Chapter 3 - Knowing One's Place

"Know one's place: be respectful" (Pocket Oxford English Dictionary, 4th edition, 1964).

"Know or keep one's place: to recognize one's social rank, especially if inferior, and adjust one's behavior accordingly" (Webster's Unabridged Dictionary, 1989).

" ." (The Fontana Dictionary of Modern Thought, 1983, [absent] entry on place).

"She doesn't know her place." The charge, I remember, had nothing to do with knowing about the place where the subject lives and moves, in Casey's description of knowing a place (from the end of the last chapter). The idea of knowing one's place, in the social hierarchies of my English childhood, was to be better able to keep in one's place, to maintain the social order as it is. My first intention in this chapter is to describe what I know of the place of electroacoustic music, in terms of social rankings, especially as they relate to gendered categories. My intention is not to keep that place, but by mapping it using the tools of feminist epistemology, to facilitate social movement within and beyond its confines. My second intention is to describe a different sense of knowing one's place, as Westerkamp uses the phrase, which involves knowing about the place where a subject lives and moves, through listening and dialogue with its inhabitants in order to better understand the social, political and acoustic meanings of that place.

Electroacoustic Music and Radio Art

Hildegard Westerkamp describes herself as a "composer, educator, or radio artist" (liner notes to Transformations, 1996: 17). This chapter and indeed the dissertation as a whole focuses mainly on the first part of that description, Westerkamp as composer, specifically as a soundscape composer. The other two roles are also discussed, but only as they relate to the first. This seems to make sense since this is a music dissertation, and composition is the most traditionally musical of these activities. It is a strategic, disciplinary decision. At the same time, Westerkamp is well-known in Canada and abroad as a radio artist, having been included in two major anthologies, both with international scope, published in Canada about radio and sound art.1 At the same time that she began to think of herself as a composer, she produced a program called "Soundwalking" at Vancouver Cooperative Radio. In an article about that program and her approach to radio art, she describes the similarities between radio art and music composition:

In some ways, making radio is like composing music. The same care for form and content has to be taken in creating radio as in creating a piece of music. The same questions arise: when to have sound and when to have silence; what sense of time to create; what sounds to select; what to say and how to say it; how to retain a listenership. (1994: 88)
While Westerkamp finds some af-finities between radio art and composition, other sound artists have been concerned with de-fining the two, as in Dan Lander's introduction to Sound by Artists:

The terms experimental music and sound art are considered by some to be synonymous and interchangeable. In fact, it is difficult to identify an art of sound precisely because of its historical attachment to music.... The 'useful limitations' that constitute and enrich a musical art practice, restrain and limit an art of sound. The stripping away of meaning from the noise of our world constitutes a refusal fetishizing the ear, while ignoring the brain to engage ourselves in dialogue with the multiplicity of meanings conveyed by the sound we produce, reproduce and hear. If a critical theory of sound (noise) is to develop, the urge to 'elevate all sound to the state of music,' will have to be suppressed. Noise your lover's voice, a factory floor, the television news is ripe with meaning and content distinguishable from the meaning and content of musical expression. It is this content that constitutes any possibility for an art of sound. (1990: 10-11)

Lander describes sound art as existing only precisely where it becomes different from music: musical sound is not noise, the content of sound art; it is only the meaningful content of noise that is to be considered as the possibility for an art of sound. He wants to distinguish between music and sound art, in order for sound art to be considered a separate and distinct discipline, and to do this he reconstitutes them as dichotomous: polar opposites with rigid and distinct boundaries.

By taking each quote out of the context of its article, I have also set up a dichotomy, underlined by my emphasis on Westerkamp's use of af-finity, the bringing together of concepts through their similarities, and Lander's focus on de-finition, the pushing apart of concepts through their differences. I have set up an opposition between two ways of thinking, and immediately they could be perceived as stereotypically gendered. Gendered stereotypes associate the feminine with nurturance and the ability to foster relationships, while masculinity is associated with the ability to individuate, separate and objectify.2 Thus affinity (bridging through relationship) would be perceived as feminine, and definition (contrast through difference) would be perceived as masculine. This is a habit of thought that I am no longer happy with: to set up an opposition in which the terms are either implicitly or explicitly gendered. But it is particularly persistent dichotomous thinking is an entrenched part of Western culture, and the implicit links between dichotomies and gender are equally entrenched, though often masked. In order to change my thinking and make the categories less entrenched, I want to bring attention to them, dig them over. If I consider Lander's work in more detail, I note that in a later

publication (Radio Rethink) he no longer attempts to define sound art and music as dichotomous. And Westerkamp defines as well as noting affinities: she refers to herself as a "composer, educator, or radio artist" (my emphasis), separating one role from another.

Dichotomous Thinking and Gender

Lorraine Code, in her discussion of knowledge and subjectivity, notes that:

The objective/subjective dichotomy is but one of several dichotomies that have structured mainstream Anglo-American epistemology and have become a central focus of feminist analysis. (1991: 28)

Some other related dichotomies that Code lists are: theory/practice, reason/emotion, universal/particular, mind/body, abstract/concrete (1991: 29). Code does not question the value of distinction in itself, noting that sharp distinctions are valuable for clarification and analysis. But dichotomies imply a certain kind of distinction. She indicates that one problem with dichotomies is their formation of exclusionary constructs rather than complementary or interdependent ones: "In dichotomous thinking the opposed terms are like Aristotelian contradictories, which must conform to the principle of the excluded middle ... Continuity between the terms is a logical impossibility" (1991: 29). This means that they restrict inquiry too much, through the fixity of their boundaries, and their insistence that everything be either one or the other; in the two examples above, that a given piece be either music or sound art, that a given argument would display either affinity or definition, which leaves no place for concepts or experiences that are in between. This move makes the terms excessively simplistic, and unlike the complexities of the real world, where things are rarely so clearly distinguished from each other. It also leads to exclusion and misinterpretation of aspects of knowledge and culture that do not fit into the constructs of the dichotomy.

Another problem is that when dichotomies are used as the basis of argument, or are implicitly incorporated into the progress of an argument, value is attached to one over the other, creating a hierarchy. Many of these hierarchical value judgments have become an accepted part of Western culture, working to structure thought in a fundamental, almost common-sense way. Not only are the value-judgments hierarchical, they are also often gendered, at least in their historical genesis, often in our implicit understanding of them. With reference to the set of dichotomies listed above by Code, she notes that in traditional epistemology, universality is valued over particularity, theory over practice, reason over emotion, mind over body:

They demarcate a set of categories the left-hand one of each pair by which knowledge is distinguished from aspects of experience deemed too trivial, too particular, for epistemological notice. The alignment of the right- hand terms of these pairs with (stereotypical) femininity is well established. Hence there are good reasons for feminists to engage critically with the dichotomies and to take issue with the political assumptions they sustain about women's lack of cognitive authority. (1991: 29) The origins of these dichotomies in the beginnings of Western philosophy are discussed by Genevieve Lloyd, who traces the history of western ideals of reason, and its association with masculinity. She begins with a discussion of the Pythagorean table of opposites: limited/unlimited, odd/even, one/many, right/left, male/female, rest/motion, straight/curved, light/dark, good/bad, square/oblong.

'Male', like the other terms on its side of the table, was construed as superior to its opposite; and the basis for this superiority was its association with the primary Pythagorean contrast between form and formlessness. (1984: 3)

These principles structured dominant modes of Western thought that informed later philosophers' work. Although the definition of masculinity has not remained a constant over the years, conceptions of reason have varied to remain in line with conceptions of masculinity. The Pythagorean principles and their later variations in the philosophies of such important thinkers as Aristotle, Descartes, Bacon and others still affect everyday thinking about what counts as reason, as well as common cultural stereotypes of femininity and masculinity. This persistence of dichotomous thinking leaves feminists with a difficult situation: either to invoke the dichotomies uncritically or merely to invert their relative value can also bring to mind their associated stereotypes, and thus strengthen them. And if these dichotomies are not discussed, they may be ignored completely, while they continue to structure thought at a deep level.

The objective-subjective dichotomy is particularly important in decisions about the ideals of reason, which designate who knowers can be, what they can know, and whose claims to knowledge can be the most authoritative (Code: 1991: 119). In traditional epistemology, it is objective knowledge that is most valued. Dichotomous thinking ensures that the alternative to objectivity is construed as "the vagaries of subjectivity gone wild" (Code 1991: 30).

Objectivity has historically been associated both with masculinity and with scientific knowledge: traditionally, science is perceived both as objective and as value-neutral, with objects of knowledge separate from knowers and unaffected by the knowing process. Paradigmatic status has been given to physics, which has been perceived as removed from all social influence. Sandra Harding notes that physics is concerned with simplified, generalized and abstracted systems "conceptualized as self-contained and deterministic"

(1986: 34).

In other fields of knowledge as well as science, types of knowledge concerned with abstracted, objective and simplified systems removed from social influence have also acquired paradigmatic status. For instance, as I noted at the beginning of the last chapter, in Western art music, absolute music has traditionally held paradigmatic status. Absolute music is defined as self-contained and self-referential:

v Absolute music must be understood as pure form, according to canons that are internal to itself ... Music becomes absolute by being an 'objective' art, and it acquires objectivity through its structure. To say of music that it is objective is to say that it is understood as an object in itself, without recourse to any semantic meaning, external purpose or subjective idea. (Scruton 1980: 26) Absolute music is understood as objective, acquiring this characteristic through its pure, formal structure.

The veneration of the methodology of physics as embodying an ideal in epistemology works to limit what counts as knowledge, which is defined as what can be objectively known and verified to the exclusion of what is believed or felt. Because religious, aesthetic, and ethical claims could not be verified:

they reduced to expressions of emotion, to mere expletives with no more epistemic status than "boo" or "hurrah." Epistemologies that bear the traces of this ideal still commonly map out their terrain so that aesthetics, religion, ethics, and, analogously, other forms of qualitative inquiry, are relegated to places beyond the boundaries of epistemological evaluation, places where "it's all a matter of opinion." (Code 1995: 163)

What could be known objectively about an artistic field, following this traditional epistemological model, would be facts such as dates of birth for artists or composers, or what instrumental forces, compositional and harmonic structures, or media they use. Aesthetic or ethical claims about their work could not be considered seriously as knowledge.

The traditional separation of aesthetics, ethics and epistemology can limit a search for knowledge. For instance, how do I know what electroacoustic music is? I can search for a definition, for examples of such music in the field, or read descriptive articles about it. My contention is that these artifacts are affected by what counts more or less as electroacoustic music, by who counts more or less as electroacoustic composers. Aesthetics, ethics, and epistemology are intimately entwined in this search. I want to look behind the definitions and descriptions to find how these artifacts are affected by the epistemologies of practitioners. v My strategy will be to focus on a time period which is crucial to electroacoustic music. Shortly after the Second World War, recording on tape became feasible as a musical possibility. While there had been many earlier experiments in electroacoustic music, such as John Cage's exploration of live electronic performance in the Imaginary Landscapes, as well as the invention of electronic instruments such as the Theremin and the ondes Martenot, recording on tape opened up the world of recorded sound to a wide range of composers.

The categorization of electroacoustic compositional thinking from this period persists in contemporary thought about electroacoustic music. I will first describe how a dichotomous categorization from this period that between musique concrete and elektronische Musik continues to structure thought about electroacoustic music to the present, particularly how it affects thinking about soundscape composition, the genre within which Westerkamp works. Then, I will discuss the period from 1948 to 1960 through the stories of four important figures from that time: Pierre Schaeffer, Pierre Boulez, Karlheinz Stockhausen and John Cage. When I was doing research on these four figures, I was fascinated by the way that interviews with, and letters by these composers revealed much more about their ways of thinking than official biographies or electroacoustic texts. The latter sources said little about the origins of the composers' ideas: they were limited in general to the kind of knowledge traditionally regarded as objective: dates of composition, descriptions of pieces, instrumental forces, compositional structures. The interviews and letters gave more explicit clues about how and why these composers developed specific aesthetics, and how these aesthetics then came to define what counts as electroacoustic music. By doing this, I am following Lorraine Code's proposal:

Taking as one of its catalysts Ruth Hubbard's claim that "Every fact has a factor, a maker," my proposal says that the same is true of theories and experiences, whose "makers" are enabled and constrained by the situations in which they find themselves, and which they need to understand. It exhorts these "makers" to announce themselves, and examine the implications of their historical-geographical-cultural locations ... Taking stories into account eschews individualism, and dispels any illusion that "experiences" come parcelled in discrete propositional units. (1995: 168)

In interviews and letters, these composers tell stories, indicating how they were enabled and constrained by situations, how they located their ideas. My aim in focusing on these four particular composers is not to re-construct an already well-known period in the history of electroacoustic music, but rather to examine in some detail the relationships among the ideas and concerns of these four influential composers, particularly with regard to their attitudes towards compositional control.

Another part of my project in this chapter is to consider the stories of some women composers within electroacoustic music, to consider how their thought and compositional

work is enabled and constrained by their situations. Here, my discussion will focus on Daphne Oram, an English composer of the same generation as Boulez and Stockhausen and Pauline Oliveros, an American composer who worked with John Cage and influenced Hildegard Westerkamp. The chapter will end with a consideration of Westerkamp's epistemology as it relates to epistemological currents within electroacoustic music in general and soundscape composition in particular.

RTF vs. WDR

Initially, the first two electroacoustic studios to open, the Studio d'Essai at the Radiodiffusion Television FranÏaise (RTF) in Paris in 1942, and the electronic studio at Westdeutscher Rundfunk (WDR) in Cologne in 1950, were antagonistic to each other and described themselves as opposites. Pierre Schaeffer of RTF defined the music he was making, musique concrete, as having direct contact with sound:

I mistrust new instruments, waves or waveforms, what the Germans pompously call elektronische Musik. Before all electrical music I have the reaction of my father the violinist, my mother the singer. We are artisans. My violin, my voice, I meet them again in this bazaar of wood ... and in my truck horns. I seek direct contact with sonic materials, without electrons interposed. (1990: 26, my translation)

Schaeffer sets up a dichotomy between his music and that of the German studio in explicit terms. While his music is related to performance (my father the violinist, my mother the singer) through direct contact with known materials, he describes the other studio as only concerned with electrical waveforms, conceived as new instruments, and fundamentally different. By emphasizing personal relationships with his family, known sonic materials and his instruments, he is showing a connection with stereotypically feminine concreteness, relationship and subjectivity, and distancing himself from stereotypically masculine abstraction and objectivity.

How accurate was Schaeffer's definition of the other studio? Initially, the WDR studio did want to sever connections with a known sound world. They used the serial technique3 of composition employing simple sine tones produced by oscillators rather than recorded sounds to make elektronische Musik::

In electronic serial music ... everything to the last element of the single note is subjected to serial permutation ... Today, the physical magnification of a sound is known...as exact scientific data ... Talk of 'humanized' electronic sound may be left to unimaginative instrument makers. (Eimert, 1955: 8)

Note that this definition of elektronische Musik by Herbert Eimert, one of the original practitioners, does not explicitly set up an opposition with the Paris studio. However, he hints at another camp by mentioning talk about "humanized" electronic sound which is "unimaginative." Also, Eimert makes the strategic move of associating elektronische Musik with scientific knowledge, the ability to know the physical magnification of sound as exact data, or objective knowledge, a stereotypically masculine domain.

A Generative Distinction

This artificial distinction between the two studios disappeared within a few years. Although his first pieces used recognizable sound sources, Schaeffer began to manipulate the envelopes of sounds in the studio so that their sources in the known sound world became unidentifiable. Composers at the WDR studio began to use acoustic as well as electronic sources, and extended compositional technique beyond serialism. Their approach has opened up considerably since that time, to the extent that recently, two CDs of urban soundscape compositions, by Michael RÉsenberg and Hans Ulrich Werner, (Lisboa, 1994; Madrid, 1995) were produced by WDR. Yet this initial distinction between musique concrete and elektronische Musik seems to be maintained in the organization of many electroacoustic music textbooks, even though by the time of publication of these books the distinctions between the musical styles had diminished greatly. I have surveyed the contents of many major electroacoustic texts, which continue to organize electroacoustic music according to this original distinction.

Definitions

Many definitions of electroacoustic music in the texts are very general. Deutsch defines electroacoustic music as: "Music made in whole or in part by electrical instruments, amplified or electronically modified instruments, recording devices or computers" (1993: 5). This definition is similar in some ways to Otto Luening's definition of electronic music:

Electronic music is a generic term describing music that uses electronically generated sound or sound modified by electronic means, which may or may not be accompanied by live voices or musical instruments, and which may be delivered live or through speakers. (Luening 1975: 2)

Chadabe defines electronic music as "all music made with electronics, whether specifically with computer, synthesizer, or any other special equipment" (1997: x). All of these definitions include the use of electrical instruments or electronics as necessary. All are also general enough to include popular recorded music that uses amplified instruments and sounds modified by electronic means. None of these definitions specifically includes recorded environmental sounds, yet none excludes them. Jon Appleton specifically

includes concr‰te or recorded sounds in his definition: "When referring to electronic music I mean music composed by using electronic instruments and concr‰te sounds by living composers and by computers" (Appleton 1989: 69). It is easy to see why the terms 'electronic music' and 'electroacoustic music' become confused. It is difficult to perceive from the preceding definitions why the two designations are used: they seem to refer to the same area, and it appears to be a very open field.

The most elaborate set of textbook definitions is given by Barry Schrader. He defines musique concrete as "any electroacoustic music that uses acoustic sounds as source material" (1982: 2). He later discusses some soundscape compositions in the section on musique concrete. Electronic music is "music in which the source, or original, sound material has been electronically produced. This is usually done with electronic oscillators" (1982: 2). Computer music is "a type of electronic music in which a computer is used to generate the sound material" (1982: 2). He also delineates tape music from live electronics and creates a graphic taxonomy of all types.

The only time that I saw a definition that specifically excluded some sounds was in the introduction to a book on computer music. Defining the focus of the book, John Pierce states:

When scientists study animals in a natural environment, they are much concerned with the animal's ability to perceive and interpret the sounds in that environment.

Man does not live in the wild; he lives and functions in a man-made environment. He listens most attentively to highly organized, man-made sounds. These are chiefly the sounds of speech and music. (1989: 2)

At the end of the introduction, Pierce returns to this concept: "While this is a book about musical sound, it is also a book about one aspect of man's civilization, about his environment of man-made sound, and about how he can understand and manipulate that environment" (1989: 4). By restricting his definition of 'man-made' environments to speech and music and saying that man-made sound is the subject of the book, he excludes recorded environmental sounds from the field of computer music. The use of the term 'man-made' in these quotes may be merely an anachronism, using the term 'man' to mean 'human', even though such language seems odd in such a recent publication. I should point out, however, that all of the articles in this book were written by men, the gender which predominates by far in computer music. Also, the editor is by no means willing to try for gender-neutral or gender-sensitive language.

The textbook definitions, with the exception of Pierce, tend to be general and encompassing. Pierce establishes a hierarchy where speech and music are worthy of consideration as computer music, and environmental sounds are not. This is not exactly like the original split that I have described between musique concrete and elektronische Musik, even though it excludes a great part of the materials of musique concrete. It was only when I examined the contents of these textbooks that I could perceive the extensions of the original split, and the value that continues to be attached to it, more clearly.

Textbook Contents

I have reviewed the contents of twelve texts. Nine of these texts specifically discuss tape music. The other three (two on MIDI, and one on more general computer music) are included for comparative purposes. The titles and chapter headings for these books are listed in Appendix C.

First, I note the titles of these books: of the nine that discuss the field as a whole, six use the word 'electronic', including the most recent book published in 1997, while only three use the more inclusive term 'electroacoustic'. The use of the term electronic to refer to the field has several implications. It continues the confusion between electronic and electroacoustic: a library search on the term electroacoustic might not reveal these books, yet their subject matter includes electroacoustic music. Joel Chadabe chooses to use the word 'electronic' as the generic term, while acknowledging that "in Germany it may cause confusion with elektronische Musik, which refers specifically to the philosophy of the Cologne studio in the early 1950s" (1997: x). I would argue that this confusion might exist outside of Germany as well. The choice of the word "electronic" erases the word acoustic from consideration, which could lead to the belief that electronic music is the norm of the field, and work with acoustic sources is an aberration, or subsidiary. With an established conceptual split between tape music and electronic music, using the term 'electronic' privileges it over tape music, ascribing greater value to the term which has traditionally been associated with objectivity, scientism and masculinity.

Now, I consider the organization of sections and chapters. Tape music and/or musique concrete almost always appears at or close to the beginning of each book or repertoire section, except in the cases of the books on MIDI and computer music, where it is only considered briefly as a secondary topic (Jacobs and Georghiades, Newquist, Mathews and Pierce). In the texts by Griffiths, Horn, Mackay, Manning, Pellman, and Schrader, musique concrete and electronic studio music are artificially separated, with electronic studio music following tape music yet in a separate category. The idea of educational progress from introductory to more complex ideas is implicit in the general tendency to place concepts considered simpler by the author at the beginning of an educational textbook and ideas considered more complex near the end. Thus the placement of tape

music near the beginning and electronic followed by computer music near the end can encourage the belief that tape music is simple and readily understood, and electronic and computer music more complex, less readily known. The idea of tape music as an introductory stage extends into some authors' commentary on it. Deutsch (1985) suggests that musique concrete should be used as an educational introduction to working with tape, before students move into electronic synthesis.

Why is musique concrete perceived as simpler? The preface to Pellman may provide a clue:

Since its origins nearly a half-century ago, the field of electroacoustic music has passed through a remarkable series of changes. New instruments and techniques, based upon the most recent technological innovations, have appeared regularly. These often relegated older electroacoustic instruments to the status of relics. (1994: xi)

Deutsch also claims that technical innovation is important: "Music, the most abstract of mankind's arts, has always been close to its technological developments" (1993: 5). The use of tape becomes one "development," improved upon by the use of oscillators (even though tape and oscillators were used at the same time), then synthesizers, computers, and MIDI. Pellman privileges the most recent developments, the topics near the end of the book, by relegating earlier developments to the status of relics, outmoded and irrelevant to current practice. The author who most explicitly places emphasis on innovation is Paul Griffiths. Discussing early work by Stockhausen, he says:

the Studien are fascinating and beautiful; at the very least they demonstrated that the future of electronic music was to lie more with the creation of the new than with the musique concrete technique of readjusting the old." (1979: 14)

At the beginning of the chapter on electronic music, entitled "out of the unknown," he states "Much of the most interesting tape music has come not from the use of natural sounds ... but rather from the synthesis of new material by electronic means" (1979: 42). In these two quotes, he indicates his belief that to work with unknown or new sources in electronic music is more interesting and worthwhile than to work with existing sources, as in musique concrete.

Innovation is particularly important in technological culture: Kathleen Woodward notes that technology is ageist, with newness and youth favoured over age (seen as the opposite of both, 1994: 61). When I was interviewing women composers in 1994, several noted that they would not even enter pieces for competitions unless they used the most up-to-date equipment and techniques. Tape music is perceived as old technology, less important or valuable than new interactive approaches using computers.

The idea of development is also tied to an idea of exploration. Griffiths's chapter titles, with "out of the known" for concrete music, and "out of the unknown" for electronic music, moves from conceptions of the familiar to the unexplored. Manning's use of the terms "developments" and "new horizons" in his section titles explicitly links development to an exploration of new territory, which is in this case the design of the voltage-controlled synthesizer. The idea of progress through exploration of unknown areas is made explicit in the two texts by Manning and Griffiths through the metaphor of new horizons and references to "the unknown." Technological culture, whether in music or in other disciplines, values exploration. And, as Teresa de Lauretis points out, the exploring hero who crosses new frontiers is stereotypically male:

As he crosses the boundary and "penetrates" the other space, the mythical subject is constructed as human being and as male; he is the active principle of culture, the establisher of distinction, the creator of differences. (1987: 43)

Those genres associated with exploration, the unknown, and new horizons are thus stereotypically masculine. These genres tend to be placed later in electroacoustic texts, associated with an idea of development, and accorded higher status.

Comprehensiveness is also a factor in determining the relative value of genres. Sometimes musique concrete is not discussed as fully as others. In Pellman (1994), works by Morton Subotnick, David Jaffe, Milton Babbitt, Karlheinz Stockhausen, and Edgard Varese are discussed in detail, while those by Pierre Schaeffer, John Cage and the team of Vladimir Ussachevsky-Otto Luening are mentioned briefly. Of the five works discussed in detail, the first is a piece for analog synthesizer, and the next two are computer music. The Stockhausen and Varese works are both tape pieces. Stockhausen's Gesang der Junglinge, which uses both electronically-generated and recorded sounds, is discussed with reference to this integration of sources as well as his use of serialism at the Cologne studio. The Poeme Electronique by Varese is described mainly with reference to his use of spatialization in the Philips Pavilion as well as his approach to timbre. The questions following these tape pieces ask the student to pay attention to various tape manipulation techniques, and to compare them with other methods. Several tape works by Cage, Schaeffer and Ussachevsky-Luening are discussed only briefly, in a sentence or two, in the context of a discussion of the composers' aesthetic approaches. Questions are included for the Ussachevsky-Luening examples, once again focusing on tape manipulation techniques. No questions are included for the Cage or Schaeffer examples. This omission may lead a student to believe that in these cases, there is nothing worth asking questions about, or that the pieces are not worthy of extended discussion. The focus on tape manipulation

techniques in the other examples could give the impression that these techniques are the most important facets of the compositions.

The organization of many electroacoustic music textbooks appears to encourage a division of the field between tape music from recorded natural sources, often called musique concr‰te, and music from electronic sources. The fact that the field as a whole is often called electronic music, the placement of music from recorded sounds close to the beginning of many books, and the language of discovery all combine to create the impression that work with recorded sounds is a predecessor or subsidiary of electronic music, and is less advanced. Electronic music, associated since its inception with the stereotypically masculine approaches to knowledge of objectivity, scientific thinking and technical exploration, is valued over tape music in this field.

Soundscape Composition

The emphasis on technical manipulation, new horizons and instrumentation influence the perception of soundscape composition as a category within electroacoustic music. Soundscape composition is a particular approach to the compositional use of recorded sound, based on the idea of a soundscape. The basis of the word "soundscape," a term credited to composer R. Murray Schafer, is the concept of an environment of sound. Schafer defines soundscape as:

The sonic environment. Technically, any portion of the sonic environment regarded as a field for study. The term may refer to actual environments, or to abstract constructions such as musical compositions and tape montages, particularly when considered as an environment. (1977: 275) By sonic environment, Schafer is referring to "the ever-present array of noises, pleasant and unpleasant, loud and soft, heard or ignored, that we all live with" (1977: jacket notes). Recording equipment makes any sound in the world potential musical material: it can be isolated from its context and treated as a sound object, as in musique concrete, or the interplay of sounds within a specific environmental context can be the focus of attention. Schafer's statement in his definition that abstract constructions such as musical compositions are soundscapes particularly when considered as an environment refers to the importance of context in soundscape composition.

This focus on relationships between composer, listener, and sound environment grew out of Schafer's soundscape research, which he conducted with other composers. Hildegard Westerkamp, as well as several other composers, worked with Schafer in the context of the World Soundscape Project (WSP) at Simon Fraser University in the early 1970s. This project, founded and directed by Schafer, began with his concerns about noise pollution, and received funding to undertake major research projects of soundscapes in cities and villages of Canada and Europe.4 This work resulted in several research and educational publications about soundscapes by members of the research team.

These composers continue to be involved in the research and education started through the World Soundscape Project. The Tuning of the World Conference in Banff in 1993 led to the founding of the World Forum for Acoustic Ecology (WFAE), with its head office at Simon Fraser University. Both Barry Truax and Westerkamp were among the founding members of the WFAE. The aims of acoustic ecology are often implicated in soundscape composition. Westerkamp, for instance, says that she likes "to position the microphone very close to the tiny, quiet and complex sounds of nature, then amplify and highlight them...[so that] they can be understood as occupying an important place in the soundscape and warrant respect" (1996: 19). Although Keiko Torigoe (1982) focuses mainly on the research and education components of the World Soundscape Project, mentioning soundscape compositions only in passing, several such compositions were made by project members, many of whom were composers. These compositions were assembled into ten one-hour radio programs for the CBC, entitled Soundscapes of Canada (1974).

In his 1996 article entitled "Soundscape, Acoustic Communication and Environmental Sound Composition," Truax discusses the range of compositional approaches in this radio series (1996: 54-58). The collectively authored "Summer Solstice" documents two minutes of each hour of a summer day and night, recorded beside a pond near Vancouver, giving a representation of condensed time. "Soundmarks of Canada," by Peter Huse, features the juxtaposition of significant sounds associated with particular places in Canada, condensing space. Several pieces included electronic transformations of sounds using a range of classic analog studio techniques. Truax notes that sounds still remained recognizable and within context in these pieces, such as Bruce Davis's "Bells of Perce" and Barry Truax's "Soundscape Study." Because of the WSP commitment to bring together research, education, and composition, these soundscape compositions are presented by the composers in the context of discussions on research and education within the radio programs, that also include a range of listening exercises and lectures by Murray Schafer.

Schafer, Truax, and Westerkamp all continue to compose with environmental sound in context. Schafer's environmental work is acoustic, rather than electroacoustic. For example, Music for Wilderness Lake (1981) uses traditional concert instrumentation within a wilderness setting. Truax works with granular synthesis, a computer process that stretches sounds to create slowly moving textures, revealing complexities within the sound that otherwise would not be heard. Since 1990, he has used environmental sound increasingly with this process, in works such as Pacific (1990), Dominion (1991), Basilica (1992), Song of Songs (1992), Sequence of Later Heaven (1993) and Powers of Two

(1995). Westerkamp has done the most extensive work in electroacoustic soundscape composition of the three. In fact, all of her work is with environmental sound in context, usually recorded by herself in specific locations. Many of her earlier pieces, such as A Walk Through the City (1981), and StreetMusic (1982) were originally broadcast on Vancouver Cooperative Radio. Her Harbour Symphony (1986), commissioned by the Canada Pavilion for Expo '86, was probably the largest environmental music event ever to be mounted in Vancouver. Some of her more recent works, such as Cool Drool (1983) and India Sound Journal (1993) also include live performance. Westerkamp (1994) notes that soundscape composition involves a balance of work in the studio with work on location. Techniques of field recording, such as learning how to listen to sound environments, placement of microphones, protecting equipment from difficult weather conditions, learning how to move through a space with the microphone, and soundmaking in response to environmental sounds, are as important as studio work with the sound.

The composers at the World Soundscape Project had an excellent climate for thinking about and working with environmental sound in context. But they were not the first to do this kind of composition. Several other composers around the world had also worked with soundscapes, although they may not have used that name. Many were inspired by the early work of John Cage to pay attention to all kinds of sounds within specific environments. In 1954, Luciano Berio and Bruno Maderna composed a piece specifically for radio broadcast, Ritratto di Citte, a sound portrait of Milan during the course of a day. In France, Luc Ferrari's Presque Rien No. 1 (1970) focused on the time of daybreak and the environment on a beach, using a similar process to time-lapse photography. In the same year, in the United States, Alvin Lucier's I Am Sitting In A Room (1970)5 used multiple repetitions of a recording process to highlight the relationships between a room resonance and a recording. A text, beginning with the words "I am sitting in a room different from the one you are in now," is recited onto tape. Then that recording is played into the same room, and re-recorded. This process is repeated many times, and each time the resonances of the room become more apparent, as the text itself is gradually masked. Americans Pauline Oliveros and Annea Lockwood have both worked with particular sound environments. In 1974, Pauline Oliveros published Sonic Meditations, a set of listening exercises of a similar type to the "ear-cleaning" exercises advocated by Murray Schafer. Recently, she has formed the Deep Listening Band, whose members David Gamper, Stuart Dempster, Joe Giardullo, Thomas Buckner and Oliveros herself play together in places with interesting acoustics. Annea Lockwood created A Sound Map of the Hudson River (1989), an aural journey which paid attention to the changing sonic textures of every part of the river from source to mouth.

The liner notes for Luc Ferrari's Presque Rien No. 1 (1970) describe a similar focus on the experience and memory of the listener as that intended by the Vancouver soundscape composers:

Instead of forcibly eliminating every trace of the origins of the material which has been taken from reality, Ferrari uses its reference to reality in order to appeal to the hearer's experience and imagination...an undistorted portrayal, although in fast motion, of daybreak on the beach, it is electroacoustic natural photography, in which Cage's respect for reality is crossed with the dream of a sounding 'minimal art.'(1970: unpaginated) While the World Soundscape Project compositions have not been discussed in any electroacoustic textbook,6 Ferrari's piece has been mentioned in some. A discussion of how it is mentioned will shed some light on how soundscape composition is positioned within electroacoustic music.

In Barry Schrader's discussion of the piece, he notes Ferrari's use of cutting and splicing to reduce the time of the original recording, and also says that "he has made the insect-like sounds that enter during the middle of the piece slowly increase in volume" (1982: 55), a manipulation that Ferrari does not record in his liner notes for the piece (he says that he only decreased the length of the recording). When Schrader refers to these sounds as "insect-like," it is clear that he is unaware that they are recordings of actual insects, rather than simulations. An increase in volume of certain insect sounds would naturally occur after daybreak. Is it possible that Schrader speaks of this as a manipulation in his desire to make sense of the piece? Since Schrader categorizes his text in terms of the techniques used (in this case cutting and splicing), he seems to think in terms of technique more than intent or aesthetics. As I noted earlier, it is not only Schrader who focuses on technique: within the field of electroacoustic music, technical knowledge is valued highly.

Still, Schrader's description is much more accurate than that of Manning, who states:

Presque Rien No. 1 is an excursion into the sphere of organized collage using a wide variety of natural environmental sources such as birds, footsteps, seaside sounds, and children's voices. As the work progresses, the source elements, which remain largely untreated in themselves, become submerged under a growing stream of noise components which grow in density, eventually masking the environmental elements completely. (1985: 161)

In this description it sounds as though the composer has juxtaposed a number of disparate environmental elements and constructed noise components in a manner which pays no attention whatever to context. Again, this misinterpretation seems to be based in accepted knowledge about what constitutes electroacoustic music. Since the norm in both musique concr‰te and elektronsiche Musik is that sounds are to be treated as

sound objects, discrete entities, then it would make more sense to hear a tape piece as using source elements and noise components that are selected and collaged together, rather than hearing it as an approach to framing and condensing a particular sound environment.

These discussions of Ferrari's work misinterpret his compositional intent, technique and aesthetic because his approach does not fit within the accepted norms of the field. A more plausible description of Ferrari's work can be found in a discussion of electroacoustic music by Simon Emmerson (1986: 17-40). Emmerson understands Ferrari's compositional intent to make listeners more aware of their acoustic environment through framing it. But his categorization of Ferrari's work makes it seem less musical than other styles. He categorizes electroacoustic works along two axes: from aural discourse to mimetic discourse, and from abstract syntax to abstracted syntax. Emmerson defines aural discourse as "'abstract musical' substance ... our perception remains relatively free of any directly evoked image" (1986: 19). He defines mimesis as "the imitation not only of nature but also of aspects of human culture not usually associated directly with musical material" (1986: 17), noting that mimesis has previously been known as programme music, in distinction from absolute music, which could be associated with his term, "aural discourse." The use of the word aural as an opposite of the word mimetic implies that mimetic discourse is not aural, that the imitation of nature is less aural, less musical than aural or abstract musical discourse. The imitation of nature is also discussed together with 'unmusical' aspects of human culture such as religious symbolism.

His second axis is abstract and abstracted syntax.7 Emmerson defines abstract syntax as:

the creation and manipulation of a priori shapes and structures by the composer. Serial composition is an important part of, but by no means alone in, this field. From the use of star maps to mystical number grids and formulas the use of principles not derived from the sound materials themselves all fall into this category." (1986: 22)

v Abstracted syntax derives from the ordering of the sound materials used by the composer: "Schaeffer's Traité des objets musicaux is an attempt to establish rules for the combination of sounds, abstracted from an analysis of their perceived properties. This interdisciplinary approach is essentially empirical" (1986: 21). Here, abstract syntax is associated with a priori structures, and abstracted syntax with the sound materials themselves. However, Emmerson does not point out that syntax derived from the sound materials is more concerned with auditory perception (and therefore more aural) than abstract syntax based on numbers or charts. So neither of these poles is associated with musicality in his discussion, unlike in the first axis.

In his final section, on music in which mimetic discourse is dominant, Emmerson states that:

Stockhausen's Telemusik, Trevor Wishart's Red Bird and Luc Ferrari's Presque Rien no. 1...have much in common. All have aims apparently outside those traditionally accepted as 'music': the Wishart and Ferrari, overtly in terms of political or social issues, the Stockhausen in terms of an attempt to integrate many disparate musics of the world. (1986: 34)

Emmerson does not explain how Ferrari's Presque Rien no. 1 is explicitly social or political, unless he means that to encourage the audience to listen to the sound environment is more social-political than musical: "This focusing and framing process using narrative natural sound sources, while respecting the autonomy of the original sounds, may be used therefore not to obscure but to heighten our awareness of the environment" (1986: 38, my emphasis). There is nothing in Ferrari's liner notes that indicates a narrative in this specific piece. Although Ferrari has described his approach elsewhere as an anecdotal style (Emmerson 1986: 43), he does not suggest a particular narrative for this piece, except to note that the recording was made at daybreak.

Emmerson says at the end of his article that his discussion refers primarily to those works in which timbre is more important than pitch relationships. He has not discussed works which retain an 'instrumental' emphasis on pitch relationships. Almost all pitch-oriented electroacoustic music belongs in the first area we examined: the discourse is exclusively aural ('abstract musical'), the syntax almost always entirely abstract (often serial at root) not based on intrinsic sound- object relations. (1986: 39)

If we accept this statement, and note the larger number of examples in Emmerson's discussion of the aural-abstract area than in the other categories, it would seem that the norms of electroacoustic music emphasize abstract musical vocabulary and abstract syntax, which would make soundscape music abnormal in this genre, and thus less likely to be recognized and valued, to be explored deeply in electroacoustic courses, or to be readily accessible to emerging composers as a model.

Citron points out that norms are not only inscribed through definitions, but also through frequency of appearance as examples of the category:

The traits considered basic to the genre those that define the particular genre and distinguish it from others, and those that populate many examples of the category will become norms, whether stylistic, performative, or social, that provide the guiding framework for future forays into the category. (Citron 1993: 124, my emphasis)

I have listened to every anthology entitled Electroacoustic Music or Electronic Music available through the York University and University of Toronto libraries, to see how prevalent soundscape compositions are in these anthologies. The results of this research, including a discussion and annotated discography, appear as Appendix D. Soundscape compositions do not figure prominently in most of these anthologies, although they are more prevalent in Canadian anthologies than elsewhere, perhaps because of the important work in this area of the World Soundscape Project and the association of national identity with a connection to the environment, as I discussed in Chapter Two. In the field as a whole, though, soundscape composition is not included in many examples of the category, so is unlikely to provide a guiding framework for electroacoustic music on an international basis.

Because soundscape composition is ignored or misunderstood as a genre within electroacoustic music, soundscape composers tend to receive less notice than other composers. For instance, Barry Truax's work is discussed in texts largely in terms of the computer processes that he employs rather than his approach to soundscapes. Although Ferrari's work is mentioned briefly in some texts, and discussed in a few, it is often misunderstood with reference to his intent as well as the processes used. In my library research, I found twenty times as many references to Karlheinz Stockhausen as to Luc Ferrari in Canada, and over a hundred times internationally, within my sample. It is also quite amazing that UQAM, which has graduate programs in electroacoustic music with professors who studied at the GRM studio in France where Ferrari worked, has only one reference to Ferrari's work. Soundscape composers' emphasis on listening to everyday sounds in context is still not really understood within a genre in which new technical processes and abstract discourse predominate in most examples of the category.

I have indicated how the generative dichotomy between elektronische Musik and musique concr‰te continues to structure thought about the categories of electroacoustic music, including the placement of soundscape composition. How does this affect the careers of individual composers and the acceptance of their music? To begin this discussion, I want to return to 1948, and discuss relationships among the careers of four important composers of electroacoustic music during this crucial period in its history: Pierre Schaeffer, Pierre Boulez, Karlheinz Stockhausen and John Cage. I have chosen these particular figures as a focus for several reasons. Westerkamp acknowledges the influence on her work of John Cage, so he is an obvious choice. Also, she notes the influence on her life and work of her European heritage and initial musical training there (often in reaction to it, as I note in the biography chapter). Schaeffer, Boulez and Stockhausen all embodied this European heritage in different ways. Most importantly, these four composers all influenced each other during this period. Focusing on how they affected each other contributes to the dissertation's exploration of second-person epistemology as a paradigm of knowledge about music. By focusing on letters and interviews, I reach below the objective facts about electroacoustic music to indicate how their attitudes and beliefs shaped both their own work as well as the norms of electroacoustic music.

v Pierre Schaeffer

Earlier in this chapter, I describe how Schaeffer portrays his work as diametrically opposed to the work of the Cologne studio, declaring that his music gives direct contact with sound, calling himself an artisan, mentioning the influence of his parents: describing his approach as concerned with concrete materials, with personal associations, with artisanal activity, all of which are stereotypically associated with the feminine. I believe that this alignment has contributed to the dismissal of his work.

In his description of why Stockhausen's Gesang der JÉnglinge is not musique concrete, musicologist Robin Maconie responds particularly to Schaeffer's use of the personal pronoun:

Soon after Gesang der JÉnglinge had acquired a reputation it was put about that since the work incorporates a boy's recorded voice it qualified as musique concrete ... one suspects that the label represents an attempt either to transfer some of the credit for Stockhausen's achievement or alternatively to reduce the work in public eyes to the level of a Parisian caprice ... it is positively misleading. The manner in which Stockhausen integrates vocal sound into the electronic fabric of the piece would never have been sanctioned by the school of Schaeffer ('mon violon, ma voix'), even if its members had been technically well enough informed to understand what he was doing. The qualities of intelligence and workmanship that made Schaeffer so keen to claim the work in retrospect as musique concrete, elevate Gesang to an altogether higher plane ... the focus on the boy's voice naturally draws attention to the 'message' content of the text, which ... tends to obscure awareness of the purely formal relationships of the electronic sounds. It did not inhibit audiences, nevertheless, from instinctively recognizing the potency and authority of Stockhausen's handling of the medium. (Maconie, 1976: 98-99)

In his concern to show why Stockhausen's work is not musique concrete, Maconie distinguishes between the two, establishing a hierarchy. Maconie praises Stockhausen's work as potent and authoritative, qualities associated with masculine mastery. He is also described as intelligent, establishing purely formal relationships, associating his work with the formal qualities of absolute music. The reference to a higher plane establishes a hierarchy of intellect. In contrast, composers like Schaeffer who work with musique concr‰te are portrayed as capricious and technically ill-informed, characteristics also

used to create denigrating stereotypes of femininity. In order to distinguish Stockhausen's work from that of Schaeffer, Maconie describes Stockhausen's work as exhibiting many attributes of objective knowledge: it has authority and potency, it is technically well- informed and intelligent. Its only flaw, in Maconie's view, is that it draws attention to the "message" content of the text, an aspect of the piece that refers to something beyond purely formal relationships. In contrast, Schaeffer's work is held to have none of these qualities of objectivity.

Maconie is not alone in his dismissal of Schaeffer's work. Pierre Boulez describes it in more graphic terms in a letter to John Cage: "I shall tell you that the experimental studio is more and more crap, and that Schaeffer is a pain in the arse; and that I hope I shall soon be working with Stockhausen at the electronic music studio of Radio-Cologne" (as quoted in Nattiez 1993: 145). He is clearly frustrated with Schaeffer and his approach to music, and contrasts Schaeffer with Stockhausen. Elsewhere, Boulez describes an absence of direction of the sonic material in musique concrete as damaging to composition:

One did not remain wary of the question of the material, which remained primordial in such a project; one substituted a poetic parade, like a surrealist collage ... This poetic art stripped of faith has become obsolete, this absence of leadership in the determination of the sonic material brings about an anarchy detrimental to composition. (quoted in Schaeffer, 1967: 13-14, my translation)

Here, Boulez expresses his belief that 'primordial' sound materials need to be controlled. His criticism could be construed as an invocation of what Lloyd refers to as "the primary Pythagorean contrast between form and formlessness." (1984: 3) Boulez is criticizing musique concrete as anarchic, a poetic parade without leadership. He finds the musique concrete approach to be inadequate, and fatally damaging to composition, which to him is fundamentally concerned with formal control over materials. In its association with (primordial) formlessness and (anarchic) chaos, musique concrete, as described by Boulez, is thus aligned with the feminine in the original Pythagorean table of opposites that structure Western thought.

Henri Pousseur relates how the process of criticizing Schaeffer's methods actually clarifies Boulez's own approach to composition:

In criticizing Schaeffer's methods, Boulez showed me exactly what he wanted to do. He wanted to restructure the material so he could have complete control. He wanted to unify the germ, to unify the seed, to have everything grow from one idea, and to apply a very precise, a very structured type of elaboration. (Peyser 1976: 74) While Boulez wanted to sever his connections with Schaeffer, it was actually through interaction (in opposition) with Schaeffer that Boulez defined his own compositional aesthetic. According to Georgina Born, antagonism to the work of Schaeffer also defined Boulez's later conception of IRCAM, which became a leading centre of electroacoustic music both in France and internationally:

IRCAM's approach has commonly been understood as involving a strong rejection or negation of GRM aesthetics and technology in line with Boulez's early critique, so that his antagonism toward the GRM has been seen as a prime motive for the emergent conception of IRCAM. Indeed ... techniques and technologies associated with musique concrete tape recording, analog electronics were subject to an almost irrational neglect and indifference within IRCAM culture. (Born 1995: 77)

Boulez's hostility towards Schaeffer and his approach affected not only his own attitude and working practice, but also the conception and technical orientation of a major electroacoustic institution under his control. From these reactions to Schaeffer's work, it is clear that to represent one's own work as dichotomously opposed to a rationalist and stereotypically masculine aesthetic only leads to marginalization of the composer as well as the approach itself. The radical separation of musique concrete and elektronische Musik established in the 1950s still tends to structure writing in electroacoustic texts and value judgements in the mainstream of electroacoustic music. Although Schaeffer is considered one of the founders of electroacoustic music, and is valued highly by the acousmatic school, his work is not valued as highly as that of other composers in the field of electroacoustic music as a whole.

These references indicate how clearly Schaeffer's work was categorized by himself as well as by colleagues as radically different from the work done at the Cologne studio. Yet, as time went on, in practice, Schaeffer's work was concerned with abstracting recorded sounds from their sources, and creating a structuralist grammar of sound types.8 He composed Le tri‰dre fertile in 1975, which uses electronically produced sounds. He experimented with removing the sounds from their original context by removing the attack portion of the sounds. The Paris studio was to produce more and more work that was decontextualized from the sound source. Even though acoustic materials were used, it was increasingly difficult to recognize them. Judd notes that tapes had to be marked for recognition:

Schaeffer ... made use of everyday sounds which once filtered, modulated, transposed or modified become so unrecognisable that they had to take the precaution of numbering the various pieces of tape in order to recognise them later, so great was the change from the original sound. (Judd, 1961: 69)

Schaeffer's work was as much abstract as concrete, as much objective as subjective. During a recent interview with Québec composer Monique Jean, I asked her about her music, which she said was influenced by the traditions of musique concrete, and acousmatic music.9 She told me that in such work, sounds "are emptied of their anecdotal content and retained for their morphology, their texture, their internal movement." This contemporary music influenced by musique concrete and acousmatic music appears to sever sound from the potential of intrinsic narrativity (its anecdotal content) and value it primarily for its decontextualized sonic properties: self-referentiality has come to be valued in music influenced by musique concrete as recorded sounds are severed from their original sources unrecognizable to the listener, and an internal structure is established, defined by morphology and texture. This emphasis on self-referentiality and abstraction brings tape music closer to absolute music than to Schaeffer's original definition of musique concrete. Still, the category of tape music is valued less than other genres, based on dichotomous distinctions that do not reflect everyday practice.

The Boulez-Cage Correspondence

The Boulez-Cage correspondence documents the uneasy relationship between two composers who were initially very amicable, and eventually moved in diametrically opposite compositional directions, at which point their correspondence dwindled and ended. The correspondence began as a result of their meeting in Paris in 1949. During that visit to Paris, John Cage intervened with music publishers to help get Pierre Boulez's work published, and Boulez in turn introduced Cage to musicians in Paris, and arranged some performances of his work (Peyser 1976: 60).

The correspondence lasted from 1949-1954. Nattiez explains the importance of this time for the two composers as follows:

... right up to 1952, Cage was seeking to organize what he called the structure of his pieces. Pitch had long since ceased to be determined by the series, and he was especially concerned to organize rhythm and temporal intervals. For his part, Boulez discovered in Cage a pursuit of sonorities behind which there was still some control ... However, everything toppled after 1952: chance grew from the status of compositional method (Music of Changes) to that of interpretation (Williams Mix) ... By contrast, Boulez reinforced the element of control and extended serial principles to all aspects of composition. (Nattiez 1993: 15)

At the beginning of their correspondence, Cage and Boulez were both interested in structural concerns: the elaboration of a musical form through mathematical means. This interest is consistent with the objectivity associated with the paradigm of absolute music. However, during the period of their correspondence, they began to move in differing directions.

The development of these differing directions is reflected in the concerns expressed by each of the composers during the period of correspondence. Boulez was concerned from the beginning about Cage's respect for the individuality of sounds, their context rather than their use as sonic resources within the structure of a composition. Nevertheless, he was interested in presenting Cage's work, while framing it within his own aesthetic. He discussed his disagreement with Cage's approach to sounds in his introduction to Cage's Sonatas and Interludes for Prepared Piano in 1949, noting also his preference for Webern's approach to sounds as "absolutely neutral" (Nattiez 1993: 32). These were his only criticisms of Cage at that time.

During the next two years, from 1949 to 1951, Cage attended the lectures of Daisetz Suzuki at Columbia University, a course making Zen Buddhism accessible to Westerners which Cage says was instrumental in changing his approach to artistic work (Cage 1961: xi). As a result, he began to question his need for control over compositional structures, and developed his work with indeterminacy and context. Boulez asked him about some of the sounds he used in the music for a film on Calder, and Cage replied as follows:

What I did was very simple, to record on tape noises actually produced in Calder's studio in the course of his work ... had I done it at the beginning, I rather imagine I would have made the entire film in this way (using also sound recorded from nature). (Nattiez, 1993: 93).

Cage had discovered an approach that questioned the tenets of traditional objectivity. The sounds that he used in the film on Calder refer beyond mathematical structures and self- referential musical forms. They were noises from Calder's studio: they referred to the rhythms of Calder's work, to Calder as a subject, rather than to a pre-defined formula.

In the same letter about the film on Calder, Cage also expressed ambivalence towards technology, seeing the perfection of machines as a limitation, but their ability to record as an advantage: "the adventure was halted by machines which are too perfect nowadays. They are stupid. Even so I had fun in the 2nd part by recording noises synthetically (without performers). Chance comes in here to give us the unknown" (Nattiez 1993: 48). In December 1950, Cage spoke of coming closer to chance while maintaining a rhythmic structure (Nattiez 1993: 79). In May of 1951, he wrote a long letter to Boulez in which he explained in detail his method of chance procedures using the I Ching (Nattiez 1993: 94-95).

It is with Cage's Music of Changes, in 1951, that Boulez and Cage started to diverge more clearly. In December of that year, Boulez wrote:

Everything you say about the tables of sounds, durations, amplitudes, used in your Music of Changes is, as you will see, along exactly the same lines as I am working at the moment ... The only thing, forgive me, which I am not happy with, is the method of absolute chance (by tossing the coins). On the contrary, I believe that chance must be extremely controlled: by using the tables in general, or series of tables, I believe that it would be possible to direct the phenomenon of the automatism of chance, whether written down or not, which I mistrust as a facility that is not absolutely necessary. For after all, in the interpolations and interferences of different series (when one of them passes from durations to pitches, at the same moment as another passes from intensities to attacks, etc...), there is already quite enough of the unknown. (Nattiez 1993: 112-113).

Here it is clear that Boulez still perceives similarities in their approaches to the use of organization (tables of sounds, etc.). The introduction of chance procedures unsettled him: "there is already quite enough of the unknown." Although Boulez was not explicit about what concerned him in the unknown, perhaps it is its quality of apparent formlessness, a seeming chaos. Perhaps he could not understand a structure based on chance because he perceived it as the opposite of formal structure, as a lack.

A letter from Cage to Boulez in 1952 (Nattiez 1993: 132-133) documented the application of chance procedures to the composition of tape music. The letters from this point on became more sporadic: the two had less in common to discuss. By 1954, Boulez no longer apologized for his beliefs about chance: "I do not admit and I believe I never will admit chance as a component of a completed work ... as for chance, the thought of it is unbearable!" (Nattiez 1993: 150) The correspondence could only continue as long as Cage was developing compositional structures with some element of control. Increasingly, Boulez moved towards total serialism and the formal control of all musical parameters. When he used aleatory techniques in his music, it was only as "controlled chance."10 At the same time, Cage moved increasingly towards indeterminacy of performance as well as of compositional means.

Boulez-Stockhausen-Cage

During the same period that Cage and Boulez were carrying on a correspondence in the early 1950s, Stockhausen had been working at the Cologne music studio, producing several works using the serial method of composition. Initially, these used electronically synthesized sounds. Stockhausen and Cage met in 1954, when Cage and David Tudor performed throughout Europe. Peyser records that Cage was disappointed with his lack of acceptance in Europe at that time. However, an association began between Stockhausen and Tudor, who started performing Stockhausen's piano works in the late 1950s. Stockhausen also began consulting Tudor on performer involvement (Peyser 1976: 125). The association between Stockhausen and Tudor was later to facilitate Stockhausen's improved relationship to Cage.

In the mid-1950s, Boulez and Stockhausen also corresponded about the subject of rhythmic structures of pieces, a similar theme to the initial Boulez-Cage correspondence. But this correspondence was not to last. Stockhausen was becoming increasingly frustrated with total serialism. Peyser also describes Stockhausen's turn away as a turn against authority:

At first Stockhausen identified with Boulez's goal, the overthrow of traditional authority: tonality. But when Boulez, or the serial language, became a new authority, when the goal of musical revolution had been in good measure achieved, then Stockhausen redirected his hostile energies against Boulez. (1976: 120)

Gesang der JÉnglinge, composed by Stockhausen in 1955-56, was considered a breakthrough at Cologne, because "against all the teachings of the establishment the piece was structured around recordings of a boy's voice, treated and integrated with electronic sounds" (Manning 1985: 75). As I discussed earlier, Maconie (1976) took pains to note its differences from musique concrete. But Boulez did not like it: "There was a cheap side showing that I did not like very much ... Stockhausen was covering abstract categories with splashy gowns" (Stacey 1987: 76). While Maconie focuses on the aspects of Stockhausen's work that made it seem more abstract and objective, to give it more authority, Boulez points to those aspects that seem to him to be less abstract and structured. In order to denigrate these aspects of the work, he refers to them as showy feminine clothing, "splashy gowns." His aim is to criticize what he perceives as the more trivial (or in his words, "cheap") characteristics of the work, and he does this by associating them with stereotypically feminine vanity, in effect accusing stereotypically masculine abstract categories of cross-dressing.

In this same period, 1955-56, Stockhausen invited David Tudor to Darmstadt to give seminars on the music of Cage. In May of 1956, Cage's Music of Changes was presented at Darmstadt. Boulez and Stockhausen argued after the concert. In 1958, Boulez cancelled his teaching engagement at Darmstadt. Stockhausen arranged for Cage to teach in his place. During this visit, Stockhausen was solidly behind Cage. Tudor reports "It was Stockhausen who turned the tide. If ever a question of negation came up, Stockhausen came to our aid" (Peyser 1976: 139). In his second lecture at Darmstadt, Cage criticized Stockhausen himself, particularly Klavierstucke XI, for not going far

enough with chance operations, a criticism which Stockhausen accepted at the time. Stockhausen became an advocate of the approach of Cage. "His [Cage's] became the forthcoming style. Stockhausen went completely overboard. And almost everyone went along with Stockhausen" (Peyser 1976: 140). Here, Joan Peyser indicates the immense influence of Stockhausen in assuring Cage's acceptance in Europe during that visit, a connection that I did not find elsewhere in the musicological literature.

Stockhausen went on to incorporate the ideas of Cage with his previous ideas about serialism. His work after this time is characterized by both serialism and indeterminacy simultaneously. Robert Frisius describes this as a synthesis: "Syntheses between electronic and instrumental music, between strict pre-constructed and free-intuitive structures, between known and unknown sounds, between handed-down and newly developed musical orders" (in Nagel, 1984: 13). However, it seems that formal compositional control through the serial technique is still primary in this composer's mind. Stockhausen believes that the direction that the composer takes through the serial technique is necessary to create a balanced situation among sounds. He believes that if sounds are collaged using only chance procedures, this creates a hierarchical situation with only the most banal sounds remaining in the memory. He describes the process as haphazard and unmusical:

Collage is gluing together and seeing what happens ... In America the music that's most praised has done away with all musical subjects. Cage is the example of collage music where everything's just thrown in one pot and you see what happens. (Stockhausen 1973: 190-191) Here, it is clear that Stockhausen only appropriates certain parts of the ideas of Cage while he dismisses others. He describes Cage's music as collage, an approach in which in his view sounds are juxtaposed without the composer's prior intention. He states that this process of collage "has done away with all musical subjects," implying perhaps that musical subjects reside only within the conscious mind of the composer. His use of the phrase "everything's just thrown in one pot" denies any structure within the music of Cage. His alternative to collage is "metacollage":

a certain object that you use, let's say a triad, is not the same as any other sound object that's less common or less simple ... If there's no choice, then things create their own hierarchy ... In music, the most redundant and the most familiar win, the most commonplace sounds stick in the mind and the others you forget. So you get a very hierarchical music ... Metacollage and integration mean ... really dealing with strong subjects and then trying to create balanced situations. (1973: 192)

In Stockhausen's view, then, the composer must have the role of mediator, to order and balance the sounds, and a hierarchy dominated by the commonplace. But in fact Stockhausen is creating a hierarchy based on the composer's choice, rather than the hierarchy of banality which he believes will be perceived by the listener. In his hierarchy, indeterminate elements are controlled by a structural form determined only by the composer.

Stockhausen has constructed a dichotomy between collage and metacollage, in which collage is formless (everything thrown in one pot, like a kind of gumbo) and metacollage is the formal structure of sound objects. By doing this, he associates his work with the privileged concept of form, and Cage's work with the less valued formlessness. Just as he had previously reacted against Boulez, he now reacts against Cage, after appropriating many of Cage's ideas. This separation from Boulez and then Cage allows him to diminish their perceived influence on him, emphasizing his status as an individual.

Peyser describes Stockhausen's selective appropriation of Cage as a type of cannibalism:

Stockhausen ... embraced Cage with such fervor that by absorption he all but annihilated him from the musical scene. Appropriating Cage's interest in Eastern mysticism as well as his notions of performer involvement and chance, Stockhausen continued to pour out work after work. (1976: 140) Peyser's writings are unusual in that she notes interactions of this type between the composers. Most of the biographical sources invent each composer as an individual: while other composers may be mentioned briefly, the focus remains on the individual's development of a style. Why are composers' biographies written in a way that minimizes their contact with other composers? I believe that this is related to the way that these composers invent their work as dichotomously opposed to that of others. This is demonstrated in the example above of Stockhausen's rejection of Cage's approach after he had appropriated aspects of his style. It is also shown in earlier examples, such as Boulez's dismissal of Schaeffer while Pousseur claimed that Boulez was able to clarify his own style through the process of working with Schaeffer.

Marcia Citron attributes this representation of the composer's work as original and individuated from precursors as associated with the rise of capitalism and with what literary critic Harold Bloom has referred to as an "anxiety of influence." She writes:

The concept of originality arose as a means of affirming the growing emphasis on the individual in capitalistic society in particular the white middle-class male. For the composer it was useful as another means towards self-definition: of marking himself off from his audiences and from other composers, who now competed for attention in an open arena.... stylistic originality for the male composer may have been a necessary response to the burden of stylistic precursors: what Harold Bloom has dubbed an "anxiety of influence." (1993: 185)

While political factors such as the rise of capitalism and psychological factors such as an anxiety of influence would definitely affect composers' ways of interacting with each other, I am equally interested in how individuation is affected by composers' epistemologies. Christine Battersby claims that Romantic and Modernist aesthetics were laid on epistemological foundations provided by Immanuel Kant, who, according to Battersby, argued that "the first thing we construct for ourselves is a stable self (the transcendental ego) which constructs itself and a stable world (of transcendental objects) at the same time" (1989: 43). Thus the artistic creator, like God, is "a Being who can literally think himself into existence ... art grows out of individuality" (1989: 44). Boulez is clear about how he thought his style into existence: "It was like Descartes's 'Cogito, ergo sum.' I started from the fact I was thinking and went on to construct a musical language from scratch" (Peyser 1976: 63).

From an epistemological position that art grows out of individuality, composers such as Stockhausen and Boulez would be concerned to individuate their work from others, to minimize the effects of others, and to describe their own work as superior to that of precursors' work. One way to do this would be to use dichotomous constructions with rigid boundaries, creating concepts such as "metacollage" that are represented as formally superior and can only be associated with their own work, while denigrating concepts that are associated with others' work.

Other European composers besides Stockhausen also criticize the compositional approach espoused by Cage, using it as an example of work that was somehow thoughtless, or mindless, as in the following quote by Luciano Berio:

... a sort of meta-aleatoricism ... focussed maximum attention on raw acoustic materials, isolating them from the conceptual procedures (whether 'true' or 'false') by which they had been organized (and which have to be there anyway, because human action is never free of concepts). The conceptual aspect, left in isolation and reduced to an abstraction that had no need of concrete relations, was much discussed, but in the end it was the physical materials that took over. And when objects took over from thought, they produced a string of gratuitous and renunciatory gestures. That was what happened with those experiences that proposed to let "things themselves" sound and speak, as if there were no difference between perception and understanding, sensation and thought, listening to the sound of water, and listening to GÐtterdËmmerung. The ultimate example of this was the thoroughly stupid gesture of the pianist in evening dress circulating around the piano without playing it, as if his refusal to do so hid some greater ontological refusal in the background. When the conceptual and the physical aspects of music propose themselves as separate and irreconcilable entities, I have the impression that I'm listening to someone who reminds us continually of his vocabulary, his syntax and his figures of speech ... but conceals from us whatever message he may have to transmit ... the producer of free sounds and noises ends up depicting the post-Cagean squalor of his soul and his musical intellect, and nothing more. (1985: 69- 70)

Here, music influenced by Cage is depicted as dominated by materials, which Berio perceives as isolated from conceptual procedures in Cage's work. Berio puts forward the argument that if the physical aspects of a composition are allowed to take over from the conceptual procedures, the result will be noise and squalor. While he may seem to be advocating an integration of materials and conceptual procedures, his delineation of "listening to GÐtterdËmmerung" from "listening to the sound of water" joined with the delineation of perception from understanding and sensation from thought aligns GÐtterdËmmerung with understanding and thought, and the sounds of water with perception and sensation, as if there is no possible thought or understanding associated with listening to the sounds of water. This places the direction of musical understanding in the mind of the composer rather than that of the listener, who can in Berio's view only understand and think about creations such as GÐtterdËmmerung while only perceiving and sensing the sound of water. For Berio, the former is musically significant while the latter is not. For Cage, both are significant.

Cage and awareness of dichotomous thought

While Cage came out of the same modernist tradition that influenced other composers of the time, his work with Daisetz Suzuki in the early 1950s led him to think about the philosophical underpinnings of his work, leading to a significant change. His music and writings from that time onwards exhibit more dialogue with others than is common among writings by composers. He is less concerned to individuate, and includes articles in his writings about many of his precursors (such as Erik Satie and Edgard Var‰se), as well as colleagues in other disciplines (Robert Rauschenberg, for instance). Some of his articles are written as anecdotes that relate specific events in which other composers figure prominently. Others, for instance the one about Satie, are written as dialogues in which writings from the subject of the article are juxtaposed with Cage's commentary.11 His most developed dialogue is with James Joyce, with whose work he engages many times. Cage does not attempt to construct himself as a solitary genius, but as a member of a creative community in dialogue with others.

Cage also attempts to go beyond dichotomous thinking in his own compositional work. Asked about work such as Stockhausen's, where indeterminacy was integrated with serialism, he responds:

to have certain aspects of a composition controlled ... and others uncontrolled. Well, what

is maintained here is the concept of pairs of opposites: having black and white, as it were, and then composing with the play of these opposites. One can then engage in all of the games that academic composition has led us to know how to play. One can balance this with that, produce climaxes, and so on. I'm afraid all I can say is that it doesn't interest me.

It doesn't seem to me to radically change the situation from the familiar convention. It simply takes these new ways of working and consolidates them with the old knowledges, so that one remains at home with one's familiar ideas of the drama of the play of the opposites. So, one wouldn't have to change one's mind. Whereas, I think we are in a more urgent situation, where it is absolutely essential for us to change our minds fundamentally ...What we need is a use of our Art which alters our lives. (as quoted in Schwartz and Childs, 1978: 45-6)

Although Salzman describes Cage as "Anti-Rational," (and the serialists as ultra-rational, see 1967: 157-169), this quote shows the desire of Cage to change his mind to avoid playing with established epistemological oppositions such as rational anti-rational, in other words to avoid dichotomies.

My own experience of realizing a Cage score helped me to understand how Cage achieves this avoidance of dichotomies in his musical work. Circus On.... (1979) "is a means for translating a book into a performance without actors, a performance which is both literary and musical or one or the other" (from the score). Here, there is no necessary dichotomy between literary and musical while they are distinct, there is no excluded middle: the performance may be both at once.

When I worked with this score, I found that there was an intimate relation between the conceptual procedures and the acoustic materials. Through reading the text, writing mesostics, making lists of sites and sounds, recording those sounds, explaining the context of the piece to the performers, organizing the performance and then performing, I felt a greater intimacy with the sonic dimensions of the book of poetry that I had chosen for this realization than I had ever previously felt. Just because I did not have control over when a performed sound took place, or how a recorded sound was manipulated, did not mean that I was alienated from those sounds. On the contrary, through listening to the sounds and finding my time and space to contribute my own sounds, I understood that sound world better than I believe I would have through directing it. Then I would have only understood my own message, and not the other possible messages contributed by chance and by the other performers. Many members of the audience told me of the "messages" that they had received through this work. All of these were interesting, some related and some quite different from each other, some expected and some quite unexpected, full of surprises.

Berio discusses the work of Cage from the point of view of the conceptual against the physical, whereas it seems to me that his work is more concerned with moving the locus of control inward. In the movement from intention to indeterminacy, the composer must exercise self-control more than control over sound objects. When I worked with the Circus On... score, it took a great deal of self-control to produce the mesostics correctly (without bending them to my taste) and to play only for one third of the time while on stage, spending more time listening to the other sounds produced. This lesson of musical self-control was a good one that indicated to me that musical discipline in composition could exist in other forms besides control over others, whether sounds or performers. There seemed to be a high degree of integration and balance between listening and performing; image, text and sound; self and other; literature and music; vocals, instrumental work and recorded sounds; improvisation and composition, that I found very satisfying.

Berio's description of Cage's music is emblematic of attempts to dismiss the latter's music and philosophy as romantic, anti-rational or simply stupid. At the same time, history books record his prophesies about the future of electroacoustic music as early as the 1930s, both in writings ("The Future of Music: Credo" 1961: 3-6, which was originally written in 1937) and in musical pieces (the Imaginary Landscapes). Pellman describes him as a "marvelous virtuoso of musical innovation" (1994: 354), a quote which reflects another part of his reputation as a creative genius. Attempts to dismiss his work were unsuccessful as Cage appealed to a growing number of experimentalists in popular music and visual art as well as concert music.

After 1960

After 1960, both Stockhausen and Cage continued to produce many compositions, as the experimental composers in the United States gained more acceptance, and Stockhausen continued to predominate in Europe. Little had been heard of Schaeffer by this point. The period from the late 1940s to 1960 was the time of Boulez's greatest compositional output. After 1960 he turned increasingly to conducting, and in 1977 was asked by Georges Pompidou to direct IRCAM (Institut de Recherche et Coordination Acoustique/Musique), one of the most important centres in the world for electroacoustic music. From that point until 1985, he produced only one work, Repons. Peter Stacey marks the influence of Cage on Stockhausen as important to this change in Boulez's predominance:

Although in the late fifties Boulez's position of predominance was threatened and overturned by the anarchic influence of John Cage, who led composers like Stockhausen

away from the world of total serialism to that of music-theatre and chance music, Boulez's achievement remains a considerable one. (1987: vii)

I would like to suggest an alternative understanding of Boulez's decrease in compositional work. By the 1950s, some composers were claiming to have exhausted the possibilities of serialism, and were looking for a change. But perhaps Boulez was so committed to the idea of serialism, its Cartesian separation of subject from object, that he could not move away from it, nor could he express any dissatisfaction with it. As director of IRCAM, he clearly privileged scientific thinking in the production of objective knowledge:

The creator's intuition alone is powerless to provide a comprehensive translation of musical invention. It is thus necessary for him to collaborate with the scientific research worker in order to envision the distant future, to imagine less personal, and thus broader, solutions ... The musician must assimilate a certain scientific knowledge, making it an integral part of his creative imagination ... At educational meetings scientists and musicians will become familiar with one another's point of view and approach. In this way, we hope to forge a kind of common language that scarcely exists at present ... The effort will be collective or it will not be at all. (Boulez 1976, as quoted in Born 1995: 1, my emphasis)

Boulez distinguishes the composer from the scientific researcher in (traditionally) gendered terms: the composer is intuitive, personal, powerless all characteristics which are stereotypically associated with white affluent Western women. On the other hand, the scientific research worker envisions less personalized, broader solutions by looking to the future. In order for the composer to balance his creative imagination and and personal tendencies to become powerful, he must assimilate scientific knowledge. While he wishes for a common language between scientists and musicians, an integration of the two poles of intuition and scientific thinking, one is clearly privileged over the other. Boulez's insistence that the effort be collaborative reflects a belief that the two poles are mutually exclusive and cannot co-exist within an individual.

Although Stockhausen was willing to engage with the ideas of Cage and others after the mid 1950s, Boulez had stopped conversing with both Cage and Stockhausen. The latter seemed not to change his mind at a deep level, maintaining a stance of control over others while appearing to embrace chance procedures. Cage seemed the most committed to approaching music in a different way, attempting to move beyond dichotomous thinking. But what about those people whose ideas were rarely even heard? I have already discussed how the ideas of Pierre Schaeffer have been marginalized within the electroacoustic community, while still forming part of the account of electroacoustic history. Some other composers are included in this account only sporadically and locally. I will now discuss the positions in the electroacoustic community of Daphne Oram, Pauline Oliveros, and Hildegard Westerkamp. Westerkamp discusses the influence of Oliveros on her work, so once again she is an obvious choice. I include Oram not because of her influence on Westerkamp, but to demonstrate how a composer's influence is circumscribed by isolation. Oram's writings reveal both interesting ideas and innovative techniques developed in relative isolation from others. As a result of this intellectual and compositional isolation, her work has remained very much on the periphery of electroacoustic knowledge.

Daphne Oram

Daphne Oram was born in 1925, of the same generation as Boulez (1925) and Stockhausen (1928). She began working at the BBC in 1943, where she was trained as a studio engineer, an opportunity available to women because of the war. In 1944, she began experiments in converting graphic information into sound, building her equipment out of old radio components. She tried at this time to convince the BBC to start an electronic studio, but met with resistance. When tape recorders first arrived, she moved them together each night to make a studio, disassembling them each morning. Finally, in 1957, the BBC agreed to begin what they called a radiophonic workshop, under pressure from the drama (rather than the music) department. In 1958, Oram became one of the initial directors of the workshop, and in October was sent to Brussels for a conference where she came into contact with other experimental composers including Stockhausen. Disillusioned with the direction of the radiophonic workshop which seemed to her overly concerned with the production of sound effects for radio dramas, Oram resigned from the BBC and set up a studio at her home in Kent.

Here she returned to her experiments with converting graphic information into sound, creating a system she referred to as Oramics. The use of ten parallel tracks of 35 mm. film allowed Oram to specify the characteristics of several sonic parameters simultaneously. She received several Gulbenkian grants to do this work. In the 1960s, she produced many concerts in London and Edinburgh, where she discussed electronic music and played examples composed by herself and others. She also produced music for theatre, ballet, radio, television, and film (see Fuller 1994: 234). In 1972, she published a book about her work, intended like her concerts to be accessible to a wide audience.

Oram entitled the book An Individual Note of Music, Sound and Electronics, beginning it with a quote from Michel de Montaigne. This French Renaissance writer is considered to be the originator of the personal essay, relying on human experience rather than abstract theory as a basis for writings. The introduction to Oram's book is full of disclaimers: that the book is not to be considered sober or academic, but is just one person's point of

view. While it is good that Oram recognizes her own subjectivity, the disclaimers made me wonder whether she expects her thoughts not to be taken seriously. Her constant emphasis that her writing should be construed as a personal note rather than serious writing may indicate an underlying belief that subjectivity cannot be taken seriously, maintaining an objective-subjective dichotomy. At the same time, she seems to recognize the power of this dichotomy and needs to address it in her work.

Despite her disclaimers, the book contains some very interesting ideas. Throughout the book, Oram finds analogies to explain electronic processes in everyday language. One of these examples seems particularly poignant in light of Oram's experience at the BBC:

Probably we have all, at some time, felt the frustration of finding ourselves talking on serious, intelligent matters to someone who has his mind absorbed at that moment by insignificant trivialities. If we are sensitive, we can almost feel physically hurt by his inattentiveness ... our own words seem to cruelly rebound and strike back at us. This is just a small illustration of unmatched impedances.12 (Oram 1972: 118)

Oram discusses the distortion and dissipation of electrical signals by making an analogy with attempted communication between people. In this case, the listener's inattentiveness leads to distortion of the speaker's message and emotional damage to the speaker, just as in an electrical circuit, unmatched impedances can lead to distortion of the signal and damage to the equipment. This allusion to serious thoughts being trivialized by the listener also suggests the intellectual isolation experienced by Oram.

As well as explaining electronic processes, Oram discusses thinking and knowledge in terms of electronics, referring to what she calls "celetal"13 thought as bringing art and science together in balance, using the Taoist yin-yang symbol as an example. She rejects the word 'control' as inadequate to describe what an electronic composer does with sound, saying that the word she searches for does not exist in the English language:

I am hunting for some word which brings a hint of the skillful yachtsman in fierce mid-Atlantic, guiding and controlling his craft and yet being taken along with it, sensing the best way to manage his vessel, freely changing his mind as unforeseen circumstances evolve, yet always applying his greatest discipline to himself and his seamanship. (1973: 13)

Here, the locus of control is similar to that which I describe in my experience of interpreting a Cage score. The emphasis is on self-control, and working with natural forces, accepting chance circumstances interacting with personal action. This is not a conceptual dichotomy between composer's concept and sound material: in Oram's sailing analogy, the composer who creates a rigid distinction between his craft and the sound would drown as quickly as a sailor who did not listen to the wind. Oram discusses the relationship of chance and determinacy through the analogy of taking a car trip down a familiar road, and noting how an experience of the trip changes according to the season, circumstances and time of day, but how similarities in the geography persist from year to year or day to day.14 The route may stay the same, but the attentive traveller will perceive differences every time.

Oram's book contains many interesting concepts, processes and analogies, that seem to have been developed in relative isolation, as the book title suggests. She is aware of the work of electroacoustic composers in Europe and North America (a wide variety of recordings is listed in the Appendix of her book). Her biography written by Fuller exposes her isolation within the BBC, and her brief contact with other composers in 1958 at the Brussels conference. This contact was enough to convince her of the value of her work, which she developed in a home studio. Having worked in isolation, Oram then communicated her ideas through a concert series, the book, and in the 1980s through teaching at Christ Church College, Canterbury. Manning notes that Oramics "provides the composer with a specification facility unparalleled in all but the most sophisticated voltage- controlled systems" (1985: 155); still, references to Oram's work are very sparse, and out of all the electroacoustic textbooks that I reviewed, she was only mentioned in Manning's book. While she was developing some interesting ideas and techniques regarding electroacoustic music, her relative isolation limited her abilities to develop these ideas, to believe that they were worthy of serious consideration, and to spread those ideas to others beyond a limited number of people. Her music is hard to find.15 In the York University library, there is only one recording (Listen, Move and Dance 1-3, a record meant to accompany creative dance for children, produced in 1962), that includes a few short works by Oram, described as "Electronic Sound Patterns." These works have the synthetic- sounding timbres typical of electronic music of the early 1960s. The short repeated sequences are gestural and rhythmic, suiting dance movements. Such short segments only give a hint of what she was doing musically. I wonder whether longer recordings of her work exist? It seems to me that her work and ideas merit more attention than they have received.

Pauline Oliveros

Born in 1932, Pauline Oliveros is just a few years younger than Oram and Stockhausen. She began working with electronic improvisation in the fifties, and was a member of the San Francisco Tape Music Center from 1961, becoming its director in 1966. She was also director of the Center for Music Experiment at the University of California in San Diego, where she taught for fourteen years. In the 1970s, she became increasingly interested in

Taoism, Buddhism, meditation and feminism. Her Sonic Meditations, created from her experiences of performing with a group of women, are examples of work from this period that involves ritual and intense, meditative listening. In 1981, she moved to New York State and set up the Oliveros Foundation, a non-profit arts organization. In 1988, she formed the Deep Listening band. This group has recorded performances in locations with interesting acoustics, such as the Fort Worden cistern, an abandoned water tank in Washington State with a 45-second reverberation, and Tarpaper Cave, an abandoned Catskill mountain cement quarry in New York State. Much of her work involves people with varying musical backgrounds, and a blurring of distinctions between performers and audience. She is well known for giving concerts and presentations where she listens, and the audience performs.16 The Deep Listening Chorus, directed by Oliveros, meets once a month and is open to anyone (Fuller 1994: 227-231).

Oliveros's book, Software for People, was published in 1984 and contains writings from 1963 to 1980. Some of these are technical (e.g. "Tape Delay Techniques": 36-46); some are descriptions of the work of others (e.g. "Atlas Eclipticalis," about John Cage's work of the same name: 202-205); many refer to Oliveros's research about listening: the poetics of environmental sound, answers to the question "What is your favourite sound?," and excerpts from sound journals. Three of the articles are about feminism and music. "And Don't Call Them 'Lady Composers'" (1984: 47-51), is the only one which was published outside of this anthology. Oliveros notes, in a 1994 interview with Fred Maus, that the New York Times asked her in 1970 to write an article on any topic, so she surprised them with this. In this article, she discusses the lack of opportunities for women, the dismissal of work of women composers, and music critics' emphasis on "great" composers.

In "The Contributions of Women As Composers" (1984: 132-137), Oliveros discusses two modes of creativity: active, analytical creativity resulting from cognitive thought, and receptive creativity in which the artist is a channel. Refusing the mainstream dichotomy which declares that (masculine) analytical thought and (feminine) intuition are separate and mutually exclusive, Oliveros includes quotes from Mozart and Beethoven which refer to both of these modes of creativity, and notes that scientists also use both modes. She points out that Western society values and develops the analytical mode, and that intuition is left to chance and remains undeveloped. She also notes the relationship of these modes to stereotyped genders. Oliveros then asks a number of questions about working methods of men and women composers, and what methods or conditions might be used to promote and train intuition. This essay was part of a grant application for research which Oliveros intended to base on the musical scores of student composers at the University of California. The research grant was denied.

"Rags and Patches" is the most playful and the most extensive of the three articles (1984: 112-129). It is an embroidered quilt of anecdotes, letters and fables, populated by Alice in Wonderland, Patchwork Girl, Ojo and Scraps in the Land of Oz. Oliveros asks "did you know there are over one hundred species of fish which change sex regularly? (Maybe even willfully)" Her allusion to the sex lives of fish, far from being irrelevant, indicates a desire to imagine possibilities beyond two fixed stereotyped genders. Her next question is "I wonder what an androgynous musical form would be?" (1984: 112). At that time, she did not include an answer. But in 1994, she does. Fred Maus asks her if she has had any more thoughts about androgynous music since writing "Rags and Patches," and she responds:

Well, I think it would certainly be in the deep structure of how the music is played and assembled. You can have music as linear process, and music as nonlinear process. And you can also have music that's both ... Probably John Cage's music could be looked at that way. He has opened the world of music so much, with his ideas. But I also think of his music as highly disciplined in its structure.

Others dismiss it as "all those chance operations." But in working with chance, asking the right questions is crucial, of course. And then having the discipline to follow the method is another thing, and that has to do with some linearity, whereas the material and the result would be nonlinear.... hardly anyone understands the discipline. (Oliveros and Maus 1994: 185)

Oliveros's description of Cage's musical process shows a much deeper level of understanding of his work than the previous quotes about him by other composers. Rather than defining his music as feminine or masculine, disciplined or chaotic, linear or nonlinear, Oliveros experiences it as androgynous in its approach. This is consistent with her other remarks in her evident desire to deconstruct gendered oppositions.

In "Rags and Patches," Oliveros contests the dichotomy between music as penetration and listening as passive reception, pointing out that "one can receive music but also actively penetrate it, not to mention all the other finer variations" (1984: 113). Again, in 1994 she enlarges upon this, pointing out that focussed aural attention is very active. "Rags and Patches" also includes correspondence with people about Oliveros's role as a woman composer. She creates a model representing the integration of identity, role, duty and will, and how these become unbalanced in stereotyped gender roles. At the end of the article is a fable, with gender translation by Oliveros. It was sent by her as a contribution to a women's art festival, in a section called "Letter to a Young Woman Artist":

Dear Feminist Art Program:
Your collective response and personal potential is welcome to a ragged traveller on a

patchy road:
Fox was the only living woman. There was no earth. The water was everywhere. "What shall I do?" Fox asked herself. She began to sing in order to find out.
"I would like to meet somebody," she sang to the sky. Then she met Coyote.
"I thought I was going to meet someone," Fox said.
"Where are you going?" Coyote asked.
"I've been wandering all over trying to find someone. I was worried there for a while."
"Well it's better for two people to go together...that's what they always say."
""O.K. but what will we do?"
"I don't know."
"I got it! Let's try to make the world."
"And how are we going to do that?" Coyote asked.
"SING!" said Fox.

If Fox had maintained a traditional epistemology, in which the construction of knowledge is "an independent project, uncontaminated by the influence of testimony, opinion, or hearsay, [by] ...cognitive agents who can know their environments by their own unaided efforts" (Code 1991: 71), then she would not have gone looking for someone to sing with, and found Coyote. Or if she had found Coyote, perhaps she would have listened to her song, then incorporated it, while asserting her difference and her own song's inherent superiority. Instead, it seems that Fox sought an interdependence:

manifesting itself in patterns of reciprocal influence. Shifting configurations of relationships, and constant reassimilations, reinterpretations, reconstructions of person-histories, commonly in dialogue with other 'second persons.' (Code 1991: 84)

Fox and Coyote are both dog-like, but of different species. Theirs is not a familial relationship, but one which reaches across an inter-species divide, a relationship which is achieved rather than assumed, a friendship. Fox and Coyote have some "affinities and shared but not identical histories" (Code 1991: 103). When they meet, and sing, they create a sound that speaks of both of their stories, rubs together the grain of both of their voices, to create a world that expresses their mutual and changed knowledge of it through their meeting. When Oliveros sent this "Letter to a Young Woman Artist," she encouraged them to find each other across whatever divides them, to create new musical knowledge by putting their voices together, listening and singing. In their letter to her, the organizers of the Feminist Art Program said "your personal vision and achievements have moved us and enriched our development as young women artists. You are a model to us" (Oliveros 1984: 128). Oliveros includes this fable in her book as a hopeful message of potential musical and cooperative interaction, a parable of possibility. Her omission of the (Native American?) source of this fable17 indicates that even though she values such cooperation and respectful interaction, she sometimes represents knowledge as her own rather than as the result of dialogue.

Because she is better known than many other women composers, Oliveros is able to enrich the development of other women composers. Her work is discussed, if only briefly, in most of the electroacoustic texts. Perhaps she has benefited from her association with other composers of experimental music in the United States and particularly with the work of John Cage, which she describes as androgynous, and therefore more attractive and full of potential than music that she would consider gendered masculine. Because she is farily well known, a younger generation of women electroacoustic composers have benefited from meeting her words or hearing her work. Others, especially in North America, have been able to work with her directly through her performances and workshops.

There are still far more references in electroacoustic texts to male composers' works than to compositions by women, with the exception of works by Oliveros, who is often the only woman composer to receive significant attention in an electroacoustic textbook. Christine Battersby points out that to be seen as significant within a genre, an author (or composer) has to be seen as:

individual but not unique; exceptional but not isolated, strange, freakish or simply crazy. Sadly, the mythologies of female Otherness still make it extremely difficult for critics (and women themselves) to see women in such ways. A male creator credited with an oeuvre that is féminin might still retain his cultural significance while celebrating non-entity; but a female viewed as hysterical and ecstatic has to fight off a much more mundane kind of cultural non-entity. (1989: 145)

Battersby's point is well taken: in my research, the work of women is generally shown to be much less widely recognized than that of men, leading to isolation and relative cultural nonentity. In addition, when only one woman composer is selected for significant attention within a comprehensive textbook or recorded anthology, her work is likely to be perceived as emblematic of an essentialized femininity, rather than part of a range of approaches by women composers.

The work of women composers is received differently in different electroacoustic communities. Both Code (1991), and Godway and Finn (1994), point out that simple communitarianism can be problematic in its uncritical valuation of the idea of community itself: communities such as neighbourhoods, families and nations can be just as oppressive as they are helpful. My research has indicated how different electroacoustic communities can work differently both in their acceptance of a variety of categories of electroacoustic music, and in their acceptance of work by women. For instance, women

composers in Australia are not represented on the CDs that I reviewed which were supposed to represent recent electroacoustic composition in Australia. In comparison with composers in other nations, a woman electroacoustic composer in Australia would be likely to feel more isolated, or would have reasons to feel that way.

Hildegard Westerkamp

Hildegard Westerkamp, as both a soundscape composer and a woman, meets with obstacles to her recognition within electroacoustic music of both genre and gender. The entry on Westerkamp in the Encyclopedia of Music in Canada implicitly questions her role as a composer:

Westerkamp's most interesting work involves the recording, processing, mixing, and structuring of environmental sounds into a 'composition' exploring a different subject, issue or mood. (Bazzana 1992: 1396) The quotes around the word composition indicate the author's question about whether this is actually composing. And unlike other composers in the volume, there is no list of selected musical works included, only writings.

Westerkamp has written about the importance to her approach of working with members of the World Soundscape Project, particularly Murray Schafer's approach to listening. She has also written about the influence on her of John Cage:

An openness to all possibilities. No attempt to control anything or anybody. A sparkle in his eyes. Offering a space to relax into. A freedom. An inner space that feels authentic. (Westerkamp 1992)

She also talks of her encounters with Pauline Oliveros. Westerkamp met Oliveros when the latter gave a concert in Vancouver. She says: "The first time I encountered Pauline was when she was advertised to give a concert. The concert was us doing sonic meditations all evening and her sitting in the centre listening." (personal communication, May 1995). Westerkamp was astounded and delighted by this overturning of everyone's roles: composer as listener, audience as performers. Later, she was impressed by the breathing environment that Oliveros creates:

When I hear her play the accordion and the way she uses processing in concerts, it is a breathing type of environment, providing a place for the listener to breathe in and for herself to breathe in while she's playing. The way she develops some of the technology is particularly with that in mind. She pays attention to those issues, and it produces a very different music than when the technology is simply a toy that creates neat sounds. (Interview with McCartney, 1993)

Westerkamp also began to integrate Oliveros's sonic meditations into her electroacoustic studio teaching, finding that students started to learn how to equalize and filter with their own bodies, and how to incorporate technology rather than seeing it as an alien structure. Her dialogue with Oliveros has influenced Westerkamp's composition and teaching. Their connection reaches even deeper. Westerkamp carries Oliveros with her as a guiding voice:

I have had her in my dreams quite a bit, as a voice of challenge and of support. She has influenced/is influencing me on a deep level and I carry her inside me. I do not have regular contact with her, but I feel connected with her. (Westerkamp, personal communication, May 1995)

While Oliveros's recent pieces focus on places with interesting acoustics, Westerkamp's work emphasizes places chosen as much for their ecological and social significance as for their acoustics. The soundwalking series was created specifically for Vancouver radio, so it concentrates on significant locations in the Vancouver area, such as the flightpath for the airport, or skid row. Street Music is about street musicians and their craft, rather than a specific location, but is still limited to Vancouver. All of these pieces include encounters with people and other inhabitants. Cricket Voice, too, is the result of an encounter with an inhabitant of the Zone of Silence. Dialogue is particularly important to Westerkamp: "Going on a participatory soundwalk ... means to learn to establish a natural dialogue between the surroundings and ourselves" (1974: 24). She speaks of dialogue with other species, or with the echoes of buildings, recognizing and working with an active, responsive environment. Inherent in her idea of dialogue is a critical awareness of her own limited perspective as recordist:

the recordist's position and perspective, the physical, psychological, political and cultural stance shaping the choices when recording. My choices are influenced by an understanding of the sonic environment as an intimate reflection of the social, technological and natural conditions of the area ... this particular microphone, this particular recording presents only one truth about the environment. (1994: 89-90)

Her ideas about dialogue also include respect for the inhabitants of a place. This respect affects her approach to studio work with sound as well. Much of her work emphasizes juxtaposition, and subtle highlighting and transformations rather than radical manipulation of sounds. In an email conversation with me, Westerkamp explains why:

I do feel that sounds have their own integrity and feel that they need to be treated with a great deal of care. Why would I slow down the cricket's voice but not my daughter's? If the cricket had come from my own garden, had a name and would talk to me every day,

would I still be able to slow it down? Would I need to? It did take me two years to dare to compose with that cricket's recording, as it had been such a magical moment of recording, such a gift. I could not just 'manipulate' it. It had to be a new sonic discovery journey to retain the level of magic for me. And I remember a moment at which I said 'Stop.' The journey was beginning to turn into electronic experimentation and the cricket was being obliterated. Same experience with the raven in Beneath the Forest Floor. I tried to make it into a regularly beating drum...it simply wouldn't let me. So I returned to the shape of the original full call, slowed that down and received from it a drum-like sound. It took a whole day to fly off into electronicland and return to the raven call. (Westerkamp, personal communication, March 26, 1995)

This description by Westerkamp of her way of working is strikingly similar to an account by Lorraine Code of the epistemological positions of three women scientists. Code says that their work is marked by:

i) a respect that resists the temptation to know primarily in order to control.... The work is ii) oriented toward letting the 'objects' of study speak for themselves; hence it is wary of imposing preconceived ideas and theoretical structures. Yet this openness is not theory-neutral. Rather, it is an attitude aware of the constraints of theory-ladenness and thus governed by reflexive, self-critical imperatives. The approach is iii) non-reductive, adding to the first two features a recognition of an irreducible complexity in nature.... In all of the features there is iv) a sense of the knowing subject's position in, and accountability to, the world she studies. That sense manifests itself in a mode of observation that is immersed and engaged, not manipulative, voyeuristic, or distanced. (Code 1991: 150-151)

Westerkamp speaks of letting the raven sound speak for itself, about caring for the cricket sound and not wanting to obliterate it. She wishes to leave these sounds recognizable, not to distance them from their roots in the world. She questions her compositional decisions, and wants sounds to retain their complexity, not to be simplified or obscured through her work. Her engagement with the sounds is reflected in her choice of language: the cricket voice was a magical gift, and with the raven sound, she flew.

There is a sense in Westerkamp's language here of an interaction with a living, breathing world, where she can learn from ravens and crickets. At the same time, she does not reject studio manipulation of sound:

I like walking the edge between the real sound and the processed sound. On the one hand I want the listener to recognize the source, and thus want to establish a sense of place. But on the other hand I am also fascinated with the processing of sound in the studio...to explore the sound's musical/acoustic potential in depth.

But I abstract an original sound only to a certain degree and am not actually interested in blurring its original clarity. I transform sound in order to highlight its original contours and meanings. (liner notes, 1996: 20) Studio transformation of sound, in Westerkamp's work, is intended not to divorce sound from its context in order to create a different symbolic world or narrative, but rather to emphasize certain aspects of the sound, to enhance the listeners' apprehension of, and their engagement with, the context of the work. Once again, there is a dialogue, this time inside the pieces: between the abstracted sounds that Westerkamp creates, and the original recordings that she listened to. This dialogue is carried into a studio method in which Westerkamp creates a counterpoint between the original recordings that recur over and over again throughout a piece, juxtaposed with sounds that are derived from these recordings. I will have more to say about this in the chapter on compositional method.

For Westerkamp, knowing one's place means trying to understand as much as possible about the social, political, ecological and acoustic aspects of a location before creating a piece based on sounds recorded in that place. In order to know a place sonically, she engages in dialogue with other human listeners, and attempts to work in dialogue with inhabitants of other species, through dwelling on the acoustic particularities of their voices. This is somewhat different from Stockhausen's definition of metacollage as the composer's method of balancing mundane and new sounds: because Westerkamp is committed to listening to the material, the balance derives from interesting facets of the mundane transformed into new sounds in dialogue with their sources, rather than new sounds that are thought of as radically different and separate from the mundane.

Westerkamp says: "I hear the soundscape as a language with which places and societies express themselves" (liner notes, 1996: 19). Boulez also speaks of sound as language: "I started from the fact I was thinking and went on to construct a musical language from scratch" (Peyser 1976: 63). But while Boulez talks of himself as the only originator of a musical language based in his own thought, Westerkamp develops hers by engaging in dialogue with the multiple inhabitants of places, through listening to their sounds.

By emphasizing the importance of dialogue within Westerkamp's epistemology and musical practice, I do not wish to set up her way of thinking as a refutation of autonomy, a relational (gendered) opposite to the autonomy-obsession that I documented in the thought of Boulez and others. Instead, I refer to the concept of "second-personhood" developed by Lorraine Code from Annete Baier's line of thinking. Baier says "A person, perhaps, is best seen as one who was long enough dependent on other persons to acquire the essential arts of personhood. Persons essentially are second persons" (quoted in Code 1991: 82).

The most obvious relationship where we learn the essential arts of personhood is that with our parents. Code discusses some of the problems with using the parent-child, and particularly the mother-child relationship as paradigmatic of second-personhood, because of the power relationships involved and the strong connection between motherhood and feminine identity in many cultures. This is an issue that I will return to in my analysis of Moments of Laughter, by Westerkamp. Rather, Code outlines the possibilities of friendship as second-person relations that can "maintain a balance between separateness and appropriate interdependence" (1991: 95). Friendships have more possibility of symmetrical power relationships than familial relations. They are chosen, based on shared affinities. In a good friendship, there is a respectful tolerance of amibiguity and difference.

While Westerkamp cannot know the sounds of a place exactly as she would know a human friend, I hear in her words an intent to understand them in similar terms, with respect and tolerance of difference, a search for affinities, and a disinclination to bend them to her will, however much she was initially tempted:

I tried to make [the raven sound] into a regularly beating drum...it simply wouldn't let me. So I returned to the shape of the original full call, slowed that down and received from it a drum-like sound. It took a whole day to fly off into electronicland and return to the raven call. (Westerkamp, personal communication, March 26, 1995)

When she flew off to electronicland, Westerkamp approached the raven call in a normatively electrocaoustic fashion: as a sound object, raw material to be transformed into something else that the composer wants as an element in a predetermined composition. When she returned to the raven call and listens to it (because it would not let her make the beat regular: she recognized its agency), then she received a sound that she recognized as drum-like. She maintained her own agency, was still moving to the sound of her own drum, with a beat that resulted from the rhythm inherent in the original call of the raven and the results of her processing. The dialogue in her work between raven as sound object and subject, between recording and processing, between raven and human, creates bridges between these categories that denies them the power of absolute exclusion by playing in the space between.

1 Both of these were published by the Walter Phillips Gallery at the Banff Centre. Sound by Artists (1990) was edited by Dan Lander, and also includes articles by John Cage, Bill Viola, Alvin Lucier, Annea Lockwood, Daina Augaitis, Rita McKeough and several others. Radio Rethink (1994) was edited by Augaitis and Lander, including articles by Jody Berland, Christof Migone, Frances Dyson, Margaretta D'Arcy,Tetsuo Kogawa, and others.

2 This pattern of thinking is particularly problematic in feminist writing that aims to value abilities generally associated with femininity. For a good example of the difficult issues raised in such attempts to value stereotypically feminine traits, see Lorraine Code's discussion of problems raised by the idea of maternal thinking (Code 1991: 88-93).

3 A definition of serialism: "For [the European serialists of the early 1950s] serialism was a compositional technique wherein every aspect of a composition--not only notes, but also loudness, timbre, duration, type of attack, and every other imaginable parameter of a sound--could be based on and derived from the same row, or series, thereby producing a kind of total structure wherein every detail was organized" (Chadabe 1997: 37).

4 see Keiko Torigoe (1982) for a discussion of the research and underlying principles.

5 Several pieces by the Sonic Arts Union (Alvin Lucier, Gordon Mumma, David Behrmann and Robert Ashley) interacted with the performance space, for instance Mumma's Hornpipe (1967) and Lucier's Vespers (1968). I choose Lucier's I Am Sitting in a Room for discussion here because it brings attention to the place of performance through the text.

6 I have discussed elsewhere how little attention Canadian electroacoustic composition as a whole has received in the electroacoustic literature (McCartney 1994: 15-17). Newquist, in Music and Technology (1989), does not mention Canadian work at all. While Deutsch (1993; 1985), Mackay (1981) and Griffiths (1979) do make references to some Canadian work, it is either to early work by Hugh Le Caine or Norman McLaren, or to the University of Toronto studio. Manning mentions Murray Schafer briefly and inaccurately: he says his work is "notable for its emphasis on electronic music for school and colleges" (1993: 186). Manning discusses Barry Truax's development of the POD computer music system of granular synthesis (1993: 247-8). Chadabe (1997) also describes Truax's development of granular synthesis, mentioning that Truax uses recorded sounds without referring to soundscape composition or the WSP.

7 The use of the word syntax here might create an expectation that the aural-mimetic axis is concerned with vocabulary and rules of order. The use of the term discourse for the first axis is somewhat confusing, since discourse usually refers to a conversation or work as a whole, taking account of vocabulary, syntax, meaning, context and speaker's position.

8 Paul Théberge describes Schaeffer's work as fundamentally concerned with abstraction: "Schaeffer's notion of the objet sonore is a conceptual, technical, and quasi-scientific program for the objectification of sound materials to render them more useful as abstract elements of art." (1997: 204)

9 A term initially used by FranÏois Bayle at the Paris studio. It refers to musique concrete in which the source has been made unrecognizable: "L'auditeur...ne peut discerner la source initiale des sons enregistrés" (the listener...cannot discern the initial source of the recorded sounds" (Guérin, FranÏois. "AperÏu du genre électroacoustique au Québec." Circuit: 'lectroacoustique-Québec: L'Essor 4 (1-2), 1993: 9-31.

10 His article "Alea" appeared in the Nouvelle Revue FranÏaise in November 1957. Peyser says that although he wrote this influential article about aleatory (or chance) music, he could never really engage with the idea of chance, which in his work was always controlled by serialism (1976: 129). 11 I use this technique to construct a dialogue with Westerkamp's writings in some chapters of the dissertation.

12 She defines impedance earlier in the book. "Electrical impedance is the opposition presented by a circuit to a flow of alternating current" (1972: 117). If the output impedance of one device is not matched with a similar input on another, the result is distortion, destruction or dissipation of the signal.

13 This is her word. "CELE (the reverse of ELEC) ... reminds us of the Greek KELE meaning 'swelling' and, too, of the French verb CELER: 'to hide' in this case, what lies hidden, and intangible, gradually emerges... it rises into being" (1972: 12).

14 Unfortunately, part of this discussion is missing, as some of the pages of the book I had access to are torn out.

15 It is even difficult to find in the south of England, where Oram worked. I asked Katharine Norman, who directs the electroacoustic studio at Goldsmiths College, University of London, if she knew of any recordings of Oram's work, and she replied that she had not been able to find any.

16 I took part in such a presentation at the Feminist Theory and Music conference, at University of California Riverside, 1995.

17 Dennis Tedlock says that the creation myths of many cultures are represented as dialogues (1995: 8). This one seems Native American in its inclusion of the character of Coyote.