèse heard and saw from his apartment' is to miss the point completely.
[6] Varèse, Edgard: *The Liberation of Sound*, in Schwartz, Elliott and Childs, Barney (ed.): 1967, p. 195-208; also in Burnand, Jonathan W: 1987, p. 27

Varèse's visionary sensibilities continually regarded technology as the only possible answer to many of his aspirations for music and its true liberation. More often than not, though, many of his ideas would ultimately be thwarted through lack of understanding and support. Burnand remarks:

> It seems that Varèse felt increasingly in need of new kinds of instruments as time went on, especially after about 1930, and that as his attempts to interest foundations, sound studios, and other commercial enterprises in subsidizing research into and construction of such instruments were repeatedly rebuffed, he sank in to a state of discouragement which led eventually to creative paralysis.[7]

By using electronic and 'extra-symphonic' means of sound production, either through scoring for then-unusual instruments such as the Ondes Martinot, or through purely electronic means as with the *Poème électronique*, his contribution, in collaboration with Le Corbusier, to the Philips Pavilion at the 1958 Brussels Exposition, Varèse can be credited as being among the pioneers of the new electronic revolution. However, the majority of his music is scored for more conventional forces. Nevertheless, the pertinence to this discussion and, more to the point, to his effect on subsequent generations of music makers and listeners, is that his radical ideas about the directions music should take and how it should ultimately achieve its goals were immense contributions to the formation of the musical aesthetic of the mid to late twentieth century. Varèse's pupil Chou Wen-chung gives a particularly pertinent insight in to the development of Varèse's musical thinking when he makes the following commentary on *Ionisation*. He is asserting that as early as 1931, Varèse had formulated compositional ideas on which much electronic music would be based.

> *Ionisation* (1931), as we now recognize it, is the first and most consummate work to explore the structural value of all non-pitched properties of sound without electronic means. It is also unique in Varèse's output. In *Ionisation*, more than in any other score, Varèse reveals to an extraordinary degree not only his concepts and techniques but also the profundity and imagination with which he crystallizes (to borrow one of his favorite expressions) his ideas: in this case, hewn from the raw sonic material that offers no definite pitch or known means for development and organization.[8]

One can perceive many of the his principles applied, consciously or unconsciously, to much contemporary music and also one discerns a searching in Varèse for the conceptualisation of many of today's means of musical production. His ambition was

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[7] Burnand, Jonathan W: 1987, p. vxii
[8] Wen-chung, Chou: 1979, p.27

to liberate sound from all constraints and have any sound that could be imagined available to him. For this he was often ridiculed and vilified. Though he experienced acute frustration and frequent bouts of creative (though not inspirational, a word he would, however, have vehemently disapproved of) stasis, his personal and artistic character displayed the necessary integrity to be true to his own beliefs and aspirations. And which innovator, musical or otherwise, has not been the recipient of similar treatment? His wife, Louise, relates, in her recollections of Varèse, *A Looking Glass Diary*, many instances of contemporary critics commenting on her husband's works. But one in particular is noteworthy for the response it elicited from one of their friends:

> The review by the unknown critic also betrays the caliber of most of the criticism. Fatuous and cocksure, with a lack of originality, all the critics chose the same flippant similes from barnyard, zoo, or factory. When Slonimsky in 1951 was collecting such howlers for a book, I sent him many from the [International Composers'] Guild clipping book. In a postcard to Varèse he commented on them:
>
> > The samples are marvelous! The comparisons with menageries are not new: Oulibishev wrote that the Scherzo of Beethoven's Fifth was the caterwauling of a demented cat. You are in good company.[9]

Whether Varèse took any comfort from this still doesn't detract from the fact that all such revolutionaries, and particularly ones whose innate sensibilities and devotion to that which they perceive as their destiny predisposes them to bluntness rather than reticence and compromise, will encounter such comments.

One of the main tenets of composition that Varèse eschewed was the idea of formulas or systems of any kind in the creation of music.

> If there was one word which was anathema to Varèse above all others, it was "system." For him the word connoted and inability to think for oneself, and excuse for "lying down in other men's thoughts" ...The tendency to systematize was something Varèse inveighed against all his life... [Neoclassic tendencies] he attributed to Stravinsky in large part, and as early as 1934 he was already saying, "I think that Stravinsky is finished"...Dodecaphony, of course, was Schoenberg's fault... He considered it a great tragedy that Schoenberg, having freed music from tonality, subsequently sought refuge in a system.[10]

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[9] Varèse, Louise: 1973, p. 213
[10] Burnand, Jonathan W: 1987, p. vxii

Varèse also later said that, "Schoenberg liberated music from tonality but it was as though, frightened by so much freedom, he retreated to the refuge of a system." Varèse did not like closed systems: "Beware the codification of systems and, in spite of all the revolutionary slogans, their latent academicism. There is nothing more deplorable than traditionalists of the left."[11] These evidently find an accord in the writings and teachings of two of Varèse's friends and mentors; firstly, Debussy – "You have the right compose what you want to, the way you want to if the music comes out and is your own. Your music comes out and is yours," with his famous aphorism, "Rules do not make a work of art" - and secondly, Busoni: "The function of the creative artist consists in making laws, not in following those already made. He who follows such laws, ceases to be a creator,"[12] and "Music was born free and to win its freedom is its destiny."[13]

> But Varèse's declaration that "the links in the chain of tradition are formed by men who have all been revolutionists!" should serve as a reminder that Varèse was really talking about forging continuity, not breaking it.[14] When he spoke of freedom for music, he did not mean irresponsible or unlimited freedom, freedom to do absolutely anything. He meant deliverance from outmoded practices statically and thoughtlessly perpetuated, from bad habits ("*erroneously* called tradition") and from restriction on the use of sound materials that modern technology had made accessible.[15]

At this the very early stage of his career we can see that Varèse does not offer any allegiance to any particular style or nationalism save that of his own choosing and conscience. Here we see an artist with a vast vision of what may not necessarily be completely possible, but which was nevertheless worth striving to achieve. It is always difficult to extract feelings and emotions from factual narratives but it is self-evident from accounts of his life after the Conservatoire that he was a young man searching for the ideal place where his ideas and methods would find acceptance. He left France for Berlin in 1907. There he readily received a large measure of recognition among the musical fraternity. In fact, it seems that while in Paris, Varèse was more likely to acquaint with pictorial artists than with musicians, a point which has much to do with his emerging musical outlook as any. Germany appears to have become his musical home, as it was here that he forged excellent relationships with, among others, Busoni, Carl Muck (with whom he was later reacquainted on his

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[11] Varèse, Louise: 1973, p. 240
[12] Busoni, Ferruccio: 1962, p.82
[13] Busoni, Ferruccio: 1962,, p.77
[14] Varèse, Edgard: *The Liberation of Sound*, in Schwartz, Elliott & Childs, Barney (Ed.): 1978, p.200
[15] Burnand, Jonathan W: 1987, p. 36

arrival in New York) and Richard Strauss. In the Italian expatriate, Busoni, Varèse had found a kindred spirit, discussing much of what occupied his life - the future of music, the new directions it would (and should) take and the impact of technology on music. Of Busoni Varèse wrote: "In any case I owe him a debt of gratitude. He not only corroborated, clarified and encouraged my ideas, but being as magical a talker as he was a brilliant thinker, he had the gift of stimulating my mind to feats of prophetic imagination."[16] Strauss insisted that Josef Stranksy programme Varèse's first major work, *Bourgogne* for large orchestra written in 1908, for its first major performance in Berlin, 1910. Such was the relationship between Busoni and Varèse that he defied a severe illness to attend the concert. Accounts of this first performance indicate that it was as coolly received, as were many of his subsequent works. Varèse came to understand that public acceptance was as difficult to court as it was ephemeral and, intentional or not, a significant part of his life was devoted to attempts to educate the listening public to his and other's new music. Whether or not he realised it at the time of this first performance, he subsequently realised that it was necessary, almost obligatory, to have to accompany his works with explanation and exposition, a trend which survives him. This he did for *Bourgogne* a few weeks after its premiere in the magazine *Pan*. He eventually set out for New York in 1915-16 where he settled, becoming a naturalised citizen in 1926. He evidently found the political tension between France, the country of his birth, and Germany, the country of his artistic roots, a real dilemma and a division of his loyalties despite the fact that he entered the French military services at the outbreak of the 1914-1918 hostilities. How much this was a determining factor in his decision to leave for the United States very soon after his discharge from the army is less pertinent than the fact that he regarded his new homeland as a kind of virgin territory where could establish his pioneering work. Many in America took the first of his own compositions to be performed there, *Amériques*, to be modelled on that country and to be a celebration of it. Chou Wen-chung relates an alternative view but one that additionally provides further insight in to Varèse's musical and artistic aspirations:

> Ever since childhood, the word America had meant to Varèse 'all discoveries, all adventures ... the Unknown.' His first composition after his arrival in the United States on December 29, 1915, was *Amériques*. To him the title symbolized 'new worlds' on earth, in space, in the mind, but not specifically geographical ones. As he said later, he could have named it 'The Himalayas.' Today, three quarters of a century later, *Amériques* strikes us as a

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[16] Varèse, Edgard: quoted in Ouellette, Fernand: 1973, p.23

> masterpiece of discoveries and adventures. Not surprisingly, then, we learn that Varèse said, with *Amériques* I began to write my own music.'[17]

Many speak in terms of 'sound masses' with regard to Varèse's work and this is a major characteristic of his work, although Varèse himself regarded the Poème électronique of 1958 to be the first true example of this. Burnand refers to the "tendency of critics to speak of "sound masses molded as though in space" when describing his music"[18] and continues by taking up Varèse's view:

> "Of course," Varèse added, "it was still a *trompe d'oreille*, an aural illusion, so to speak, and not yet literally true." The first literal realization of spatial projection in his music, he said, came with the production of the *Poème électronique*, the collaboration with Le Corbusier for the Philips Pavilion at the 1958 World Fair in Brussels, in which425 loudspeakers mounted at various locations around the building were arranged and combined by numerous amplifiers to present "sound routes" for Varèse's taped music.[19]

Intrinsic to Varèse's compositional attitude is the challenging of traditionally accepted modes of practice. Rather than for material to develop in linear fashion, ideas are presented, arranged and transformed episodically. Varèse deliberately attempts to steer the listener away from traditionally accepted forms of attention to what is heard. Rhythms are intentionally made difficult with no discernible beat structure apart from where these blocks of sound create their own rhythmic patterns, speeds are altered suddenly and in rapid succession, sounds erupt and subside. There is little in the way of melody in the accepted sense and perhaps most pertinent of all, all sentimentality is excised from the music. Melody, which has held predominance over the composition of music for centuries, is relegated in favour of rhythm and timbre; sound for its own sake, sound quality for its sonic properties. Neither is subservient to any other aspect. Varèse's own words explain this amply; the following extract is taken from his own programme notes for *Intégrales* (1925):

> The music is not a story, is not a picture, is not psychological nor a philosophical abstraction. It is quite simply my music. It has definite form which may be apprehended more justly by listening to the music than by rationalizing about it. I repeat, what I have before written, analysis is sterile. To explain by means of it is to decompose, to mutilate the spirit of the work. As to the title of a score it is of no importance. It serves as a convenient way of cataloguing the work. I admit that I get much amusement out of choosing my titles - a sort of parental pastime, like christening a newborn child, very different from the more intense business of begetting. I find no fun in family names. I often borrow from higher mathematics or astronomy only because

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[17] Wen-chung, Chou: 1998, p.15
[18] Burnand, Jonathan W: 1987, p.8
[19] Burnand, Jonathan W: 1987, p.8

> these sciences stimulate my imagination and give me the impression of movement, of rhythm. For me there is more musical fertility in the contemplation of the stars - preferably through a telescope - and the high poetry of certain mathematical expositions than in the most sublime gossip of human passions. However there are no planets or theorems to be looked for in my music. Music being a special form of thought can, I believe, express nothing but itself.[20]

It is also noteworthy that Varèse here talks of scientific and astronomic influences. The relationship with his father may have been an unhappy one, but his insistence on Varèse's study of mathematically related subjects in his youth, with a view to following his father in to architecture, certainly left its mark. One also gets the impression that this is a kind of a safe haven for Varèse. Speaking in mathematical and scientific language would be something that would be quite alien for most musicians, thereby putting him at an advantage. I don't for one moment suggest that he was not perfectly able to use the terms which speak of narrative, impression and emotion, but that he chooses not to. He chooses, rather, to make a definite break with the traditional, associative perception of music, to forge a new dimension in listening and appreciation. Mellers assesses Varèse from this point of view and in the light of his contemporaries as he writes:

> Ives's empirical music is always unpredictable yet always unsurprising, since it accepts *what is*: as do the subversive Europeans, notably Debussy and Stravinsky, and as did the French-American iconoclast Edgard Varèse who, trained as a mathematical engineer, made a music constructed partly on primitive ritualistic principles and partly on architectural and scientific principles such as rock and crystal formation... But Debussy, Stravinsky [and] Varèse ... still belong in part to the tradition of 'art' music.[21]

Associative mimesis is no longer required as in Varèse there is nothing but music. Music (that is, *sound*)[22] has all the necessary qualities to be able to speak for itself. Bereft of the trappings that it has accumulated over the centuries, it is then allowed to communicate with something within us which tradition (and here I welcome Varèse's alternative phrase of 'bad habits') has rendered dormant.

Louise Varèse recounts a commentary on one of Varèse's works of 1922-23, *Hyperprism*:

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[20] Varèse, Louise: 1973, p. 228
[21] Mellers, Wilfred: 1992, p.14-15
[22] In this context, Varèse's appropriated André Derain's dictum, 'Painting is made of light,' and transformed it into his own maxim, 'Music is made sound:' Varèse, Louise: 1973, p.108

Sometime later Charles Martin Loeffler, interviewed for *Musical America*, made these curiously contradictory remarks:

> I was fortunate enough to hear the Philadelphia Orchestra when they played Varèse's *Hyperprism*. It would be the negation of all the centuries of musical progress to call this music. Nevertheless I seem to be dreaming of rites in Egyptian temples, of mystic and terrible ceremonies which history does not record. This piece roused in me a sort of subconscious racial memory, something elemental that happened before the beginning of recorded time. It affected be as only the music of the past had affected me.[23]

In Varèse's own words again:

> In the matter of timbre, my attitude is precisely the reverse of the symphonic. The symphony orchestra strives for the utmost blending of colors. I strive to make the listener aware of the utmost differentiation of colors and densities.[24]

These last two terms sum up this aspect of Varèse's work: colours (to employ the English spelling) and densities - new colours and new densities combined in self-generating form.

I earlier made reference to Varèse being very much at ease with pictorial artists and sculptors, spending a lot of time with them while in his early days in Paris. Indeed, for a while he worked in Rodin's studio. This illustrates one of the more interesting aspects of Varèse's influence - his ability to see musical potential in extra-musical sources. Cubism is one particularly pertinent example, as Varèse's music embodies a multi-dimensional character. Burnand makes the point that Varèse was inclined to speak of his work in analogous terms, often comparing it to the natural world.

> He preferred to speak analogically, not analytically, of his music, often with reference to physical phenomena... Attempts to involve him in more narrowly defined, "analytical" discussions made him uneasy.[25]

The multi-dimensional aspect of Varèse's music is very appropriate. We have already seen that Varèse, very early in his development, was thinking about the *spatial* properties of music, despite the fact that it was some time before he applied that nomenclature to it. In electroacoustic music the sound space is as much a part of the

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[23] Varèse, Louise: 1973, p.225
[24] Varèse, Edgard in Frankenstein, Alfred: *Varèse, Worker in Intensities*, San Francisco Chronicle, November 28, 1937, 'This World' section, p.13, in Burnand, Jonathan W: 1987 , p.29
[25] Burnand, Jonathan W: 1987, p.xix

aural and aesthetic experience as the music itself. It defines the music in its environment and places the listener in to a position of interaction with the music – a form of multi-directional experience. Varèse's adoption of cubist principles were more likely to be a confirmation of his own evolving processes in his quest for the liberation of music rather than his application of those processes and theories to his own work. Burnand observes that, "Even though in music there is seldom any question of actual depiction of images from the "real world," it is still possible to see why Varèse would have been impressed by the cubist's attempt to distinguish between subject and object."[26] However, his innate aversion of inter-dependence with other artists and their philosophies meant that he rarely adopted other methods indiscriminately without adapting them to his own. Burnand again:

> Varèse never adopted anyone's opinions wholesale; he never simply and uncritically absorbed ideas about visual art to apply them to music. Traces there are, and in abundance, but whatever he borrowed became uniquely his own.[27]

His relationship, amicable, philosophical and professional, with the Italian *Futurists* is typical. Varèse evidently had a great deal of empathy with their outlook and aspirations and many commentators, historians and listeners have casually and mistakenly associated him with their movement. There are many references in Louise Varèse's *A Looking Glass Diary* to newspaper accounts of the time to attest that contemporary critics, among others, were quick to assume such a correlation; comments such as, "As before, the headlines were jocular: *A Cocktail of Sound, Noise by Wireless, Slapstick Music, Pandemonium Broadcast, A New Name for Old Noises*,"[28]. But Varèse himself was adamant that his own output and that of the *Futurists* was quite different and separate. He was convinced, concurring with them, that the future of musical expression was intrinsically linked with the invention and development of new forms of sound production through technology, and that the increasing industrialisation and mechanisation of society should insinuate itself in to the regular practice of making music in order to counteract the imitative practices of musical tradition.

> Varèse was in enthusiastic accord with many of the tenets proclaimed by Marinetti in his *Le Futurisme*, such as:

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[26] Burnand, Jonathan W: 1987, p.6
[27] Burnand, Jonathan W: 1987, p.3
[28] Varèse, Louise: 1973, p.218

> Imitation has killed art. It is for us to resuscitate it. We can only succeed by getting rid of all worn-out formulas, by turning our eyes from the already-seen, the already-done in order to observe the spectacle of modern life.[29]

And as Burnand has commented:

> Musical composition, in Varèse's view, had been held back for some time in its progress by the failure of musicians to see the necessity of developing new instruments and new means of sound production in general, and by academic conservatism, which perpetuated old forms and old formulas.[30]

On the other hand, the Futurists tenets of transplanting those sounds and influences directly in to musical works without artistic exposition, were in opposition to Varèse's core values of composition and interpretation. As stated earlier, his use of sirens in his works was not to bring those everyday noises in to the musical domain but to utilise the technology of them to expand and develop the range of his sonic palette. Louise Varèse then goes on to add:

> However, later on Varèse accused Marinetti's followers of committing the very offence their spokesman deplored, and 1917 he protested in the Number 5 issue of Picaba's[31] *391*:
>
> > Why is it, Italian Futurists, that you slavishly imitate only what is superficial and most boring in the trepidation of our daily lives!
>
> He shared Marinetti's enthusiasm for the mechanical modern world but not his desire to reproduce it. "The futurists," he used to say, "imitate, an artist transmutes."[32]

Burnand also states that, "Varèse made no public claims of allegiance to the artistic tenets of futurism. In fact, he divorced his intentions from those of the futurists repeatedly and vehemently."[33]

In the realm of cubism also, Varèse found sympathetic resonance with many of its aims and processes, but retracts from simply adopting them. In them, though, Varèse sees the possibilities of metamorphosing the organic elements of previous music in to new perspectives through systematising them on different planes. Varèse

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[29] Varèse, Louise: 1973, p.106
[30] Burnand, Jonathan W: 1987, p.1
[31] *Sic*: this is how it is presented in the text, it should, of course, be 'Picabia'
[32] Varèse, Louise: 1973, p.106
[33] Burnand, Jonathan W: 1987, p.23

frequently adopts the analogy of a crystal to explain these phenomena. It is this, perhaps above all, which has illuminated Varèse's relevance to the perceptive and appreciative aspects of modern music. What was once uni-directional becomes bi-directional, what was once two-dimensional becomes multi-directional, and what was linearly organic becomes nuclear. When refracted through it, colours and densities remain unobscured, but transformed. One can clearly see the affinity with cubist painting where many dimensions and aspects are viewed simultaneously. Burnand aptly describes this in an appraisal of Varèse's *Intégrales* of 1924-1925:

> The opening of *Intégrales*, in which a succession of "sound elements" (in the sense of pitch content and registral placement) is repeated some fourteen times before its dissolution, but never with an exact repetition of dynamic or rhythmic indications. Such passages - which, as anyone even casually acquainted with Varèse's music knows, are numerous - are quite clearly the aural equivalent of multiple views of an object.[34]

Inherent in the crystal's properties are found evidence of natural order and geometric shapes, the consummation of natural stresses, tensions and resolutions. In them we find the results of unseen natural processes that absorb its environment and reflect those surroundings in new interpretative ways. Burnand, commenting on cubism, puts it thus:

> One can detect a tendency [in later cubist art] which might be described metaphorically as a *tendency towards the crystal.* The crystal, in nature, is one of the phenomena that touches us most, because it clearly exemplifies to us this movement towards geometrical organization. Nature sometimes reveals to us how its forms are built up by the interplay of internal and external forces. The crystal grows, and stops growing, in accordance with the theoretical forms of geometry; man takes delight in these forms because he finds in them what seems to be a confirmation for his abstract geometrical concepts. Nature and the human mind find common ground in the crystal as they do in the cell, and as they do wherever order is so perceptible to the human senses that it confirms those laws which human reason loves to propound in order to explain nature.[35]

Varèse also uses the crystal as an analogy to his perception of form. The problem of form in a piece that apparently has no form can be a significant stumbling block to many unused to listening to contemporary works. Varèse regarded the form of his works to be like the geometrical patterns of the crystal in that its construction is the consequence of the processes of its own formation, that is, 'Form is a resultant - the

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[34] Burnand, Jonathan W: 1987, p.16
[35] Burnand, Jonathan W: 1987, p.16

result of a process' in Varèse's own words, a sentiment that would be echoed by other later composers. Burnand writes of Varèse's ...

> ... strenuous opposition to the strictures of preconceived forms. Varèse's characterization of form as "the result of a process" led him to an analogy between a standard "historical" form and "a rigid box of definite shape," noting that if one's aim is to fill a box of this sort, one "must have something that is the same shape and size or that is elastic and soft enough to made to fit in." However, a substance of harder consistency cannot be so forced; it will break the box - as, Varèse promised, his music would.[36]

And, in a later continuation of this theme, observes:

> It is more likely, however, that Varèse's insistence on the inseparability of form and content was meant to distinguish his compositional process from the process of filling predetermined forms with motivic, thematic, and harmonic material. Further, inner *is* different from outer in that, according to the crystallization analogy, the number of available internal structures is severely limited, while the number of possible external forms has no limit at all.[37]

A further aspect typical of Varèse's compositional procedure is that of simultaneity. In Varèse's music it took several forms but seems again to have found its stimulus from the trends within pictorial art, another beneficial emanation of his contact with artists as opposed to musicians. Again there are echoes of cubism here, different perspectives of the same subject being presented at the same time. Louise Varèse describes Varèse's development of his ideas of simultaneity:

> Orphism did not concern [Varèse]. *Simultaneism* did. While poets were juggling words on a page and painters were producing curious juxtapositions of noses, ears, eyes and breasts in the name of simultaneism, Varèse was beginning to wonder how it might be obtained musically. He believed that, given the means, simultaneism was literally possible in music. It was one of the objectives of his lifelong quest for what he called "liberation of sound." René Bertrand, whom Varèse met in 1913, was already working on a new instrument that developed into the electronic dynaphone, conceived on the same principles as the Theremin and the Martinot. Years later Varèse was to say in a lecture:
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> > One of the greatest assets that electronics has added to musical composition is that of metrical simultaneity. My music being based on movements of unrelated sound masses. I have long felt the need and anticipated the effect of having them move simultaneously at different speeds.[38]

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[36] Burnand, Jonathan W: 1987, p.21
[37] Burnand, Jonathan W: 1987, p.32
[38] Varèse, Louise: 1973, p.105

Here Varèse is at once affirming his confidence in the beneficial consequences of the greater absorption of electronic instruments in to mainstream music making and additionally delineating his ideas on the metrical characteristic of simultaneity. He once again confirms the nature of his music to be grounded in the manipulation of 'unrelated sound masses.' This finds concrescence in his adaptation of simultaneity in terms of pitch. Varèse was a master of polyphony and counterpoint. During the very early part of his musical studies he developed a deep interest and regard for Renaissance music (which, of course, preceded equal temperament), its forms and its techniques, which remained with him throughout his life. He considered it important to become proficient and skilful in the methods of Renaissance music. Varèse transformed the concept of linear or 'horizontal' polyphony, as found in the tradition of western art music, into 'vertical' polyphony as a further extension of the simultaneous concept. On other words, the vertical takes precedence over the horizontal. Here in essence is the conceptualisation of what was to become Stockhausen's philosophy of the 'now' (the vertical) – the predominance of the present over the temporal continuum of life or thought (the horizontal).

In his 1995 book *Ocean of Sound*, David Toop gives a euphuistic account of Varèse and music. In it he puts forward the postulation that, "Born too early to realise his ultimate visions, Varèse spent all his life envisaging instruments which could express the soundworld of his imagination."[39] This would be entertaining if it were true, but although it is a statement of fact that Varèse continually found technology disappointing and frustrating, he evidently did not consider himself to be a person 'out of time.' As the following quote from Louise Varèse's book attests, he was well aware that he was part of the inexorability of musical progression and resigned to being misunderstood and misinterpreted. Despite his detractors, Varèse persisted with his innovations with self-assurance and rectitude, developing methodologies that would, knowingly or not, be implemented and absorbed into future musical practices.

> An article by Varèse also appeared which, I believe, he had dictated to a reporter of a London paper and was then copied by papers in other cities reached by the BBC radio. In it Varèse briefly reviewed some of his most tenacious musical tenets:
> There has always been a misunderstanding between the composer and his generation. The commonplace explanation of this phenomenon is that the artist is ahead of his time; but this is absurd. The fact is the creative artist is representative in a special way of his own period; and the friction between

[39] Toop, David: 1995, p.81

himself and his contemporaries results from the fact that the masses are by disposition and experience fifty years out of date.[40]

[40] Varèse, Louise: 1973, p.217

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Karlheinz Stockhausen

It is argued by many that Karlheinz Stockhausen has become one of the most influential figures of contemporary music. What is also the case is that he has perhaps, in the eyes of many of the present-day concert-going public, become the epitome of modern music itself. Both revered and reviled in equal measure, and perhaps for the same reasons, he has, nevertheless, produced some of the most influential works of the last fifty or so years and actively affected and inspired a generation of composers through his works and writings. Some have given him almost 'superstar' status becoming the totem to which many bring their justification for modernistic musical thinking and practice. To others, he has come to be regarded and referenced as the embodiment of all that is negative in modern music. But whatever his detractors may believe, there is little doubt that his exploratory approach to his creative art and his exhaustive work with regard to establishing the compositional modes and credentials of electronic music are significant. He emerged as an adolescent at the end of the Second World War, which, it is fairly certain, had a large affect on his subsequent philosophical viewpoint and personality (see Harvey 1975, p.9), at the same time as the technology that conflict enabled. It is also worthy of note that, as he was eleven years old at the outbreak of war and consequently a member of the Hitler Youth organisation, it is not fanciful to assert that his adolescent musical surroundings would

probably have been at best traditional and at worst banal in view of the culturally restrictive nature of the Nazi administration. The end of the war marked his entry to formal musical study at the Cologne *Musikhochschule* in 1947. It would not be long, however, before Stockhausen would be launching out towards his own unique agendas and attempting to re-start musical history. Harvey claims that "In Stockhausen's music of this [early] period there is, however, an almost total rejection of our European past."[1] As with so many other composers who achieve high levels of critical and peer acceptance, his output is largely the result of his abilities to understand the true nature of the musical experience and to reference his own creative output to the techniques and developments both inherited, through historical musical culture, and discovered, by the coexistent musical climate. Allied to this is his pioneering and questioning search for new musical expression. He was additionally the principal representative, whether by design or default, of the *elektronische Musik* faction of the electroacoustic divide, creating and developing his ideologies and artistic output as part of the Cologne group of musicians based around the North West German Radio Studios with, principally, Herbert Eimert who, as early as 1951, broadcast some of the results of the studies undertaken at that studio. That he is a successor to the work of the Second Viennese School is certain, the superficially apparent dichotomy being that many of his elected post-war influences were of different traditions if not persuasions. Although Webern 's influence was paramount among the Cologne group's output almost to the point of exclusivity, Stockhausen's own watershed seems to have been his encounter with Messiaen's *Mode de valeurs et d'intensités*, itself embracing Webernian principles, as interpreted by Messiaen, as well as, or perhaps better, than any other work.

The Darmstadt group as a whole chose to use the German serialists as their creative *raison d'être*. This may have been convenient for them in their desire to be seen as the German Modernists, carrying on a radical tradition, if only a tradition of a matter of a few decades, and the serialists were definitely modern and Germanic. Music in pre-war Germany was, in common with many other musical cultures, attempting to reconcile itself with the many forces and constraints upon it. As with so much of the music written in the first part of the twentieth-century, the various forward-looking musically artistic cadres of all persuasions were faced with the fact that the Classical/Romantic genre had all but exhausted itself and new expressive mechanisms needed to be explored. This evidently took many forms. In Germany around the turn of the century, atonality was being cultivated by those that saw themselves as Wagner's natural and logical

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[1] Harvey, Jonathan: 1975, p.13

successors, taking Wagner's and Mahler's tonal and harmonic principles to their reasonable and inevitable conclusions. Schoenberg's pre-serialist music, that is, pre-1923, falls in to this category, chromaticism being employed to endue the music with no traditionally recognisable tonal or harmonic base that came to be known as atonality. One dares to postulate, however, that melody, harmony, form, structure and even emotional content would be compositional elements that Wagner would still be able to recognise. Hindemith, entering later on to the scene and therefore having had no direct experience of Romanticism, also began to write atonally and Busoni, the Italian expatriate in Germany, was advocating the liberation of sound through (admittedly extreme) chromaticism and dissonance without recourse to serialist techniques.

In spite of, or because of, this, Schoenberg, the instigator of the twelve-tone compositional process, was immersed in the Wagner-Brahms-Bruckner-Mahler Austro-German romantic praxis and style. Despite the fact that Schoenberg created and developed one of the main springboards of twentieth-century compositional technique and in so doing gained the reputation of one of the prime movers of modern music, his music and his tone-row system failed to break free from the pervading formal shackles of the previous two hundred years of musical tradition. Unlike France, where such composers as Debussy and Satie had consciously made the break from Germanic influences, these traditions were of course particularly strong in the land of Beethoven, Brahms et al. Although the twelve-tone system tonally exerted a formidable necessary shift from the constraints of the prior diatonic/chromatic tonality, Schoenberg, like many other composers of this 'evolutionary' period of musical history, still chose to preserve the formal practices of previous generations of composers[2] and similarly the concepts of melody, harmony, counterpoint and so on. As the introduction to 'Contemporary Composer on Contemporary Music' explains:

> The esthetic of late nineteenth-century music was extended many composers, principally by the Austrian and German followers of Wagner. In the music of Mahler, Strauss, Schoenberg, Berg, and Webern, the ambiguity of Wagnerian tonal-function harmony was taken to its logical conclusion, and resulted in the decay and final breakdown of the tonal system....
>
> Although the shapes and structures of nineteenth-century music were often retained – the musical "forms" persist through Webern – the broader concept of "form" as such was freed from its dependence on the organizing implications of

[2] Of course I realise that the work of the Second Viennese School was reactionary enough to be regarded as anything but transitional breaking as it so radically does from the harmonic and melodic content of its predecessors, but I here refer to it as evolutionary with regard to its sway on the even greater radicalism of post-war generations.

> functional harmony, and thus became much more fluid in abstract and non-programmatic music.
>
> Although these innovations may at first seem far removed from Romanticism, they have clearly come about as natural extrapolations from late nineteenth-century trends. Furthermore, these composers of the post-Wagnerian tradition retained the sense of gesture, the rhetoric, the approach to music as "expression," and the basic view of music as a moral and emotional force, of their predecessors.[3]

In fact form in the hands of the Second Viennese School becomes a major issue. As Harvey has commented:

> Schoenberg had already paved the way by writing music more structure-conscious than any since Bach and the Viennese classics, Berg had used rhythmic systems and extra-musical numerologies, and Webern wrote some of the first music in which the musical idea, as Alexander Goehr would say, *is* the process employed – as opposed to its being a statement that arises *within* the process.[4]

But suites, string quartets, concertos and so on still abound. The presentational form of the School's music had not drastically altered from that employed by its historical peers. Harvey goes on to say:

> As so often with form-projected-into-music, the Second Viennese School were the first; their mentality, like that of the Darmstadt School, was very structure-conscious, only they were in touch with Beethoven and the Darmstadt School was not.[5]

And as many of the works of Berg and Schoenberg himself show, especially those written after his emigration to America, the Dodecaphonic system could, if used appropriately, yield some very tonally docile results laying themselves open to the supposition that they had turned their backs on any atonal past.

In the first volume of *die Reihe*, a periodical edited by Stockhausen and Eimert that became the Cologne group's manifesto and apologia, many of the contributors refer to Anton Webern as their principal source of stimulus. Eimert is typical when he writes:

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[3] Schwartz, Elliott & Childs, Barney: 1978, *Introduction: The Revolution in Musical Esthetics*, p.xi-xii
[4] Harvey, Jonathan: 1975, p.13
[5] Harvey, Jonathan: 1975, p.23

> It is certain that no means of musical control could have been established over electronic material had it not been for the revolutionary thought of Anton Webern.[6]

Indeed, the second volume is devoted entirely to the life and work of this deserving composer. Much of elektronische Musik's compositional fundamental principles take Webern's techniques of serial composition, as opposed to 'pure' dodecaphony, and the perceived consummation of the twelve-note system as its starting point and its point of departure from musical tradition. Cornelius Cardew comments thus:

> When the Darmstadt Summer School for New Music was founded after the war its claimed intention was to reinstate and develop that music which had suffered persecution at the hands of the Nazis.... Darmstadt propagated the so-called Second Viennese School – Schönberg, Berg and Webern – and offered encouragement to young composers – Boulez, Stockhausen and Nono became the leading names – to proceed further along the road of serial music.[7]

The extent to which the German pioneers of electronic music gave credence to the concept that their milieu's birth appeared to seminally spring from Webern's death is particularly well documented through their writings, not least the various volumes of *die Reihe*, and that they confer upon him a high degree of hagiography is not only apparent but equally unsurprising. Stockhausen writes:

> ... and once we have begun to realise that we are not fallen from the sky, but are irrevocably tied to *our* – not any other – tradition, then we recognise that it is Webern who has pointed most emphatically to the future.... Thus Webern becomes a yardstick: no composer can with a clear conscience be active, now or in the future, below the level of this music's language, and ignorance is no excuse.[8]

Several eminent commentators on the progress of musical history have noted the timing of certain occurrences taking place at apparently fortuitous moments, the implications being that coincidence is too convenient a phenomenon for such events. Note Eimert's opinions of the invention of the electrical valve in this first volume of *die Reihe*:

> The invention of the valve in 1906 marks the beginning of the development of the phenomenon of electronic music, though naturally the invention had nothing to do with music. It is a coincidence, yet in a higher sense perhaps no coincidence, that at this very time Busoni and Schoenberg were first interesting

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[6] Eimert, Herbert: 1958, p.6
[7] Cardew, Cornelius: 1974, p.114 (notes)
[8] Stockhausen, Karlheinz: 1959, p.38

> themselves in the idea of an 'uninterrupted continuity' of musical material, thus touching the limits of instrumental technique.[9]

No doubt myriad composers have seen themselves, as, for example, Stravinsky publicly did, as a conduit of the creative energy of a 'higher sense' and Eimert obviously alludes to this here though he wisely and deferentially allows himself to leave his options open. Jonathan Harvey has more recently taken this concept a step further when he postulates that contemporary, or 'modern,' music has emerged because of the fact that the human race is ready for it.[10] This, I believe, is too important and significant an abstraction, especially in a survey of electroacoustic music, as to not discuss further, but I will do so later. But here we have, at the end of the Second World War, the spiritual and social conditions to engender the desire for real change, the necessary technical means perfected literally in battle to effect the means for a musical revolution, the ideological banner to be fervently taken up and the intellectually and musically equipped personnel to see the work consummated.

What is perfectly clear, though, is that, even if we only consider the two schools in Cologne and Paris, the elements of electronic music found their incubation in radio. This has a more than passing significance on this discussion to find the heart of electroacoustic music. Eimert's language is of one immersed in the subterranean world of the radio studio. Consider this from the same passage in *die Reihe*:

> The normal studio technique of broadcasting is transformed into a compositional means. Tape recorder and loud-speaker are no longer 'passive' transmitters: they become active factors in the preparation of the tape. This is the essential secret of electro-musical technique. One might say that today we have perfected a 'keyboard' of this elaborate and differentiated sphere of radio transmission; now we lack only the virtuosi to master it.[11]

This notion of transformation is perhaps the crux of electroacoustic technique but in itself, of course, nothing new. However, David Keane points out that

> Einstein demonstrated that the essential process in the universe is transformation. It follows that the act of making art is not the process of creation but rather a process of transformation.[12]

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[9] Eimert, Herbert: 1958, p.2
[10] Harvey, Jonathan, 1980, p.700
[11] Eimert, Herbert: 1958, p.3
[12] Keane, David, 1981, p. 518

And what all the electronic pioneers effected was a realisation that the technology and techniques of the radio studio particularly were the means by which they could realise the new musical ideologies presenting themselves as the old order began grind to a halt and fade away. Coincidence? Perhaps. The departure point between the two schools lay in the mode of transformation. What is conspicuously missing, of course, from Eimert's article in the first edition of *die Reihe* is any acknowledgement of other developments elsewhere in the field of electronic music. This is because to the Cologne group were vehemently opposed to the work being undertaken in Paris. They were fully of the opinion that theirs was the true way. Eimert himself, however, makes no reference to this in the first volume of *die Reihe*, and this is delegated to his lieutenant, HH Stuckenschmidt, in the subsequent article, to take up the argument thus:

> As a spokesman for the group, Eimert has repeatedly drawn attention to the creative possibilities of electronically generated sound, but has disassociated himself from the 'fashionable and surrealistic' Musique Concrète produced at the Club d'Essai in Paris, and any incidental manipulations or distortions haphazardly put together for radio, film or theatre music. He is opposed to all metaphorical synaesthetic interpretation – that is, he is opposed to the idea of composition and interpretation by association and reference.
>
> Aesthetic understanding of the new art is not facilitated by this attitude. It cannot be denied that this associative effect, which the initiator denies as being of any relevance, has been the principal reaction of the majority of listeners faced for the first time with electronic music. There appears to be a discrepancy between postulation and reception, a discrepancy which must lie in the very nature of the new art form.[13]

Stockhausen himself benefited greatly from Schaeffer's ideologies, facilities and early experiments although he probably experienced as much frustration as erudition in Paris. He may have left France knowing that musique concrète assuredly did not hold the key to what he wanted to achieve and work on but any certainty of purpose Stockhausen may have felt must, it seems to me, have emerged only from his time spent in close proximity to it. Another aspect of Stockhausen's 'French connection' has earlier been identified in his studies with Messiaen, for whom he had great respect. Additionally Stockhausen studied and worked with Schaeffer himself; Harvey has suggested the influence of Schaeffer on Stockhausen's Gruppen of 1957.[14] However, in November 1958, Stockhausen gave several lectures in American universities, the texts of which formed the article originally printed in the 1959 German edition of *die Reihe* in which he states:

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[13] Stuckenschmidt, HH: 1958, p.11
[14] Harvey, Jonathan: 1975, p.55

> In general, one can recognise a first criterion for the quality of an electronic composition by hearing the degree to which it is free from all instrumental or other auditive associations. Such associations divert the listener's comprehension from the self-evidence of the sound-world presented to him because he thinks of bells, organs, birds or faucets. Associations are formed by our own experiences and can be lost again; they tell us nothing about the form of the music or the meaning of the sounds and noises in a particular composition. From this we should conclude that it is best for electronic music just to sound like electronic music, that is, that it should as far as possible contain only sounds and sound-connections which are unique and free of association and which make us feel we have never heard them before.[15]

Such passages required little expository interpretation as it is self-evident that Stockhausen is unequivocally of the opinion that the true quality and worth of a piece of electronic music is directly linked to its real-world associative properties and that this is a major factor when appreciating such works. Two paragraphs later in the same article, and hence the same lecture, he quotes the example of Ligeti's Artikulation and the fact that at each playing of this piece there are three occasions when the audience is moved to laughter because of the "unusual sound-connections." This, of course, was not a rare or unusual response to much of the electronic, and non-electronic, pieces being played at this time and one with which Stockhausen himself was certainly not unfamiliar. He additionally states that "during the realisation of this [Ligeti] piece, the composer and his collaborators also laughed" and continues by citing John Cage as another example of such a phenomenon. Is Stockhausen applauding or decrying these pieces? Is he citing them as examples of bad compositional practice? Is he advocating that composers should play absolutely safe and only present works that have no possibility of encouraging reactions other than stony-faced reception, even though the composers themselves have reacted in the same way and so publish works expecting audiences to do likewise? Is he afraid of any entertainment or enjoyment value being placed on his work? Or is he simply making a statement in favour of his own music? Such attitudes only serve to reinforce the perception of Stockhausen as a 'serious', 'cerebral' composer.

What was also prevalent in the works of many composers at this time was the (further) duality of at once bringing all aspects of musical performance under control and additionally allowing the music through formulaic processes to achieve a dynamic of its own. All this becomes achievable and in fact holds the potential to bring music to its (perceived) zenith through serialism to those serialist ideologues. The compositional

processes are bound by strict determinants, the only similarities with traditional processes being the formulation of the determinants themselves, that is, the composition of the tone row and any manipulations involved: inversion, retrogradation, transposition and so on. What Webern and Messiaen famously achieved in their work was, of course, the extending of the serial technique to parameters outside the tonal sphere and applied them to factors previously left to either assumed expectation or interpretation. The level of overall control, however, becomes increasingly diminished in the light of cognition of parameters previously outside the control of the creator-composer, that is, the role that had hitherto been expected of the performer-interpreter. One of the basic tenets of traditional western art music is that the composer, having once composed, consigns the creation to the vagaries of the performer in whose hands its eventual fate is largely entrusted. When the concept of composing strictly defined parameters and variants of not only pitch, duration and dynamics, but also those of timbre, intensity and spatial aspects, then the role of the performer, and his or her relationship with the composer and the work, becomes redefined. The preoccupation with the complete control of all aspects of the sonic content led to pieces having degrees of intensity, dynamic, note length and pitch correlating to the determinant tone row. In works written for instrumental ensemble there may be problems as to what this actually relates in terms of the timbral qualities of widely differing instrumental groups but at the very least the spirit of the piece can be realised effectively. Clearly human performers were never going to be accurate enough for the demands of this new music where the different notes of certain chords were simultaneously given varying levels of intensity. Electronics, on the other hand, provided the potential for infinite parametric variation and ultimate levels of control and were of course to prove to be the solution. Stuckenschmidt affirms this in his section of *die Reihe*:

> It need hardly be expressed that we are not [here] concerned with the works for the Trautonium or the Ondes Martenot concert instruments, but with music conceived purely for the electronic sound generator and which for its realisation does not require, indeed excludes, human interpreters.[16]

The Trautonium the Ondes Martenot were electronic instruments that had too many references to the traditional past for the elektronische Musik group despite the fact that the Ondes Martenot had been extensively utilised in music by Varèse, Messiaen and others. (It is interesting to note here, though, that the Theremin is not included in the list; perhaps its innovative approach to its mode of playing, that is, without a keyboard,

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[15] Stockhausen, Karlheinz: 1961, p.62

affords it passing nod of approval.) Much more importantly Stuckenschmidt mentions the true definition of elektronische Musik: music produced on electronic sound generators only, this being their justification of their rejection of other modes of electronic music.

Gredinger, though, points out an aspect of Webern's music that became the reason why he was held in such high esteem among the Darmstadt group. He declares Webern's innovations in terms of relationships within the elements and structures of the compositional process.

> Webern is a twelve-note composer, but that is only of secondary importance. For him the important thing was the relationship of intervals. Fundamentally there is no great difference in the manner of composition between those of his works written before 1912 and his later twelve-note compositions.[17]

These relationships were, of course, based on mathematical principles and in common with the apparent growth of scientific activity, perhaps as kind of penitential attempt to turn the second world war's science of destruction into that which was going to benefit mankind, many artists were swept up with the idea of technology and complexity.

> The status of technology and rationality was high, 'irrational' was a dirty word, and composers saw the imposition of externally-conceived patterns on to the music as something not only *new* (previous composers having been too fearful of the 'paper-music!' accusation), but *permissible* in aesthetic society.[18]

These accusations of 'paper-music and its reliance on rationality and technology against electronic music in general and elektronische Musik in particular would be heard for a long time and with some justification. What preoccupied many composers such as Stockhausen, Boulez and Goeyvaerts was the concept of allowing music, once it has been given its elemental form, to create its own life-force and carve out its own 'destiny' through the "imposition of externally-conceived patterns." Total serialism was an obvious candidate for such a method for the pursuit of such a goal, in the same way that the later chance writing of Cage and the algorithms of Goeyvaerts's were a way of exploring automatic methods of composition (but with huge foundational and philosophical differences). Why not devise and array relatively loose initial parameters and let the outcome of a piece be determined by the 'forces' which cause a die to fall

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[16] Stuckenschmidt, HH: 1958, p.11
[17] Gredinger, Paul: 1958, p.40
[18] Harvey, Jonathan: 1975, p.13

on a particular number, or even the vagaries of nature itself? What better way of embracing the principles which govern the universe and harnessing them to create music than to formalise the methods of that music making along the lines of terrestrial mathematical equivalents? To go even further would be to allow, through this automatic mode of creation, the spiritual dynamic of the piece to emanate. Paul Griffiths states that

> ... what exhilarated Stockhausen and Goeyvaerts was the spiritual dimension of their work: the possibility of liberating , more than creating, sound structures which would have nothing human in their composition which would be images of the divine unity.[19]

Once again we encounter the notion of 'liberation' with regard to new music but not, I suspect, in a way which Varèse would have approved of. Stockhausen's view of liberation lay in the concept of total serialism – the idea that the fundamental principles on which music itself found its existence should be the ones to determine that existence.

Stockhausen's main priority, however, was that of re-establishing the Webernian aim of achieving total unity and proportion through total serialism, that is, every aspect of the creative and listening experience being one which is governed by the same laws and ratios. Stockhausen had been interested in the work of Helmholtz and Fourier. They had suggested that any sound was an amalgam of constituent elements of sine waves - pure frequencies in that they have no overtones. This Stockhausen believed he had affirmed through his work in Paris on instrumental sounds. If this was the case, because the quality of any sound was determined by the overtone structure, then timbres could be constructed by adding further sine waves to a fundamental tone according to any ratio or determining numerical set. This led to the possibility that, just as chromaticism can be applied to tones, then the same chromaticism can be applied not only to rhythm and dynamics, as it already had, but to the timbral qualities of the sound itself. This could only be achieved electronically. Stockhausen turned his energies to this during 1952 while still in Paris in what was intended to be his first electronic *Etüde*, a study in synthesis, but found that Paris lacked the necessary equipment to realise his experiments effectively. Here is Niall O'Loughlin's account of the gestation of, as he spells it, *Étude* and very well sheds light on the tensions that

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[19] Griffiths, Paul: 1995, p.32

were emerging between the aspirations and directions Stockhausen and Schaeffer were anticipating for their differing strands of electronic music:

> The resulting work from the last months of 1952 was *Étude*, barely tree minutes long. That it did not impress Schaeffer is not surprising. It is true that Stockhausen used many of the techniques of *musique concrète*: many copies of the original sound were made from which the attack was cut off, and many pitches were spliced together to form tape loops and there [sic] were transposed to different pitches. The composer, however, kept to his single sound source, analysing it minutely. It is this that must have worried Schaeffer, who aimed to use a multiplicity of sounds, whereas Stockhausen had used only one. Schaeffer's advice fell on deaf ears, while Stockhausen was embarrassed by the richness of Schaeffer's sound palette. The younger man had also by this time been experimenting with a sine-tone frequency generator in the Paris studio, an action that would have alienated Schaeffer even further. Despite the fact that technically the studio was not of the type that Stockhausen wanted, future development for him was now clear. What was also apparent was the parting of the ways, at least for the time being, of *musique concrète* and what was to become electronic music. Stockhausen wanted to devise a new approach to a new kind of music. The opportunity came for him June 1953, the month after the new electronic studio of the West Deutscher Rundfunk in Cologne opened.[20]

Stockhausen moved on from here by turning his attention to conceiving an electronic piece of musique concrète using the sounds of a prepared piano. His aspirations were only realised when he returned to Cologne and started to work on the *Studie I* at the West German radio station where the facilities to allow his theories to coalesce were found. Every aspect of the sonic construction of this piece is ordained by a six-element series. The sine tone frequencies, the number of sine tones in each sound, the duration of silences, the dynamic changes (in themselves sinusoidal in nature) and the intensities all bear proportional relationships in connection with the determining series. Things happen in fixed proportion after the manner of Messiaen's *Mode de valeurs*: the lower the pitch the shorter the note, dynamics in 4db steps and so on though there seems to be no such application to the 'envelopes' of the sounds – the attack and decay qualities. Unfortunately, what should have been a creation of perfect balance, harmonization (in the spiritual sense) and structural perfection became a disappointing example of concept over perception. Stockhausen had established a restricted order of intervals to work with and as Jonathan Harvey observes:

> The limitation of intervals to major thirds, minor sixths and minor tenths makes for a rather monotonous piece. It is a case of elaborate systemisation being

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[20] O'Loughlin, Niall: 1994, p.86

> used to achieve something that fantasy could have done much better in half the time.[21]

In the following year, 1954, Stockhausen set about the task of using the lessons learned in *Studie I* and moving on from them to produce *Studie II*. He still chooses to use a restricted palette from which to work in order, as Harvey asserts, to proceed "to cover it totally, to use up all the possibilities that imagination considers worth while...."[22] *Studie II* is made up from 81 sine tones with pitches that stretch over seven octaves, each interval equating to between ½ and ¾ of a whole tone. The number 5 plays an important part in the determination of chordal elements and types and there are five sections to whole work. There is no sense of the octave – the lowest frequency of 100Hz does not have whole number relationships with any of the other frequencies; in fact, no frequency has a whole number relationship with any other. It is interesting to note that in *Studie II* Stockhausen enhances the sounds with envelope characteristics as shown in the score, the first electronic example, where the upper part is devoted to the graphic use of squares representing the blending of frequencies through time, in this case time as represented by tape speed. The lower part represents the attack and release intensities of the frequencies in terms of loudness through time, which combine to give the piece an enhanced sense of momentum. From a listening point of view this is important. The attack characteristic of a sound has now been found to contain almost totally within itself the idiosyncrasies of the whole sound. The attack envelope defines the subsequent analysis of that received sound in such a way that even if the waveform used is not that of a particular sound, the ear perceives it as such from the initial part of the waveform. In other words, as shown aesthetically in the differences between *Studie I* and *Studie II*, the human cognitive and receptive faculties make value judgements on the sounds being listened to dependent on its start.

Also Harvey has pointed out that where the spacing of the chords is quite sparse, the resulting overall effect is one of a "'near-harmonious' lack of dissonance. Stockhausen uses this scale from dissonance approaching 'noise' to 'near-harmoniousness' to great effect"[23] establishing an almost traditional use of dissonance-consonance tension, in utilisation, perhaps, more than in consummate effect. Most interesting of all, however, is that Stockhausen did not end with the completion of the technical aspect of the work, that is, the completion of the spliced tape itself. Once the tape was finished he then

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[21] Harvey, Jonathan: 1975, P.25
[22] Harvey, Jonathan: 1975, P.25
[23] Harvey, Jonathan: 1975, P.28

subjected it to a re-recording in a resonant space. This materialized as one of the unwanted by-products of the elektronische Musik technique. Robert P. Morgan observes:

> Advantages of precision and complete control were offset by the timbral poverty of the sounds that could be achieved with techniques and equipment then available. The "dead" studio quality characteristics of pure electronic music troubled composers and listeners alike.[24]

At this point Stockhausen begins to walk towards Schaefferian territory which would be wholly unremarkable were it not for the fact that the point of departure between the Cologne and Paris groups was the mode of generation of the raw materials of their craft. The Cologne group of composers believed that the only true electronic media were to be found in the internal workings of electronic sound generators and that the use of recorded material was inadmissible. Stockhausen, in using the technique of re-recording the generated tape presumably by playing the original tape through loudspeakers and capturing the result through a microphone to another tape machine to address some of the deficiencies of *Studie I* is reaping some of the fruits of his time in France. More pertinent is the fact that one of the defining separations between the Paris and Cologne groups is that the microphone is the instrument of *musique concrète*, not *elektronische Musik* in that it is the conveyor to the storage medium, tape, of 'real' sounds as opposed to electronically produced ones. This exercise was, of course, a composer's natural response to an aesthetic problem of a deficiency with the original tape before re-recording. I have little doubt also that had the technology had been available to Stockhausen he would have preferentially used an electronic means of infusing the finished work with a sense of space rather than the real-time method used. This was evidently an issue being confronted by the Darmstadt group during the middle 1950s. Eimert writes:

> The stereophonic distribution of sound transmitters is a further element of the form of electronic music. The various loudspeaker systems around the hall are the 'concerting instruments'- a concept similar to the distribution of orchestral and choral forces in church or concert hall. This special dimension is incorporated into the very plan of the composition.[25]

Here, Eimert seems to assert that the technical quality of the loudspeaker system used to convey the music in combination with the space in which those loudspeakers are

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[24] Morgan, Robert P: 1991, p.466
[25] Eimert, Herbert: 1958, 1958

placed are considerations to be taken in to account in the overall compositional process. Stockhausen takes the lessons learned in the production of *Studie I* and *Studie II* and begins to apply them to his next electronic work *Gesang der Jünglinge* of 1955-1956, a work originally intended to be performed in Cologne cathedral. Space and the effects of space become an important factor in the creative process. As the process of creating the two Studien had shown, sounds emanating from the confines of electronic circuitry without the beneficial effects of the ambient space, which we humans take largely for granted, become sterile and uninteresting. This 'special dimension' is used to good effect in *Gesang der Jünglinge* which employs multiple tape tracks separately reproduced through individual loudspeakers, or banks of loudspeakers[26], located around the listening space, a concept Stockhausen was also exploring in *Gruppen* for three orchestras. The effect, achieved in *Gesang der Jünglinge* by re-recording the original tape back on to tape through microphones situated around a rotating loudspeaker, gives the illusion of the audience being surrounded or immersed in the sound, and of course the listening space is affected by their presence, "in this way the listeners are, as it were, enclosed within the sound polyphony of the composition."[27] I do find it interesting that Stockhausen is imprinting the tape with spatial characteristics as well as or instead of allowing the space where it performed or listened to in order to lend its own identity to the sounds. The fact, though, that Stockhausen was preparing a single channel version and eventually a stereo version indicates that the 'special dimension' of at least this work was perhaps not special enough for the work only to be presented in a cathedral-type space. Presumably compromises were tolerated for the sake of a mass audience via radio.

Gesang der Jünglinge represents some new thinking and exploration on Stockhausen's part. First of all, it is the first composition that may be viewed by both the *musique concrète* and *elektronische Musik* factions separately and each recognise their own craft and ideologies in it. Again, this superficially becomes incongruous in the light of Eimert's and the other Darmstadt group's antipathy to *musique concrète.* Stockhausen infuses certain methodologies into his own without allowing any fundamental concrescence of ideologies. Emmerson has clearly points out that, as with the mutual utilization of the microphone, "it is a gross simplification to imply that Stockhausen's Gesang der Jünglinge, in using the recording of a boy's voice as part of the material,

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[26] Stockhausen cites six channels in *Actualia* (1958, p.51, Paul Griffiths talks of five being reduced to four (1995 p.86). This, though becomes largely immaterial in the light that Stockhausen then goes on the explain in *Actualia* that a single channel version was produced for radio transmission while anticipating 'the technique of stereophonic sound.' (1958, p.51)

broke the barriers between the two [Paris and Cologne] groups. The differences between the two approaches were fundamentally between the abstract and the abstracted approaches to syntax."[28]

Stockhausen uses his article 'Actualia' in the first volume of *die Reihe* (Stockhausen, 1955) to explain *Gesang der Jünglinge*, and does so without mentioning the title of the piece being discussed, a method which Paul Griffiths (Griffiths 1995, p.86) suggests is designed, Boulez-like, to convey a sense of authoritative objectivity. In 1955, the year *Gesang der Jünglinge* and the first volume of *die Reihe* were written, Stockhausen was mid-way through a period of attending the lectures of the physicist and phoneticist Werner Meyer-Eppler at Bonn University. These were to have a profound impact on Stockhausen, not only for devising the means of concretising the ideas behind *Gesang der Jünglinge*, but also, as Harvey says,

> ... the 'unscientific' aleatoric element in Stockhausen's music he claims to have derived directly from studies of statistics, random structures, the aleatory behaviour of noise structures and other scientific disciplines in Professor Werner Meyer-Eppler's seminars.[29]

And later writes:

> [Stockhausen] started his studies with Professor Meyer-Eppler in 1954, and it seems highly likely that this gentleman was the main catalyst of these radical developments in Stockhausen's thought, not only in the 'time' theory, but also Stockhausen's increasing preoccupation with information theory.[30]

Also, commenting on Gesang der Jünglinge, Paul Griffiths explains these "radical developments in Stockhausen's thought" in direct relation to Meyer-Eppler's lectures.

> [Stockhausen] needed 'to arrange everything separate in to as smooth a continuum as possible, and then to extricate the diversities from this continuum and compose with them',[31] and he found the way to do that through attending, between 1954 and 1956, classes in phonetics and information theory given at Bonn University by Werner Meyer-Eppler.[32]

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[27] Stockhausen, Karlheinz: 1958, p.51
[28] Emmerson, Simon: 1986, p.39
[29] Harvey, Jonathan: 1975, P.13
[30] Harvey, Jonathan: 1975, P.30
[31] Stockhausen, Karlheinz: 1964, p.58
[32] Griffiths, Paul: 1995, p.85

We are possibly seeing in *Gesang der Jünglinge* the gestation of theories Stockhausen was to put in to more detailed use a few years later, that of the natural progression, that is, as found in nature, of the linear phenomenon of development from elemental particles to summative cognition. Here he is exploring the phenomenon of language in that certain sounds or 'phones'[33], as the elements of speech, are the means of uniquely identifying the spoken words of that language. Consequently complete linguistic understanding is achieved through the combination of those phones, some of which may be very much alike and others completely different. As Stockhausen himself explains in *Actualia*:

> Every phone is characterised by a fixed number of acoustical properties. Together they constitute its form.... Thus we may consider every sung phone as one permutational resultant of the elements contained within it.... The combination of phones into words and of words into sentences provides the sense of the text.[34]

We are additionally seeing Stockhausen applying himself to the possibilities and problems of constructing acoustically and sonically those phone sounds by the progressive 'synthesis' of sine tones. In this way Stockhausen attempts to mimic the sonic structure of the phones found in the tape recordings of the boy's voice in order to emulate them and to provide those which are not naturally occurring in the tape of the boy's voice to fill in the gaps and so create a progressional series. Additionally, the recording of the boy's voice is not enough in itself. Although such characteristics as timbre, intensity and so on are required to be supplied to the material at source, that is during the recording, Stockhausen envisions more of the singer than is possible in terms of the requested pitch. The results of the mathematical bases of the pitch system become impossible within the confines of the tempered scale method. Stockhausen's solution is to remedy the pitch inconsistencies through manipulation at the material gathering and juxtaposing stage.

> The system of pitch levels which is used requires mixture-scales which combine harmonic, sub-harmonic and chromatic pitch intervals and in which the steps of the scale must be clearly differentiated. These intervals cannot be sung precisely. The singer sings an approximation of the required pitch which is rectified only in the course of the actual montage work.[35]

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[33] The smallest uttered components of speech; probably the word 'phoneme' is more commonly used today

[34] Stockhausen, Karlheinz: 1958, p.45

[35] Stockhausen, Karlheinz: 1958, p.47

Stockhausen is here raising the status of the electronic manipulation to that of indispensability. Humanity falls woefully short of the total means of his expression and his only recourse is to 'rectify' its inadequacies through technological means. This additionally has the dual effect of rendering the recorded source material, unlike in *musique concrète*, unsuitable in its original state.

All available material is subjected to mathematically identical treatment.

> Stockhausen takes a ratio such as 3 : 2 and applies it to two frequency figures, two measured duration figures, two formant region figures (to change the timbre), two loudness figures by a rather more empirical methods based on an intuitive scale of perception (which he explains), and two locations in space – the sound coming from a point intervallically related to the last point around the circle of loudspeakers.[36]

Again, Stockhausen is playing with numbers and using language of numbers in his explanation and justification of the work: words rooted in the term 'permutate' occur some eight times in the first three pages of *Actualia.* Form, then, becomes a series of possibilities, of mathematically ordered 'extraction' of every possible configuration of the raw material. Stockhausen echoes Varèse almost word for word when he states that 'The structure of a work and its material are one and the same thing.'[37] Harvey adds, "and if one is envisaging a continuous time scale which stretches from pitch to rhythm then it is no longer so easy to view composing simply as a matter of arranging in time the possible notes playable by the possible instruments."[38] Form now does in reality take on the nature of the 'paper music' referred to earlier (Harvey, 1975, p.13). This should hardly be seen as any kind of surprise. In the same passage, quoted earlier, Harvey refers to the fact that the "status of technology and rationality was high" and this was, perhaps even more so than today, the age of science and technology. The twelve-tone composers had shown that the future of music lay in the very permutations that Stockhausen was now perfecting through the previously unavailable medium of electronics. It should be no surprise either that Webern is used as the justification of such methods but I tend to agree with Harvey, especially in light of the fact that Stockhausen was influenced so profoundly by the *Mode de valeurs et d'intensitiés*, when he writes:

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[36] Harvey, Jonathan: 1975, P.79
[37] Stockhausen, Karlheinz: 1958, p. 51
[38] Harvey, Jonathan: 1975, P.78

> Messiaen was father to mathematics in music in a way that the more usually quoted Webern (more obviously 'modern') never was.[39]

I do, however, find it difficult to accept the finality of the word 'never' in the above quote. I readily accept that Webern has more easily attracted the status of modernity, and consequently, by implication, justified or not, notoriety, more than Messiaen and as a result fits more easily in to the mould of reactionary inspiration for young contemporary composers. This, though, is more likely to be the consequence of post-war contemporary musical politics than a reflection of the truth, Webern, of course, being perfectly capable of claiming a part in the digitisation of musical thought.

Central to Stockhausen's rationale of *Gesang der Jünglinge* is the concept that the recording of the boy's voice represents abstract, 'neutral' sounds as raw material for manipulation. It seems to have been important to him to attempt to disassociate the sounds from any discernible linguistic meaning.

> Sung speech phones are, in part of their structure, more differentiated than any sound utilised in composition up to this time. The combination of the given phones and the composed electronic sounds should be quite natural.
>
> Only by 'objectivising' the sung speech phones, i.e. subjecting them to an artificial process and thus bringing them within the sphere of electronic sounds can this be achieved.[40]

And later:

> The elements we have chosen do not amount to more than neutral material; they are differentiated only because of the different ways in which they have been selected.[41]

It is evident from the above that the electronically composed sounds were to be the dominant ingredient and the recording of the boy's voice a kind of phonetic framework on which to base his experimental use of the layering of tones to synthetically produce vowel sounds. It also, of course, acts as means of comparison as to whether he has been successful. This insistence on the ascendancy of the electronic material over the recorded is, I suspect, to offset Stockhausen's use of real-world subject matter in the manner of *musique concrète* and thereby avoiding contravening Eimert's maxim of the rejection of employing 'associative' material. By attempting to reduce the sounds of the

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[39] Harvey, Jonathan: 1975, P.18
[40] Stockhausen, Karlheinz: 1958, p.45

boy's voice to little more than pure sounds it then brings them in to the alien world of the electronic. Unfortunately, Stockhausen has not, in my opinion, accomplished this. Unintelligible, at best for the most part, the sounds may be from a cognitive linguistic point of view, but it is always, and always is perceived to be, unmistakably a boy's voice. The work is, in my estimation, better for it. However, Stockhausen himself affirms that the occasional confluence of certain elements of the sung material results in it achieving a level of cognisance.

What becomes far more effective is the complete integration of the chosen sonic material. Stockhausen's emergent theories of continuity, of one element exponentially being transformed in to another, begin to achieve fruition here. What at first appears to be one thing transforms itself in to something else with some efficacy. As Harvey puts it:

> At those moments where one realises that a sound one had initially thought of as a vocal one turns out to be an electronic one, and *vice versa*, the unity of two contrasting elements is apparent, and apparently submitted to a higher ordering that transcends the difference between them.[42]

This aura of transcendence and the concept of unity are a key characteristic of this work and were to become important features of Stockhausen's compositional outlook during this creative period. The religious aspect is certainly a pertinent feature, being written at a time when Stockhausen was an adherent of the Catholic faith and before his work and thinking later became more mystical. The Biblical text of the work, despite being fragmented, will have had some significance to German-speaking Christians and the original configuration of multiple enclosures, or banks of enclosures, in the listening space of the Cologne cathedral would have enhanced the otherworldly nature of the experience.

Kontakte of 1959-1960 attempts to carry the work started on the concept of phonetic linearity in *Gesang der Jünglinge* in to the musical sphere by writing for electronic tape, piano and percussion in such a way that they make 'contact' with each other. To many this is a landmark work; Niall O'Loughlin certainly falls under its spell:

> ...Stockahausen's *Kontakte* (composed 1959-60) faced the problems [of the "acceptance of the coexistence of electronic and instrumental music"]

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[41] Stockhausen, Karlheinz: 1958, p.51
[42] Harvey, Jonathan: 1975, P.79

> comprehensively and overcame them with complete conviction. It sums up the composer's experience over the previous decade and has set a standard that has not been surpassed since.[43]

And it was certainly an important work for Stockhausen:

> *Kontakte* was Stockhausen's first live *and* electronic piece, and must therefore be regarded as something of a turning point; for most of the works composed since have employed the two media in one form of combination or another.[44]

But it was not the first work to experiment with the integration of traditional instruments and electronics. Varèse's *Déserts* was performed in Paris in 1954, a piece in which Varèse interpolates orchestral passages, using an orchestra without strings, with prepared tape interludes. 1958-1959 also saw two notable composers working on pieces integrating traditional and electronic sounds: Luciano Berio's *Différences* and Henri Pousseur's *Rimes pour différentes sources sonores*; (it is interesting to note the use of the words '*Différence*' and '*différentes*' in these two titles, giving the impression of accentuating the polarisation of the sound sources used as opposed to Stockhausen's attempts at unity and correspondent relationships). Berio used the rather simple technique of recording the other instruments used in the piece (flute, clarinet, harp, viola and cello), transforming them and having them interact with each other according to the *differences* experienced in the transformations. Pousseur, on the other hand, defined recognisable correlations of rhythm, timbre and attack and interrelated them according to the composer's directions.

Stockhausen's *Kontakte* is again, like *Gesang der Jünglinge*, a work for multiple speaker arrays. This time Stockhausen experimented with sounds being played through a rotating speaker, recorded through four equidistantly placed microphones and then played back through an equal number of speakers to create the effect of the sound moving in a circular motion. Jonty Harrison enthuses about this characteristic of *Kontakte* and observes that, "what is even more significant about the spatial dimension of *Kontakte* is that it is *real* – real movement with real phase information in a real environment, recorded via four microphones and recorded on tape."[45] This task could, of course, be easily achieved today by the use of modern multi-track tape machines but would also mean, as Harrison observes, that the 'space' or ambience of where it was being recorded would be precluded. Two versions of *Kontakte* exist: one for tape alone

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[43] O'Loughlin, Niall: 1994, p.89-90
[44] Harvey, Jonathan: 1975, P.90

and the other, mentioned above, for tape, piano and percussion, although yet a third version exists with further sounds added to the tape in the guise of a theatre piece called *Originale.* This 'open-endedness,' which *Kontakte* shares with *Gesang der Jünglinge*, is reminiscent of the flexibility of the pre-Classical periods when the same piece of music would often be played by differing combinations of instruments even to the extent that the instrument or voice would not be specified. Harvey comments:

> It says much about the 'openness' of these works [based on *Kontakte*] that this is possible; it would certainly be impossible, or inartistic, to do such things with any of the pre-1957 works.[46]

I don't necessarily agree. Although the material of *Gesang der Jünglinge*, completed in 1956, is fixed by the use of the recording of the boy's voice and the electronic sounds on tape, Stockhausen's own treatment of the piece in transforming it in to being output to differing numbers of tracks dependent upon its ultimate 'delivery' or performance shows that there is not necessarily one definitive version of either piece. Of course, unlike in *Kontakte*, which is treated to instrumental and timbral changes, the piece stays the same though diffused differently. Stockhausen himself does not deem it inartistic to modify the end result although this is perhaps more to do with the restrictions of broadcasting media than other considerations. This presages the dilemmas of later composers, including, inevitably, Stockhausen himself, being faced with finding a solution to transferring their multi-speaker diffused works to stereophonic and even monophonic reproduction in order to reach a wider audience through, at first, radio and later, commercial recordings. As with *Gesang der Jünglinge*, Stockhausen uses his analyses of sounds to create a progressive 'scale' where one sound is gradually transformed in to another.

> Just as with the ostensibly awkward mixture of a boy's voice and electronic sound in *Gesang der Jünglinge*, so here, a continuous scale between the two different sounds [by which I assume Harvey means those of instrumental and taped origin] is constructed in order to integrate them.[47]

Additionally, Stockhausen explores the idea of the complete relational correlations of the all the components and aspects of the sounds themselves being used. In his 'The Concept of Unity In Electronic Music'[48] Stockhausen explains the compositional

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[45] Harrison, Jonty: 1998, p.126
[46] Harvey, Jonathan: 1975, P.88
[47] Harvey, Jonathan: 1975, P.88
[48] Stockhausen, Karlheinz: 1962/63, p.39-48.

premises of *Kontakte*. He begins by repeating the four characteristics of electronic composition that are important to him and then subdivides these into four sub-classes.

> Here, I would like to discuss only the correlation of timbre, pitch, intensity, and duration.... Compositionally, in terms of the production and manipulation of sound, these individual sound-properties had to be dealt with separately. But, on the other hand, we perceive a sound event as a homogeneous phenomenon rather than as a composite of four separate properties.... In the preparatory work for my composition *Kontakte*, I found, for the first time, ways to bring all properties under a single control.[49]

Michael Clarke 'revisits' Stockhausen's article and puts it in to the perspective of Stockhausen's serialist heritage and objectives when he writes:

> The desire to bring all aspects of music under unified control was of course the main goal of those composers aspiring towards integral serialism at this time.[50]

It is interesting to note Varèse's view on this subject and the way he highlights the 'impersonal' quality of serialism. Speaking from an American perspective, he related to Gunther Schüller his opinions of Milton Babbitt's compositional methodologies, which also strived for total serialism:

> It seems to me that [Milton Babbitt] wants to exercise maximum control over certain materials, as if he were *above* them. But I want to be *in* the material, part of the acoustical vibration, so to speak.[51]

Obviously the problem of unity and integration was centred on the electronic sounds as the instrumental ones would already have constituted 'known' factors through knowledge of their sounds and playing techniques even if they were regarded as less than adequate for Stockhausen's needs. Stockhausen devised the notion that all the main aspects under his control are constructed from the same root in the same way that paragraphs, phrases, sentences, words and letters are founded in the separate utterances of phonemes as used in *Gesang der Jünglinge*. Thus periodic tonal pulses will be perceived as rhythm, regular or irregular. As the distance between the pulses is reduced, this will result in the spaces between the pulses appearing to gradually disappear and the separate pulses being perceived as a continuous tone that rises in pitch linearly and continuously as the periodicity is increased. Eventually these will take

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[49] Stockhausen, Karlheinz: 1962/63, p.39-40.
[50] Clarke, Michael: 1998, p.222

on the nature of harmonics. In *Kontakte*, Stockhausen gives us the now famous and now familiar passage where the electronic music on tape swoops down in a long glissando arriving at the point where the pulses which make up the sound no longer are perceived as tones but as separate rhythmic pulsations. Clarke writes:

> The one-and-a-half minute segment from 16'56.5" is a striking demonstration of the continuum between pitch and pulse. At the start, accelerated pulses are heard as pitch. The pitch descends in waves, the pulses slowing in speed, until individual pulses can be perceived as discrete events.[52]

In a very real sense this is what Varèse was attempting to achieve, but perhaps for different reasons, in his use of sirens, that is, trying to cut through the constraints of the tempered system. In so doing, both composers are echoing the writings and imaginings of, for example, Busoni that Eimert refers to in the previously quoted extract. The regularity or otherwise of these pulse-elements is a key factor in the quality of the sounds; regular pulses being more 'harmonious' than the more noise-like sounds of irregular pulses. Commenting on Stockhausen's declared deduction "that all differences of acoustic perception can be traced to differences in the temporal structure of sound waves" (Stockhausen 1962, p.40) Clarke writes:

> Intensity, [Stockhausen] argues, results from the density of pulses, timbre is the result of the pattern of pulses within the repeating loop, and noise is caused by irregular, aperiodic, pulse patterns.[53]

Not only does Stockhausen give detailed indications as to the technical aspects of *Kontakte* in his article in Perspectives of New Music of 1962, he also, more pertinent to discovering his appreciation of aesthetic matters, gives explanations of his thoughts on compositional attitudes from which I believe it would be beneficial to quote from at length.

> For most musicians, these considerations may seem specifically related to acoustics rather than to music. Actually, however, a musical composition is no more than a temporal ordering of sound events, just as each sound event in a composition is a temporal ordering of pulses. It is only a question of the point at which composition begins: in composing for instruments whose sounds are predetermined, a composer need not be concerned with these problems. On the other hand, in electronic music, one can either compose each sound directly

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[51] Schuller, Gunther. "Conversation with Varèse." *Perspectives of New Music* 3/2 (1965): p.32-37. Reprinted in Boretz and Cone, eds., *Perspectives on American Composers*, p. 34-39, quoted in Burnand, Jonathan W, 1987, p.29

[52] Clarke, Michael: 1998, p.225

[53] Clarke, Michael: 1998, p.223

> in terms of its wave succession, or, finally, each individual sound wave may be determined in terms of its actual vibration, by an ordering of the succession of pulses.
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> If, in fact, all of the experiential properties of sound could be traced to a single principle of ordering – such temporally composed succession of pulses - compositional thought would have to be radically reoriented. The distinction between the "acoustical prearrangement" *within* the material and "musical ordering" *using* this material would now have to be discarded. The prevailing additive, or "synthetic" compositional procedure, in which the different properties are bound together, would now be expanded through a protogenerative and more unified approach. One would not proceed from sound properties that had already been experienced and then allow these to determine temporal variations; instead, one would compose the temporal arrangements themselves, and discover their resultant sound properties experimentally.[54]

The creator, then, becomes at best coequal with and at worst subservient to the creation and becomes not so much a director of proceedings but more of an explorer, finding out all of the permutations, as I noted earlier, of the possibilities presented by the created sound world. The composer becomes less a master of his or her art so much as, in the first instance, an initiator and then subsequently an observer and enabler of how the creation unfolds. This, I argue, is concomitant not only with the serialist concept of conferring some of the creative processes to the prescribed methods and the material, but additionally with the progressive adoption of non-western philosophies that gained increasing currency through the rejection of traditionally held tenets and ideologies of the west by younger generations. Stockhausen was very well aware that his use of noise as a raw material was a more oriental than occidental technique, a fact, he concedes, together with the almost total lack of a traditionally perceived rhythmic pulse, would make listening to his work difficult for westerners. Perhaps Stockhausen is also proposing that this is how listeners of his music should engage with his work – experimentally. This would also accord with Varèse's views of 'experimental' music when he states that experimentation by the composer ends with the publication or dissemination of the piece, at which point he expects the listeners to begin their own process of experimentation.

It is not difficult to see how Stockhausen gained his reputation, as I stated previously, as a 'serious' or 'cerebral' artist. In 1999 Arnold Whittall published a portrait of Jonathan Harvey based on conversations between them. The following is an extract

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[54] Stockhausen, Karlheinz: 1962/63, p.41-42

from that book in which Harvey gives an 'updated' consideration on Stockhausen. It shows evidence of the greater opportunity for reflection but at the same time seems to contradict some of his earlier opinions about Stockhausen's position with regard to musical history and tradition.

> [Stockhausen] was a composer deep within European tradition, highly emotional, but very scientific, very rational, all at the same time.... Whereas perhaps he was overestimated in those days, now he is very definitely underestimated because the fashion has gone in an opposite direction. But he remains a fascinating model of how to at least make the attempt to bring together the rational, the scientific, the mystical, the intuitive and, let's say, the chaotic. There are many things in Stockhausen which are completely unexplainable except, as he would say, they occurred in one of his dreams. They come from no obvious source.[55]

We should, though, be wary of accusing Stockhausen of complete dogmatism. I believe he learned quite early in his experiments that to be slavishly tied to his own musical ideologies resulted in a degree of aesthetic sterility; hence the willingness to allow the listening processes to dictate the benefits of a certain amount of ambience in his recordings. As Emmerson asserts: "In *Kontakte* Stockhausen moved one small step away from such slavish adherence to the ideal. Heikinheimo has pointed out[56] the interesting discrepancies between the composer's intended section ('moment') lengths and what actually happened in the studio, and it is evident that Stockhausen is making many more individual decisions based on the evidence of the ear."[57] And Harrison attests that *Kontakte*, "an early example of moment-form, only exists in its present shape because the date of the premiere was looming and Stockhausen simply stopped working on it![58].... But it illustrates that, despite the rigour and complexity of its concept, *Kontakte* was evidently assembled by ear, Stockhausen making countless experiments in the studio and selecting only those sonic results which worked perceptually in a structure which evolved in to its present form during the process of composition, rather than being pre-planned."[59] It is, however, often difficult not to conclude that the exhaustive research and experimentation that he did and built his theories and a great deal of his reputation upon occasionally resulted in excess. As Harvey lucidly points out (in 1975):

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[55] Whittall, Arnold: 1999, p.9
[56] Heikinheimo, Seppo: 'The Electronic Music of Karlheinz Stockhausen,' Helsinki: Suomen Musiikkitieteelinen Seura, 1972, p.152, quoted in Emmerson, Simon, 1986, p.26
[57] Emmerson, Simon, 1986, p.26-27
[58] Wörner, K (trans. Bill Hopkins): 1973, 'Stockhausen: Life and Work' (London) quoted in Harrison, Jonty, 1998, p.119
[59] Harrison, Jonty: 1998, p.119

> Stockhausen sees 'a fundamental contradiction between instrumental music and serial music'; he is criticising serial Schoenberg in particular (superficially actually, but that is a long story) and goes on: 'the instrumental sounds' *harmonic scale of perception* was irreconcilably opposed to the *chromatic scale of perception* of the twelve fundamental tones in the octave, whose steps were serially composed'. Therefore, he continues, we must use a *corresponding* mixture in the rhythmic sphere, to make the rhythm 'harmonic' too. Personally, I think this contradiction is more apparent than real, and that the electronic analyst cannot see listeners' wood for his own trees.[60]

Clearly, then, Stockhausen's working methods and rationale have the potential to create a credible gulf between the composer and his audience, a gulf which the Cologne group of composers, to their credit, were aware of and to which they made efforts to minimize. In an article written in 1998 concerning the understanding of electroacoustic music, Giomi and Ligabue affirm this trend:

> In the contemporary music of the late 1950s, a radical change in the language is taking place: it involves both lexicon and syntax, newly achievable with electroacoustic means. Composers seem to take into account the development of a series of strategies to give the listener, disorientated by new timbres and pitch systems, some points of reference in order to understand better their compositions: such strategies are utilised with different means, following diverse aesthetic trends, different musical 'schools' and contrasting ideological approaches.[61]

It is difficult to deny, though, that this vacuum, whatever its dimensions, can still exist and remains as an obstacle for many except those who are, or who compel themselves to be, privy to those methods and the expositions of them. It is also occasionally difficult to view the series, in all its manifestations, as little more than a compositional exercise. It becomes debatable whether the subtleties and intricacies of a row translate themselves effectively in to an auditory aesthetic experience. As with all musical listening, knowledge of its methodologies does not in itself lead to a great appreciation of that work, but what Stockhausen did, I believe, achieve through this early stage of his career is, in common with the mood of the time, to contribute to the greater understanding of sonic world around us and the true nature of sound itself. Self-

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[60] Harvey, Jonathan: 1975, p. 31-32
[61] Giomi, Francesco & Ligabue, Marco: 1998, p. 48

invented, self-appointed and self-referential Stockhausen may well have been, but influential? Certainly.

> More than ever before we have to listen, every day of our lives.[62]

[62] Stockhausen, Karlheinz: 1958, p.50

4

Pierre Schaeffer

> I'm the opposite of the persecuted musician. In fact I don't consider myself a real musician. I'm in the dictionary as a musician. It makes me laugh. (Pierre Schaeffer, 1987)[1]

In 1958 Karlheinz Stockhausen boldly announced that, "electronic music has existed since 1953."[2] This statement only becomes true if we accept the term 'electronic music' as Stockhausen himself wishes to define it. He is, of course, referring to 'pure' electronic music: *elektronische Musik*. 'Pure' electronic music as far as Stockhausen was concerned was the type generated through new but completely electronic means that was the continuation and evolution of the historical instrumental tradition. He is evidently basing the date of 1953 on the opening of the new electronic music studio of the group of composers connected with the *Westdeutscher Rundfunk* in Cologne; and, of course, his own arrival there from his studies in Paris. In this particular context I will leave aside the fact that in his announcement, Stockhausen has at a stroke ignored the work of the head of that studio, Herbert Eimert, who, as we have discussed, as early as 1951 broadcast some the results of the work he and other fellow composers had been

[1] Hodgkinson, Tim: 1987, p.9

involved in during the previous post-war years. More significant to this discussion is that he resolutely disregards the work on electronic music that had been done in Paris under the auspices of Pierre Schaeffer who espoused diametrically opposite ideas and methodologies to Stockhausen and his colleagues in Cologne. As we have seen, this is not unsurprising given the level of tension between the *elektronische Musik* and the *musique concrète* schools of thought. Considering the date of Stockhausen's lecture, 1961, one wonders how Morgan could arrive at his supposition that "by the middle of the 1950s, the sharp division between *musique concrète* and pure electronic music, previously viewed as two distinct methods based on essentially opposed compositional philosophies, had become academic."[3] 'Academic,' yes, but one fears not exclusively so.

As for Schaeffer himself, it is unlikely that he will ever be given a place in the canon of important composer of the twentieth century. He is more likely to be remembered as the thinker, the enabler and the visionary of one of the most important musical movements of modern times. However, the opening quote, although by Schaeffer himself, seems like a self-effacing and self-protecting smokescreen to divert criticisms of his musical credentials. Although he came from a musical background and studied music, he was always aware, and being continually reminded, of the lack of profound musical achievement. This, as much as anything, precipitated his collaboration with established composers such as Pierre Henry. Nevertheless, he will probably be always credited with being the sound engineer who saw the creative possibilities of the new technologies in sound reproduction and dissemination available at the end of the Second World War. Of course, as such, he was a person uniquely placed and invested with the rare, at the time, combination of the necessary musical and technical experience and sensibilities to sustain a movement that facilitated creative music making through the use of contemporary technology. He was an engineer with French radio during the war and formulated his approach to technology as early as 1941 when he devised the notion of *Arts-Relais* or relay-arts. But it was not until 1948 that he was able to put some of ideas in to practice through experimenting with manipulations of 'real-world' sound recordings. The results of these experiments were broadcast on Paris radio in a programme called *Concert de Bruits* on 5th October 1948. In May of that same year, Schaeffer had put together a three-minute work entitled *Étude aux chemins de fer* created from manipulations of recordings made with a shellac disc-

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[2] Stockhausen, Karlheinz: 1961, p.59
[3] Morgan, Robert P: 1991, p.466

cutting recorder in a railway marshalling yard. It is the first example of what Schaeffer was to later call *musique concrète* and was included in the October radio broadcast. Although various composers had experimented with the use of recordings before the war, Varèse, Milhaud and Hindemith (separately) among them, it was Schaeffer who devised the various techniques that were to become the creative methods of *musique concrète*. He played the discs backwards to reverse the sound, filtered the sounds, altered parameters such as pitch and timbre through variations in the disc rotation speed, removed segments of the sound and created more complex multiple sounds from the individual recorded sounds through 'overdubbing'. Put out on air in the *Concert de Bruits* were other pieces that had been created using the similar techniques to those used in composing the *Étude* but using recordings of piano chords (played by Pierre Boulez), saucepans and so on. *Musique concrète* allowed for any sound to be equally appropriate as raw material for manipulation and Schaeffer came to regard these elements as the bases of more complex sound structures and named them 'sound objects' or *objets sonores*. Camilleri notes that, "The use of the term *sound object* is not accidental; it provides a useful definition denoting a more complex event than any single musical element with its properties of frequency, timbre and duration."[4] And Paul Griffiths writes:

> Schaeffer's aim was to use his techniques in order to free his material from its native associations, so that an event could become not just an evocative symbol but a pure 'sound object' amenable to compositional treatment: to have depended on the original associations would have been, in his terms, to create not music but literature, to make a drama of sound effects rather than a musical composition of rhythm and timbres.[5]

Central to Schaeffer's vision was to be able to extract musical significance from what was previously considered to be completely non-musical. This obviously raises questions as to what one bases the sense of 'musical significance.' Palombini comments:

> 'Signification,' as Schaeffer construes it here, means sound source identification, generally associated with the attack transient, which contains in embryo the overall shape of the sound. Hence shape, meaning (by synecdoche) the attack, must be cut off so that relations of matter (and musical form therewith) replace what otherwise would be a succession of literary episodes: a train that leaves, an alarm-clock that rings, a whirligig that plays.[6]

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[4] Camilleri, Lelio: 1993, p.40
[5] Griffiths, Paul: 1995, p.18
[6] Palombini, Carlos: 1998

Schaeffer himself, finding common ground with all electronic means of musical production, wrote the following in 1953 and, in so doing, gives an insight in to his ideas on aesthetic empiricism:

> All call in to question the notion of the instrument. Sound can no longer be characterized by its causal element, it has to be characterized by the effect only. Hence it must be classed according to its particular morphology, rather than according to instrumental provenance. It must be considered in itself. The best proof of this: once the most interesting sonorities produced by the new techniques have been recorded on tape, it is impossible to say how, and by what ensemble of procedures or instruments, they have been produced.[7]

Schaeffer was convinced that electronic musical thought was the future of music, in the same way, of course, that the Cologne group was of identically equal conviction, but through different means. In the following extract, taken from an interview with Tim Hodgkinson, we see illustrated his ideas of the weight of musical history, performance and perception being taken along an esoteric path towards an enlargement of the musical lexicon. He squarely equates the timbral distinctions between musical instruments, well known and consequently distinguished by exposure through performance, to the discrimination of the sonic qualities of extra-musical material.

> In the 17th century people thought of noises as unpleasant – but noises are as well articulated as the words in a dictionary. Opposing this world of sound is the world of music [Schaeffer does not here specify whether this is a natural opposition or one that has been humanly imposed], the world of musical entities, of what I have called 'musical objects.' These occur when sounds bear musical value. Take a sound from whatever source, a note on a violin, a scream, a moan, a creaking door, and there is always this symmetry between the sound basis, which is complex and has numerous characteristics which emerge through a process of comparison with our perception. If you hear a door creak and a cat mew, you can start to compare them – perhaps by duration, or by pitch, or by timbre. Thus while we are used to hearing sounds by reference to their instrumental causes, the sound-producing bodies, we are used to hearing musical sounds for their musical value. We give the same value to sounds emanating from quite different sources. So the process of comparing a cat's mew to a door creak is different from the process of comparing a violin note to a trumpet note, where you might say they have the same pitch and duration but different timbre. This is the symmetry between the world of sound and the world of musical values.[8]

One of the problems of the *musique concrète* approach at this early stage was that it was of necessity, due to the primitive nature of the available equipment, a cumbersome

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[7] Schaeffer, Pierre (ed.): *Vers une musique expérimentale*, La Revue Musicale 236, Paris, Richard-Masse, 1957, p.26, quoted in Palombini, Carlos: 1998(b)
[8] Hodgkinson, Tim: 1987, p.5

and time-consuming activity; a situation that would not be rectified for a couple of years when tape recorders were to become readily available. However, those who were willing to persevere with the equipment found an exciting and rich new sound world to investigate. The 1948 radio broadcast inspired a high level of interest from both the public and the musical community. This led to many young composers visiting Schaeffer's studio and becoming involved with it. One of these, the twenty-year-old Pierre Henry, a pupil of Messiaen, was to prove to be vital to the artistic integrity and long-term worth of the studio and its work. During 1949 and 1950, he and Schaeffer collaborated on the first extended electronic composition, the *Symphonie pour un homme seul* and was premiered at the first public concert of electronic music at the Paris *École Normale de Musique* on 18 March 1950. For this work they collated and combined modified vocal sounds such as speaking, whistling, breathing and laughing and blended them with other transformed sounds such as footsteps and orchestral music to produce eleven short uniquely characteristic movements. As Palombini comments above, one of the major discoveries made by the group at this time was the importance of the 'starting transient' of the sound, which Stockhausen was to experiment with in his *Studie II*. They found that removing the initial part of the sound, also known as the attack, renders the sound unrecognisable. This must have reinforced their resolve to pursue the goal of effectively transforming sounds, through a process of manipulation, to a state of 'purity.' A year after the *École Normale de Musique* concert Schaeffer's studio was formally established as the *Groupe de Musique Concrète* by French radio. This would eventually become the *Groupe de Recherches Musicales* and attracted long-term collaborators such as Luc Ferrari, Iannis Xenakis, Bernard Parmegiani, François-Bernard Mâche and François Bayle, as well as Henry who would always be inextricably linked to the *Groupe*. It was also here that Varèse worked on his orchestra with electronics work, *Déserts*. Other composers such as Messiaen, Boulez and, of course, Stockhausen attached themselves to the studio and its work for a while but eventually left to pursue their own destinies. This was not a happy period for Schaeffer. In 1957 he wrote this vitriolic account of those early days as part of a report on the First International Ten Days of Experimental Music organized by the Groupe de Recherches de Musique Concrète at UNESCO in Paris in June 1953 through which Schaeffer attempted to syncretise some of the various electronic music factions only to become, it seems, completely disillusioned by the event. Schaeffer demonstrated some bitterness about the episode but perhaps it also indicates an equal level of artistic naivety in dealing with his peers. There is, however, perhaps a small indication that by the time of writing the situation was beginning to change to what gave rise to the academicising of the feud referred to by Morgan.

> No sooner had I understood the necessity for musical experimentation, no sooner had I been astounded by the profusion of sonic entities that might pass out of our hands, no sooner had I requested the assistance of those who could help me in this discovery, in this sifting, in this curiosity turned above all to the object, and in this method whereof the empiricism I championed and the allegiance to the finding I treasured, than a party of musicians whose favourite instrument was the slide-rule, and whose musical ideas were rigorously opposed to mine came running.
>
> Of this sometimes stern ordeal, only the meaning is understandable. For two years, in a companionship that had nothing distinctly fraternal about it, the abstracts got down to the concrete, and vice-versa, with a sort of ferocious partisanship, and with mistrust in their emulation. Maybe all this is just starting to make us smile now and, as in any companionship, fraternity is at last arising, but seldom have opposing procedures rubbed shoulders.
>
> From among the thousand sounds in our cupboards, Pierre Boulez and his friends would choose the most unyielding ones, carve their full mass, and show no consideration for anything other than the series they had calculated in advance. Messiaen, whom we had invited to a feast of sounds in which everything – so we had thought – should flatter his gluttony, did not even open our cupboards, but clapped his hands and whispered: 'Something like that, as little sound as possible.' And there even has been that mere nobody, a pupil of J-J Grunewald's who apparently had inherited so little of his master's taste for incarnate music as to ask, with a hint of covetous desire in his eyes, whether we deemed it possible to create a music totally devoid of evolution in tessitura.[9]

It is evident that Schaeffer took the criticisms to heart. In fact he took it quite personally. It seems that despite his situation, and the fact that other experimentalists and composers surrounded him, he identified himself wholly with *musique concrète*, to the point where he was *musique concrète*. In the 1970 interview with Frank J. Malina, Schaeffer comments that "there is an old war between the electronic school of sound and myself because I have always refused to calculate sounds *a priori*."[10] This, of course, was not the only reason for the conflict but one where the German faction believed that Schaeffer was distancing himself too far from the current of musical tradition. But it is interesting how emphatically he personalizes the issue.

Schaeffer's limited contribution to the Groupe's compositional output is self-evident. Art Lange has written that "precisely because he was not a trained musician or composer, Schaeffer was able to work with sounds under unorthodox, non-musical conditions, injecting them with philosophical ideas in the process, while developing many

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[9] Schaeffer, Pierre (ed.): *Vers une musique expérimentale*, La Revue Musicale 236, Paris, Richard-Masse, 1957, p.26, quoted in Palombini, Carlos: 1998(b)
[10] Malina, Frank J & Schaeffer, Pierre: 1972, p. 258

techniques that anticipated subsequent musical practices."[11] This has some fractional truth to it, with which Schaeffer himself would agree in part, but unintentionally damns him with faint praise. It does not give Schaeffer any credit for having much more than passing musical understanding and sensibility. Without this, it is my contention that it would have been difficult for Schaeffer to envisage the creative possibilities of the tools and the instrument of *Arts-Relais*. During the interview with Tim Hodgkinson he outlined that he came "from a family of musicians: my father was a violinist and my mother was a singer. I did study well – theory, piano, cello etc., so I'm not completely untrained."[12] Nevertheless, it is quite difficult to unqualifiedly label him as a composer and he raises no objections when Hodgkinson begins the interview with the statement that Schaeffer is "a writer, a thinker, and a radio sound-engineer. This makes you, from the point of view of 'Music' with a capital 'M' – something of an outsider."[13] This makes it particularly important that, on the one hand, the presence of so many other composers around him and allied to the studio was important and, on the other, possibly why certain musicians took such exception to his methods and ideas. But as Carlos Palombini puts it:

> Having set sails as a sound-effects man at the French Radio, the French intellectual Pierre Schaeffer spent some of the most critical years of Western art music prospecting the mysterious world of sound perception. His target was befitting of a true Enlightenment gentleman: that universal language of music of which Western tradition had lost sight.[14]

Yet once more we observe another example of the serendipitous confluence of situation and circumstance with the personality with the necessary foresight, skills and influence to inaugurate a new chapter in the flow of historical events. Although he makes no direct reference to his own unique contribution to this confluence, Schaeffer, in a 1970 interview with the kinetic artist Frank J. Malina, shows that he was, at least in hindsight, aware of the true nature of the situation.

> For while traditional music was marking time at the end of its development in this century, notably with the work of the serial school, which finally did not know what to do with its notes, a technology coming from elsewhere that had nothing to do with music (the technology of broadcasting was a technology of telecommunication) taught us how to capture sounds and to condition them for another purpose. Sounds were torn out of their ephemeral existence and transferred on to tapes – just like the images that are transferred by the camera on to a support. At this moment, the two manifestations of sound met, the

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[11] Lange, Art: 1998, p.51
[12] Hodgkinson, Tim: 1987, p.4
[13] Hodgkinson, Tim: 1997. p.4
[14] Palombini, Carlos: 1998(a)

> downfall of traditional Western music (for its inspiration had withered) and the sudden arrival of this mass of new sounds. I think that it is the same as what happened with visual art: the meeting of two movements in history. Painters who did non-figurative work may not have been directly influenced by the camera although the camera existed in their time.[15]

And what his adherents must have seen in him was his visionary freshness and vitality with the conviction that his was the way forward and the position and skills to make Paris the centre of a new and radical musical art form one of the foundations of which was to be a Gallic disregard of 'foreign' ideologies. As Schaeffer himself said:

> After the war, in the '45 to '48 period we had driven back the German invasion but we hadn't driven back the invasion of Austrian music, 12-tone music. We had liberated ourselves politically but music was still under an occupying foreign power, the music of the Vienna school.... I was horrified by modern 12-tone music. I said to myself, 'Maybe I can find something different... maybe salvation, liberation, is possible'.... Then, after the impressionists, we have a period of rigour, of barbarity, a period seeking to re-establish something more solid. This is epitomized in the Vienna school. At this point the Vienna school was also inspired by scientific ideas, by a rigour coming from a discipline which wasn't music but an algebraic equation.[16]

These sentiments echo similar ones expressed by Debussy and Satie half a century earlier. One of Schaeffer's protégés, Bernard Parmegiani, said of those early days:

> [Schaeffer] was someone who had a great deal of presence and personality. Whenever he was around he radiated a kind of charm. Some people weren't sensitive to it at all, and could even be hostile, whereas others, like me, were completely taken by him, even though he was a difficult person to work with. He frequently contradicted himself, and sometimes it could be difficult to follow his line of thought. But he was very stimulating, he was definitely a leader.[17]

Schaeffer's compositions of this early period include *Étude Pathétique* in 1948, the same year as the *Étude aux chemins de fer*. In 1949 he composed the *Variations sur une flûte mexicaine* and *Suite pour quatorze instruments* in which the movement entitled '*Rigodon*' is Stravinsky-like neo-classical music treated with distortion. 1950 saw, in addition to the completion of his collaborative work *Symphonie pour un homme seul*, his *L'Oiseau RAI* performed. Unfortunately, these pieces only serve to attest to how much Schaeffer was unable or unwilling to complement his new ideas and techniques with equally radical forms, to consciously break away from traditional compositional attitudes.

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[15] Malina, Frank J & Schaeffer, Pierre: 1972, p. 259
[16] Hodgkinson, 1987, p.4

However much Schaeffer saw his experiments as being part of the continuing advance of musical culture and history, the consequences of his work and ideologies were new and radical enough to warrant completely new philosophical approaches and terminology. As we have seen, not only were neological innovations necessary but also those of compositional attitudes and methodologies. Schaeffer was well aware of the psychosocial impact of electronic music and commented:

> The classical relationship between composition and performance, between authors and instrumentalists, are also fundamentally changed. In the new musics, the composer is often his own performer, and the score is simply a shooting script [using the interesting analogy of cinema which he continues]. The creation is achieved once for all, by means of a different division of responsibilities, which resembles that of the production crews in cinema.
>
> Contact with the public is also different. The concert is no longer a spectacle, at least not in the sense we were used to. The conditions of listening entail new elements, simultaneously physical and physiological, individual and social.[18]

One of the most controversial methods that the 'Concrètists' adopted was an empirical style of composition. This aspect, which the Cologne electronic composers seized on as evidence that *musique concrète* was not a valid musical paradigm, meant that previously unquestioned procedures of composition such as notational or graphical exactitude, internal hearing and imaginative acumen were relegated to the periphery. Intrinsic to this mode of thinking was that if the sound object itself was the most important element of the creative process and this new creativity was wholly based on the centrality of the timbral and textural qualities of the sounds used, then the created object could not, as in the case of *elektronische Musik*, be pre-conceived. Schaeffer felt that an unsuccessful experimentation was preferable to a successful work based on preordained 'mathematical' principles. To this writer this appears to be the logical conclusion of the integration of technology with musical creativity. If, as I have previously discussed, the traditional relationship between the composer and his or her audience is no longer the same as it was due to the redundancy of the interpreter, then the score, for instance, also takes on a commensurate level of obsolescence. Taking Stockhausen's score for his exclusively electronic *Studie II*, as an example, it does not conform to the traditional function of a score as a means of conveying performance instructions for an interpreter to convey the composer's imagination and vision for the piece to an audience. It serves as a justificative academic document for analytical

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[17] Kahzam, Rahma: 1998, p.36
[18] Schaeffer, Pierre (ed.) 1957, p.26-27 in Palombini 1998(b)

purposes. Schaeffer annotates this in a series of "negative propositions" which declare his stance that in fact the preparation of a score was inimical to the compositional process.

> Music, which is all contained in the symbols of solfège, must not take any account of those sonorities which, being too complex and too new, elude such a system of notation and, for this reason, can be neither adequately laid out on a score that is accessible to traditionally trained musicians nor officially registered in the SACEM [*Société des Auteurs, Compositeurs et Éditeurs de Musique*].[19]

Typically, Schaeffer is correctly declaring present and future truths by erroneously attempting to justify them through mores of the past. This duality of vision and purpose, this striving to look forward with new means and purpose while simultaneously perceiving that future in terms of the past, was something that both provoked criticism and exposed an inner tension that Schaeffer would eventually be compelled to reconcile.

The exploratory nature of *musique concrète* means that the sound material that is being worked on is the determinant of the works evolution and progress. To Schaeffer, the direction of a work was not something that could be pre-calculated as the sonic-montage nature of its structure dictated its development. Schaeffer risibly assented to Boulez's description of *musique concrète* methodology as being a case of '*bricolage*,' even though Schaeffer was perfectly well aware that Boulez meant it negatively and critically (see Hodgkinson 1987). Hodgkinson explains that '*bricolage*' is a "French noun [that] has no direct equivalent in English, but is close to the adjective 'makeshift'; and the idea of improvising new uses for things originally meant for something else."[20] But *musique concrète's* very nature coupled with Schaeffer's own musical sensibilities and predilections generated fundamental dilemmas. As Palombini explains:

> When a concrete composer – by which is meant the composer who opts for concrete material – uses his material, the aesthetic results are doomed to be either atonal or surreal. If the result is atonal, the concrete material will be inserting itself within an aesthetic revolution where it does not belong: atonality defines itself in opposition to tonality, which in turn informs and is informed by the instruments of Western musical tradition. If the result is surreal, there will be lack of the abstract dimension, which, for Schaeffer is inseparable from musicality: rather than the music, there is literature.[21]

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[19] Schaeffer, Pierre (ed.) 1957, p.12 in Palombini 1998(b)
[20] Hodgkinson, 1987, p.4-5
[21] Palombini, Carlos: 1998(b)

And literary or pictorial associations, or at least the accusations of association, were the very things Schaeffer and other *musique concrète* composers were trying to avoid. Inevitably, throughout the early period of the *Club d'Essai* Schaeffer had to tolerate and even encourage a variety of compositional compromises for the sake of justification of the tenancy at the *Radiodiffusion-Télévision Française*. In reality this was a situation that never really altered. Schaeffer eventually brought all of the work being undertaken in the studio, and "the establishment of complementary research programmes,"[22] under banner of 'experimental music.' The RTF management who handed to Schaeffer his own studio and eventually the first electroacoustic studio in the world, together with the expectations of a listening public, demanded evidence of their faith in their endeavours – they required *oeuvres*. Thus artistic integrity proffered limited deference to pragmatism. Nevertheless, it is quite possible that this syncretism was a genuine attempt to establish a catholic base for the creation of new music that did not traverse the limits of Schaeffer's own ideology, albeit with full expectation of inevitable and evident benefits to himself. This philanthropy, and the need for those *oeuvres*, was one of the reasons behind the inauguration of the Ten Days. All the more the bitterness, then, when it was rebuffed. After the Ten Days of 1953, Schaeffer absented himself from the *Groupe de Recherces de Musique Concrète*, without actually relinquishing contact with the *Groupe*, and went to North Africa to manage the *Radiodiffusion de la France d'Outre-mer*. On his return to Paris in 1957, he renamed the *Groupe de Recherces de Musique Concrète* the *Groupe de Recherces Musicales*, by which it is known today, withdrawing the term *musique concrète*, "so as to detach himself from its aesthetic connotations."[23] At the same time he classified his work as musical research. Palombini explains this shift of emphasis:

> Schaeffer did not abandon the term 'experimental music', but it lost its syncretic connotations; and the term 'concrete music' was in turn disassociated from the technical procedures of concrete music and thus reappeared... with a more comprehensive meaning. In relation to concrete music, experimental music corresponded to the need to generalize the concrete approach, opening it up to new sounds and techniques, reassessing its principles and defining its method. The creation of concrete pieces had led to the formulation of a number of hypotheses; experimental music implied a shift of priorities: stress was laid on verifying the postulates upon which these pieces were based. However, the method of doing this was still an unknown quantity. Although striving towards the goal of a synthesis, Schaeffer's ideal of experimental music was historically

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[22] Schaeffer, Pierre: *Machines à Communiquer: I. Genèse des simulacres*, Paris Seuil, 1970, p.190 in Palombini 1998
[23] Palombini, Carlos: 1998

> placed amid the concrete/electronic controversy, which lasted from 1950 to 1955.[24]

An important aspect of Schaeffer's work was that it led to the concept of 'acousmatic listening.' This was the conceptualisation of a practice developed, as Schaeffer discovered, by Pythagoras who devised the notion of teaching from behind a curtain encouraging the heightened concentration on the words and the concepts being taught rather than the distractions of the teacher. This abstraction found empathy in the listening expectations of the *Club d'Essai* in that the main objective of their compositions was the severance of the sound from any visual connotation. Schaeffer complained that, "New listeners to concrete music ask me: 'How do you do it?' The question always makes me angry, as I feel it's none of their business!" Schaeffer further explains acousmatic listening thus:

> I am going to tell you a story that proves the importance of the absence of an image connected with sound that will help you understand what I am talking about. A friend, Jerome Peignat, told me that the Greeks knew of this experience and called it *acousmatics* – the study of the meaning of sound and noise when their origin is ignored or unknown. In usual communication, when one hears something, its origin is usually easily verifiable (whether it be a bird singing, a violin playing or someone speaking). Acousmatics was the basis of Pythagoras' teachings. The master had his disciples listen to him without seeing him. Thus, they concentrated on what he said without his person visually distracting them. Vision can, indeed, be a distraction. When I listen to a violin being played, my attention to the gestures of the violinist and to the technical aspects of his instrument for producing sounds – my understanding of the music is affected by what I see. But when I listen to the radio or recordings, I am forced to modify my listening to penetrate the sounds alone. This corresponds, in a way, to reasoning either by deduction or induction. Listening to live orchestral music is essentially deductive listening, it is strongly deduced from vision, whereas listening to the radio is inductive or acousmatic listening.[25]

Despite Schaeffer's use of the radio or recording listening experience appears to be correct and rational, I believe it to be erroneous. Although listening to music without the visual stimulus may appear to adequately explain acousmatics it does only in relation to someone who has no recollective experience of the source of the sounds. Those who have, synaesthetically substitute the visual sensation through imaginative remembrance of times past when they actively experienced those sounds being made. And I believe this is usually not a conscious action – the sounds automatically trigger the imagination. Acousmatics and the inherent problem of mimetic association in *musique concrète* were not only a source of criticism from the Cologne group but also

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[24] Palombini, Carlos: 1998

ones that reverberate today still. Schaeffer's ideal of the true neutrality of the material proved to be hard-won. As Emmerson points out:

> The earlier works of Pierre Schaeffer's group in Paris (most notably Schaeffer's own *Étude aux objets*) stubbornly refuse to relinquish this reference to the real world. The listener is confronted with two conflicting arguments: the more abstract musical discourse (intended by the composer) of interactive sounds and their patterns, and the most cinematic stream of images of real objects being hit, scraped or otherwise set in motion.[26]

Schaeffer advocated that the listener should consciously make the transference from encountering the sounds in their mimetic state to that which has no external references at all. He named this *écoute réduite* (reduced listening). Camilleri describes this as "the disposition of the listener, in virtue of which his attention is focused exclusively on the sound object itself with no reference to the sound causing its production.... The receptive attitude of the listener influences the work of analysis because these properties are not merely associative but are part of the structural potentiality of the electroacoustic medium."[27]

The acousmatic demands of *écoute réduite* in my view, place, initially at least, too many demands on many listeners by expecting and requiring them to deny what is a perfectly natural process of aural recognition. Schaeffer's famous recordings of, for example, trains and saucepans lids will always, on a superficial level, be just that, and the Cologne group's criticisms of this aspect of Schaeffer's and his colleague's work will have more than a little resonance with many listeners and critics. But to dismiss these recordings as merely sound effects, more comfortably associated with radio drama than any kind of concert, radio or otherwise, is to miss the opportunity to question our relationship with our general surroundings and our aural environment in particular. To listen to Schaeffer's music is to be challenged to reappraise that which we have perhaps taken for granted, that which has been so pervasive that we have forgotten its significance and influence. Perhaps Schaeffer did not see himself as a composer, less because that which he created could be questionably regarded as musical composition, more that his work as a composer redefined the meaning of the word and as a result the meaning of the process. Throughout the latter part of the twentieth-century the term 'sound designer' entered the language to describe the work of cinema sound engineers who manipulate the sonic environment of the movie action

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[25] Malina, Frank J: 1972, p.255-256
[26] Emmerson S: 1986, p.18

in order to enhance the dramatic effect. This, of course, is another example of a term being adopted by practitioners of a craft that had been in existence for some time but under a less sophisticated nomenclature, but many who took that description for themselves were fully aware of Schaeffer's legacy to their work. As such perhaps we should consider Schaeffer as the first sound designer. It seems to me to be fairly safe to assume that he would certainly not have objected to being remembered as a sound sculptor and that we should associate all the connotations of radical working practices with that phrase.

That Schaeffer should gradually turn away from composition and devote himself to research could perhaps be viewed as inevitable. That he should come in later life to not quite so much disown *musique concrète* as to lament the 'barbarous' way in which those who came to adopt and used it is perhaps and aspect very pertinent to the further appreciation of *musique concrète.* Illustratively, in Hodgkinson's interview, Schaeffer is asked his opinions on rock music. Although he is discussing a genre of music that has commercially adopted, but transmuted, many of Schaeffer's original ideas and concepts of sounds as raw material, I believe he is additionally including similar approaches to his art in other genres and comparing them to his ideal of musical perfection. He says, "What strikes me is the violence of the sounds, a violence which seems to be designed to reach not only the ear but also the gut. In a certain way this seems to function as a drug. Real music is a sublime drug, but you can't really call it a drug because it doesn't brutalise, it elevates."[28] In addition to being its progenitor, he also became its artistic and intellectual champion but appears to have been continually ill at ease with the results of his work, despite his robust defence of *musique concrète* in the face of intense criticism. How much of this was the result of parental pressure and more directly Schaeffer's need for paternal approbation is beyond this study, but it is interesting to note his reference here to his father's comments. His disconsolation seems to be borne out of weariness for all twentieth century music, all forms of which his disappointment appears to be directed. His personal knowledge of ethnic musics of the east and especially of Africa, appear to have led him towards a weariness of the pervasion of technology in the world and that world's lionization of it. One also senses Schaeffer's frustration at his fellow occidental man's inability to change for the better and the inevitability of *plus ça change, plus c'est le même chose.* And despite the fact that *musique concrète* and its inheritances have become some the

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[27] Camilleri, Lelio: 1993 p.41
[28] Hodgkinson, Tim: 1987, p.8

defining musical methodologies of the twentieth century, absorbed in to the mainstream musics of both the classical and popular fields, he has evidently become disillusioned with the outcome of his creation. Schaeffer's interview with Tim Hodgkinson is particularly melancholic. The temptation exists to reprint the majority of the interview, but the following selection serves to illustrate his condition.

> Unfortunately it took me forty years to conclude that nothing is possible outside DoReMi... In other words, I wasted my life...
>
> This coincidence of a music which is debilitated and failing and a glorious, all-conquering science is what really characterizes the 20th century condition...
>
> Many researchers, well understanding the pre-eminent importance of musical value, turned to the physicists. Their values were now frequencies, decibels, harmonic spectra. With electronics they could get direct access to all this and have really precise and objective musical values. But then – another symmetry, this time a really disturbing one. When you build a farcical machine for rumori... you don't hurt a fly, it lasts 10, 20 years – it's circus, quite harmless little sound effects. But when you stick generations of young musicians, as is happening today, in front of [non-commercial, non-populist] synthesizers, where you have one control for the frequency, another for the decibels, another for the harmonic spectrum – then you're really in the shit...
>
> (Pierre Schaeffer) You have to remind musicians of what Dante wrote over the Gates of Hell: Abandon hope all ye who enter here
> (Tim Hodgkinson) But if you stay outside?
> (Pierre Schaeffer) Well then you don't have any music. If you enter, if you want to make music you must abandon hope. Of what? Of making a new music.
> (Tim Hodgkinson) So new music is impossible?
> (Pierre Schaeffer) Yes, a music which is new because it comes from new instruments, new theories, new languages. So what's left? Baroque music.... It will be when our contemporary researchers abandon their ludicrous technologies and systems and 'new' musical languages and realize that there's no way out of traditional music, that we can get down to a baroque music for the 21st century....[29]
>
> (Tim Hodgkinson) So there is nothing essentially relevant in the fact that the world we live in is changing and that we might need to express new or different things about it?
> (Pierre Schaeffer) The answer is that the world doesn't change.
> (Tim Hodgkinson) There is no progress?
> (Pierre Schaeffer) There is no progress. The world changes materially. Science makes advances in technology and understanding. But the world of humanity doesn't change.... Why should a civilization which so misuses its power have, or deserve, a normal music?

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[29] As a note in the text signifies, "In the French language, the term 'baroque' has the meaning 'roughly put together' – as well as the meaning we have in English of that theatrical, excessive, late Renaissance style."

> *Musique concrète* in its work of assembling sound, produces sound-works, sound-structures, but not music. We have to not call music things which are simply sound-structures.... There are many people working with sound. It's often boring, but not necessarily ugly. It contains dynamic and kinaesthetic impressions. But it is not music....
>
> I must say that I do judge these times to be bad times. We seem to be afflicted by ideologies – often, entirely incompatible ones. Thus, the ideology of scientific rigour and at the same time the ideology of chance; ideologies of power, technology, improvisation, facility – technology with which to replace inspiration.
>
> I fought like a demon against electronic music, which was another approach, a systematic approach, when I preferred an experimental approach, actually working directly, empirically with sound. But at the same time, as I defended the music I was working on, I was personally horrified at what I was doing. I felt extremely guilty. As my father, the violinist, used to say, indulgently, What are you up to, my little chap? When are you going to make music? And I used to say – I'm doing what I can, but I can't do that. I was always deeply unhappy at what I was doing. I was happy at overcoming great difficulties – my first difficulties with the turntables when I was working on '*Symphonie pour un homme seul*' – my first difficulties with the tape-recorders when I was doing '*Étude aux objets*' – that was good work, I did what I set out to do – my work on the '*Solfège*' – it's not that I disown everything I did – it was a lot of hard work. But each time I was to experience the disappointment of not arriving at music – I couldn't get to music – what I call music. I think of myself as an explorer struggling to find a way through to the far north, but I wasn't finding a way through.... There is no way through. The way through is behind us.[30]

I leave the last words on Schaeffer and his true achievements to Palombini:

> With *musique concrète* Schaeffer has brought the technical object's concrescence to bear upon the 'problematics' of Western composition. With acousmatic listening he has brought the tape machine in to play as a component of a global rebirth of culture. With the sonic object he has brought listening to recorded sounds into the world of significations. With reduced listening he has brought harkening to sonic things up to date with the poetics of Varèse, Seelsi, Ponge, Freud, Heidegger, Barthes, Lacan, and Calvino. Schaeffer died on 19 August 1995: 'My essential role is to communicate a manner of comprehending, feeling, and acting that may seem, from the outside, terribly personal. In fact I am but a relay myself.'[31/32]

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[30] Hodgkinson, Tim: 1987, p.9
[31] Brunet, Sophie: *Pierre Schaeffer*, Paris: Richard-Masse, 1969, quoted in Palombini, Carlos: 1999
[32] Palombini, Carlos: 1999

5

The Electroacoustic Divide

Although I have already discussed this controversy in the context of the biographical positioning of the main protagonists, Stockhausen, Eimert and Schaeffer, I believe it is valuable to attempt a more objective point of view for the purposes of historicity and appreciative listening. The split that has existed between *elektronische Musik* and *musique concrète* adherents has defined the two methodologies of electronic music as a whole. In order to understand the two types it is necessary to explore a number of questions about them: what defines the distinct differences between them; what points of commonality exist; where do the differing ideologies fit into musical historicity; does the dispute have any contemporary relevance in the twenty-first century? It may be best to consider initially the most palpable evidences of commonality. Despite the fact the *elektronische Musik* would claim that this is a fundamental aspect of their methodology, it is also manifestly apparent that, like *musique concrète*, the medium is disseminated by loudspeakers via electronic circuitry and that this is a resultative characteristic. Nevertheless, differences are what seem to define the two. Deeper differences lie in more fundamental aspects. Jonty Harrison, writing in May 1998, defined the divide thus:

> Among English speakers, the term *musique concrète* has usually been taken to mean only that the sounds used were 'real', recorded from acoustic sources *via* microphone. This definition then affords a convenient historical contrast with *elektronische Musik*, in which the raw material originated inside electrical circuits rather than in the acoustic world of sound waves and air molecules crashing into each other.[1]

This is indeed a convenient contrast and one to which I have referred in the discussion of Stockhausen's productional treatment of *Gesang der Jünglinge*. This definition is evidently not without merit, but despite the fact that it appears to be fundamental to either's justifiability, it is in reality only superficial due to the vagueness of the two faction's awareness of the microphone and its differential use. Harrison has more recently revisited this definition and modified it accordingly. In a paper given in March 2000 that is in essence an adapted version of the 1998 article, he states:

> Among English speakers, the term *musique concrète* – the name given by Schaeffer to the use of sound stored 'on a fixed medium' as the basis of composition – has usually been taken to mean only that the sounds used were 'real', recorded from acoustic sources *via* microphone – a definition which then affords a convenient historical contrast with *elektronische Musik*, which emerged shortly afterwards in Cologne. I would suggest that this is too simplistic a distinction, based on a reading of only the most obvious surface features.[2]

This distinction may appear superficial yet it is also perfectly valid. It must be remembered that originally the *elektronische Musik* group adamantly based their technique on the non-associative sound-producing capabilities of the electron only. Eimert categorically stated that "electronic music is based on the composition of electrically generated sounds made audible by a generator, i.e. recorded on tape without recourse to any instrument or microphone. Electronic music exists only on tape (or on record) and can only be realized in sound by a loudspeaker system."[3] The Cologne group took recourse to the use of the microphone as a direct solution to an aesthetic compositional problem – that of the perceived remoteness of the sound – and thus were compelled to adopt more intuitive and empirical procedures. Schaeffer said, "I truly think that dodecaphonic music is quite independent of the microphone. In fact, I do not recommend that anyone search for historical

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[1] Harrison, Jonty: 1998, p.117
[2] Harrison, Jonty: 2000
[3] Eimert, Herbert: 'What is Electronic Music?' p.2

explanations, as, for example, whether or not the Vienna school was inspired by the microphone."[4]

From the question of the tactility of either methodology springs another contention. Harrison continues his discourse thus:

> In the French-speaking world, however, where access to Schaeffer's writing is (slightly!) easier [a common Harrison theme], it is widely understood that a further dimension of what was 'concrete' was also the working method employed – and, consequently, the relationship between composer and material: as in sculpture or painting where the artist produces the finished product on or in a fixed medium by manipulating the materials (paint, wood, stone) directly, so in *musique concrète* the composer is working *directly with sound.* As Francis Dhomont points out, echoing Schaeffer, the musical process thus moves from '...the concrete (pure sound matter) and proceeds towards the abstract (musical structures) – hence the name *musique concrète* – in reverse of what takes place in instrumental writing, where one starts with concepts (abstract) and ends with a performance (concrete).'[5/6]
>
> This was, effectively, a reversal of everything music had, in recent history, understood itself to be.[7]

The difficulty with this statement is that while it is perfectly true of *musique concrète*, it could easily be argued that this is equally the case, to an extent, of *elektronische Musik*. If we were to take Stockhausen's *Kontake* as an example, much of the work producing the tape element of the piece was constructed by splicing sections of magnetic tape together in to loops in order to 'compose' the electronic pulses and manipulate them (see Stockhausen 1962-1963, pp.40 & 42). In a similar way to the techniques used in *musique concrète* composition, Stockhausen is directly in contact with the sounds and 'sculpting' them. It has been observed that recent attempts to emulate Stockhausen's techniques employed in *Kontakte* using computers has left the results inferior to the original because of the lack of a 'tactile' quality; on the other hand, this may only be another manifestation of the well-worn argument about the merits of the analogue medium over digital. I understand and do not deny the essential ideological differences to this 'hands on' aspect, but my argument is that, as in the question of the use of microphones, the issues here appear to be less distinct than would at first appear or that the commentators and apologists would have us believe. Harrison's last comment above leads us to consider another differential

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[4] Malina, Frank J: 1972, p.258
[5] Dhomont, F. (1995) Rappels acousmatiques/Acousmatic. Contact!, Spring 1995, quoted in Harrison, 1998, p.117
[6] Harrison, Jonty: 1998, p.117

aspect between the two groups: that of the different attitudes towards compositional technique. Those of the Cologne group were fully of the opinion that their principles were based on the clear purpose of continuing the lineage of musical history. His article 'What is Electronic Music' in the first volume of *die Reihe*, is replete with references to this, yet his article in '*Vers une musique expérimental*', edited by Schaeffer, gives probably a clearer indication of this mode of thinking.

> The fact that this system allows the creation of new musical material that cannot be obtained with classical instruments constitutes a true criterion of electronic music. It could be said, in a general formula that does not bind one to anything, that electronic music starts where instrumental music ceases. From a historical point of view, it is not by chance that means of construction today have been pushed to the limits of possibilities of realization, and that, precisely at this moment, the new electronic means become available. [See also Thus, there are doubtless real points of contact, particular connection between traditional and electronic musics. Those complicated rhythmic values that can no longer be played by instrumentalists may be easily represented as length values, that is, in centimetre length. Notwithstanding this, it is equally important to learn how to identify and grasp the immanent laws of matter that govern electronic sounds.[8]

Harrison offers his interpretation thus:

> It should also be stressed that *elektronische Musik* did not depart in any significant way from this 'traditional' model of composition [Dhomont's 'traditional' concept (abstract) to performance (concrete) paradigm].[9]
>
> *Elektronische Musik*...was very much a continuation of traditional (what Dhomont calls 'instrumental') musical thinking. The apparent need for 'objective justification' of musical utterance, through analysis (i.e. 'measurement'), is one of the central creeds of western art music (especially in academia). The high modernist agenda of serialism (in which *elektronische Musik* had its origins) was heir to this tradition and continued the prevailing view that the 'text' of the score was the true representation of the composer's thoughts because it was amenable to an 'out of time' analysis of the distances between musical events: pitch, intervals, rhythmic durations, dynamic levels, fixed ('instrumental') timbre and, eventually, spatial location.[10]

In contrast, Harrison expounds the Parisian group's doctrine much more succinctly and with far less parenthetical apostrophising.

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[7] Harrison, Jonty: 2000
[8] Eimert, Herbert in Schaeffer, Pierre (Ed): *Vers une musique experimental*, 1957, p.49, quoted in Palombini, 1998(b)
[9] Harrison, Jonty: 1998, p.117
[10] Harrison, Jonty: 2000

> *Musique concrète*, on the other hand, was based on a fundamental rethinking of what composition actually was – and the key to it was, and remains, sound recording.[11]

Few, it seems, would dispute this particular distinction.

Lastly, Palombini offers a further insight in to the polarization of the two groups, that of their perception of the technology being used and serves to emphasize their respective positions in the historical lineage.

> The controversy has customarily been reduced to the choice between two contrasting kinds of material, each representing one of two mutually exclusive temperaments: the intuitive and the rational [but this too is not a definitive distinction]. It has gone generally unnoticed that two radically different approaches to technology underlie the concrete/electronic dichotomy: for the electronic group, technology was, so to speak, neutral, a mere tool for the perfecting of Western musical tradition; for Schaeffer, new technology implied new thinking, the calling in to question the whole edifice of Western musical culture.[12]

And in another article:

> For Eimert and Boulez new tools were the ideal means to perfecting Western musical tradition. For Schaeffer, new sounds were primarily an inexhaustible repository of novel sense data: they implied new thinking, the calling into question of that tradition.[13]

Schaeffer had much critical comment about the twelve-tone system, congenital to elektronische Musik, and was perhaps the point at which Schaeffer found himself at the greatest distance from the Cologne group. During his conversation with Frank J Malina, Schaeffer discusses his personal and idiosyncratic thoughts on the true meaning and identity of dodecaphonic music and reaches what may be seen to be a predictable conclusion. Palombini's comments that, "In Schaeffer's opinion, although concrete material validates the serial method, this material itself has little to gain from the systematic application of serial principles."[14] And in Schaeffer's own words:

> But there is perhaps something more general, cosmic, that made the school of Vienna want to create music different from the old school. For example, for a little piece of Webern, which last one or two minutes, there are two explanations. In the first place, it is music based on a row of twelve notes, and

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[11] Harrison, Jonty: 1998, p.117
[12] Palombini, Carlos: 1998(b)
[13] Palombini, Carlos: 1998(c)
[14] Palombini, Carlos: 1998(b)

> their permutations etc. And for the traditionalists, it is twelve-tone music. I am not interested in the permutations. I do not hear them. But Webern indicated little tremolos, exquisite glissandos, all very well constructed.
>
> Perhaps I can explain what I mean in terms of concrete music. Here is music known to be the most 'abstract' in the world, which is from the dodecaphonic point of view; but I deny, absolutely, that it would be interesting to base oneself on the twelve-tone scale. This is nonsense. Why do we find these pieces based on this scale interesting, seducing and so well made? Because they are little jewels of concrete music. Because in this music there is not a note that exists for itself. Because the composer found something that we were to find elsewhere much less refined, much rougher, from another direction. There is something fascinating in this meeting of twelve-tone music and concrete music.[15]

As I have discussed previously, Simon Emmerson warns us not to be too hasty in perceiving fundamental areas of convergence between the two philosophies, as whatever commonality there may appear to be, essentially the differences greatly overshadow them. Whatever there may be by way of mutual praxis, it will always be cursory and peripheral to the central and divergent tenets as ultimately, in their purest forms, they speak a different musical language.

And what of Varèse and his music in this context? The initial point to make is that whatever artistic stance he would have taken, he would have undoubtedly had to face a similar conflict of loyalties as to that when he left France for America. He visited Darmstadt in 1950 but appears never to have relinquished his affirmations against the uses of formulae in the compositional process. Despite his frequent visits to Europe, where he was perhaps more notorious than famous, he inevitably always returned to the America he had chosen as his home. Varèse essentially represents an earlier generation to the post-war composers and as such was less influenced directly by the technology available to them. He also disapproved of schools of thought and consequent collectivistic groups that necessarily invoked. He believed in the individual and the consequent innovation that individualistic thought created. Varèse always took an interest in artistic developments and saw technology (or 'science' as he put it) as the possible answer to his artistic desires, but never regarded it as the end in itself, but only the means. His views on the 12-tone series are documented and it would be expected that strict adherence to such as formula would be judged by him to be too restrictive. He saw Schoenberg's developments as laudable in that they attempted to mirror his own beliefs that music needed to be emancipated, but despaired at the fact that another had merely replaced one

undesirable system.[16] As such, the dogmatic approach of the Cologne group *et al* would have found no resonance in Varèse's thinking. As far as the *Club d'Essai* is concerned, it is conceivable that he empathised with much of the member's work, but with evident reservations. Writing in the *New York Telegraph* Varèse states:

> Our musical alphabet must be enriched. We also need new instruments very badly. In this respect Futurists (Marinetti and his *bruiteurs*) have made a serious mistake. New instruments must be able to lend varied combinations and must not simply remind of things heard time and time again. Instruments, after all, must only be temporary means of expression. Musicians should take up this question in deep earnest with the help of machinery specialists. In my own work I have always felt the need of new mediums of expression. I refuse to limit myself to sounds that have already been heard. What I am looking for is new mechanical mediums which will lend themselves to every expression of thought and keep up with thought.[17]

His views as to his colleagues show an altruism lacking between the two European schools. His assessments and criticisms of his contemporaries were often scathing, considering as he did, for example, that the neo-Classical movement was no less than deplorable, yet he nevertheless philanthropically included examples of this movement as part of the concerts organised through his International Composers Guild. Unlike the apparent arrogance of some of the artists mentioned in this dissertation, and despite his views on individualism, which he seems to regard as the foundation of beneficial mutuality, he appears to have favoured the idea of a global community of artists. Chou Wen-chung writes:

> Varèse was always an internationalist. Two years before he put his ideas into practice, he wrote the New York Times on March 20, 1919: 'I should like to propose a League of Nations in Art. It needs no covenants... it would exist solely in the mental attitudes of the world.... Only by a free exchange of art – music, literature, painting – can one people be interpreted to another... In art, as well as in politics, we have been jarred out of our traditional isolation. And the results will be good. The contact, the emulation, the competition will spur us to greater accomplishment... What a combination of freer mingling of national characteristics in art would give! What beauty and strength!'[18]

Twenty-five years later, in a lecture Varèse gave on the effects of the Thirty Years War on German music before the Second World War had ended, he was equally optimistic about the future:

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[15] Malina, Frank J: 1972, p.259-260
[16] See Burnand, JW: 1987, p.vxii; and Varèse, L: 1973, p.240
[17] Varèse, Louise: 1973, p.123
[18] Wen-chung, Chou: 1998, p.10

> I only hope that out of a similar inferno now raging in Europe will come a spiritual and aesthetic renaissance so much needed today. I dare believe it will. I look forward to a complete revision of values and a restoration of the things of quality to the high usurped place that is rightfully theirs.[19]

A renaissance, revision and restoration there were, of sorts, but whether they embodied Varèse's ideals and hopes is open to question. It seems that except in quite superficial ways, musically, philosophically and socially, Varèse can be seen as maintaining a credible gap between his work and that of the two European schools in the countries that had contributed so significantly to his artistic development.

Where any real concurrence can be found is in the shared views on the nature of electronic praxis with regard to 'conventional' instruments. Both affirm that electronics should not be the means of recreating of reproducing those sounds and that both sound worlds are incompatible. Eimert writes:

> But the fact that [electronic music] cannot be expected either to take over or to imitate the functions of traditional music is clearly shown by the unequivocal difference of its material from that of traditional music.... Here we touch on a most widespread misconception: namely, the idea that one can make music 'traditionally' with electronic means. Of course one 'can'; but electronic concert instruments will always remain a synthetic substitute.[20]

Schaeffer goes one step further in cautioning against the advisability of using electronic methods to 'enhance' traditional instruments or to supply what they lack:

> The following facts... must be minimized:
>
> The production of sounds by electronic means is of no musical relevance. Such instruments, only just good enough to imitate (but to what end?) classical instruments, must avoid extending their possibilities to the domain where acoustic instruments are powerless.[21]

This position has had little opposition within academic circles that are mainly concerned with preserving traditional instrumental use. But commercialism and populism have had, and continue to have, no such misgivings, using technology that has evolved directly from Schaeffer's innovations to achieve precisely this, and further, supplant those instruments.

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[19] Quoted in Wen-chung, Chou: 1998, p.13
[20] Eimert, Herbert: 1958, p.1
[21] Schaeffer, Pierre (ed.) 1957, p.13 in Palombini 1998(c)

It is difficult to estimate the impact the dispute between the two groups had on their eventual artistic development. That there was a dispute is historical fact but to begin to determine whether the rivalry resulted in a higher level of artistic attainment from any of the participants is to call in to question those composer's personal abilities. Consequently, the question 'Would the absence of such a tension as existed between the Paris and Cologne groups have led to a major difference in the eventual output from those groups?' is insoluble. But it is true that any ideology or methodology that remains unchallenged is only likely to become an isolated oligarchy. Also, it is not the prerogative of the listener or the critic to judge whether the composer should have created a work in such or other way with particular materials through certain methodologies, or other such related opinions, but only to subjectively decide whether the outcome deserves to be aesthetically accepted or rejected. This is pertinent, of course, to the whole gamut of the listening experience but what is also of particular relevance here is that the *musique concrète* versus *elektronische Musik* controversy is not confined to history, but one that is extant. On the one hand it informs listeners of differential modes of appreciation when encountering electroacoustic music. On the other it still provides many with the means to continue the disagreement about electroacoustic music being written today. One of the apparent dichotomies of concrete music is that despite the intellectual and aesthetic arguments against it, it has become one of the most important technologies of the late twentieth-century. So pervasive is it that, in the guise of the modern technique of sampling, one may regard it as being indispensable in a way that 'pure' electronic music is not. It is beyond the scope of this particular discussion to go any deeper in to this subject but any superficial investigation in to modern digital sound reproduction techniques and practices will bear this out. Most contemporary composers will be aware of both concrete an electronic methods, now likely to be based within a computer application, being available to them as part of their sonic palette, even though the situation may still, after more than fifty years, be less than satisfactory.

> Yet, for all [the] technological progress, many feel that Electro-Acoustic music has not really fulfilled its promise.... One crucial factor is certainly that, despite all the advances, the technology until now has really not been adequate. Composers have always had to compromise. Technology has restricted musicians in one way or another and at times it has perhaps even misled them.[22]

[22] Clarke, Michael: 1996, p.57

However, among those composers writing today who choose to align themselves to one particular philosophy to the exclusion of the other, the argument still rages. For example, Jonty Harrison[23], who is an affirmed and vociferous Schaefferian and consequently a firm adherent to *musique concrète*, has asserted that among his colleagues and peers his work is regarded as not music for all the same reasons as Eimert had his grievances with Schaeffer.[24] And the *Groupe de Recherches Musicale* continues to produce work that has evolved from Schaeffer's original principles and theories. Perhaps Schaeffer was correct: *plus ça change...*

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[23] Reader in Composition an Electroacoustic Music & Director of the Electroacoustic Music Studios and BEAST at the University of Birmingham
[24] Personal interview

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Conclusion

When John Cage and Dexter Morrill were reflecting on the fact that audiences were becoming bored to the point of falling asleep during electronic music performances, they reasoned that this was because the music was emanating from loudspeakers. They complained that no matter how good the music was, it did not hold the listener's attention due to the unfamiliar mode of its diffusion. This, of course, occurred during electronic music's nascence, at a time when the full impact of the mass communication explosion had yet to reach its zenith. This may still not have been achieved even at the beginning of the twenty-first century, but it is certainly true that contemporary society not only has accepted the technology of communication wholesale (at least in the 'first' world), but also has indeed, in part, become almost reliant upon it. So much so that it could almost transform Varèse and le Corbusier's four-hundred speaker installation at the Brussels Exposition in 1958 to be more of a

prescient augury of the twenty-first century home, rather than a revolutionary exploration of a sonic sound space that it was. However, during the pre- and post-war period of the 1930s, 40s and 50s, the foremost item that enabled people to become acclimatized to the loudspeaker would have been monophonic radio technology, which I regard as being one of the most potently influential inventions of the twentieth century. The difference with the situation today is almost total. Loudspeakers are everywhere to the point where it becomes, at times, impossible to control our exposure to them. Wilfred Mellers, writing in the 1992 edition of A Companion to Contemporary Musical Thought, observes:

> We cannot escape it: we live in a music-producing world; 'musical' assail our ears at most hours of the day and night. So much so that we seldom reflect on what these sounds mean in relation to our lives, or even notice many of them.[1]

Under these circumstances it is not difficult to conclude that our reception and perception of loudspeaker sounds has changed significantly and that listening to electroacoustic music includes a more familiar listening practice than it once did. Of course, as the problem of acclimatization is solved, the problem of over-familiarity poses itself. But that is easily overcome through deliberate attentiveness.

It is not just radio technology that has had lasting authority on society. The full apparatus of the mass communication culture, which the electroacoustic circle has willingly appropriated, has equally changed much in the way we conduct our lives. In the same volume as the Mellers quote above, Trevor Wishart takes up a similar theme:

> The twentieth century has brought about a much more intense relationship between music and technology. This is partly due to the development of cheap and easily accessible electrical power, and the subsequent evolution of electronic and digital technology and its application to musical problems. More significantly, however, the phenomenal rate of technological progress and the growth of our knowledge about all aspects of the physical world have penetrated most aspects of our existence, and music is no exception.[2]

As Attali has observed:

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[1] Mellers, Wilfred: 1992, p.1
[2] Wishart, Trevor: 1992, p.565

> Although recording, for example, was intended first and foremost as a reinforcement and amplification of a pre-existing speech mode, it in fact had an impact on the status of the contents of that speech; the network modifies the code within which messages are expressed.[3]

He the continues by placing the accusation of using recording technology for purposes of nostalgia and the 'museum' culture, echoing Boulez's indictments, at the door of the recording industry:

> Today, it is too often nothing more than the consumption of past culture or a structure of universal mathematical invariants, a reflection of the general crisis of meaning. Communication has disappeared.[4]

Thus, loudspeaker technology, for want of a better phrase, has the potential to impact us in more ways than is at first apparent. It has the capacity not just to convey the message, but also to transform it, as that which is conveying it changes that which is being conveyed. This led Eimert to direct those involved with electroacoustic music to consider a curiously apparent anomaly attached to it. In concluding his defence of *elektronische Musik*, he offers the following possibility:

> ... only in coming to electronic music can we talk of a real musical control of Nature. Its dependence for reproduction on the loudspeaker, which has almost imperceptibly revolutionized our way of hearing, leads us to reflect whether perhaps it is not the symphony recorded on tape or disc that is synthetic, and electronic music the genuine article. For in the latter, we may find, is the genuine musical order.[5]

What is patently evident is that technology has so insinuated itself into our consciousness that we do not question the validity of recorded traditional music even though it is a mere simulacrum that asks us to regard it as reality. By virtue of its very nature, this reality is found in electroacoustic music of any persuasion.

Electroacoustic music is a fascinating genre that can be equally as difficult and mystifying as it can be rewarding. It has challenged me to reassess my musical values and has not only illuminated contemporary music from a new perspective, but has also achieved the same for music that I previously considered incapable of eliciting anything further.

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[3] Attali, Jacques: 1985, p.35
[4] Attali, Jacques: 1985, p.36
[5] Eimert, Herbert: 1958, p.10

Paul Griffiths notes:

> Indeed, there is no period in musical history when, so much as between 1945 and 1960, the attention of so many composers was focused so vigorously on basic matters of compositional technique. It is as if the Second World War had brought about a large-scale failure of musical nerve. Composers could no longer rely on their own sensibilities and a given language (tonal, serial, neoclassical or whatever) to guide them: music had to be rethought from fundamental principles, and every creative decision justified on the basis of that rethinking. Theoretical writings – the essays of Boulez, Cage, and Babbitt, and Messiaen's *Technique de mon langage musical* (1944) – became not only common but even central, as if the compositions were incomplete without some justification of their system. The half-decade after the war was a great age of pure music: Boulez's sonatas, Cage's Sonatas and Interludes, Babbitt's Compositions. But in another sense no music was pure; it was all technical demonstration, and incomplete without its manifesto or analysis.[6]

Of the USSR during the middle decades of the twentieth century, Morgan states: "Any work that did not adhere to [the decreed state's] principles, as determined by those in power, was condemned as "formalist" – i.e. without "content" – and likened to the "degenerate" and "decadent" art of such Western modernists as Stravinsky, Schoenberg and Hindemith. The parallels with the views of the contemporaneous Nazi regime are striking."[7] It is worthwhile not to forget that the vast majority of Europe, with depressingly few exceptions, but including unoccupied France, was under fascist authoritarian rule during the first half decade of the 1940s. It is hardly surprising that when freedom was re-established, at least in Western Europe, composers should exercise their liberation with unbridled extremism leading to the musical 'impurity' that Griffiths defines in his pessimistic rendering above. That there should be a glut of theorizing and objectifying among radical musicians should not be unexpected.[8] Acceptance of music that is 'difficult' but progressive within a musical culture is the mark of a tolerant, though not necessarily informed, society. What Griffiths does not allow for is that there were few models on which to base new concepts, analogous in part to the discovery of a new scientific phenomenon that requires exploration in to its possibilities and potentialities (an analogy of which, I'm sure, the protagonists would approve). Boulez, in an article originally written in 1977, gives his assessment of the situation regarding the use of computers in composition,

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[6] Griffiths, 1995, p.51
[7] Morgan, 1991, p.238
[8] There may also be the added factor of music 'catching up' with developments in pre-war pictorial art: as Schaeffer comments, "Visual art tends to be almost fifty years in advance of music." (Malina, Frank J, 1972, p.260)

but his comments could easily apply to the situation facing the electronic music composers of the 1950s of which he had first-hand knowledge:

> From our education within a traditional culture we have learned and experienced how instrumental models function and what they are capable of. But in the field of electronic and computers... models do not exist, or only sporadically, and largely thanks to our imagination. Lacking sound schemes to follow, the new field seems exaggeratedly vast, chaotic, and if not organic at least unorganized. The quite natural temptation is to approach this new field with our tried and tested methods and apply the grid of familiar categories which would seem to make the task easier and to which, for that reason, we would like to resort unthinkingly.[9]

Boulez, of course, was centrally involved with the musical innovations being explored throughout the 1940s and 1950s, but despite his apparently empathetic stance regarding electronic music here, he found the medium incongruous to his compositional objectives. Those proto-concepts inevitably formed intrinsic chasms between the composer and his or her audience that needed to be bridged through discourse. However, freedom confers power, which in turn requires responsibility, and what should have been discourse would often lapse into propagandist invective, intellectual and philosophical demarcation, and further alienation. Hence, electroacoustic music, in its broadest definition, took its own unique path and its adherents with it. This route closely followed that of avant-garde music of all persuasions and in fact the two would interrelate and engender yet more new forms and concepts. The major problem concerning the avant-garde at this time is generally agreed to have been one of language; and is generally agreed, by modern commentators and practitioners alike, that this is still an issue not yet fully resolved. Célestin Deliège begins an article on musical form written in 1989 and by prefaces it with a quote from Aristotle's Poetics:

> *To be beautiful, a living creature, and every whole made up of parts, must not only present a certain order in its arrangement of parts, but also must not leave its dimensions to chance.*

> In 1950, the problems confronting musical composition were problems of language. These were handled with varying degrees of success, depending on the imaginative skills of the protagonists and on the collective commitment made. Ultimate success, however, was thwarted by desertions, by

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[9] Boulez, Pierre: 1986, p.12

> unevenness in outlook, and by a certain complacency which went so far as to disregard the need for an aesthetic position.[10]

In other words, according to Deliège and Boulez, the European musical climate of the late 1940s was less a case of 'large-scale failure of musical nerve,' and more a situation where chaos, disorganization and disparity were common. Deliège does not express whether the use of the term 'language' refers to that of aesthetic lexicon or of verbal terminology; whichever it is, it is true of both. Of course, an electroacoustic neology did begin to surface, especially in Paris where Schaeffer regarded the classification of the new ideology and the new *écriture* to be a major element of his research. One of the consequences of the electroacoustic divide was that acceptance or dismissal of the new lexicon was bipartisan. In the same way in which this separation is now generally regarded as academic by consent, it has still, in reality, survived and the consensus for commonly agreed terminologies still proves elusive. This would be perceived as a weakness, were it not that contemporary music in is generally regarded by the composer as having no accountability or reference but to itself: it is self-perpetuating and self-justificative. This compels the listener to avoid appraising electroacoustic works comparatively. It also signifies that the listener is equally compelled to question its relevance to its audience by virtue of its existential adherence to its own validity. If there is no sense of partnership, of correlation or co-communication, the intent of the piece, however justificative or meretricious, is not imparted. What is left is subjective entrenchment. One of the strongest opinions I have formulated through studying this subject is that ultimately, preference and prejudice are most likely to influence listener's validation of any musical work, but perhaps most acutely when appraising electroacoustic pieces. Perhaps after more than half a century, electroacoustic music is still attempting to discover its true identity.

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[10] Deliège, Celestin: 1989, p.101

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