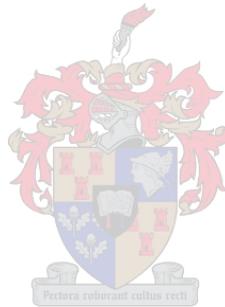


THE VISUALIZATION OF SOUND: AN INVESTIGATION INTO THE
INTERPLAY OF THE SENSES IN ARTMAKING

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Thesis presented in partial fulfilment of the requirements for the
degree of Master of Visual Arts at the University of
Stellenbosch



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Co-promoter: Katherine Bull

March 2008

Declaration

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature:

Date:

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Abstract

This thesis is informed by the assumption that the senses, in their manner of functioning, may have much to teach us about creativity and the dangers of categorization. Sound, as component of at least one of our senses, hearing, the only sense with an executive component, the voice, offers a particularly rich source for theoretical investigation.

Western culture has, since the Renaissance, been dominated by the sense of vision as the distancing agent that enables the objectification that has resulted in scientific advances to our benefit, but also to our detriment in its constant reductionist impulse. This western history, dominated by the eye, must be acknowledged by us as visual artists, but, in our current globalized era, sound and hearing may possibly suggest an extended paradigm more appropriate for us to function in. Sound, through movement, is proposed as a medium that shapes the structure of materials, including the earth, by that means linking it to visual art and the ways in which it has dealt with earth and landscape throughout the centuries. Sound is also proposed as an inherently relational and social phenomenon able to be incorporated into the work of visual artists to great effect in an age moving toward intersubjectivity. Sound contributes also its other side, silence, which I present as an active space of co-existence, in which gathering may take place and through which a more subtle understanding of dialogue may be achieved.

Opsomming

Kennis van die funksionering van die sintuie het heelwat om by te dra tot 'n begrip van skeppendheid enersyds en ook tot 'n besef van die nadele en beperkings van kategorisering andersyds. Hierdie tesis gaan uit van hierdie veronderstelling.

Aangesien gehoor ons enigste sintuig is wat tot aktiewe uitdrukking kom, deur die stem, bied klank as sintuig 'n besonder ryk bron vir 'n toeretiese ondersoek. Sedert die Renaissance word westerse kultuur gedomineer deur die oog, wat afstand moontlik maak en dus objektifisering in die hand werk. Die analitiese gevolge hiervan het gelei tot wetenskaplike vooruitgang wat ongekende voordele meegebring het, maar wat ook negatiewe implikasies as gevolg van die volgehoue reduksionere impuls inhou. As visuele kunstenaars moet ons oog-gedomineerde geskiedenis erken word, maar in die huidige era van globalisering, bied klank en gehoor die moontlikheid van 'n paradigmaskuif met groter bewegingruimte.

Klank, wat altyd beweging impliseer, word voorgehou as 'n medium wat die vorm van materiaal beïnvloed en struktureer. Klank gee vorm, ook aan die aarde se oppervlakte, en word op dié manier verbind met visuele kuns en die wyse waarop met die aarde omgegaan is deur eeue van visuele interpretasie. Klank word ook in hierdie tesis aangebied as 'n inherent relasionele en sosiale fenomeen wat relevant is vir visuele kuns in 'n era waarin 'n verskuiwing na intersubjektiviteit plaasvind. 'n Ander bydrae van klank is sy teensy, stilte. In hierdie studie word stilte voorgestel as 'n aktiewe ruimte vir medebestaan, een waarin opgaan en berging plaasvind, en waarin 'n meer subtiele begrip van dialoog bewerkstellig kan word.

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Foreword

The Master of Visual Arts degree comprises two complimentary components, a theoretical thesis and a practical component which culminates in an exhibition. The nature of my thesis is one of interaction between praxis and theory. The visual imagery that started this entire enquiry is from science, and I have in my theory continued to draw from a wide range of disciplines. My readings from science, art and cultural studies are grounded by my focus on the phenomenon of energy, the interconnectedness of the senses and the interrelationship of all these elements. I intend, by undertaking this study, to initiate an interaction also between practical artwork and theoretical enquiry, a hermeneutical circle in which praxis and theory may be mutually enriching.

This thesis began with my work as printmaker and sculptor – fields in which I was exploring sound and how to visualize it. This led to my decision to explore the theoretical background of sound and of the senses, and how they had been perceived and interpreted in western culture and art. I began to formulate a number of questions relating to the nature of sound and the role it might be playing in our time which has witnessed a move to intersubjectivity.

The theoretical component of my study provides the opportunity to investigate issues raised in my practical work, as they relate to or are echoed by the work of other artists, thereby placing my work in an art context. It also enables me to explore the theoretical issues. Those related to praxis concern the nature of sound, how my visualization of sound steered my further theoretical and practical development in an interactive direction, the implications of the paradigm shift from modernism to postmodernism that followed for me as artist, as well as the recognition of fertile spaces for creativity, previously suspected but not articulated.

My preference for the use of the female pronoun in this study indicates my own subject position, but also my identification with the continuing battle to promote an understanding of the harm done by the fact that women, as subject, were excluded from western thought and writing until well into the twentieth century. In the area of science particularly, a discipline in which nature itself was conjoined in an objectification with women and referred to as such in scientific language, the implications of exclusion were

far-reaching and negative. However, where in this text the historical situation indicates the probability of a masculine agent, such as in the reading aloud of ancient Hebrew scripts, I use the male form of pronoun.

I have chosen to use lower case spelling throughout, except where an art movement recognized as such is mentioned, e.g. Performance art or Earth art. The activities that take place within the schools are spelt with lower case, e.g. 'in performance, Anderson ...'. The lower case is in sympathy with the democratic nature of postmodernism, and avoids the build-up in an argument to a definitive and universal 'Truth', which may be regarded as inappropriate in our globalized era. The lower case, in most instances, is also suitable to the general gist of this study, which encourages an opening up of conventions to enable their creative interplay within new contexts. To avoid ambiguity, however, I have referred to the chapters in my own thesis as Chapters One, Two and Three.

This study was undertaken under the aegis of the University of Stellenbosch, which, as an academic institution, works within a certain structure that presupposes certain outcomes. Although my work concerns the kind of interplay that knows no boundaries, I accept this structured space and see the study as an interlude in time, of an activity that will continue, and will broadcast its contents wider as it continues. I chose the US Gallery, a former Lutheran Church, as suitable venue for my MA exhibition. My work on sound, movement, energy, the voice, breath, and all it implies, echoes the way the word, sound and breath were always linked with the human spirit, in Christianity, as much as in oral and indigenous cultures.

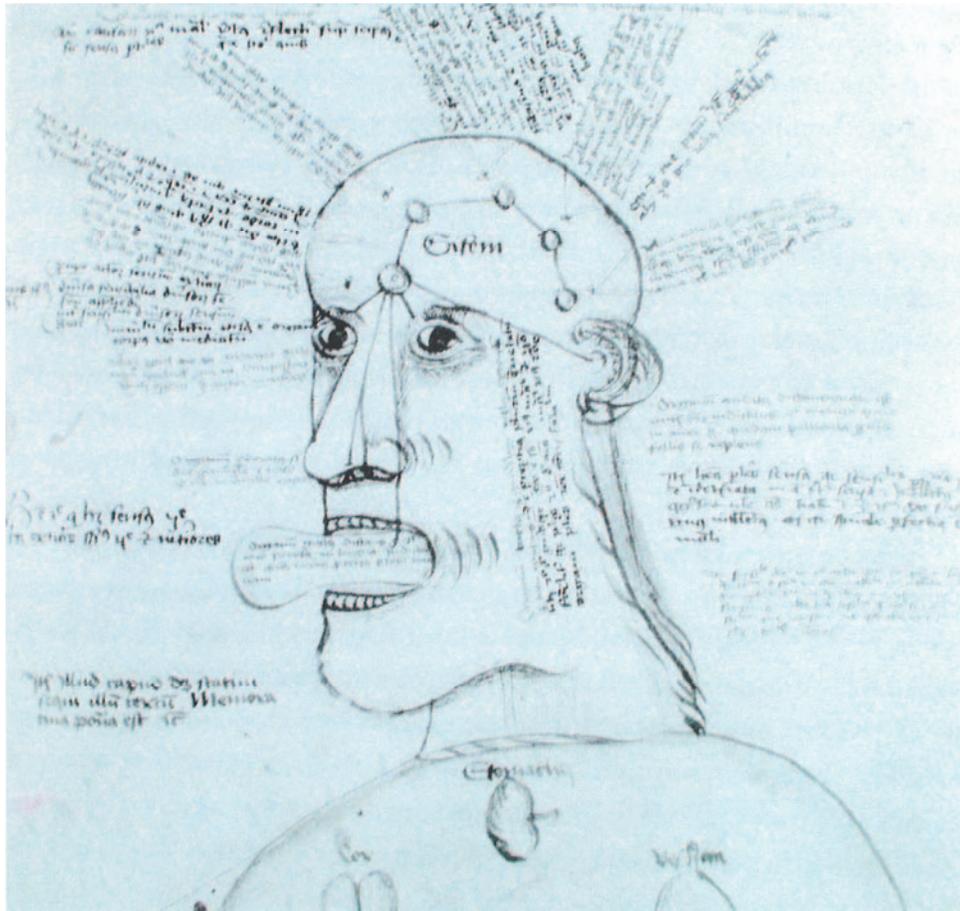
Furthermore, the annexe to the gallery, reached by descending a few steps, with its length and its submerged quality, is very sympathetic in feel to the concept of the sonar printout of the ocean floor with which this entire enquiry, both practical and theoretical, originated. The soundwave that drew the sonar 'landscape', referred to in my practical work (see Chapter One p. 19), caused me to investigate acoustics, where I discovered the soundwaves of the Chladni system, around which I constructed not only my own work on sound, but was drawn into collaborative and interactive work (see also Chapter One pp 24-26). These two examples of sound visualized gave me the guidelines for my enquiry. The vibrating metal of the Chladni system revealed to me visual nodes of sound

and silence interplaying in a way that seemed to describe the functioning of an interconnecting energy. In my theoretical work, I accordingly set about constructing a system of interconnecting concepts drawn from several disciplines, but all concerning energy, interplay of the senses, sound, creativity and the overflow of existing categorizations. As sound is affected and changed by the manner of environment it moves through, so have I been enriched by the opportunity offered for theoretical study.

Common sense

It was commonly accepted by medieval scholars that (as Galen had suggested) sight, sound, smell, taste and touch fed into a general sensorial repository located in the brain, an area sometimes known as 'common sense', from which derived not only memory but also knowledge, fantasy and dreams. This area, in turn, was connected to Aristotle's *splanchna* now reduced by the medieval commentators to just the heart, the centre of all feeling. Thus the senses were ascribed a direct kinship with the brain while the heart was declared the body's ultimate ruler. A late-fifteenth-century manuscript in German, of Aristotle's treatise on logic and natural philosophy, depicts the head of a man, eyes and mouth open, nostrils flaring, one ear carefully underlined. Inside the brain are five small connected circles representing, from left to right, the principal site of common sense, and then the sites of imagination, fantasy, cogitative power and memory. According to the accompanying gloss, the circle of common sense is related as well to the heart, also depicted in the drawing. This diagram is a fair example of how the process of perception was imagined in the Middle Ages, with one small addendum: though it was not represented in this illustration, it was commonly supposed (going back to Galen) that at the base of the brain was a 'marvellous net' – *rete mirabile* – of small vessels that acted as communication channels when whatever reached the brain was refined.

(Manguel, A. 1977:30,31.)



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Acknowledgements

I would like to thank my supervisor, Marthie Kaden, for her diligence and professional support.

I would like to thank my co-supervisor, Katherine Bull, for her professional interest in the development of my practical work, as well as for her contribution to the theoretical component of this degree.

I would like to convey great appreciation to Romaine Hill for her invaluable enthusiasm, professionalism and insight in her role of consulting editor.

I am thankful to my husband, Gerhard Lubbe, for his generosity and support and for our many conversations over many years. I am also indebted to our daughters Frances, Nina and Andrea whose positive interest in this project, from their widely differing fields of interest, contributed to my pleasure in its completion.

Introduction

Aim

To make visible the invisible and intangible realms of human awareness remains a main function of the artist, an aspect increasingly informed by the technology of scientific imagery. In this thesis, my own art making, traced as shifting from modernism to postmodernism, reveals within its movement certain recurring nodes or concepts: an interest in energy (this shift is itself a form of energy), intersubjectivity, discernment for the other and an underlying awareness of the earth as sustaining force. The aim of this thesis is to contextualize my art making by referencing other art works and events, and linking these to related concepts that I have found and investigated in other disciplines. Accepting that the interaction between parts is what gives meaning to a system, I aim in my theory to construct a personal system from these interactive areas of interest that will resonate in a way that echoes the functioning of the senses and the process of making art.

This thesis is based on the premise that a hierarchical understanding of the senses, which in modernism led to the dominance of the eye as the superior sense that provided the distance needed for objective knowledge, has been found to be prejudiced and obsolete. For several decades, art making, in the form of comment on the world from an uninvolved, critical distance, the distance of the eye, has been questionable, and indeed questioned by artists.

The visualization of sound in the simple concrete way that I happened upon it gave me the visible construct of a space containing and demonstrating its implicate and explicate existence simultaneously. I compare the synaesthetic process of an activation of multiple senses (in this case hearing, touch and sight) to the inventive making and creating of art as a poetic activity, embracing a plurality of origins, as well as multiple aims. I aim, moreover, in contextualizing my own work to construct a position which can accommodate contradictions, because the concern of this thesis is with interplay and thus a need to join with the 'other', even if the connection is only partial. A position of situated knowledge recognizes that limited location and particular embodiment underlie a collective subject position that may approach objectivity.

In her study on the response to music of the human fetus and neonate,¹ Sheila Woodward (1992:39), discussing the human ear, proposes that it is more sensitive to those frequencies which are important for the detection of speech, with less sensitivity at the higher and lower extremes of the frequency scale. This physiological programming toward interrelationship is further enhanced by the fact that the human ear, primarily attuned to the range of the human voice, is the first organ to develop in the fetus and the last of the senses to go at death. In this study I suggest that energy, in the form of sound, which is movement, has the potential to clarify and promote intersubjectivity and collaboration. Signs of such sensibilities were present in *ArtePovera*, became prominent in Environmental art and underlie Performance art. While not a Performance artist or a Sound artist myself, I attempt to explain briefly why these forms are meaningful for, and burgeoning in, our time.

General orientation

My awareness, informed by popular science, that all of life consists of subatomic energy (Baggini & Stangroom 2004:5) and that energy and matter are changed by and reflect each encounter with other interference patterns (Briggs & Peat 1989:111-112), raises the vital question: what would an appropriate art form for an era informed by this knowledge look like? The western art tradition presents us with several restrictions. The art object as cipher for shared values (Owens 1983:58) and the striving for an objective and disinterested transcendental truth have proved questionable tenets, not only because of globalization, but even more pertinently because feminist art critics (Owens 1983:61) have exposed such claims as thoroughly partisan and flawed.

In part, the answer is, of course, this art would not only 'look like', but would also sound like, feel like and so on, and most importantly would also engage real time and space. That the onus of this thesis is on sound is a fortuitous state of affairs, as sound is, by its very nature, interactive and social: a sound caused in any segment of space will immediately spread to its maximum potential, broadcasting itself within the physical bodies of all present. An insensitivity to the nature of sound, which implies also an insensitivity to silence, may, however, engender a certain indifference to or even a fear of silence. Mark Slouka (cited in Cox 2004:40), noting its absence, writes:

¹ Woodward's Doctoral thesis (1992) provides valuable factual knowledge on bone conduction and the effect of sound on the immediate responses and also the retardation or promotion of growth and development of the human fetus as it is affected by external sound.

I wish not to define silence but to enquire about its absence, and I ask the question not to reiterate the obvious – that silence, in its way, is fundamental to life, the emotional equivalent of carbon – but because everywhere I turn I see a culture willing to deny that essential truth.

Slouka's concern is with the impoverishment of communication, as is that of Performance artist, Laurie Anderson, whose work I mention briefly in Chapter Two when discussing Performance art. Anderson incorporates and subverts the technology of communication in her work. Slouka, in an article, *Listening for silence, notes on the aural life* (cited in Cox & Warner 2004:40), remarks that communication, having been narrowed down into whatever can be squeezed into binary code, 'has been redefined by the marketplace into a commodity itself'.

Aware of these problems of communication, collaborative and performance artists strive to make more direct, intersubjective contact. Collaboration implies audience or co-artist interaction and in this way chance and indeterminacy are brought into the picture. As art educator and psychologist, Anton Ehrenzweig (1967:95), states: 'Indeterminacy has an important social aspect; it requires the co-operation of others' and thus a loss of control over exact outcomes.

The problem then becomes: is the artist willing to go as far as relinquishing the traditional role of creator? Author, David Cope (1971:82), in his book, *New Directions in Music*, refers to indeterminacy as 'not a game or a passing fancy', but '*the philosophical challenge to the aesthetics, art, and ego of history*'. He elucidates further:

What must be dealt with is the concept of indeterminacy, not the sounds *not* the forms, *not* the individuals involved. If it cannot be reckoned with in philosophical terms, then it will [destroy] (or possibly already has) ... the structure, terms and aesthetics of music and art as contemporary Western civilization has come to know them (1971:82).

Sound artist, Christian Marclay (2005:65), unpretentiously presents the problem in an interview he shares with Anderson in *ArtReview*:

Making objects can sometimes seem absurd. That's why it's liberating to be performing, because it's harder to finish and capture I love those moments of improvisation with other musicians when you don't know where you're going. You have to take risks: it's so playful, [i]t's like having a conversation – you don't know where it's going to go, what you're going to talk about. It's that wonderful doubt'. (2005 Vol 2, LVI:65)

Anderson, visual performance artist, as well as musician, replies:

My fantasy is never going to happen where we don't make stuff any more. But sometimes I really feel you don't need to make anything. The experience of what I'm seeing and feeling at a particular moment is way beyond enough. (*ArtReview* 2005 Vol 2, LVI:65)²

The dilemma posed by Marclay and Anderson is the rejection of the ego inherent in the decision to be what philosopher Gemma Corradi Fiumara describes as a listener, a gatherer.

What Cope (1971:82) is saying is that indeterminacy implies art as process. Each new performance, each new circumstance will create a continually variable process of ideas. And time might not treat the work kindly. Slouka (2004:44), from the vantage point of more than half a century on, has a very specific interpretation of the famous 4'33" by *avant garde* composer, John Cage:

Cage's portrait of the artist frozen before his medium, intensely aware of his allotted time, unable to draw a shape out of the universe of possibilities, carries a certain allegorical charge, because we recognize in its symbolism ... a lesson worthy of Euripides: art, whatever its medium, attempts to force a wedge beneath the closed lid of the world, and fails; the artist, in his or her minutes and seconds, attempts to say – to paint, to carve, in sum, to communicate – what ultimately cannot be communicated. In the end, the wedge breaks; the lid stays shut.

² Anderson remarks that she was going to do a project at the end of her residency at NASA, 'but the scientists there are already making huge beautiful art projects. They're building a stairway to space out of nanotubes. This is *Jack and the Beanstalk* stuff' (*ArtReview* 2005 Vol 2, LVI:65).

The artist fails, this suggests, to communicate through the work. Then should we not accept the impossibility of clear communication through art, concentrating our efforts of creativity on fostering basic human relationships instead? Richard Kearny (1988:376) thinks not: he believes that the poetic potential of the postmodern imagination is able to transcend the limits of egocentric and anthropocentric consciousness, thereby exploring different possibilities of existence. But more than that, Kearny (1988:370) claims, we may approach intersubjectivity by 'deconstructing our pseudo-images of selfhood into a play of undecidable possibilities' whereby the poetical imagination, together with visual poetics, can bring us to the threshold of the other.

Problem statement

The urgent question then is how is the artist able to achieve a position of dialogic interaction with the other? In this study, I sketch how an initially intuitive disposition toward exploring sound became an urgent motivation in my art making. In my earlier work, the essentially modernist practice of making images that reflected my direct experience of the world, and that expressed my understanding of the human condition at a specific moment of history, examples of which I provide in Chapter One, found a wide audience and did not fail to solicit response.

The postmodern era places different demands on the individual, and I became aware that sound, as art medium, offered an entry into a new paradigm that I had entered intuitively already. Aware that a shift of position in art making was indicated, not only by my intuition but by my changing context, the question was whether sound as material and as the area of study would translate my work into a postmodern paradigm of interactivity and intersubjectivity. My position, I realized, was conflicted from the outset: I had always, in my earlier (modernist) position, understood landscape, together with nature, as a live and breathing other, a position in advance of anything I have subsequently encountered in my reading on postmodernism, which focuses on intersubjectivity and the dispersed subject, not on the more-than-human other. And I now put forward my conflicted position – between modernism and postmodernism – as a creative space of uncertainty; a space that requires the 'constant labour' that Fiumara (1990), earmarks as a 'gathering, keeping and harvesting' realm. She (1990:189) also constantly alludes to the act of 'dwelling' as essential to listening (1990:189), thereby conceptually intertwining place and sound.

Scope and nature of the investigation

Thoughts of philosopher and ecologist, David Abram, in his work, *The spell of the sensuous* (1996), on the interplay of the senses and ecology, have largely initiated this theoretical study. Abram's concept of 'participatory consciousness' underlies the premise of his book that we are human only by contact and conviviality with what is not human. His reading of Maurice Merleau-Ponty, whom he regards as having laid the foundation for a philosophy leaning toward ecology, is relevant also to the art movements I have mentioned in this thesis: *Arte Povera*, Earth art, aspects of Sound art and Performance art, as well as my own art making,

Phenomenology, according to Abram (1996:35), was initiated by Edmund Husserl in an attempt to retain the 'fluid region of direct experience' as valid philosophical area, when it became apparent that the early discipline of psychology was categorizing even 'mind' as yet another 'object' to be analysed. While attempting to establish the science of experience that became known as 'phenomenology', Husserl, at the end of his life, still affirmed the self as a transcendental ego separable from the phenomena it ponders. Phenomenologist-philosopher, Maurice Merleau-Ponty, one of his successors, however, identifies the subject completely with the body – the self is corporeal. It is this corporeal self, a self with open and indeterminate boundaries, membranous rather than exclusive, that is of relevance to art writer, Amelia Jones, as explicated in her book, *Body art: performing the subject* (1998), in which she elucidates the typically postmodernist characteristic of a dispersed subjectivity.

I propose that Merleau-Ponty's philosophy is relevant to postmodern art, because he regards the event of perception as inherently interactive. Participation is required, as is reciprocity. In terms of art, this understanding of perception confirms that a distanced comment on the world at large would be inappropriate in a postmodern context. *Arte Povera* artists, according to Christov-Bakargiev (1999:211), claimed incoherence, imagination and heterogeneity as positive values, and Abram (1996:90) interprets Merleau-Ponty as proposing that, while our pre-conceptual experience provides for relative distinctions between various forms of animateness, it supplies no evidence for a dualistic division.

The language of visual art is, I propose, often engendered in the non-verbal exchange operative between the human body and its environment, what Merleau-Ponty would call the 'flesh of the world'. What Abram (1996:90) claims for ecology, I propose to claim for art, namely that human languages, in which is included the language of visual images, are informed 'not only by the structures of the human body and the human community, but by the evocative shapes and patterns of the more-than-human terrain'.

The interplay of the senses finds substantiation also in Merleau-Ponty's concept of the chiasm, the crossing over, that he developed in his last book, *The Visible and the Invisible* (1968:146). This concept describes the interaction between the various sense modalities, their constant coupling and collaboration in a kind of reversibility. The collaboration that Abram desires as ecologist-philosopher is a reciprocity with the landscape or earth, in an era when he regards participation as happening almost exclusively with other humans or with human-made technologies. It is a collaboration that I echo in my practical work and mention in this study, specifically in Chapter Three. The issue for Abram, one of orientation and navigation in a world with technologically multiplying dimensions, is also echoed in my subsequent enquiry into a similarly challenging world, albeit one of the senses: the world of deafness, which, in the same way, requires entry into another dimension. In both instances, orientation depends on a tangible ground, be it the earth or the body as ground.

Abram derives the term 'participatory', of relevance to his philosophy leaning toward ecology, not only from French anthropologist's, Lévy-Brul's, description of the animistic logic of indigenous, oral communities but also from phenomenologist-philosopher's, Merleau-Ponty's, concept that participation is a defining attribute of perception itself (Abram 1996:57). For Abram, as for Merleau-Ponty, perception always involves the active interplay of, or coupling between, the perceiving body and that which it perceives. Abram's insight into 'the promiscuous creativity of the senses' (1996:58) derives from his proposal that the imagination is an attribute of the senses themselves:

Imagination is not a separate mental faculty but is rather the way the senses themselves have of throwing themselves beyond what is immediately given, in order to make contact with the other sides of things that we do not sense directly, with the hidden or invisible aspects of the sensible.

Richard Kearny (1988:368), British philosopher, in his turn, describes *poiesis* as fulfilling the function of creative abandon, of letting go of the calculus of means and ends: 'Poetics is the carnival of possibilities where everything is permitted, nothing censored'. In my practical work I find that both these links, the sensual (the synaesthetic functioning of the senses) and the poetic (inventive art making) have indeed been the keys to a participatory model of art making, as well as being underlying themes in my theoretical investigation.

Because the background to my thesis is multidisciplinary, including not only artists and art critics, but philosophers, mathematicians and scientists, it might be seen as a bricolage of ideas, all interconnected by the main purpose, which is to investigate the interplay of the senses in art making. The method of bricolage is, in itself, a postmodernist activity, a *bricoleur* being defined by Kearny (1988:13), as 'someone who plays around with fragments of meaning which he himself has not created, or wanders about in a labyrinth . . . trying to piece together fragments of dispersed narrative'. This is a methodology suited to a study where information from diverse sources and disciplines needs to interact in a free play of meanings, each resonating with the other. It is also a methodology that reflects the way information reaches us through technologized means, in abundance and anonymity. The disparate components of this study are meant not only to juxtapose, but to create interference patterns in their encounters, since all relate to sound, play, conversation, silence and earth.

The literature that has informed my study and that answers to it includes Kearny's *The wake of the Imagination* (1988), in which he examines the threat to the imagination posed by postmodernism (1988:3). He provides an analysis that contrasts the nature of the traditional (modernist) subject, described as being the controlling author narrating a metaphysical profundity, with the heterogenous nature of the postmodernist subject. A modernist belief in the image as an authentic expression derived from our experience is replaced by a postmodern proliferation of images, which, in their selfconscious lack of origin and reflectiveness, may lead to 'artificiality' and 'representational depthlessness'. In analysing the changing role of the artist, Kearny (1988:23-25) introduces the field of ethics. At first the artist was an agent of (radical) change typical of *avant-garde* modernism, then the artist became a dissenting, private outsider, and finally, with

postmodernism, the artist endures uncertainty about any capability for effective intervention and merely reflects the fragmentary nature of contemporary experience in a polyphony of styles. Kearny's theory of the constant interplay of *ethos* and *poiesis* as the two constituent factors of imagination finds a concrete visual presence in the various attitudes to the earth itself that I mention as informing Earth and Environmental art, discussed in Chapter Three.

Kearny (1998:27) mentions that the current position of dislocation and uncertainty, reflected in postmodern art in the way the past is often quoted or referred to, have led certain intellectuals to regard postmodernism less as a step beyond modernism into something new, than as a critical reworking of the 'unconscious' crisis within modernity itself. The fact that modernism seems, in retrospect, to have had such closure about its own aims, should not be regarded as sufficient ground to assume that the project did not have areas of overlooked and undeveloped potential. I find a similar wish to revisit origins in the critical work of Fiumara. In her book, *The other side of language: a philosophy of listening* (1990), she investigates the origin and extended development of the concept of dialogue and, in her analysis, finds closure concerning its nature premature.

Just as Kearny (1988:25) sees the critical task of a postmodern imagination as requiring a revisit to the 'infancy' of modernity, so Fiumara advises a return to the full origin of the word 'dialogue'. Both writers recommend an attitude of *listening* and involvement, through which to mine richer meanings from concepts that have become restricted or clouded by overuse and convention. Kearny (1988:26) advises a re-examination of, amongst others, the diversity of tradition which gave rise to modernism, while Fiumara advises recognition of 'the other side of language', namely silence. Both want to establish spaces in which uncertainties may be accommodated, and this can only be done in a dynamic field. Kearny (1988:27) quotes the postmodern thinker, J-F. Lyotard, on the requirements for realizing such openness:

Periodisation is typically modern, whereas the postmodern is a sort of permanent labour which accompanies modernity and constitutes its true value. 'Post' should not be understood therefore in the sense of a 'period

which follows' but rather as a 'dynamism' which allows us to go further than modernity in order to retrieve it in a kind of 'twist' or 'loop' (*boucle*).

Lyotard's articulation of 'Post' as a 'dynamism' echoes Fiumara's (1990:90) concept of silence not as a period which follows activity, but as itself a demanding activity that engages the challenges of uncertainty. The image of the loop (*boucle*) recalls, in its structure of crossing over at some point, the 'chiasm' of Merleau-Ponty (1968:146), a concept in which transfer and reversal are incorporated.³ Lyotard claims:

The modern is all too easily snapped up by the future, by all its values of promotion, pro-gram, pro-gress . . . dominated by a very strong emphasis on wilful activism. Whereas the postmodern implies, in its very movement . . . a capacity to listen openly to what is hidden within the happenings of today. Postmodernism is deeply reflexive, in the sense of anamnesis or reminiscence and that itself evinces what is best in modernity.

Kearney (1988:27) proposes that Lyotard's vision of society as a complex network without a single centre places great onus on the individual to judge for her- or himself. In this individual responsibility, Zygmunt Baumann sees the possibility for a re-enchantment of the world, a participatory personal engagement of the kind that David Abram also promotes.

In Chapter One I focus on my own work, bringing three examples of earlier work into play with what I have done subsequently, in an attempt to analyse my shift from the modernist paradigm to the postmodernist. I suggest that the phenomenology of Merleau-Ponty, which informs my work, carries within it, in its awareness of interactive relationship with other selves, the postmodern potential of the heterogenous and dispersed subject. I juxtapose the implications of Merleau-Ponty's thought on intersubjectivity to the 'relational aesthetics' of Nicolas Bourriaud. Thereby, I create a context within which to enquire whether it was my use of sound that directed my enquiry away from the modernist artist as subjective producer toward the postmodernist role of

³ Merleau-Ponty (1968:146) analyses the act of seeing and speaks of the uncontested evidence that 'one must see or feel in some way in order to think, that every thought known to us occurs to a flesh. Once again, the flesh we are speaking of is not matter. It is the coiling over of the visible upon the seeing body, of the tangible upon the touching body ...'.

artist as catalyst, in a real situation that engenders relationship and community. I enquire whether the nature of sound itself became the definitive factor that naturally caused my shift from sound as content to a collaborative art making, with sound a form.

In Chapter Two I present a construction of reference points from various disciplines that have in common an interest in the process of creativity, a lack of trust in certainty and a wish for renewal. Synesthesia is linked by Vilayanur S. Ramachandran and Edward M. Hubbard (fellow collaborators in studies on this phenomenon) to metaphor, while metaphor is linked by scientists, David Bohm and F. David Peat, to a state of high energy. Energy in the form of seemingly chaotic scanning activity is, according to art educationalist, Anton Ehrenzweig, a superior analytic tool in the creative process. These analyses of creativity from various disciplines are employed as an interrelating system to create a context for my own art work, and the juxtaposed construct they form acts as a support for my proposal that the interplay of the senses is relevant for creativity. I compare order, as visualized in the Chladni sound experiment, which is a main component of my practical work, to the visualisation of chaos through fractal geometry. Order underlying apparent chaos in the natural world, as explicated by mathematician, Benoit Mandelbrot, as well as an order underlying the apparent chaos of the subconscious, as explored by Anton Ehrenzweig, is juxtaposed with the implicate and explicate order of David Bohm, revealing the seeming binaries as contained in one dynamic whole. I continue my construction of the interplay of disciplines and concepts to create a context for my art work, by referring to three art movements which employ transferrals and interactions of energy and movement in their work: *Arte Povera*, Performance art and certain aspects of Sound art. All are concerned with establishing interrelatedness and connection in terms of intersubjectivity and direct experience of the world.

In Chapter Three I pose three questions that relate to sound and silence and their interplay. What is a philosophy of listening? What are the implications of identifying and accepting the inter-spaces that this philosophy wishes to recognize? What is the substance of silence? I again refer to examples from other disciplines to illuminate the concepts of sound and silence. The implications of the questions I ask resurface in this chapter in relation to my own art work, as well as that of other artists.

Abram, in his concern for a participatory consciousness and the loss thereof through the abstraction of the written word, traces the history of the alphabet and finds within the old Hebrew *aleph-beth* an interactive space that allows for the participation of the reader. I bring this into relationship with the understanding that philosopher, Michael Polanyi (1958:64), has of the necessity for an active 'pouring of ourselves into the subsidiary awareness of particulars' before knowledge can be fully obtained. This active, personal participation in the creation of knowledge and meaning makes Polanyi a contributor to the development of a postmodern ethics. A personal ethics surfaces also in the field of ecology, which, at the conclusion of the final chapter, is closely related to Earth art.

Fiumara (1990) critically investigates dialogue, on which all of Western philosophy is based, and finds its application war-like in manner and in opposition to silence and listening. As a result, the concept of listening has lost its extended meaning of gathering and preserving, as well as the potential for being a coexistential space of processing and generation. While not questioning the value of dialogue, she laments the restricted understanding and use of the concept. Silence, she claims (1990:90), is by no means passive, but makes listening as a gathering and storing activity possible. As listening implies receptivity and collaboration, the very focus of contemporary art practice, Fiumara's theory resonates on the levels of art practice, as well as theory, ethics and ecology. This study entails listening to what other disciplines have to contribute to interrelatedness.

Sociologist, Zygmunt Baumann, in his book, *Intimations of post-modernity* (1992), provides an analysis of both modernism and postmodernism which largely contextualizes the art produced in these eras by providing the social, political and, to some extent, economic surrounds that made the 'site clearing' (1992:ix) operation of postmodernism inevitable. In its striving for the independence of reason, with which to take authorship of, and initiative in, establishing order, Baumann (1992:x) situates modernism's need to disenchant the world and, specifically, spontaneous nature. It is this demotion of the world and nature to the status of object that Abram refers to as the loss of 'participatory consciousness'.

Baumann (1992:xii) compares the modernist fear of 'the contingency of the imperfect', which may be read as the unpredictability and indeterminacy of nature, to the 'privatized'

horror vacui (1992:xviii) of postmodernism. He predicts (1992:xix) that, in a postmodern milieu where no master narrative holds sway, imagined communities, existing almost solely through their intermittent public manifestations, will form. Baumann, through this construct of a postmodern urban society, sketches the scene for the 'social art' of Bourriaud, where spaces are created to instigate relationships, but more than that, to create an aesthetics that is relational.

In concluding this chapter, I introduce a kind of listening where sound is absent, the grammar of deaf Sign. In so doing, I wish to put forward a completely different aspect of sound, as well as a different angle on the interrelatedness of the earth and the body. Finally, having introduced silence as understood from various disciplines, I conclude by calling for a recovery of an active and positive silence, one that can examine uncertainty and generate a true dialogue.

Chapter One

Earth, energy and visual poetics in my work

Introduction

In this chapter I consider issues contained in my own work. I refer to three works made before the advent of this study to clarify the concerns already present in my work prior to my decision to address these formally. My initial phenomenological perspective, akin specifically to that of Merleau-Ponty and his view of the subject, evolved in the course of this study into an interest in intersubjectivity and the relational aesthetics of Nicolas Bourriaud. The question posed here is whether the shift in my approach is the result of the development that took place in my practical work. Initially, I worked individually with representational material in a manner informed by a phenomenological bent. Through an interest in sound, however, I became involved in collaborative work and intersubjectivity.

Several main areas of enquiry in postmodern theory were anticipated by the concerns of Merleau-Ponty's (1962:161)⁴ phenomenology: his critique of the traditional Cartesian concept that separates mind and body; his emphasis on the whole lived body in human experience (1962:146),⁵ his acknowledgement of the *particular* whole body; also with consequences for a situational knowledge; and his enquiry (Jones 1998:38)⁶ into concepts of a dispersed subjectivity and other selves.

The paradigm shift, initiated by an awareness of sound in my practical work, as described in this chapter, concerns the tension between the detachment regarded by modernism as a prerequisite for knowledge and progress, and the impossibility of detachment for any human being when experiencing sound. The question is whether the shift in my art practice, to the reciprocity and contingency which is a postmodern

⁴ Merleau-Ponty (1962:161) states that 'unlike other objects in the world, the body cannot be thought of as separate from the self, nor does it signify or express the modalities of existence ...'.

⁵ Merleau-Ponty (1962:161) regarded the lived body not as discrete from the mind as vessel, but, in fact, as the 'expressive space' by which we experience the world.

⁶ Amelia Jones (1998:38) explores Body art through a phenomenological and feminist framework and finds all three phenomena interrelated in the 'compulsion to dissolve or interrogate the modernist subject'.

position,⁷ may be regarded as having been brought about by the use of sound and its 'multi-centered'⁸ nature.

The shift from subjectivity to intersubjectivity in my work

An earlier print, *Narrative Landscape* (1999) (Fig. 1), contains elements of the concerns that drew me to the field of investigation of this study. The three issues that occupied me were landscape, sound and the space humans occupy, all interrelating in various ways. The observed landscape in this work presents my method of working from 'life' or direct observation and drawings. This is the method I prefer as I find an exchange of energy takes place when the senses are all involved in the reading of what is before one. The long format of the print containing figurative details requires time to view and decipher, encouraging a sense of narration. The purely formal components of line, dot, amorphous mark, empty space are a narrative by themselves and have connotations of a music score, which the horizontality of the work encourages. The work shares many of the elements of the sonar printout which finally prompted this study: the horizontality, length, split in the middle, narrative marking and strong landscape reading.

In terms of its more overt content, my earlier work records small scenes of lives lived next to the road on the way between Stellenbosch and Cape Town in the late 1980s. It shows a woman rebuilding a house (in a time when informal settlements were routinely demolished by the authorities, only to be re-erected immediately by the occupier), a man lying ill or drunk under a bush, a boy washing the face of a horse in a roadside dam. Although glimpsed in a certain place, these are sensed as people without a definite location, people who spend much time in a (historical) space only just adjoining official structures. While not quite answering to the *heterotopia* concept of Michel Foucault, it is an 'other space', an 'elsewhere', in the sense that these people were officially wished elsewhere. Observed as they are, in passing, from a car, they occupy a space of silence, like a film sequence that has been running for decades. Foucault, in his essay, *Of other spaces* (1967: *Heterotopias*.(<http://foucault.info/documents/heteroTopia/foucault.heteroTopia.en.html>:2)), analyses sites that are in relation to all the other sites, but 'in such a way as to suspect, neutralize, or invert the set of relations that they happen to designate,

⁷ Jones (1998:38) refers to the 'contingency or reciprocity' of body art as recognizably postmodern.

⁸ Marshall McLuhan (cited in Cox & Warner 2004:68-69) describes an 'ear culture' as 'multi-centered and reverberating'.

mirror, or reflect'. The space depicted in my etching, depicts a space linked to the official, but in a way that contradicts all the other sites of the projected official 'real'.

In August of 1987, at a solo exhibition at the Dorpstreeet gallery in Stellenbosch, I included over a hundred small stoneware heads, *Lives* (Fig. 2), which I scattered over a bare table surface. The exhibition, which comprised prints and sculpture, was opened officially with the usual social event, but I invited each guest to take home a head if she or he wished, as the affirmation of the value of each life at a time when violence was institutionalized and some individual lives worth very little. This gesture presupposed the involvement of the viewer in a way that later became very marked in the development of art. It involves the 'mutual obligations' that exists between artist and spectator mentioned by Michael Archer (1997:214). Here the political content was central to the way the work was able to exercise an aesthetic hold on the viewer. The gesture was also subversive of the commercial role of the gallery, a tactic increasingly employed in art from the 1960s, extending through Conceptual art and *Arte Povera* and into Performance art, until the completely inter-relational use of the gallery came about in 'Social art' of the 1990s (http://en.wikipedia.org/wiki/Rirkrit_Tiravanija:1).

Actual, and not implied sound, entered my work through sculptural experiments in the 1980s. A *ciment fondu* sculpture that formally combines the shape of a garden-snail shell with the head of a man (Fig. 3), titled '*Tuinman*' ('Gardener'), referred to a person who was acknowledged, but only at certain times, when needed; at other times he had to be in a state of 'elsewhere'. After I had changed the medium to ceramics and cut a mouthpiece into the clay face, the sculpture evolved into a series of flutes (Fig. 4). When breathed into, these heads emit a sonorous note. Jonathan Ree (1999:61) traces the history of breath, and particularly the voice, as being traditionally linked to the spiritual, and as conveying the authority of an authenticated presence.

As Sound art writer, Brendon Labelle (2006:xi), says, actual sound has an immediate effect on all present, 'sound is always already a public event, in that it moves from a single source and immediately arrives at multiple destinations'. Through the body, LaBelle (2006:xii) suggests, sound reveals its 'very relational' nature. The shared immediacy of sound is different from that which is seen, which is attended to selectively. In my practical work, the seeds were sown at this stage for engaging with sound as a

means to a fuller relatedness to the 'observers' of my work. An intuitive start was made toward an interactive relationship, as well as to a fuller interplay of the senses in art making.

My interest in observational energy and experience gained through all the senses means that I do not work from photographs. The basic premise of the phenomenology of Merleau-Ponty (1962:vii) is therefore relevant to my work. It is a philosophy which states that 'the world is always "already there" before reflection begins – as "an inalienable presence"; and all its efforts are concentrated upon re-achieving a direct and primitive contact with the world, and endowing that contact with a philosophical status'.

All we subsequently speak of, according to Merleau-Ponty (1962:ix), relies on primary perception, through the body, of a pre-conventional kind:

To return to things themselves is to return to that world which precedes knowledge, of which knowledge always *speaks*, and in relation to which every scientific schematization is an abstract and derivative sign-language, as is geography in relation to the countryside in which we have learnt beforehand what a forest, a prairie or a river is.

Merleau-Ponty's phenomenology has relevance for a visual language through its purpose, as stated by Ree (1999:385), of enabling us to describe the world of our experience without forcing preconceived ideas onto it, thereby granting the individual the opportunity to interpret it subjectively. I propose that the constant reminder that subjective experience is the root of all knowledge is not a restrictive tactic, but contains in itself the potential to a relational knowledge and inter-subjectivity. The subjectivity Merleau-Ponty refers to, as existential phenomenologist, does not have as its end the transcendental ego, but refers to the level 'at which we are simultaneously aware of ourselves, others and the world' (Fouche in Snyman 1993:110). By positing a dialectic involvement with the world, he completely alters the earlier phenomenological concept of the transcendent subject and the psyche as a private domain (Snyman, 1993:97).

Ree (1999:383) understands phenomenology as a constant challenge to undertake the humble but endlessly complex task of describing the world in terms of what it can mean

to us, in 'whatever specific situation' we find ourselves. Such a position implies that there are many truths instead of a single transcendent one. I propose that this aspect of phenomenology makes it compatible with a position of situated knowledge. Feminist scientist, Donna Haraway (cited in Mirzoeff 1998:198), rejects the feasibility of objectivity as a transcendent view from above and proposes rather a collective subject position 'that promises a vision of the means of ongoing finite embodiment, of living within limits and contradictions, i.e. of views from somewhere'. Haraway (cited in Mirzoeff 1998:195) describes the subject as never finished and whole: 'it is always stitched together imperfectly, and *therefore* able to join with another, to see together without claiming to be another'.

Lebanese born artist, Mona Hatoum (Archer, Brett & de Zegher 1997:8), relates phenomenology directly to art by saying: 'I have always been dissatisfied with work that just appeals to your intellect and does not actually involve you in a physical way'. Her work, *Light Sentence* (1992) (Fig. 5), plays with the ambiguity of the solidity of the object which, through the constant movement of the light source, seems to dissolve into a process. Archer (1997:212) describe experiencing *Light Sentence* as an 'indeterminate ground' that separates solidity and flux, making for a visual confusion the artist did not wish to resolve.⁹ Describing the impact of 'this finely balanced situation', Archer (Archer, *et al* 1997:69) calls the ambiguity between the luminous associations of rational order and a dark, chaotic flux 'magical'. Of importance to the effect of the work, and of relevance to this study, is that the artist chooses not to give fixed, unchangeable values to either light or darkness, since each is continually being rediscovered inside the other.

By positing the idea that our primary sense organ is our body as a whole, the phenomenological theory of Merleau-Ponty seems validated in Hatoum's approach to art.

For me, the embodiment of an artwork is within the physical realm; the body is the axis of our perceptions, so how can art afford not to take that as a starting point? We relate to the world through our senses. You first

⁹ Archer *et al* (1997:68) describe the space-frame of *Light Sentence* as made of standardized wire-mesh lockers running in two parallel rows down the centre of a large room. A single, naked bulb moves slowly up and down by motor, throwing on the surrounding walls a cage-like tracery of extraordinary beauty. A dilemma is created for the viewer between the threatening and beneficent aspects of the same structure.

experience an artwork physically. I like the work to operate on both sensual and intellectual levels. Meanings, connotations and associations come after the initial physical experience as your imagination, intellect, psyche are fired off by what you've seen. (Hatoum, cited in Archer *et al* 1997:8.)

In the course of this study, like Hatoum, I made the 'shift from a situation of representation to a desire to create an actual and real situation that the audience could experience directly for themselves' (Archer *et al* 1997:134).

As an etcher and printmaker, I engage in inscriptive techniques. This graphic orientation, aligned to the need for a synaesthetic reading of the world that stemmed from a desire to integrate sound into my visual art, was focused by seeing sonar printouts of the ocean floor¹⁰ (see Foreword p viii). The sonars (Fig. 6 & 7) are lengths of landscape visuals burnt into damp paper by electric impulses transformed from the echoes of sound-waves. The process was obviously initially designed for scientific purposes. The transcription of the invisible into visibility, however, is clearly as much the province of visual art as it is of science. In these printouts the sonar image is drawn by the echo of the sound-wave sent down to the bottom of the ocean, so that the agent/artist and the image drawn seem to be linked in a constant echo or transferral of each other.

I propose that the surface of the earth was formed by energy processes that are echoed in the human body. We are presented with the residue of these energy processes in the visual and tactile maps of solidified energy, in rocks, sand patterns and riverbeds. Active energy still able to be observed in motion, like the flow of water, is influenced by the older underlying structures of 'maps' on the surface of the earth. The residue of these processes, sometimes able to be seen and touched, forms a direct link, beyond language, that connects humans to the whole environment. What I began to explore was how these residual traces could be reflected and experienced in my art.

In an attempt to feel this erstwhile solidified energy physically, I made human-sized rubbings of solidified wave patterns in places like the Cedarberg, and Fraserburg in the

¹⁰ I first encountered a display of sonar printouts of the ocean floor some years ago at the open day of the Institute of Oceanographic Research then based on the campus of the University of Stellenbosch.

Karoo. Placing large sheets of rice paper on the rock surfaces, I lay down on these, and transferred the shapes by rubbing over the paper with graphite. Every prominent surface was touched and redrawn in this way, so that the earth's surface was stroked and recorded. I titled my rubbings *Transferred Waves* (Fig. 8 & 9), but gave each one its particular, localized name, e.g., *Gifberg*, *Fraserburg*, *Gansfontein*. These are very fragile objects as the paper is constantly punctured by the pressure of my moving hand and torn by the slightest breeze. Specific marks are left on the paper, too, in the process of their being rolled up and transported. The impermanence of the rubbings makes them an appropriate 'copy' of nature, in which matter is constantly perishing.

I regard these body-sized rubbings (Fig. 8 & 9), made by lying on energy-patterns formed on the earth's surface, as small performances. By connecting in this direct, simple way to the earth, I am tracing its patterns and telling its story. I spend time in these performances because the action of transferral is a meditative way of doing a collaboration, or finding an identification with the natural world. I find resemblances or echoes of my own body in the graphic visualization of energy inscriptions on the earth's surface. When the rice paper is picked up from the rock surface after the drawing is made, it resembles a skin displaying for a while both my embossed body shape and the tracing of the site. The paper is a detachable skin that bears a visible record of a transaction between my body and the earth, a membrane serving less as a boundary than a connection and having a very ephemeral, transient quality about it. Picking up the membrane from the rocks immediately exposed it to air currents that were hardly perceptible until that moment, so that one might also say that the paper revealed the air currents to me. Air and breath play an important part in the history of sound (see Chapter Three of this thesis). Here, the rice paper revealed the movement of air all around me. This intertwining recalls Merleau-Ponty's (1968:138) question in his chapter 'The Intertwining – The Chiasm': 'Where are we to put the limit between the body and the world, since the world is flesh?' To quote art historian, Amelia Jones (1998:206):

The 'flesh' ... is definitely *not* a determinable, impermeable border between the self and the world (or the self and the other) ... but always a contour in process; the flesh exists provisionally both as a permeable, shifting physical perimeter, a limbic surround of virtual containment, and as the visible trace of the human body (whose contours are never stable in one's own or an other's

visual field). Metaphorically as well as materially, the flesh is an envelope, a 'limit' inscribing the juncture between inside and outside but also the *site of their joining*.

Enabling the 'initiation to and the opening upon a tactile world', Merleau-Ponty (1968:133) explains the intertwining nature of touch, the sense I utilized in the rubbings, in which vision and the other senses too are embedded: 'Through this crisscrossing within it of the touching and the tangible, its own movements incorporate themselves into the universe they interrogate, are recorded on the same map as it; the two systems are applied upon one another ...'.

I do not attempt to overly feminize the exploration inherent in this performance, presuming that my very need to do such tactile work stems from a desire to make contact and interrelate with the earth, a desire which may well originate from the feminine principle. The membranous nature of the result recalls Jacques Derrida's (cited in Jones 1998:207) metaphoric use of the hymen as 'a sign of fusion, the consummation of a marriage, the identification of two beings, the confusion between two. *Between* the two, there is no longer difference but identity'. Between my body and the earth, a visualization of two intertwining energies does seem to come about. As the receding areas in the rock surface offer no resistance to the graphite, these parts do not 'draw' themselves, but remain white on the paper, causing negative white shadows, or the shadows of my movement. These shadows resemble the negative sound shadows of the sonar printout of the ocean floor, which initiated this study,¹¹ and which I have described above.

The broad white void that mysteriously bisects the sonar print-out of the ocean floor (Fig. 6 & 7) appears to be a consciousness, a silent presence, until it is pointed out that this is, in fact, the active agent, the vessel or reader itself, causing an interruption in the image. Calling to mind ancient intromission and extromission theories of vision¹², the

¹¹ In the sonar process, the sound-wave strikes an object at the bottom of the ocean at a slight angle, leaving an un-probed area immediately adjacent to the positive drawn mark.

¹² In his book *A history of reading* (199:28), Alberto Manguel quotes Empedocles describing the eye in the fifth century as letting through 'the inner flame to the outside.' Epicurus, more than a century later, imagined these flames to be 'thin films of atoms that flowed from the surface of every object and entered our eyes and minds like a constant and ascending rain, drenching us all in the qualities of the object observed.' According to Manguel, this intromission theory presents the problem '... how could the film of atoms emitted by a large

vessel sends forth impulses and gathers echoes to form images of the landscape over which it travels. 'We grasp external space through our bodily situation,' Merleau-Ponty (1964b:5) claims, detailing how he perceives the process as, '[a] system of possible movements or "motor projects" [which] radiates from us to our environment':

Our body is not in space like things; it inhabits or haunts space. It applies itself to space like a hand to an instrument, and when we wish to move about we do not move the body as we move an object. We transport it without instruments as if by magic, since it is ours and because through it we have direct access to space. For us the body is much more than an instrument or a means; it is our expression of the world, the visible means of our intentions. Even our most secretive affective movements, those most deeply tied to the humoral infrastructure, help to shape our perception of things (1964b:5).

Our observation of the world is active, Merleau-Ponty (1964b:6) confirms: 'Our world. . . is an unfinished task'. The body, through the 'sensory fields' (1964b:7) and its organization as a whole models itself on the natural aspects of the world.

After completing the rubbings of erstwhile energy waves fossilized on the earth's surface (Fig. 7 & 8), I made a rubbing of a human-sized palm tree frond, which exactly matched every visual requirement of a boat on a human scale (Fig. 10). The body, active and capable of gestures, of expression and finally of language, turns back on the world to signify it. A fresh attempt on my part to signify or capture the world's multisensory manufacturing was by making my sculptural work, *Vessels* (2006), for which I fashioned small boats from the same graphite pencils used previously to make the rubbings (Fig. 11, 12, 13 & 14). Already partially used to draw the earth, each of these graphite tools continues the 'unfinished task' as voyager, as stylus and as the artist herself.

object – an elephant or Mount Olympus – enter so small a space as the human eye?' Euclid proposed the contrary theory: that rays are sent out of the observers eyes to apprehend the object observed. According to Manguel, Euclid's extromission theory raises the problem: 'what ray could issue from the eyes and in a fraction of a second reach the distant stars every night?' Six centuries later, according to Manguel (1997:29) the Greek physician Galen proposed that 'a visual spirit, born in the brain, crossed the eye through the optic nerve and flowed out into the air. The air itself then became capable of perception, apprehending the qualities of the objects perceived however far they might happen to be.'

Once again, referring to intromission and extromission theories underlying theories of sight, the carbon rods on which the boats are mounted describe both the energy impulse sent forth from each vessel and the material with which to record the image on its return. Carbon underlies all of existence; here I use it as the material that depicts energy sent back and forth between artist and the earth. The extreme flexibility of the carbon rods (they are manufactured for use in kites) makes the sculpture sensitive to any currents in the space and air around it. Anchored only by lead sinkers to the floor, the vessels are in a constant state of slight movement. Their near-weightlessness enhances their mobility. Air and breath are linked to life and motion, without which there is no sound. Here, however, there is an absence of sound and only slight movement caused by the presence of the viewer. Some of the boats are installed singly, providing a space for the individual observer to breathe or blow on them, thus becoming aware again of breath and air as launching movement, which is the beginning of sound.

The launching of my fleet of graphite boats originated in drawings made by sound, the sonar printouts of the ocean floor. They followed from an initial phenomenological interest in the body, which through its various means of perception intertwines with the world. Foucault, in his essay, *Of other spaces* (1967: *Heterotopias*. (<http://foucault.info/documents/heteroTopia/foucault.heterTopia.en.html>:2)), concedes that the descriptions of phenomenologists have taught us that we do not live in a homogenous and empty space, but on the contrary, in a space thoroughly imbued with quantities and perhaps thoroughly fantasmatic as well. He states that these analyses 'primarily concern internal space'. Turning to external space, Foucault defines 'heterogeneous' external spaces as 'a set of relations that delineates sites which are irreducible to one another and absolutely not superimposable on one another' (<http://foucault.info>:2). This is the space in which we live, 'which draws us out of ourselves, in which the erosion of our lives, our times and our history occurs'. Defining utopias as unreal places, Foucault (<http://foucault.info>:2) presents heterotopias as counter-sites, 'a kind of effectively enacted utopia':

[I]n [these] the real sites, all the other real sites that can be found within the culture, are simultaneously represented, contested and inverted. Places of this kind are outside of all places, even though it may be possible to indicate their location in reality. Because these places are absolutely different from all

the sites that they reflect and speak about, I shall call them, by way of contrast to utopias, heterotopias.

Of relevance to my *Vessel* sculpture, moreover, is that Foucault (<http://foucault.info:5>) regards the ship as the heterotopia par excellence: it is 'a floating piece of space, a place without a place, that exists by itself, that is closed in on itself and at the same time is given over to the infinity of the sea'. The boat has been the greatest reserve of the imagination: 'in civilizations without boats, dreams dry up, espionage takes the place of adventure, and the police take the place of pirates' (<http://foucault.info:5>).

Imagination /space

Another very subtle inter-space was revealed to me when, through my subsequent reading on sound and acoustics (Beyer 1999:15), I came across the 1785 sound experiments of eighteenth-century acoustics physicist, Ernst Chladni (see Foreword pp viii-ix). Devised to illustrate that all matter vibrates,¹³ the images resulting from his experiments also render the invisible visible. The link with my own practices was established by his choice of the same materials: copperplate and fine powders. My initial trials with the Chladni system, that of vibrating metal plates by means of a string bow, led to aquatint prints of sound visualized like *Resonant Earth* (Fig. 15). The vibrational patterns shaped by frequencies happily accommodated my interest in, and attraction to, sound and to the synaesthetic conjoining of the senses. The formation of the earth's surface, according to this experiment, was caused by soundwaves.¹⁴

It is clear that the real fascination of this process resided in seeing the movement of the powders as they shifted before one's eyes, even more so than the resulting symmetrical pattern captured statically, intriguing as it is (Fig.16). The entire exercise invites

¹³ Colin Rose & Nicol, M.J. (1997:101) relate how, two hundred years later, the experiments of Chladni were taken up by Swiss scientist, Hans Jenny. He produced visual forms by oscillating crystals, through which electronically generated sound was sent. Whereas the Chladni shapes were mathematically ordered geometric shapes, Jenny achieved organic patterns with some areas overlapping in mandala-like designs, while others approximated hexagonal cells and some the vanishing spiral of the nautilus shell. Jenny called his new discipline 'Cymatics', meaning 'the shape of harmony' from the Greek word *kyma* or wave. Kay Gardner (1997:16) records that Jenny experimented with fluids and substances, like glycerine, and achieved shapes that may be seen in other natural and organic structures, including the cells and tissues of the human body.

¹⁴ Another development of the Chladni experiment is currently under way in Germany, where photographer, Alexander Lauterwasser (2003:17), is sending sound frequencies through water and photographing the resultant complex patterns. He bases an argument for sound as originator of structure in the universe on these experiments. Lauterwasser discusses creation myths in which sound causes the universe to come into being and mentions the Big Bang theory as a more recent interpretation of the same idea.

participation and interactivity and drew me further into the context of performance and the interest already engendered in audience response.

While working specifically around the Chladni vibrational patterns, I was approached to take part in a collaborative exhibition on sound at the Irma Stern gallery in Cape Town. Her exposure to my experiments in the visualization of sound confirmed the curator's, Katherine Glenday's, wish to explore sound and its resonance, both physically and in a metaphoric sense, in a collaborative way. The efforts culminated in a collaborative exhibition in 2006 that included ceramic, collage, video, Sound and Performance art. Glenday titled the show *Sound Still* to illustrate that it was about sound that had been arrested in various ways (Fig. 17).

In a truly collaborative project, the artists spent many days and weeks together producing work across the various disciplines (Fig. 18-26). I list the collaborators and their areas of interest: Katherine Glenday (porcelain), Christina Bryer (porcelain), Lore Heuermann (ink on paper), Claire Beynon (painting and work on paper), John Turest-Schwartz (ambient sound and video), Neo Munyanga and Johan Rautenbach (music for Heuermann performances), Remix Dance Company (dance and movement) and Mirjam Macleod as project facilitator. Performance works were given by Lore Heuermann in collaboration with dancers from the Remix dance company founded by Nicola Visser (Fig. 27, 28 & 29).

My contribution centred on the Chladni system which was physically available to be played at the walkabouts. A separate video (Fig. 30) with soundtrack was made (Fig. 31) which was played continually for the duration of the exhibition. The film encapsulates my concern with earth and landscape, with sound as the agent that moves matter, with energy, with the visualization of sound and silence. As a product of collaboration it is also, by its very nature, about intersubjectivity.

The video visuals consisted of my playing the shifting patterns of changing frequencies on a blackened copperplate. Robert Hofmeyr filmed the movements from various angles, including at camera-level parallel to the plate edge, so that the lens focused on the jumping and erupting sand and took on the cosmic appearance required by video director John-Turest-Schwartz. As I was dressed in black and wearing black gloves in a

blackened cubicle, all details, apart from the white patterns shifting seemingly in space, disappeared. The soundtrack, produced and installed by John Turest-Schwartz, utilized resonance inherent in the porcelain vessels of Glenday by placing microphones inside particular vessels while they were activated by percussion gongs. Linking up conceptually with the string bow with which I produced my visuals, Turest-Schwartz mixed the porcelain resonance with notes played on a de-tuned cello by a professional musician.

I found it significant that the ultimate value of this exhibition lay in the intense response of viewers who waited to speak to us. It lay, in fact, in the conversations with visitors who were anxious to relate their personal accounts of sound experiences. The performance quality of sound is overwhelming in the sense that it instantly fills space and immediately affects everyone present in a physical way. Emotionally, as well, sound acts instantly on the body and the mind. When, additionally, sound is accompanied by, or fused with, shifting visual images similar to structures in nature, reminiscent of dreams and memory, a kind of hidden communication is evoked (Fig. 33-37). Ultimately, the exhibition proved to be as much about communication as about objects produced. We might have planned on sound as content, but for me sound (conversation) turned out to be the form. I experienced directly what French art critic and curator, Nicolas Bourriaud (2002:28), proposed: that interhuman exchange is an aesthetic object in and of itself.

As conversation promotes relationships with other people, I propose that art could be an activity that creates the circumstances for meeting and community. Bourriaud creates the concept of a relational aesthetic, where the artist is understood as the catalyst rather than the sole creator, master or celebrity engendering a work of art. At the 1993 Aperto, the international exhibition for younger artists at the Venice Biennale, Buenos Aires-born Rirkit Tiravanija provided tables and chairs, gas burners, boiling water and pots of noodles for visitors to prepare and eat.¹⁵ With the artist as catalyst, the spectator is placed at the centre of the piece and determines what happens so that a certain degree of randomness is inbuilt, much as *Arte Povera* artists in using live elements from nature built unpredictability into their work. The shift away from producing an object to that of co-ordinating an event is part of the history of the shift from modernism to

¹⁵ The title of Tiravanija's work, *Untitled (Twelve Seventy One)*, referred to the year Marco Polo set off from Venice to visit China, the source of the food.

postmodernism. In the work of artists such as Tiravanija, the aim is to build a micro community (Bourriaud 2002:31), no matter how fleeting and vulnerable, which offers a space for interrelating (Fig. 38).¹⁶ In this way the 'social artists' enact one of the characteristics of postmodernism as understood by sociologist, Bauman (1992:xviii), namely the construction of imagined communities. With the dwindling of the power of a single coherent modernist norm, for instance, the orderly progress aspired to by means of universal reason (1992: xix), meaning and nurture is looked for in community.

Relational aesthetics 'does not represent a theory of art, this would imply the statement of an origin and a destination', but, according to Bourriaud (2002:19-20), 'a theory of form'. The 'glue' that holds the artwork together is constantly transforming according to the historical content. For example, whereas the medium of bronze was once a conventional form of 'glue', our contemporary visual experience has become so complex that a collection of disparate objects with no obvious links (such as an installation) can be recognized as a unity or world in itself. Bourriaud (2002:20) insists on the instability and diversity of the concept of form. His description of form as 'a linking element, a principle of dynamic agglutination', suggests the various attempts I have encountered at defining energy. In a sense the form of our *Sound Still* exhibition was the phenomenon of sound explored as a manifestation of energy, during which its diversity and poetic resonance interacted with all present. The understanding of Baggini & Stangroom (eds.) (2004:5) that everything, including human beings, consists of the energy of sub-atomic particles, makes me argue the relevance of exploring the interrelatedness of collaboration.

The reference to the desire for conversation has surfaced like a pulse through all my reading of the art of the last few decades. The concept of the artwork as a period of time that is lived through, 'like the opening to unlimited discussion' (Bourriaud 2002:15), articulates the wish for shared conviviality rather than the ownership of objects. This understanding anticipates the end of a territorial and aristocratic conception of the contemporary artwork as the owner's 'space' to be walked through, like a tour. The historical 'chance', as Bourriaud (2002:13) puts it, of the contemporary artist is one of

¹⁶ Almost thirty years ago, French philosopher, Felix Guattari (cited in Bourriaud 2002:31), advocated a similar line of action to that practised by Social artists: 'Just as I think it is illusory to aim at a step-by-step transformation of society, so I think that microscopic attempts, of the community and neighbourhood committee type, the organization of day-nurseries in the faculty, and the like, play an absolutely crucial role'.

'learning to inhabit the world in a better way', instead of trying to construct it based on preconceived ideas of historical evolution. Collaboration, such as that described above for the Sound Still exhibition, explores differing modes of functioning, which invoke the challenges inherent in the sharing of ideas and space.

Although I had previously worked mainly on my own, I obviously was producing work in a private space which I intended would enter into a relationship with a viewer or viewers. Relational aesthetics theory, however, as defined by Bourriaud (2002:43), consists in judging art works on the basis of the inter-human relations which they represent or produce. The space of artistic practice has the potential for social experiments and, by implication, for renewal beyond 'the empire of predictability', which Bourriaud (2002:8-9) regards as the outcome of uniform consumerist behaviour patterns. It may re-connect people to other levels of reality by artistic activity.

Summary

In this chapter I trace my shift in position from subject to intersubjectivity, facilitated by the work of Merleau-Ponty, which carries within its existentialist phenomenology the seeds of intersubjectivity. I point to the positive role that my awareness of the nature of sound has played in directing my enquiry away from the artist as subjective producer of works to the artist as catalyst of relational processes. The precondition to a relational form of art is an urban culture, and the existence of the constant encounters built into that way of life. For Bourriaud (2002:13) the role of the artwork is no longer the formation of imaginary and utopian realities; it becomes 'ways of living and models of action within the existing real', whatever the scale chosen by the artist. Although the whole of human interaction and its context is taken into account and becomes the point of departure for the intervention of the artist, I regard relational aesthetics as a primarily urban phenomenon and see my interests possibly diverging, due to an underlying interest in the extended natural world.

As printmaker and inscriber, with implied and actual sound already surfacing in my earlier work, the relevance of the sonar scan of the seabed focused my attention on drawings made by means of sound, the making visible of the invisible. I interpret the vibrational experiments of Ernst Chladni as a demonstration of how sound, in moving matter, shapes the surface of the earth. Both the sonar and the Chladni image would

possibly be described by art historian, Martin Kemp (2006:55), as 'quintessentially twentieth century because [they deal] with something that cannot be seen and [rely] upon a transmission other than the visible wavelengths of light that we normally use for looking at the world'. Yet, inviting other artists to re-engage with these sound drawings in a collaborative way, and having the opportunity to present the images by means that are not static, i.e. through video, as well as through performance and direct interaction and conversation, which according to Bourriaud is lived art as aesthetic activity, has revitalized these sound images and has pointed out a way in which my art could develop in the future, in method and in materials. The interactive nature of sound leads logically to the following chapter, which deals with the interplay of the senses and the order that underlies the seeming chaos of creativity.

Chapter Two

The interplay of the senses: order and chaos

Introduction

In this chapter I examine the interplay of the senses, continuing to employ the bricolage methodology which, being itself a form of interplay, seems appropriate for a study inquiring into the nature of creativity and the desire for renewal. My question here is: can knowledge of the functioning of the senses lead us to renewal beyond established conventions?

I investigate examples of the visualization of order and its seeming opposite, chaos, from other disciplines, namely science and mathematics, only to arrive at an awareness of the limitations of such a binary concept. Although produced outside the realms of art, the implications not only of the Chaldni vibrational image but also the visuals of fractal geometry have acted as affirmations of the presence of co-existent spaces, those that artists accommodate instinctively.

Western development, which gained so much knowledge and applied expertise from scientific reductionism, often seems, in the process of analysis, to have lost sight of the interconnectedness underlying all of life. In this postmodern era, Kemp (2006:3), finds evidence of hostility to the 'arrogance of scientific knowledge' and a public loss of 'absolute confidence in scientific progress'. Although these can be no deterrent to professional mainstream science, the visual images of popular science do continue to play a 'key role, both because of its inherent importance in terms of observation and representation, and because 'pictures' provide highly effective ways of communicating to non-specialist audiences' (Kemp 2006:3).

In contemporary art, with its emphasis on what Kemp (2006:3) calls 'process, performance and spectacle', I note a desire to move, by means of the senses, toward inter-relatedness in an interconnected world. This shift presupposes an interplay on many levels, not least of which is that of the senses. Discussing three types of creative thought, synaesthesia, metaphor and unconscious vision, I suggest that closer attention to the physiological processes, the visualization of sound, art and interplay might

enhance our understanding of our relatedness to each other and the world. *Synaesthesia* is regarded by neurologists as providing clues to the phenomenon of creativity, *Metaphor* signifies a high state of energy and transferal and, in the teaching and creation of art, *unconscious vision* describes the dispersed structure of unconscious perception. All demand an attitude of openness to intuition¹⁷ and to the senses, which might lead to an increased understanding of relatedness.

I turn now to these three forms of relational awareness to illustrate that as humans we are, in various ways, programmed to engage in chaos as a precursor to dynamic order.

Synaesthesia

Writing in the online journal, *Scientific American*, Ramachandran and Hubbard¹⁸ (Scientific American.com April 13 2003:1) propose that studies of people with synaesthesia – whose senses merge – are providing clues to some of the most mysterious aspects of the human mind, such as the emergence of abstract thought and metaphor. Synaesthesia is an oversupply of one particular sense, or an excess of communication, between regions of the brain which, in some individuals, leads to unusual connections and concepts, such as hearing colours and tasting shapes. This physiological oddity sets synaesthetes apart from the majority of humanity.¹⁹ According to poet and nature writer, Diane Ackerman (1995:289), the term comes from the Greek *syn* (together) and *aisthanesthia* (to perceive). Assuming that all of life is energy, selectively accessible to our various human senses, the manner in which the senses conjoin determines our experience. The rare people who regularly experience intense synaesthesia – only about one in every five hundred thousand – are called living ‘cognitive fossils’ by neurologist, Richard Cytowic (http://cytowic.net?Mondo_2000.htm:1). He traces synaesthesia to the most primitive part of the brain, the limbic system. The more recently evolved cortex may not yet entirely govern the limbic in

¹⁷ Intuition is defined (ODE 1998 s.v. ‘intuition’) as the ability to understand something immediately without the need for conscious reasoning. It originates in late Middle English (denoting spiritual insight or immediate spiritual communication): from late Latin *intuition* (n), from Latin *intueri* ‘consider’. Intuition is regarded by Henri Bergson (cited in Ehrenzweig 1967:132) as a faculty for visualizing several incompatible images occupying the same spot in space.

¹⁸ Ramachandran directs the Center for Brain and Cognition at the University of California in San Diego, and is adjunct professor at the Salk Institute for Biological Studies. Hubbard studies psychology and cognitive science and, in his research, combines psychophysics and functional magnetic resonance imaging to explore the neural basis of multisensory phenomena (Scientific America.com April 13, 2003:4).

¹⁹ According to Ackerman: ‘Composers Aleksandr Scriabin and Nikolai Rimski-Korsakov both freely associated colors with music when they wrote’ (1995: 290).

these people. Ackerman (1995:290) suggests: 'Synesthesia ... may be a memory of how early mammals saw, heard, smelled, tasted and touched'.²⁰

While initially regarding synaesthesia as caused by some kind of 'cross wiring' in the brain, Ramachandran and Hubbard (2003:4) explain, scientists are now giving attention to the fact that the wiring may be in order, but the balance of chemicals travelling between the regions may be warped. The result is that the possibility of cross-activation is being investigated. Neighbouring brain regions may inhibit one another's activity, which would serve to limit cross-communication (Ramachandran & Hubbard, 2003:4).

A common synaesthetic instance is that of a number being experienced as having a specific colour associated with it. Numbers, the most abstract of entities, are represented in the *angular gyrus*, which is quite a small brain region. The human brain contains different maps, 'small patches of cortex that represent specific perceptual entities'. An excess of communication between these regions could lead to synaesthesia and also toward an inclination to 'linking seemingly unrelated concepts and ideas – in short, creativity' (Ramachandran & Hubbard, 2003:3).

This trait may set the stage for abstraction – an ability at which humans excel. The *TPO*²¹ which is the region of the brain where information from touch, hearing and vision is thought to flow together to enable the construction of high-level perception, and the *triangular gyrus* within it, which plays a part in the condition of a joining of the senses, is normally involved in cross-modal synthesis. It could be that the *angular gyrus*, evolved originally for cross-modal associations, became co-opted in the course of the brain's development for other, more abstract functions, such as metaphors (Ramachandran & Hubbard, 2003:3).

²⁰ Ackerman notes it may be '... odd to think of Nabokov, Faulkner, Virginia Woolf, Huysmans, Baudelaire, Joyce, Dylan Thomas and other notorious synesthetes as being more primitive than most people, but that may indeed be true' (1995: 292).

²¹ A patch of cortex, the junction of the temporal, parietal and occipital lobes (Ramachandran & Hubbard 2003:2).

Metaphor and Chladni's visualization of order

Ramachandran & Hubbard (2003:3) propose that, just as the interplay of the senses taking place in the brain itself leads to unusual links between perceptual entities that seem unrelated, in a similar way, metaphor involves linking unrelated conceptual realms. The word metaphor originated from the Greek *metapherein* 'to transfer' (ODE 1998, s.v. 'metaphor'). Philosopher, Johan Degenaar (1970:293), lists a multiplicity of characteristics of the metaphor: resonance and boundary crossing, comparison, difference on the basis of comparison, flexibility and stability, open texture, interaction and confrontation. Nelson Goodman (cited in Degenaar 1970:293), proposes that a metaphor can be seen as a calculated category mistake, 'One describes a in terms of b, and one knows that a and b ... [belong] to different logical types. It is precisely this difference which is deliberately brought into the relationship and explored in view of the imaginative creation of new meaning'.

Degenaar (1970:303) points out the importance of realizing that a metaphor is not a clash of two words, but two contexts, two fields of meaning. He quotes I.A. Richards' reference to metaphor as 'a borrowing between and intercourse of thoughts, a transaction between contexts'. In emphasizing the range of the metaphor's creation of new meaning, Degenaar (1970:303) turns again to Goodman:

'The shifts in range that occur in metaphor, then, usually amount to no mere distribution of family goods but to an expedition abroad. A whole set of alternative labels, a whole apparatus of organization takes over new territory. What occurs is a transfer of a scheme, a migration of concepts; an alienation of categories. Indeed, a metaphor might be regarded as a calculated category mistake – or rather as a happy and revitalizing, even if bigamous, second marriage'. (Goodman, cited in Degenaar 1970:303.)

I mentioned in Chapter One how the Chladni vibrational experiments, in which sound generates patterns, brought me into performance work. Word of my 'playing' images reached the Nietzsche scholar at the Philosophy Department at Stellenbosch University, Vasti Roodt, who then referred me to an unpublished Nietzsche essay entitled 'Truth and

Lies in a Nonmoral Sense' (Breazeale (transl. & ed.) 1979:82).²² In the essay, Nietzsche draws a comparison between the Chladni pattern and metaphor.²³

One can imagine a man who is totally deaf and has never had a sensation of sound and music. Perhaps such a person will gaze with astonishment at Chladni's sound figures; perhaps he will discover their causes in the vibrations of the string and will now swear that he must know what men mean by 'sound'. Humans believe they know something about the things themselves when they have given names, words to them, yet we possess nothing but metaphors for things, metaphors that correspond in no way to the original entities. (Breazeale (transl. & ed.)1979:82.)

Nietzsche calls a word a '*copy* in sound' of a nerve stimulus: 'To begin with, a nerve stimulus is transferred into an image: first metaphor. The image, in turn, is imitated in a sound: second metaphor' (Breazeale (transl. & ed.)1979:82).

Nietzsche rejected the mirror imagery often used to depict the relationship between the knower and the known, preferring the image of the *process* of metaphor as gaining knowledge. The etymology of the Greek word *metaphor*: 'to transfer' or 'to carry across', alludes to the process itself. Nietzsche regarded the Chladni experiments as a physical illustration of the process of metaphor formation. Sounds were 'transferred' into sand patterns on a flat surface (Breazeale (transl. & ed.)1979:xxxiii).²⁴ What I visualize in my mind's eye is that, at the formation of the earth's surface, sound energy was transferred into patterns, and that the earth might thus also be seen as one huge Chladni visual.

²²Roodt also sent digital photos of herself playing the Chladni/Nietzsche image to colleagues all over the world.

²³ The essay is one of a collection, translated and edited by D. Breazeale (1979), of six unpublished early works written by Nietzsche when he was about thirty. This particular essay is not only regarded as stylistically brilliant, but raises the problems that Nietzsche addressed in his later philosophy (Kaufmann, cited in Breazeale, 1979:viii).

²⁴ Breazeale, quoting Nietzsche, explains: 'The reason that all knowledge involves metaphor is that knowing is supposed to be "the adequate expression of an object in the subject". And since the "subject" and the "object", the knower and the "known", are imagined to be radically independent of each other, knowing always demands a "transfer" or "carry-over" from one sphere into the other' (1979:xxxiii).

Nietzsche found the parallel between knowing and metaphor formation immensely suggestive (Breazeale (transl. & ed.)1979:xxxiii). Degenaar, in *Art and the Meaning of Life* (1987:73), describes our experience of reality as 'a rich texture, which cannot be exhausted by direct reference'. Metaphor in language may be seen as an attempt, through indirect reference, to better convey the multifacetedness of experience.

A further description of metaphor, this time by two scientists, Bohm and Peat (1987:35), regards metaphoric perception as fundamental to all science, as it involves bringing together previously incompatible ideas in a radically new way. In their book, *Science, Order and Creativity* (1987:35), metaphor is described as causing 'tension', or 'vibrating' in the mind and as 'a high state of energy', while their claim is that the perception of 'the meaning of the metaphor takes place nonverbally'.

It seems as if metaphor functions beyond pre-ordained systems of connection. An anarchic embrace of the powers of imagination in an attempt to decrease intellectual control over experience might describe effective metaphor formation. It is also a description (Christov-Bakargiev 1999:20) of *deculturare* – to de-civilize – a method according to which *Arte Povera* artists of the 1970s functioned. This art movement is the first of the three that I propose to look at in this study, each of which seems to reflect the possibility for renewal brought about by the creation of that space where transferrals and interactions of energy take place. The others are Performance art and Environmental art. *Arte Povera* and Performance art I discuss here, as well as aspects of Sound art that I consider relevant to the interplay of the senses in art. (Environmental art will be brought into relation with ecology in Chapter Three, since it is part of the enquiry relating to what a postmodern ethic might mean to the art maker.) In returning to the body as containing within it the source of conceptual renewal, a return to Merleau-Pont's existential phenomenology, I align myself with each of these. Performance art is an art form in which I detect a wish for inter-subjectivity, or human inter-relatedness, made visible most simply and clearly by gestural energy, while in Sound art I deal with examples of what I regard as the extended body, namely the body of the city as environment and resonator. *Arte Povera* is a precursor to Performance, Sound and Environmental art: it regarded everything, including energy,²⁵ as valid art material; and it encompasses in its

²⁵In the introduction to the catalogue for the *Zero to Infinity* exhibition at the Tate Gallery, London, Flood & Morris (2001:15) write: 'Art could be made from anything: living things, products of the earth, and industrially

movement, according to Edward Lucie-Smith (2001:173), the initial stage of the attempt to change both the nature of art and its relationship with the public.

Arte Povera

Taking its name from an exhibition organized in 1967 by the Italian critic, Germano Celant,²⁶ Lucie-Smith (2001:168) points to *Arte Povera* as a widely defined movement that renews focus on the nature of art materials (2001:169), as well as on the relationship of art with society. Richard Flood and Frances Morris (2001:14) refer to *Arte Povera* works as 'dialogues with materials, with the physical and metaphysical dimensions of life and with history'. The '*Povera*' or 'Poor' in the name refers to 'impoverishment', such as in its use of humble materials. Lucie-Smith, however, regards the name as having an edge: as being a militant 'poverty' of art vis-à-vis an opulent and alienating society (2001:168). Amongst the *Arte Povera* artists characterized by Celant (cited in Lucie-Smith 2001:168) as anti-formal, elusive and interested in the essential nature of the materials used, are Giovanni Anselmo (b. 1934), Jannis Kounellis (b. 1936), Mario Merz (b.1925), Giuseppe Penone (b. 1947) and Guilio Paolini (b. 1940) and Gilberto Zorio.

Referring to their attitude toward materials, as well as to their conceptual grasp of imagery, Godfrey (1998:178) quotes Celant as remarking, in 1969, that *Arte Povera* is a 'refreshing phenomenon that tends toward deculturization, toward the regression of the image to the pre-iconographic stage. It is a hymn to the commonplace, primary elements ...' . I detect a link with phenomenology in the onus *Arte Povera* artists place on the sensual dimension and in their attitude to pursuing fresh and subjective perceptual experience. In 1965 Merleau-Ponty's book, *Phenomenology of Perception*, was published in Italian (Christov-Bakargiev 1999:26). In it he focuses on perception as the moment where the self and the world connect, which seems to me an accurate description of the most potent of the *Arte Povera* works.

produced materials, as well as immaterial substances such as moisture, sound, and energy. Art could be made in any way. It could be painted, handcrafted, industrially produced, gestured, spoken, written, acted, filmed, dreamed. It might exist as an object for time immemorial or as a momentary, time-based action'.

²⁶In his first catalogue essay for the exhibition, Celant (cited in Christov-Bakargiev 1999:18) wrote: What has happened . . . the commonplace has entered the sphere of art. The insignificant has begun to exist – indeed, it has imposed itself. Physical presence and behaviour have become art ... cinema, theatre and the visual arts assert their authority as anti-pretence [...]. They eliminate from their inquiry all which may seem mimetic reflection and representation or linguistic custom in order to attain a new kind of art, which, to borrow a term from the theatre of Grotowsky, one may call "poor".

I suggest that Carolyn Christov-Bakargiev's (1999:19) description of the aims of *Arte Povera* as 'subjective understanding of matter and space through primary energy, unmediated through ideology or codified language', places these artists in the position of precursors of Performance, Sound and Environmental art. She states (1999:19): 'This energy was intended, on the one hand, to correspond to the basic physical forces of nature (such as gravity or electricity) and, on the other hand, to refer to the fundamental elements of human nature (such as vitality, memory and emotion)'. Rather than being based on a theoretical premise, the activity of the *Arte Povera* artists was experimental and open to any experience.

A very distinct quality of their work is the sensitivity of *Arte Povera* artists to the poetic associations of their materials, an aspect of art making that underlies my own work as referred to in Chapter One. I find similarities in their attitude and in the concerns I am articulating in this dissertation: a concern with the earth; a positioning of oneself on the earth; an attitude towards materials; and a certain attitude towards ordinary life. The return to simple materials correlates with my inclination in my practical work to return to simple processes, for instance, doing rubbings as described in Chapter One or realizing sound in hollow shapes (as described in my *Kalinga* work in Chapter Three). There is a correlation between this inclination and the definition that Swiss curator, Jean-Christoph Amman, offered of *Arte Povera* (cited in Christov-Bakargiev 1999:20): that, in contrast to the technologized world around us, its aim was for the power of the imagination to unlock poetic statements made with the simplest of means. Additionally, author, Jonathan Fineberg (2000:333), regards the *Arte Povera* fusion of elements from nature with those of urban society as having the connotation of 'nature overwhelming culture from within'.

Arte Povera came into being at the time of the conceptual and minimalist era, but according to the Italian critic, Marco Meneguzzo (cited in Lucie-Smith 2001:168), was also influenced by American Pop art as something that had 'direct contact with the social'. Europe, in 1968 and 1969, was in turmoil as a result of rebellious anarchist upheavals that followed the collapse of a period of unprecedented prosperity in the 1950s, which led to a flourishing consumer society. The two centres of the art movement were Turin, which witnessed violent social conflict, and Rome. The city of Rome itself is

a constant example of Baroque intermingling of materials which, according to Lucie-Smith (2001:168), displays 'its refusal to make distinctions between artistic genres', an attitude in sympathy with *Arte Povera* explorations.

Lucie-Smith (2001:168) refers to a scepticism about 'style as an end in itself' as issuing from Joseph Beuys, as well as from the *Arte Povera* artists. This facilitated an undermining of the 'sacred' art object and opened the way to artistic variety, art as dynamic process and 'the wonder and coherence of the incoherent'. *Arte Povera* remained primarily a gallery-based art, but it can be regarded as contributing to Land art and Environmental art, by 'displacing' attention to the setting and context of a work and by using material often so ephemeral that the surrounds came into prominence.

Christov-Bakargiev (1999:19) calls the *Arte Povera* notion of knowledge 'horizontal', as opposed to the central 'vertical' gaze of the powerful modernist eye. In terms of giving due regard to the importance of all the senses, one of the most well known works is the work *Senza titolo (12 cavalli)* (Untitled (12 horses)) of Jannis Kounellis (1969) (Fig. 39), which he installed in the L'Attico gallery in Rome. For a period of three days, Kounellis tied twelve live horses to rings attached to the gallery walls. This work challenged gallery conventions on many levels. The horses were formally tied at regular intervals, but completely unpredictable were, of course, the movements of the animals. The economic interests that are the foundation of any commercial gallery were subverted as was the dominance of the eye. All the senses of the viewer came into play, smell, touch, hearing and sight. Kounellis chose horses for their association with energy and power, and the connotations of equestrian sculpture alluded to Roman history. His own history he refers to poetically in a companion work, *Senza titolo* (1969) in which ten hanging shelves are suspended from an iron beam fixed to a wall. Containing mounds of coffee, the work calls into play the sense of smell no less strongly than the visual sense, and refers to the transportation of goods and travel as Kounellis experienced them in his home port of Piraeus. Smell and 'its pervasive nature is contrasted with the formal equilibrium of the shelves' (Christov-Bakargiev 1999:112).

The intangible is evoked in *Respiro* (Breath) (1969) (Fig 40) by Giovanni Anselmo, a work consisting of iron and a sea sponge, but depicting air and breath. A sea sponge, held between two iron bars, inhales and exhales imperceptibly, as the fluctuation of

temperatures causes the iron to expand or contract. Christov-Bakargiev (1999:79) deems it possible in the presence of this work to imagine the breathing of the sponge.

Gilberto Zorio explores the relationship between art and truth in language. Since 1969 he has made a series of alchemical machines, of which *Serpentine* (1989) (Fig. 41) serves as an example relevant to my interest in sound, also as expressed in language. The machines, called *Per purificare le parole* (Through which to purify the words) are long, pipe-shaped alcohol containers through which the viewer is meant to speak. After passing through the 'purification' what remains of language is 'the tone, timbre and rhythm of the voice freed from "content", the intentionality of conscious discourse and the representational nature of verbal language' (Christov-Bakargiev 1999:19). Zorio's field of interest prefigures that of Anderson, whose work as Performance artist deals in a complex way with similar issues, but functions additionally in a technologically much more sophisticated world. There is, moreover, the fact that she 'speaks' or not, as a woman, a matter addressed in the following section.

Performance art: interplay

As in the process of metaphor, which causes high energy or tension between disparate parts, Performance art requires engagement from all present. The term 'performative' has come to describe a state of perpetual animation. RoseLee Goldberg expresses it in the following terms: 'We are all activists, not passive recipients of the material of culture: we are kinetic collaborators in the construction of ideas' (1998:10). It is the elements of unpredictability and chance inherent in performance that contribute to the provocative nature of the live event.

Because its main tool is the live body, I regard Performance art as, above all, the art of direct and immediate energy. It is *the* art form for an era aspiring to inter-subjectivity. Defined as 'live art by artists', and in Britain, also as 'time-based art' (Goldberg, 1998:12), Performance art requires viewers as collaborators, participants and immediate interpreters at its events. An interaction of energy takes place between artists and viewers on a perceptual and psychological level, activating the conceptual, the sensual and the practical aspect of both performer and viewer. This makes it a hugely relevant art form for an era that has experienced a glut of technology, distancing people from one another and causing one-dimensional experiences of communication. When the body is

described as 'a site, an instrument, an environment, a singularity and a multiplicity' (Turner, cited in Jones 1998:12), it seems to me to be understood as interconnected and inter-subjective by its very nature.

Historically, the Conceptual era of the 1970s inhibited the making of any art objects, but the gatherings for performances, in artist-run alternative spaces, were, according to Goldberg, a tangible substitute for the art of ideas (1998:11). Many innovators in other disciplines, like music and dance, initially found their only audiences in Performance art spaces. Only later were they accepted back into the folds of their own disciplines. This happened in the realm of sound, when John Cage, for instance, performed his *avant garde* work, in which no musical instrument is played, with and for visual artists.

Before the interactivity of the Chladni vibrational plates caused the paradigm shift in terms of my own art, I had to deal with the fact that one's first reaction to the symmetrical formation of the shape of sound is that it is a magical manifestation of 'universals' (meaning that in *all* cases this frequency of sound will produce this particular result; in reality, of course, the way the plate is fixed, centrally, *can only* result in a symmetrical image).

Interestingly, the Chladni image raises questions of interpretation. Writing on age-old issues in the seeing and depiction of nature, Kemp (2006:4) regards the period of 'classical modernism' in the first three-quarters of the twentieth century as the period in which the emphasis was upon 'hidden, abstract forms and forces, often of increasing minuteness and immensity'. As images of abstraction, the Chladni pattern could be placed in this category. At the same time, as an image of energy arrested, the image will always compel but will constantly be reinterpreted, and reinvented, using new technology. The way in which I engage with it in this study, the Chladni visual becomes a postmodern example of the image as 'a site revisited'. According to Ray (cited in Stevens 1996:33), 'Postmodernism retains the notion of the art object, but redefines it as a *site*, a crossroads traversed by communication highways continuously rerouted by external, extra-textual circumstances. Any method which attends only to the object will prove inadequate'.

The synaesthetic appeal of the Chladni process, as such, has lost none of its potency. The relevant factor for Performance art is that the Chladni concept is not unknown, but to see it in action, or better still, to activate it, engages the senses and causes transferral, also in the imagination. The process causes excitement, energy and tension. The desire that the Chladni process stimulated in observers for a chance to take the bow in hand, to interact also with this synaesthetic phenomenon from nature, is, as I have said, what moved me into Performance art. In her book, *Overlay*, Lucy Lippard (1983:4) confirms: 'Art itself may be partially defined as an expression of that moment of tension when human intervention in, or collaboration with, nature is recognized'. In the way I present the Chladni process, as available to anyone for interaction, the result bears traces of human intervention sufficiently strong to arrest the human observer and to stimulate enquiry about the meaning of that interaction.

In his own era of the late eighteenth, early nineteenth century, Chladni toured Europe, in a type of performance, giving demonstrations of his findings on the vibrational nature of matter at scientific salons.²⁷ Chladni's work was primarily received by his contemporaries as confirmation of God's universal order and the harmony inherent in all things. Michael Faraday, the scientist who discovered electromagnetism, for instance, took a great interest in the Chladni plates (Zajonc 1993:130). He believed that the universe was a divinely inspired construct and devoted a great deal of time to looking for patterns of order, unity and symmetry in natural forces. When he found them, as in the work of Chladni, Faraday's religious faith was confirmed and his belief strengthened by the fact that 'what appeared at the surface disparate, was at its core one' (Zajonc 1993:130).²⁸ British art critic, Peter Fuller (1988:233), quotes eighteenth-century writer and aesthete, John Ruskin, who presents complex designs in nature as argument for a Divine creation. Writing on 'the grammar of nature', Ruskin says: 'We are inclined to think that order is the product of an ordering mind, and we suspect some divine mind at work behind what we observe' (cited in Fuller 1988:233).

²⁷ Kemp (2006:310) relates how, after the discovery of the X-ray by Wilhelm Röntgen in 1895, which seemed magically to transcend the normal definitions of sight in respect to opaque bodies, 'scientific showmen' gave public performances across Europe and America, heedless of what we now know about the risk of prolonged exposure.

²⁸ Zajonc (1993:130) tells of how Faraday investigated whether vibration was such a unifying idea under which not only sound and light could be joined, but electrical effects also. Faraday's investigation in search of an undulating wave of some kind subsequently led to his discovery in 1831 of electromagnetic induction.

As the camera had not been invented yet, Chladni made drawings of his findings, leaving an essentially static version of sound patterns for posterity. While I derive satisfaction from extending the potential of my traditional etching materials into the realm of sound by using materials similar to those of Chladni for making prints (Fig. 42), in contemporary art, when the Chladni experiment occasionally surfaces, it is not in a static form. In an article in the contemporary art Journal, *ArtReview* (2005 Vol 2, LVI:76), for instance, fellow artist, Cosey Fanni Tutti, refers to the visual sound performance piece of Caroline Locke, in which vibrations from acoustic transducers stimulate the surface of water to produce patterns, as 'an obvious example of sound as art'.

The methods of production, as well as the interpretation of these Chladni images, have changed over time. In some instances, such as that of Locke, electronic sound has replaced the violin bow and the metal plate has been supplanted by water, in her case making an installation of continuous patterns in movement, so that sound is perceived as movement. In his turn, contemporary German photographer, Alexander Lauterwasser (2003:130, 59), sends an electronic frequency through a shallow basin of water, shines a coloured light on it from above, and photographs the resulting pattern. Additionally, he employs live music and musicians in his studio, to play the work of various composers, leading to results such as the Bach (Fig.43), *Stockhausen* (Fig. 44) and didjeridoo works (Fig. 45). In his book, *Klang, Wasser Bilder*, Lauterwasser (2003:62) proposes that the similarities in these Chladni patterns and the structures of nature, for instance, the shape of a tortoise shell (Fig. 46), lead one to believe that the many myths associating the origin of the world to sound are based on close observation of the results of movement and sound patterns, as well as ancient wisdom.

Engaged as I am with concerns of sound and silence, a fuller examination of which follows in Chapter Three, Anderson presents to my mind the most compelling profile of a complex postmodern Performance artist (Fig. 47). The inter-subjectivity inherent in Performance art is taken to complex levels in her work. A trained violinist, she uses sound and the voice extensively in her Performance art. In technologically adept but subversive ways (subversive also of that technology and its potential toward perfection), Anderson turns the concept of the live voice as harbinger of (warm) communality on its head. By manipulating the range of her voice electronically, she changes from female, to clone, to male, to cyborg, to machine. In using her voice thus, she not only changes her

persona but the content of what might have been expected, in a live performance in which an artist was using her expressive voice (Fig. 48). Anderson started her career with a strong interest in Phenomenology. Latterly she has been described by American author, Amelia Jones, as contributing to a discussion of the 'techno-phenomenological body' (1998:17).

Language is at the heart of Anderson's concerns. The voice as human tool has been altered in our technologized era. The way the voice has been taken over by the media is played out in her snippets of seemingly arbitrary and anecdotal narratives that create a desolate feel and seem to accentuate the vulnerability of the individual in contemporary life. By demonstrating, in techno-performance, the lack of any automatic assurance of presence in the voice, Anderson dilutes the old debate about the hierarchical importance of the separate senses. Along with several other performance artists, she is categorized by Phillip Auslander as employing a strategy of 'refusal of presence' that **presents** a critical analysis of postmodern culture and the media from within the terms of that culture itself (1994:54-55). Anderson makes of the human voice a reflective surface with interminable permutations. At heart, lack of presence is *all* there is, a truly postmodern concept.

In her earlier work, in the 1970s, Anderson created a sound-speech that was completely novel. She replaced the strings of a violin with an audio head from a tape recorder and replaced the horsehair on the bow with recording tape, to create a tape-bow violin. The resulting sound-speech was a reversible music-language, the up-bow movement creating a different word from the down-bow, for example, 'no' becoming 'one'. This demonstrates her awareness of the 'slipperiness' of phonetic language (van Dorsten 1991:4), which links with my discussion of deaf Sign in Chapter Three.

Art using sound: interplay

The relational nature of sound is topical for the same reasons as Performance art: it is immediate, impermanent and the live presence of the listener/observer is necessary for the work to function maximally, but at the same time indeterminacy is built into the process. The way in which the work is received is not controllable: again unpredictability becomes one of the main factors lending energy and tension to the project.

Sound, by affecting the body directly, irrespective of existing cerebral interpretations and established conventions, offers an attractive alternative method of perception for the visual artist who inherits a western art tradition which carries a heavy burden of 'ocularcentrism'. This concept implies the objectification of the world through the distancing mechanism of analytic sight. That a shift toward an auditory or acoustic mode of perception would happen in the late 20th century, was predicted by McLuhan (cited in Cox & Warner 2004:68-69), in an essay titled *Visual and Acoustic Space*. In it, he describes a 'multi-centred and reverberating ... gyrosopic' world, non-linear, an 'ear-culture', where objects resonate with each other. Although he is talking about a pre-alphabetic world, I suggest that acoustic space might be a dwelling place for artists convinced that a multifaceted grasp, in contrast to a linear sequence and uniform understanding of the world, might be more appropriate for our time.

Much Sound art work explores the immediate environment, mapping cities and buildings poetically by engaging hearing. Sound art places an intense focus on space through innovative sonic mapping. Sound artist, Stephen Vitiello, says he is 'interested in dialogue between himself and a place, or between the listener and a place: a dialogue carried out in the language of sound' (Kim-Cohen, 2005:69). Microphones placed at inaccessible heights on buildings will record the creaks and winds, and city sounds from below, of a metropolis, in order to expand the listener's awareness, spatially and aurally, of his or her environment. In 1999, Vitiello (Fig.49) converted one of the towers of the World Trade Center into a microphone, in this way, in the words of Seth Kim-Cohen (2005:67), 'tracing the sound of space'. Sound art writer, LaBelle, quotes Michel Serres, who claims: "The sound wave arriving at the ear is the analogue to the current state of the environment, because as the wave travels, it is charged by each interaction with the environment" (2006: x).

In Sound art, the effect on the viewer/participant is strong, because it is often relayed on a human scale within an ordinary, everyday space. LaBelle maintains that energy, as sound, has inherent spatial and social implications: 'Sound is always already a public event, in that it moves from a single source and immediately arrives at multiple destinations' (2006: xi). Although certainly also allowing for an operatic grand scale, it is the strongly individualistic, private even, idiosyncratic investigations of sound that bring a fresh awareness of our environment and our place in it.

American artist, Bill Fontana, asked the question, 'When does a sound become art?' explains that, when he was a young student of composition and philosophy he became obsessed with the transformative power of listening. 'Sometimes, wherever I was,' he relates, 'when I was listening, the ambient sounds seemed every bit as musical as anyone's music.' He continues

The perception, recognition of musical patterns in ambient sound – actively listening – turned listening into a form of composition and art for me. I began to translate these experiences into something that could be communicated, and recording sound and translating these very focused listening experiences has been my path. All of my projects in the ensuing 40 years have been explorations of how natural and urban environments generate musical phenomena. The resulting artworks involve creating complex listening networks that simultaneously hear a situation from many perspectives and translate this composed listening into an architectural setting (*ArtReview* 2005 Vol 2, LVI: 75).

Fontana, it seems, is joining the move back to appreciating the world as one big composition, not so different from the music of the spheres, though mapped freshly with an appetite for the contemporary urban environment. His awareness of the sonic properties of surrounding materials echoes one of the two founding myths of the origin of music (Schafer, cited in Cox & Warner 2004:30). The first tells of how the heart-rending cries of Medusa's sisters, after Perseus had killed the Gorgon, inspired Athena to invent the art of aulos playing. The myth of greater interest, in the case of both Fontana and Vitiello, is that the lyre is said to have been invented by Hermes 'when he surmised that the shell of the turtle, if used as a body of resonance, could produce sound' (Schafer cited in Cox & Warner 2004:30). The first myth concerns subjective emotion, the second, the sonic properties of matter. The urban shell as body of resonance seems to enjoy interest as one direction of Sound art.

In opposition to the lingering eighteenth-century aspiration to an ideal harmonic order, the idea of a random universe was introduced in the nineteenth century by Charles

Darwin's theory of evolution. The subsequent advent of chaos theory further challenged previous notions of an ideal order. In the twentieth century, scientists found a strong element of unpredictability in the functioning of the universe.

In his book, *The Music of the Spheres*, American writer, Jamie James (1995:5), deals extensively with concepts of order and chaos over the centuries:

Nowadays most scientists would support the thesis that the cosmos has no underlying logic in the classical sense, but is rather a confluence of accidents, which are governed by laws. The laws themselves are irrational and do not arise from a fundamental orderliness.

These shifts in the understanding of order and chaos, are themselves also a form of energy and movement. The concept that nothing is ever complete, that everything is in a perpetual state of movement, changes the interpretation of phenomena. The Chladni experiments may, for instance, in contemporary thought, be interpreted rather as transmissions of energy than as affirmation of a Divine design. For many people, science has largely replaced the mystery of religion as a source of wonder. An exact definition of energy, however, proves to be elusive: its nature seems to be a mystery. According to science, the constant movement of subatomic particles that constitute the entire universe can best be called energy (Baggini & Stangroom (eds.) 2004:5). Other than that, energy is described as that which enables this or that to happen – in a quite unspecific way.

Scientists increasingly find that interconnectedness and patterns of activity are what give systems meaning. In this context, the entire history of speculation about which of the senses is noblest is being re-evaluated. The relatedness of units, the one to the other, creates coherence and a language, or system.²⁹ The folded and crumpled structure of interconnected neurons in the cranium implies that the route between any two neurons involves no more than a few steps. Philosopher, Paul Cilliers (1990:2), claims: 'The

²⁹ Karl Pribram proposes in his book, *Languages of the Brain*, that the human cortex functions in a way similar to the hologram, and that this accounts for the storage of memory. He believed that life was a sensitive system of complexity beyond anything imagined so far. Proof of ever-finer systems of dendritic networks in the brain showed that activity did not take place only in the initial receptive nerve impulse, but extended to more than one process (1971:166).

result is a vast amount of loops and feedback circuits. There is therefore no significance in the firing of a specific neuron, it is always a pattern of activity that signifies something'.

The attribution of limited and separate roles to the five different senses, for instance the eye as interpreting space in one and two dimensions, and the ear as functioning exclusively in time, has proven to be a false categorization. According to Ree (1999:10), entire bodies of aesthetic speculation have, as a result, been rendered historically interesting but invalid. Although time has overthrown these theories, the premises they functioned from are often still operating in society through widely held beliefs, the origins of which have long been forgotten.

Interestingly, this debate continues actively in the sphere of Sound art, where one of its prime exponents, Vitiello, declares: 'Music can be defined by sound in time, while sound art may be defined by sound in space', an idea he confessed to borrowing from Max Neuhaus, father of the sound installation. Philosopher and critic, Christoph Cox (Kim-Cohen, 2005:67) took issue with this definition, pointing out that 'sound is irreducibly temporal'; and that such distinctions 'tended to occlude the profound temporal experience of sound installations'.

Fontana's description, quoted above (p 45), on how natural and urban environments generate musical phenomena, expresses a wish to form patterns from scattered chaotic sounds. The basic Chladni vibrational flux is from chaos through order and back to chaos. The constant flow from chaos to order is also addressed in the theory of 'scattered focus' advanced by art educator, Anton Ehrenzweig, a theory that is addressed below (pp 48-50).

Unconscious vision

In this section I continue the investigation of this chapter into the necessity of chaos as precursor to creativity and arrive at the third of the types of creative thought that I propose might lead to an increased understanding of relatedness. Whilst synaesthesia, examined earlier in this chapter, may be described as a physiological demonstration of the interplay of the senses in the brain and metaphor, also referred to above (pp 3-35), as a conceptual desire revealed in language to approximate the richness of experienced life, the interplay of the senses happens also on an unconscious level. Ehrenzweig, in

his book, *The Hidden Order of Art* (1967:31), explores the role which the seemingly chaotic unconscious plays in controlling the vast substructures of art, beyond the discipline of conscious perception. He proposes that we need the less differentiated techniques of unconscious vision to become aware of the hidden order within the chaos of outer reality.

The tool which Ehrenzweig (1967:6) believes is effective for finding the order underlying chaos is unconscious scanning, the dispersed structure of unconscious perception. This primary process that corresponds to 'syncretic' vision involves a scattering of focus, an activity that Ehrenzweig (1967:24) suggests comes quite easily to the visual artist who needs to hold all the elements of a work in a single undivided act of attention. Ehrenzweig (1967:6) regards the child's unconscious syncretistic vision as being different from conscious gestalt perception. The young child artist distorts colours and shapes in the most imaginative way and, owing to a global unanalytic view, deems the work realistic. This, according to Ehrenzweig (1967:41), is syncretism: 'a comprehensive and precise grasp of a total view in which the elements are variable and exchangeable'. The gestalt impulse, by contrast, makes us divide the visual field into a significant part, the figure, and an insignificant surround or background.

Pointing out an inherent limitation of gestalt, Ehrenzweig (1967:11) states that, from a variety of undifferentiated visual stimuli, it tends to select 'the most compact, simple and coherent pattern'. Our aesthetic taste, which is an established convention, steers the choice of a 'good' gestalt, but, as such, represents only the impulse of our own cultural convention, so that no universal conclusions should be drawn on which to build a master narrative. According to Ehrenzweig (1967:11), the result is that:

A good gestalt approximates to simple geometric patterns such as are hardly ever found in nature. But this matters little. The gestalt principle not only governs the selection of the best pattern from within the visual field, but it will also actively improve it. Little gaps and imperfections in an otherwise perfect gestalt are filled in or smoothed away. This is why analytic gestalt vision tends to be generalized and ignores syncretistic individuality.

Being the result of conscious thought and vision, gestalt is focused to address only a small part of the overall reality. Its law of closure, referred to in the above quote (p 48), will, in Ehrenzweig's analysis (1967:39), always tend to round off and simplify the images and concepts of conscious thought. This makes it difficult for rational thought to handle open material without rounding it off prematurely, giving the material greater precision than it actually possesses.

Ehrenzweig's (1967:35-37) theory is that conscious thought alone cannot lead to creativity.³⁰ In painting, he regards an artist's 'hand' – the signature nature of the marks made by each artist's specific personality and what I would call energy transfer – as the unconscious at work spontaneously making 'the countless hardly articulate inflections' of a personal handwriting. Any switch of attention toward these minute distortions, scribbles and textures would interfere with their apparent lack of structure, explaining why the vibrancy of a work is lost when it is imitated or restored.

The 'scattering', which is none the less connected, regarded by Ehrenzweig (1967:24) as essential in the functioning of unconscious vision, resonates with physicist's, David Bohm's, description of the universe. The image Bohm finds to be most relevant is that of the hologram. In the hologram, each fragment contains within itself the possibility of reconstituting the whole, given the right circumstances. It requires the identical conditions present at the creation of the image for movement of light and energy to be reconstituted into the identical illusion. Bohm arrived at the metaphor of the hologram in an attempt to understand order, but subsequently changed it to the 'holo-movement', developing a concept of wholeness which implies constant flow.

Bohm,³¹ in his book *Wholeness and the Implicate Order* (1980), developed an understanding of consciousness, in particular, as a coherent whole, which is never static or complete, but which is an unending process of movement and unfoldment (1980:ix). Bohm tells of his endless fascination with the conundrum: what is the nature of movement? The image Bohm used for light and energy and matter all over the universe

³⁰Ehrenzweig (1967:37) finds confirmation of his theory in the example of the mathematician, Hadamard, who became interested in the psychology of mathematical thought and emphatically stated that any attempt at visualizing the way ahead clearly only leads astray; the decision must be left to the unconscious.

³¹Bohm held posts at Berkeley and Princeton. After he fell foul of the McCarthy investigation into unamerican activities, he left America via Sao Paulo and later became Professor of Theoretical Physics at Birkbeck College, in England.

is one 'composed of moving interference patterns which literally bear the mark of all other waves of light and energy and matter they have been in contact with, directly or indirectly' (Briggs & Peat 1989:111-112). In other words, each part or instance of energy and matter encodes an image of the whole. Bohm uses this description to explain why the surface of a hologram film looks chaotic, but under the right conditions presents coherence and legibility.

The thrust of Bohm's work is toward wholeness, but this entails an understanding that everything has an implicit, as well as an explicit, potential, which is not a static but a dynamic condition.³²

The visualization of chaos: fractal geometry

In the field of mathematics, Benoit Mandelbrot was guided by his senses to the creation of a new paradigm. He subsequently found confirmation of his insight from visual artists who have long intuited the concept of the order underlying chaos.

In his book, *The Fractal Geometry of Nature* (1982), Mandelbrot describes his stubborn visual inclination as follows: 'For me, the most important instrument of thought is the eye. It sees similarities before a formula has been created to identify them' (Briggs 1992:71). Mandelbrot describes how his own fascination as a child, with the irregular, organic, complex shapes of nature, led him intuitively to reject Euclidean geometry and resulted in his creation, ultimately, of a new geometry:

Clouds are not spheres, mountains are not cones, coastlines are not circles and bark is not smooth, nor does lightning travel in a straight line ... many patterns of Nature are so irregular and fragmented, that, compared with *Euclid* – a term used in this work to denote all of standard geometry – Nature exhibits not simply a higher degree but an altogether different level

³² In Talbot's book, *The Holographic Universe* (1991:287), links between Bohm's thought and Buddhism are expressed: 'Many other traditions describe this same insight in different ways. Fa-Tsang, the seventh century founder of the Hua-yen school of Buddhist thought, likened the universe to a multidimensional network of jewels, each one reflecting all the others ad infinitum to communicate the ultimate interconnectedness and interpenetration of all things. Tibetan Buddhism describes the universe as compounded of two aspects in flux; the void and the non-void. These are much like the implicit and explicit orders. The endless flux between void and non-void cause the manifestation of the visible realm.'

of complexity. The number of distinct scales of length of natural patterns is for all practical purposes infinite.

Mandelbrot then articulates the challenge that fractals presents to an aspect of nature that had been avoided:

The existence of these patterns challenges us to study those forms that Euclid leaves aside as being “formless”, to investigate the morphology of the “amorphous”. Mathematicians have disdained this challenge, however, and have increasingly chosen to flee from nature by devising theories unrelated to anything we can see or feel. (1982:1)

The mistrust of the amorphous possibly is linked to the avoidance of chance. Mandelbrot’s (1982:1) fractal geometry overturns this totally: ‘The most useful fractals involve chance and both their regularities and their irregularities are statistical’. Computer technology made the visualization of fractal geometry possible (Fig.50), being called ‘the mathematics of chaos applied to computer graphics ... what makes chaos theory visible’ (Madden 1999:9). Whilst the mandalas made visible by the Chladni sound patterns show a symmetrical harmony, the images of chaos revealed by fractal graphics also reveal a harmony, but it is a dynamic harmony, a complex harmony, in which everything affects everything else. It is not a static harmony. Mandelbrot (cited in Madden 1999:27) states: ‘Fractal geometry’s power to make visual images out of mathematical models led to a growing appreciation of the complex beauty of chaos’.

The computer helps us to understand the laws of chaos, but it cannot control or predict its manifestations in nature. By accepting that even the most minute factor, when changed, can alter the subsequent sequence of events dramatically, chaos scientists have arrived at a more holistic approach to nature. American humanities academic, John Briggs (1992:27), suggests that chaos theory brings ‘the order that lies in uncertainty’ to the fore. This is a far cry from an understanding of conventional science as only accepting that which can be infallibly proven.³³ Describing fractals as ‘a new and old

³³ Briggs (1992:27) writes: ‘The uncertainty built into chaos theory and fractal geometry echoes two earlier scientific discoveries of this century: the fundamental uncertainty that Gödel’s theorem found skulking inside mathematics and the array of essential atomic uncertainties and paradoxes unearthed by quantum

aesthetic', Briggs points out that artists have always appreciated 'the order that lies in uncertainty', they have always embraced doubt and uncertainty as part of the fabric of being.

Mandelbrot reproduced three works of art to illustrate how accurately artists over the centuries have taken note of the dynamic profusion in the natural world around them.³⁴ In the first example (1982:C1), the frontispiece of a French *Bible Moralisée* (1220-1250) (Fig 51), God is shown as a mason measuring circles, waves and fractal shapes. Engineering was a growth area during the Medieval era of the construction of Gothic Cathedrals, and a mason was held in high regard. By contrast, science and philosophy had stagnated. Mandelbrot explains that the foundation of western science rests on the extensive studies of circles and waves, but the more chaotic shapes '(the wiggles)', though depicted by artists, were left untouched by science until the twentieth century. 'Mathematicians, he claims, have disdained this challenge (to investigate the "amorphous"), however, and have increasingly chosen to flee from nature by devising theories unrelated to anything we can see or feel' (1982:1).

Mandelbrot's (1982:C3) second example of fractal art is the drawing, *The Deluge*, by Leonardo da Vinci (Fig. 52).³⁵ It shows water flow represented as the superposition of eddies of many diverse sizes. Yet only belatedly, in the 1920s, did the 'scaling' view of the nature of turbulence enter science. Mandelbrot's (1982:C16) third example from the history of art is *The Great Wave*, by Hokusai (1760-1849) (Fig. 53), who is described by Mandelbrot (1982:c16) as 'fascinated by eddies and whorls of every kind'. *The Great Wave* depicts the ever-reiterating self-similar shapes of fractal geometry, as clearly seen in the shapes of a wave breaking in the ocean.

What is important to the visual artist about the visuals of fractal geometry is that they were embraced as intriguing, beautiful, and recognizable by observers. Beyond the sheer delight in what new computer technology could achieve, the complex, organic, reiterating patterns caused, I suggest, a delight in the abundance of their manifestation, which reflects the profusion of nature. Mandelbrot (1982:23) states: 'Fractal art came in

mechanics. Science, in this century, seems destined to learn about nature's intention to remain behind a veil, always slipping just beyond our understanding, imposing a subtle order.'

³⁴ This section of Mandelbrot's book is called: 'Three great Artists of the Past Illustrate Nature, and they thereby bring the Reader to the Threshold of Fractals' (1982:C2).

³⁵ This *Deluge* by da Vinci is from the Windsor Castle Collection, U.K.

through an effort to imitate nature in order to guess its laws, it may well be that fractal art is readily accepted because it is not truly unfamiliar'. From other disciplines then, I suggest, comes the affirmation that within art, there is always something more than meets the eye, ear or mind, there is a more unconscious way of looking (Briggs 1992:28).

Summary

At the outset of this chapter I posed the question whether knowledge of the interplay of the senses might help us avoid the stultifying effect of conventions. The Chladni method implies that the senses, conventionally regarded as functioning separately, function in an interrelated fashion, although on levels of energy which our bodily apparatus might not be able to perceive. The process of sound visualized is a demonstration, in a pre-conceptual way, of the interconnectedness of the senses. I propose that the syncretic nature of intuition leads the observant person toward an awareness of wholeness and interconnectedness, but that the way the senses function implies a space where interrelatedness takes place. The nature of this inter-space is examined in Chapter Three.

The Chladni process, when seen in action, intrigues and delights because it makes visible the subtle transformation from chaos – in which a dissonant frequency is played – to the harmonic orderliness created by a consonant sound. I suspect that in the process we recognize the unconscious birth of clarity. In chapter three I look more closely at the nature of sound and its opposite, silence, as they impact on our lives.

Chapter Three

Sound and silence

Introduction

Sound and silence initially informed my practical art work in an intuitive way and were often reflected in my titles, for instance, *The colour of silence*, *Echoes and shadows* and *Sound and silence*. Then, in 1992, my unexpected loss of hearing forced a much more potent understanding of the energy of sound. My experiments in the field of art concerned with sound and silence are explained elsewhere in this thesis. In particular I describe my own collaborative art work and the advantages I drew from this engagement.

In this chapter I pose three questions: first, what is a philosophy of listening? Secondly, I ask: what are the implications of accepting the importance of those interspaces that philosophy wishes to have recognized, the spaces of silence? While western philosophy is based on a system of dialogue, the actual practice of logos, which I understand as the demonstration of rationality, might well have diminished the potential, or rather the necessity, for listening. Listening implies receptivity and collaboration, the very focus of contemporary art practice. Lastly, I pose the question: what is the substance of silence? These questions are answered with reference to art, but I continue to employ my bricolage methodology to include examples from science and the grammar of sign, as well as ecology. In the field of ecology and Earth art, the question leads to the implications of what a postmodern ethic might be.

The performative alphabet

The most well known example of visualized sound is probably writing: the letter, the alphabet, the written word, written language. Augustine stated clearly that letters, 'invented so that we might be able to converse with the absent, [were] signs of sound [and these, in turn, were] signs of things we think' (Manguel, 1997:45). The written text was one side of a conversation, it was sound abstracted. The recipient would unlock the

signs again through vocalizing them.³⁶ In his study of the history of the senses, specifically the voice, Ree (1999:61) notes that the breath that vocalized words was traditionally regarded as a spiritual link that authenticated a presence, an idea that persists to our time. Ree (1999:64) states that the traditional link between spirituality and the voice makes of the latter the perfect instrument for giving expression to the inwardness of the soul, thus accomplishing an 'objectification of subjectivity'.³⁷

Although silent reading is now common, reading out loud was the norm from the beginning of the written word to the Late Middle Ages. Because early writing systems, such as early Greek and Roman writing, were designed to be translated into sound, they possessed unbroken rows of letters. As Abram (1997:99) explains, in his book, *The Spell of the Sensuous*, the original Semitic *aleph-beth*, devised around one thousand five hundred years before Christ, established a character or letter for each of the consonants of the language, so that the *aleph-beth* was a simple set of twenty-two signs. Since the *aleph-beth* contained only consonants, the vowels, the sounded breath, had to be chosen by each vocal reader, who would fill in the vowels as he saw fit, according to his understanding of the context. Air and breath are linked to life and spirit by many indigenous oral cultures, and by various religions also to the divine (Ree 1999:6). Because breath was meant to be the very mystery of life and awareness, the sounded breath was seen as inseparable from the holy wind or spirit. Hebrew scribes possibly wished to avoid making visible representation of the invisible, the divine, and so refrained from shaping the vowel as a letter.

The participation of the reader initially placed him in a vital role as interpreter and energizer of the text. As Abram explains, and I describe further, the energy expended by the vocal reader automatically led to a personal commitment to the meaning of the text. In this description of producing meaning collaboratively through performing a text, I recognize characteristics of the sought after quality of 'mutual obligation' that Archer (1997:214) regards as prevalent in contemporary art. I refer specifically to the 'interstices' of social art, where the artist provides a basic space and a few material

³⁶In the Biblical languages, Aramaic and Hebrew, exactly the same word is used to name the act of speaking and the act of reading. 'Faced with the written text, the reader has a duty to lend voice to the silent letters, the scripta, and allow them to become, in the delicate biblical distinction, verba, spoken word-spirit' (Manguel, 1997:45).

³⁷ This authenticated presence is the aspect of the voice that Laurie Anderson wreaks havoc with, when projecting her techno-phenomenological and cyborg presence.

requirements, but the viewer is expected to vitalize the work through interacting with it. As has been suggested (see Chapter Two above p 44), in such a scenario, very little remains of the modernist idea that detachment is required to achieve the necessary objectivity with which to perceive meaning or truth.³⁸ In a postmodern context there are instead various truths articulated by collaboration.

The old Hebrew model of engaging with the sacred text involved a completely participatory engagement with 'the Book. Every reading was an interactive experience of very old knowledge and a new interpretation, which meant that the knowledge was constantly made relevant and vital by the personal energy and understanding of the particular reader.³⁹ A degree of ambiguity must have been experienced when reading a text without vowels, the possibility of conflicting meanings stimulating much subtlety of thought.

The active and social involvement through sound, as discussed above (p 55), diminished as the alphabet became silent, more abstract and private. Knowledge was increasingly gleaned through abstracted sources and in self-reflexive situations. It seems thus almost inevitable that the cerebral would eventually dominate. Yet, it might be said that the participatory aspect to gaining knowledge has returned in the twenty-first century. The description above (p 55) of the silent spaces left in the Semitic *aleph-beth* for the reader to 'perform', demonstrates the necessity for active engagement in the process of making meaning that I attempt to demonstrate in this study. In a similar way, I trace the importance of properly acknowledging interspaces when engaging in and with the art work.

The creativity, involvement and commitment required for gaining knowledge is demonstrated also in the philosophy of British (Hungarian born), Scientist-turned-philosopher, Michael Polanyi. What makes his work relevant to the artist is the degree of empathy he deems necessary for gaining insight, beyond the analytic and rational process. An oft-repeated phrase of Polanyi's, we all 'know more than we can tell'

³⁸ Craig Owens (cited in Foster 1983:70) claims that the belief in a detached and visual experience of the world as the privileged means of access is closely aligned to modernism.

³⁹ As Abram (1997:195) poetically describes it, '[T]he written text became a portable homeland for the Hebrew people'.

(Polkinghorne 2002:90), is, I would suggest, an affirmation of intuition and the intelligence inherent in the body as a whole.

Polanyi regarded knowledge as a participatory act. In his book, *Personal Knowledge* (1958:64), he argues that knowledge is never entirely a state of mind, but an intentional change of being, 'the pouring of ourselves into the subsidiary awareness of particulars'. Arguing in the field of ethics, Polanyi regards the gathering of knowledge as entailing personal commitment. The notion of *persona*] means actively entering our commitments, making choices. Morris Berman (1981:136) understands Polanyi's thesis as signifying that, in attributing truth to any method we make a non-rational commitment, in effect we perform an act of faith. Polanyi demonstrates that the coherence possessed by any thought system is not a criterion of truth, but only a criterion of stability. What it stabilizes may equally well be an erroneous or a true view of the universe. According to Polanyi, Berman (1981:136) writes, affirmation of truth is active; it cannot be analysed in non-committal terms. The faith involved arises from a network of unconscious bits of information which form the basis of 'tacit knowing'.

In *The Tacit Dimension* (1967), Polanyi describes with care the process by which he thinks knowledge is obtained, and much of it has to do with tacit knowledge, knowledge already in the body. He describes the experience of a medical student attending a course in the X-ray diagnosis of pulmonary diseases. This example demonstrates the opposite of the Platonic/Western model of knowledge as rational, at a remove and distanced. The example is of particular interest, since it describes a person learning to 'read' or understand another body through identification and a measure of empathy, a situation most art students know from life drawing sessions. Polanyi describes this as learning through 'osmosis'. There is no logic of scientific discovery in this teaching method, but an act of faith that the process will lead to knowledge.

The crux of such learning, as Berman (1981:139) explains, is the Greek concept of *mimesis*, of visceral/poetic/erotic identification. Rationality begins to play a role only after the knowledge has been viscerally obtained. Once the terrain is familiar, we reflect on how we got the facts and established the methodological categories. But these categories emerge from a tacit network, a process of gradual comprehension so basic that they are not initially recognized as categories. Polanyi thus argues that knowledge is

physiological, that the body and the unconscious are the same thing, and that sensuality is part of cognition. It explains why, for Polanyi, 'impersonal' or objective knowledge is a contradiction in terms.

Polanyi (1958:312) writes: 'Into every act of knowing there enters a tacit and passionate contribution of the person knowing what is being known'. He points to the subjectivity of knowledge in his concepts of 'knowledge as performance' or 'embodied knowledge' (1958:163). Embodied experience is profoundly subjective, yet knowledge is, of necessity, public and something able to be discussed. By emphasizing the importance of individual responsibility or agency, Polanyi continued to develop a notion of ethics as performative knowledge, a concept that contributed to the idea of ethics (Rothfork 1995:3). The personal enters into concepts of ecology, where the onus is on making a personal choice and commitment to living a sustainable life. Cerebral activity is not enough, energy and participation are required for understanding to take place.

While a participatory understanding underlies the attitude of Jewish thought to knowledge, as described above in the discussion of the performance of vowels in the readings of sacred script, Christianity, by contrast, regards the Word as primarily written on the soul; the mortal written word being supplementary and merely a token of unredeemed human nature and its fallible grasp of God's will. The idea is of a spiritual truth beyond the physical realm, with writing in a lesser role, signifying the weakness of human understanding of the Word of God and the logic of divine purpose revealed.

Christopher Norris (1987: 229) writes: 'Christian doctrine was shaped at an early stage by its exposure to Greek philosophical influences, tending to equate the Word of God with the Logos of revealed divine purpose'. The nature of truth, written on the soul, could be more closely grasped through speech and presence – there could be a moment of self-present truth when reason would grasp the encompassing logic of its own nature and history. Pointing out the difference in attitude between Christian and Jewish thought to commentary on writings, Norris (1987:228) states: In the Jewish religion, 'the emphasis is placed upon *writing* as an endlessly productive signifying practice irreducible to some ultimate, self-evident truth'. He (1987:230) contrasts this to the 'Christian (or logocentric) habit of thought which subdues writings to the service of a truth equated with speech, presence and origins'

Logos and listening

Re-examining the term logos, Fiumara, (1990:1), proposes that the original Greek term, *logos*, besides 'speaking, saying, enunciating', includes 'sheltering, gathering, keeping, receiving', all recovered in the verb *legei*.⁴⁰ Fiumara's concern (1990:1) is that relational propensities associated with a 'doing' word of practical activity, such as *legein*, seem to disappear completely at the level of the substantive noun *logos* and with it the content that refers to listening. According to Fiumara (1990:2):

At any moment in which reality is constructed we can identify an attitude which is able to say and not listen – at that moment, in fact, a halved and overwhelming *logos* manifests itself. If we start out from this basic concern we can then perhaps go back into the cultural wire-netting and discover how the mechanism of 'saying without listening' has multiplied and spread, to finally constitute itself as a generalized form of domination and control.

Fiumara (1990:3) bases much of her theory on the work of Heidegger, whom she quotes below also on the original meaning of *legein* as a gathering which might epitomize the sort of concentrated listening that is required in intellectual midwifery:

'No-one would want to deny that in the language of the Greeks from early on *legein* means to talk, say or tell. However, just as early and even more originally, *legein* means what is expressed in the similar Greek word *legen*: to lay down, to lay before. In *legen* a 'bringing together' prevails, the Latin *legere* understood as *lesen*, in the sense of collecting and bringing together. *Legein* properly means the laying-down and laying-before which gathers itself and others'.

The idea of listening as contained in the original concept of 'logos', Fiumara (1990:3) claims, is not well developed in western philosophy and is rarely taken into consideration, despite the fact that western philosophy is largely built on the concept of

⁴⁰ In her 'Notes', Fiumara (1990:199) refers to *A Greek-English Lexicon* (Liddel. G. and Scott, R. 1968. Oxford: Clarendon Press pp.1033-4), where the following meanings are indicated for the verb *legein*: pick-up, gather, count, tell, say, speak.

dialogue. I suggest that Fiumara (1990:2) does not question the value of dialogue in principle, but laments the restricted way in which the practice has developed in western culture. Disturbed by the fact that silence is usually regarded as being something opposed to dialogue, Fiumara (1990:101) states: 'The tendency to constantly evoke dialogue in conjunction with this blind spot on the issue of listening thus appears as a puzzling feature of our culture'. What she (1990:99-102) aspires to rather is the creation of a coexistential space. This she regards as the highest function of silence. It is also a gap in which germinal meanings can be developed, a fertile way of relating, aimed at the inner integration and deepening of dialogue, expressed tellingly in the lines of the Chinese poet, Lao Tze (cited in Fiumara 1990:102):

We put thirty spokes together and call it a wheel;
But it is on the space where there is nothing that
The utility of the wheel depends
We turn the clay to make a vessel;
But it is on the space where there is nothing that
The utility of the vessel depends
Therefore just as we take advantage of what is,
We should recognise the utility of what is not.

In the recognition Fiumara grants to silence ('the utility of what is not'), the concept of dialogue she (1990:91) is accenting requires a demanding activity in which one must practise an 'interacting endurance' (1990:90), qualities the artist recognizes and needs to cultivate.

Fiumara (1990:8) argues that our concept of rationality has developed into a system of to-and-fro counter-argumentation, of 'theoretical contrasts which perhaps are no more than an archaic warlike strategy transposed into the realms of epistemology'. I understand her to mean that there is limited awareness beyond the power structure. Her work is an attempt 'to retrieve the functions of listening which may allow for truer forms of dialogue' than those 'dialectic dismantlings which tend to repropose what has been demolished' (1990:13).

To support her case for dialogue that is more supple and subtle, one that can listen as well as speak, Fiumara (1990:13) quotes Jacques Derrida who, in his introduction to *Margins of Philosophy*, states:

‘We know that the membrane of the tympanum, a thin and transparent partition separating the auditory canal from the middle ear (the cavity) is stretched obliquely (*loxos*). Obliquely from above to below, from outside to inside, and from the back to the front. Therefore it is not perpendicular to the axis of the canal.’

Derrida (cited in Fiumara 1990:13), explaining that “the effects of this obliqueness ... increase the surface impression and hence the capacity of vibration”, notes:

‘It has been observed particularly in birds, that the precision of hearing is in direct proportion to the obliqueness of the tympanum. The tympanum squints. Consequently, to luxate the philosophical ear, to set the *loxos* in *logos* to work, is to avoid frontal and symmetrical protest, opposition in all the forms of *anti* ...’ (Derrida, cited in Fiumara 1990:13.)

This I understand as a plea for a relational awareness in dialogue rather than an oppositional attitude. To increase the capacity of vibration is to increase receptivity to impulses from elsewhere; as demonstrated by the physiological example of the tympanum above. It does imply, as far as I can make out, a widening and opening of the range of one’s awareness, a state where an interplay of all the senses can come about. I interpret the Cartesian split between body and mind as increasingly irrelevant, as physiological knowledge of the physiological functioning of the senses is revealed through science. Fiumara (1990:90) extends the concept of listening beyond the accepted passivity it normally signals in binary understanding. Far from being an attitude one could describe in terms of inertia or weakness, Fiumara (1990:95) describes listening as requiring ‘a laborious attitude more consistent with problems of integration and living’, or letting live.

In the Chladni sound plates the nodes are only made visible through silence, and there is a sense in which one could also call listening the other side of sound; the one cannot exist without the presence of the other. Sound and silence occupy the coexistential space for which Fiumara (1990:99) seeks recognition, and which she believes is created by silence. The listening which Fiumara calls 'the other side of language' is by no means a passive silence, but the active gathering together, laying before and conservation of units of information and knowledge. As a whole, her concept of listening is set out in an agrarian simile that implies storage. The 'laying before' suggests a passage in discrete steps through time, one that may be visualized as a progressive activity. Such a passage is one that informs my idea of what listening is and of the equal significance of sound and silence in communication. Fiumara's articulation of the fuller nature of dialogue made me aware of the relevance of her thesis to my own art work, as I will relate in the following example, of my collaboration with Glenday.

There was a stage in the development toward the *Sound Still* collaborative exhibition mentioned in Chapter One (p 25) when all available surfaces in my workroom were covered in shards of the 'conversation' between me and Katherine Glenday (Fig. 54, 55 & 56). The shards were fragments of porcelain on which we had experimented by all manner of means to record visual marks made by sound. While I played vibrational plates, Glenday used gongs on her resonant vessels and the resulting oxide patterning was transferred to porcelain and fired (Fig. 57). The results were snatches of sound that had been stilled. Gathered on tables and on the floor in the manner of a harvest in a store room, these shards also occupied a period of suspended time, a period of gathering and taking stock before moving on to a further development.

Art collaboration, (such as that described in the preceding paragraph), in my practical work, is a process concerned with problems of integration and ways of living through art. A desire for the integration of art with ordinary life was expressed in the 1970s, according to Carolyn Christov-Bakargiev (1999:74), by *Arte Povera* artists, in their reference to domesticity and habitat and their preference for a human scale in their artwork. Currently, Nicolas Bourriaud (2002:13) names simple models of social behaviour as valid forms of art. A similar concern for relational behaviour occupies Fiumara (1990:1), connecting her thought to an ecological perspective. She warns that ecological distress is a clear sign of 'our deaf logic', a coercive logos in which the

supposedly superior conceptual functions may make us lose the secure foothold from which we could set up ways of life capable of gathering and preserving (1990:6).

Listening and collaborative energies

The sensibility of the listener, as described by Fiumara above (p 62) is required for the development of a participatory consciousness, which can be described as one of empathy and inclusiveness, toward the human as well as non-human aspects of our world. Continuing with the bricolage of reference material from various disciplines which underwrites this study, I now refer to a concrete example of the sensibility of one particular listener fully deployed to the advantage of science. She is geneticist, Barbara McClintock. McClintock's respect for the materials she works with finds an echo in my attitude to my materials. Because I regard the materials I work with as having a certain integrity that will not be ignored, I view the work process as already implying an exchange of energies. It is a form of collaboration. Anton Ehrenzweig (1967:57), describing this exchange, writes: 'The artist feels this need for expanding his point of departure and will welcome the independent life of his medium. Something like a true conversation takes place between the artist and his own work'. This is what occurs between McClintock and the organisms she investigates, too.

The work on genetic transposition, for which she was awarded the Nobel Prize, rested on a study lasting six years, of a single corn plant that showed aberrant pigment patterns on a few kernels (Keller 1985:163). McClintock was sure this unusual pattern was significant; revealing what Keller (1985:161) calls 'the respect for difference and complexity' in her general philosophy. Keller (1985:162) understands McClintock's description of 'listening to her materials', as following from her particular sense of the order of things: that due to the complexity of nature that vastly exceeds the capacities of the human imagination, 'there is no such thing as a central dogma into which everything will fit'. This view is not at odds with Merleau-Ponty's thesis that the world's efforts are concentrated upon receiving a direct and primitive contact. It follows that McClintock's attitude of humility compels her to take the position of listener, one for whom, as scientist, it is essential to 'let the experiment tell [her] what to do' – a stance (McClintock, cited in Keller 1985:162) that implies that there could be a conversation of kinds between the human and the natural world that would lead to further understanding.

McClintock's approach is far removed from the modernist attitude of regarding the natural world as inert object, exposed to the enquiry of an active subject. 'We need the experiment to tell us what to do' (Keller 1985:12), says McClintock, again suggesting that no single human dogma has yet been able to accommodate the complexities of nature. The vocabulary of kinship and empathy is not usually found in scientific usage, yet in pursuit of a reliable knowledge of the natural order, McClintock speaks of enlisting 'a feeling for the organism' (Keller 1985:162). Spontaneity from nature is welcomed as an opportunity to rethink and deepen knowledge and to accept that the natural world is alive and more complex than the human mind can fathom. A respect for difference and complexity points to an acceptance of, or contentment with, 'multiplicity as an end in itself' (Keller 1985:163). Rather than thinking in terms of division: subject-object, mind-matter, feeling-reason, the recognition of difference provides a starting point for relatedness (Keller 1985:163) which allows for the preservation of the individual.

The implications of a 'deaf logic', warned against in Fiumara's philosophy of listening and overturned by McClintock's attitude to nature, are relevant to Earth art as well as to ecology. I suggest that ecology may well be the contemporary morality, and that ecology and the way it surfaces in visual art point to our current position in a postmodern ethic.⁴¹ I proceed now, with the example of McClintock in mind, to examine the way in which several Earth artists have been prepared to listen, or not, to nature and the land.

Earth art

After the devastation of the Second World War, German artist, Joseph Beuys (1921-1986), embarked on a career that saw him, as described by Jonathan Fineberg (2000:231), take on the role artists can play in 'indicating the traumas of their time and initiating a healing process'.⁴² Beuys's shamanism extended beyond the healing of the collective psyche to the earth and the ecological field, and because he regarded all action as politically and socially relevant, he had his finger on the pulse of what would be

⁴¹ The word ecology comes from the Greek word *oikos*: house. Conservationists regard ecosystems as our home and dwelling. A land ethic as established by American writer Aldo Leopold, in his classic work, *A Sand Country Almanac* (1949), is based on the conviction that ecosystems are part of the human community. Leopold (1966:219) maintains that 'all ethics rests on the premise that the individual is a member of a community of interdependent parts'. Changing notions of energy cycles and of energy inherent in the earth have led to soil and all that grows and lives on it being included in the definition of community.

⁴² Fineberg (2000:231) observes that from as early as Roman times, observers consistently commented on mysticism and a sense of closeness to nature in German culture.

of concern in the twenty-first century. Beuys realized that cultural work and political awareness would fuse closely in matters of ecology. Beuys, Sue Spaid (2002:25) remarks, anticipating the views of Ecovention⁴³ artists, believed democracy demanded every individual's participation in the destiny of the world, through feeling as much as thinking, and through protecting and activating creative freedom. Demonstrating this belief, Beuys explained his own views on the relationship of humans to nature, as well as on the potential of creativity, through an extensive series of blackboard lectures held in 1974, called the *Energy Plan for Western Man* (Fig. 58).

Beuys was concerned about the overemphasis on rationality in contemporary society and wanted his art actions to redress the imbalance. Fineberg (2000:232) explains how, to make society aware of the dangers of the 'Apollonian' mind, defined by Nietzsche as the Socratic mind of abstract thought and intellect, Beuys symbolized, through the animals he included in his actions, the 'Dionysian', the intuitive, passionate, irrational soul of mankind. Beuys (2002:235) also addressed the overbalance of rationality in society by regarding all creative thought as art and declaring 'everyone an artist'.

His *Bog Action* (1971) (Fig 59), a directly ecological work, which Beuys recorded in a series of photographs, is specifically relevant to growing concern regarding water resources. By bathing in the mud and swimming through the swampy pit of a bog, Beuys drew attention to the significance of European bogs, the natural environment known as wetlands that cleanses and absorbs water. He referred to bogs as 'storing places of life, mystery and chemical change, preservers of ancient history' and as 'the liveliest element in the European landscape' (Tisdall 1997:39). Beuys staked out what author, John Beardsley (1998:159), calls 'a conspicuously emphatic relationship' to landscape. He also provided a model of the artist as environmental activist and cultural critic, a model that has grown increasingly influential as the years have passed. Beuys speaks of the earth as live subject, as generator of energy processes, so that his vision of the earth has resulted in the re-enchantment of what had become merely a resource for the uses of humanity.

⁴³ An Ecovention is defined by Amy Lipton (cited in Spaid 2002:147) as 'an artist's aesthetic invention and/or intervention within the context of an ecosystem'. By making functional art, Ecoventionist artists call into question the framework within which westerners define art and the notion that aesthetics serves only itself.

Joseph Beuys, fellow German artist, Hans Haacke, as well as the initial Green Party, had a huge impact on the conscience of German society, and Germany is now the most ecologically advanced state in Europe. Of its cities, 43 per cent offer financial incentives to construct green roofs (Spaid 2002:29).

I suggest the unique and lasting impact of Joseph Beuys on succeeding artists was the strength of his conviction about the integration of life and art, his realization that every action had political, economic, social, moral and ecological implications. The impact of the message was amplified by the fact that it issued from the figure of a lone shamanistic, almost mystic intellectual. Beuys facilitated catharsis for physical and emotional experience and, in so doing, one of the great and most famous products of his career seems to have been, in the words of Lucie-Smith (2001:10), the 'artist's own personality'.

The first American 'earthwork' or 'land art' artists, Michael Heizer, Robert Smithson, Walter De Maria and Robert Morris, by contrast, were driven simply by the desire to make art. Through his family history – his forebears were geologists – the practicalities of, for instance, how to secure land lease for making an art intervention, probably proved less problematic for Heizer than they might have otherwise. The works of these artists are inextricably bound to their sites; in fact, as Beardsley (1998:7) states, they take 'as a large part of their content a relationship with the specific characteristics of their particular surrounding' and are intended to provide an 'inimitable experience of a certain place'. The earth is regarded as just yet another formal sculptural material to be moulded at will. Yet Heizer articulated a self-conscious ambition to make an American art less dependent on European precedents. He also had a pre-planned ideal to 'be radical' and to use 'real space' to distinguish his work from that filling the 'glutted museums' (Beardsley 1998:13). He found in the desert, in his own words (cited in Beardsley 1998:13), 'that kind of unraped, peaceful, religious space artists have always tried to put in their work' which, ironically, he then proceeded to violate with a work such as *Double Negative* (1970) (Fig. 60). It consists of two 50ft-deep cuts in the earth's surface, facing each other across a deep gorge in the escarpment for a total length of 1 500ft. Whilst in formal sculptural terms one may remark on his inventive overturning of the normal intrusive character of traditional monuments, having created rather a void, a space in

which to stand, Heizer himself reveals his relationship to the earth by saying (cited in Beardsley 1998:19) 'It's about art, not about landscape'.

Robert Smithson has a more considered grasp of landscape, which acknowledges that the traditional understanding of nature versus culture exists less clearly, that nature is already incorporated into culture. Even a wilderness is now allowed to exist by the choice or not of a certain (cultural) decision. With this altered concept of nature in mind, Smithson perceives the landscape as constantly changing, as, according to Beardsley (1998:8), 'in metamorphosis, revealing entropy – the law of thermodynamics that measures the gradual, steady disintegration in a system', a very far cry from nature as the primordial garden.

Unlike Heizer's, Smithson's work makes a plea for a more emphatic relationship with nature, but it is a contemporary nature already changed by both human and natural causes. His work *Spiral Jetty* (1970) (Fig. 61), reveals Smithson's careful reading of the existing landscape, which had been unsuccessfully mined for oil from tar deposits and still had the industrial residue on site. In an essay published two years after the completion of the work, Smithson articulated how the ideas for his structure came about, how his sensual experience of the site initially demanded a spiral formation and how the relevance of this particular choice was confirmed by subsequent information. The spiral was namely the key to the microscopic world of the salt crystals that coat the rocks on the water's edge. He writes: 'Each cubic salt crystal echoes the *Spiral Jetty* in terms of the crystal's molecular lattice *The Spiral Jetty* could be considered one layer within the spiraling crystal lattice, magnified trillions of times' (Smithson, cited in Beardsley 1998:22). Additionally, Smithson had uncovered a legend that the Great Salt Lake was connected to the ocean by an underground channel, which revealed itself in the middle of the lake as an 'enormous whirlpool', thereby connecting the spiral as key 'not only to the macroscopic world, but the microscopic and mythological as well'.

The reiterating nature of this imagery is reminiscent of the fractal geometry of Mandelbrot, and the way Smithson narrates his gradual understanding of the implications of the spiral he had chosen, intuitively, resonates with suggestions made in Chapter Two that artists often have an intuitive awareness of 'worlds within worlds'. Smithson thus manages to imagine the poetic in the 'bleached and fractured world' that

surrounds him. Beardsley (1998:22) quotes him as saying, 'To organize this mess of corrosion into patterns, grids and subdivisions is an aesthetic process that has scarcely been touched'.

Like Heizer and Smithson, Walter De Maria (b.1935) manipulated landscape on a grand scale. Regarding these three American artists from the vantage point of their attitude to the earth, the aggressive, invasive and masochistic nature of their approach is probably best illustrated by De Maria's kilometer-long brass rod buried outside the Museum Fridericianum in Kassel by being driven vertically into the ground, for Documenta VI in 1977. In New Mexico, he placed regularly spaced, vertical steel rods over an area of a mile by a kilometer to make his *Lightning Field* (1971-77) (Fig. 62). The work is permanent but isolated, a prerequisite for such art, according to Da Maria (cited in Archer *et al* 1997:95), who claims: 'Isolation is the essence of Land Art'. The difficulty in finding it, the way in which it is seen, and the requisite walk around the area, is meant as part of its meaning. British land artist, Hamish Fulton (cited in Beardsey 1998:44), articulates his view that Heizer, Smithson and De Maria 'use the landscape without ... any respect for it I see their art as a continuation of "Manifest Destiny" ... the so-called "heroic conquering of nature"', he says.

The British Isles have, throughout their history, been far more densely populated and the landscape more effectively organized than America. Increased industrialized development only augmented the traditional reverence for landscape that has informed British culture for centuries. Fulton is reverential about nature, stating (cited in Beardsley 1998:44): '[T]he natural environment was not built by man and for this reason it is to me deeply mysterious and religious'. On his long walks, which are the artworks, Fulton leaves no marks other than footprints and rearranges nothing; he merely takes photographs. Richard Long's work also consists of walks, but he uses stones as his medium (Fig.63), saying (cited in Beardsley 1998:42), 'Stones are the material of the Earth. I pray the Earth still has a future'. These British artists, through their non-interventionist behaviour, reveal an awareness that the earth is fragile and imperiled, so that the viewer's attention is really diverted to the phenomena of the world itself, rather than the activity of the artist.

Of artists using earth itself as medium, the work of Cuban-born sculptor and performance artist, Ana Mendieta, displays awareness of its longevity, as opposed to the fleeting moment that a single life dwells on it. Her work is complex and poetic, since her own position in America is that of exile, a position she seems to extend to the human condition beyond political individual life. The nature of her works is fleeting, impermanent, and she ultimately makes an impact through her absence, leaving only photographs of body traces and silhouettes behind (Fig. 64). Mendieta's personal identification with the earth is depicted in *The Tree of Life* (Fig. 65), where she covered her naked body with clay and stood against the trunk of the tree, according to Beardsley (1998:163), suggesting the affinity she felt between her vitality and that of the plant, and the dependence of both on the earth. In another work Mendieta scored and moulded the earth in various ways, and ignited gunpowder in vagina-shaped furrows, implying the violence that had been perpetrated against both women and the earth by a predominantly patriarchal culture. Because she is a woman identifying with earth, her work has been mired in controversies of interpretation that span the biologist- and essentialist-oriented pitfalls awaiting any such statement by a woman. Regarding one such convention, the question of the guardianship of nature, Beardsley (1998:164) prefers to say that 'women are more attuned to its gender implications'.

In one of my own works, I have chosen to have a conversation with the earth, and to let it talk. I constructed an earth bow (Fig. 66), a hollow in the ground with a weighted membrane stretched over it, and a string through the middle of the membrane, attached to a flexible pole (Fig. 67). The *lurale* or string of the ground bow used to be a twisted sinew or, rarely, plant fiber, or wire, which was wound along its entire length with hair obtained from the tail of an ox (Kruger 1989:393), and which was later replaced with thin rope. When played, a deep sonorous frequency issues from the earth (animals in the vicinity are attracted to, and excited by, the sound.) The surface of the membrane vibrates like a Chladni plate and probably creates all manner of interference patterns, acoustical as well as visual. This work, entitled *Kalinga* (2005) (Fig. 68) is my example of art that enables the earth itself to talk back. Artist and earth are linked in conversation, making us both more alive. The work becomes the instrument through which earth itself may speak.

The *Kalinga* is a traditional Venda instrument now largely forgotten. In his research (1983-1984) on Venda instrumental tradition, Jaco Kruger (1989:391) encountered a few adult men who still remembered seeing it played, but who did not themselves have the skills to perform on it. On his constructing one, on a remote and quiet mountain slope, however, a local man appeared who had the skills and enthusiastically took part in making music (Fig. 69). This anecdote of the gathering nature of the earth sound has been borne out by my own experience in playing the earth bow.

Grammar in space: Sign

Inherent in this thesis is the need to investigate 'the other side' of phenomena. The Chladni experiment alerted me to silence as a key component of sound, and the work of Fiumara made me aware of silence as the other side of language. I proceed now to a subject that seems unlinked but is, in every way, connected, to the other side of grammar (as we are accustomed to understanding it), that is, to deaf Sign.

An assumed link between spoken language, the voice and human spirituality originally informed the 'oralist' approach to educating the deaf. It was long assumed that the deaf, not being able to hear sound, could not learn a language and therefore would have no hope of full intellectual and social development, with possibly only a limited spiritual life. Sight, through a visual 'language of signs', was the obvious compensatory sense through which to educate the deaf. Ree, in his book, *I See a Voice* (1999:9), describes attempts to make speech visible 'by writing it in some kind of phonetic notation, or by such exotic means as picture-writing, manual spelling, lip-alphabets, gestural signing or vocal photography'.

In contrast to the oralist approach, the 'gesturalists' or 'manualists' are mentioned by Ree (1999:9) as having been certain their visual language of signs was more expressive and intellectually superior. Only since the 1950s, after developments in linguistics brought about by the work of Saussure, has it been commonly accepted that Sign could be a fully-fledged language. Saussure's cardinal insight was that 'only by conceiving language "synchronically", as a network of interrelated sounds and meanings, could linguistics become a genuine, self-respecting science' (Norris 1987:85). As Norris (1987:85) explains, '... it is a major precept of modern structural linguistics that meaning is not a relation of identity between signifier and signified but a product of the

differences, the signifying contrasts and relationships that exist at every level of language'. There had been a misconception that symbols have to be speech, that where speech is lacking, so are symbols. When exploring the deeper properties of human language in general, Noam Chomsky articulated the phrase 'deep structure of grammar' (Sacks 1991:81). This is a potential latent in the nervous system until activated by actual language use. Sacks (1991:81) describes it thus:

Since the 'deep structure' of language, as envisioned by Chomsky, has an essentially abstract or mathematical nature, it could, in principle, be mapped equally well onto the surface structure of a sign language, a touch language a smell language, whatever. The modality of the language, as such, would not (necessarily) present any problem.

Due to advances in knowledge about sign languages of the deaf, Chomsky agreed to change from referring to language as 'a specific sound-meaning correspondence', to a 'signal-meaning correspondence' (Sacks 1991:145).

Because Sign consists of innumerable spatial patterns nested three dimensionally in each other, I would suggest that it is an essentially sculptural language. Being a fully developed purely visual language of spatial signs, Sign could be of interest to people in other visual disciplines. In Sign, visual structures of pure gestural energy and skill are described in front of the signer's body, which is the constant ground and reference point that makes sense of the content, as the earth does of our human gestures. Abram (1997:281) explains that subtending the strictly human universe of conventions, what he calls 'inert meaning', lies the 'carnal field of participation' regarded by Merleau-Ponty as the source of language and meaning. This field of bodily participation remains, however, literally, on the ground. Postmodern and deconstructionist theories justifiably challenge western rationality and its consequences, but, claims Abram (1997:281), the ground:

This dark source, to which we can readily point even in the silence, will outlast all our purely human philosophies as it outlasts all the other artificial structures we erect upon it. We would do well, then, to keep our thoughts and

our theories close to this nonarbitrary ground that already supports all our cogitations.⁴⁴

I suggest that, as a constant, the body is as essential to the deaf Signer, for placing, referring, relating and conveying meaning, as the ground is for anyone else. I imagine that there is then a double grounding in Sign, the body as ground and the actual ground we stand on.

I first experienced this linguistic use of space when I attended a Sign class at Stellenbosch University, taught by a Deaf teacher to a few hearing students. I was overwhelmed by the novelty and complexity of linguistic space. Above all, I was bewildered by the speed with which these complex structures were relayed. It is extremely difficult to grasp 'frames' within this stream of images. What one grasps is that the body is constantly being referred to and this offers a certain set of relationships to begin with. Clearly this language differs in origin and in biological mode from the spoken. It points one to the gestural potential, the expressive energy of the body. There is a sense in which one is uncertain of whether one is losing or gaining a dimension of perception. The disorientation may be the result of the two grounds that are being referred to, as I attempted to explain above (p 71). It might be the passage to yet another dimension.

The cinematic properties of this visual language, as explained by Stokoe (cited in Sacks 1991:90) are interesting. From the start of communication, a specific relationship is signed: the signer is often 'placed', as spatial reference is essential. A whole scene is set up, as in the making of a film or a play, to indicate where everyone and everything is to be found. The signer is like the camera in making a film and one is aware of this position. The narrative is not linear, and close-ups, distant shots, flashbacks, and so on, are indicated, as in movie direction. David Wright (1969:111), a deaf British writer and poet, identifies with the camera imagery: 'Like an eccentrically-sited camera taking

⁴⁴ Abram (1997:281) describes ground in the following terms: 'The density beneath our feet is a depth we cannot fathom, and it spreads out on all sides into the horizon, and beyond. Unlike all the human-made foundations we construct upon its surface, the silent and stony ground itself can never be grasped in a purely human act of comprehension. For it has, from the start, been constituted (or "constructed") by many organic entities besides ourselves'.

angle-shots that distort but may often reveal otherwise masked lineaments of truth, the deaf person watches from the unexpected and unguarded quarter’.

The fact that the ‘normal’ eye (the untrained one and the one that has hearing as an additional reconnaissance mechanism) cannot even see the movements of sign until trained specifically to do so, leads one to reflect on the limited way we all observe what we have around us. And yet it leads me to wonder less that we have allowed ourselves to become disenchanted with the world. Moreover, it reinforces my conviction that we have what we need to re-enchant it: the conjoined senses.

Summary

Three interlinked questions were addressed in this chapter. What is a philosophy of listening? What are the implications of the alternative spaces and functions revealed by philosophy of listening? And, what is the substance of silence? Starting with the most well known visualization of sound, namely the alphabet, I found in its history the existence of an interactive stage, where individual choice and performance led to a commitment from the individual. This commitment is echoed in the understanding that Michael Polanyi has of knowledge as an act of faith that sets the individual on the path to a postmodern ethic.

The active nature of listening is emphasized by Fiumara (1990:90) who, in the explanation of her philosophy, bemoans the loss of the interspace of gathering inherent in silence; one largely ignored by western rationality. The implications of recognizing the active use of silence would lead to a form of dialogue that would be able to bear uncertainty, thus leaving openness and creativity operational in the process.

The answer to the question of the substance of silence would then include a space of interplay of both the senses and of concepts, a space where implicit and explicit are contained and from which they generate yet another a space – which contains and fuses opposites, just as the silence on the Chladni plates, the nodes, gave form to sound.

Conclusion

In this thesis which investigates the interplay of the senses in artmaking, I focus on sound and all it implies in terms of voice, breath, language, relationality, movement, gestation, sociality, conviviality and connectivity in terms of its relevance to contemporary art. Sound permeates space and dwells there temporarily but not, I would suggest, invisibly. Sound is always caused by movement, and movement leaves traces. This study was initiated by observing visual traces of energy patterns in nature and by the writings of philosopher, David Abram, who laments our lack of recognition of a shared energy and explores some of the implications implied by a lack of participatory awareness. Traces of energy, like wave patterns on rocks and in the ocean bed, are an inexhaustible fund of interconnectedness, so stimulating to creative minds that I have attempted to isolate some examples of energy active in the process of creating visual images. The visualization of sound resulting from the Chladni process clarifies aspects of flux, of the implicit and explicit orders and the nature and inadequacies of gestalt.

This study of the interplay of the senses, whilst recognizing the 'ground' in which the senses are embedded, the body, and its physiological propensity for interrelatedness, embraces also the grounding of all bodies, human and otherwise, in the larger entity of the earth. The interrelationship of human beings with the earth, as I have attempted to show through discussion of work by myself as well as other artists, is the kind of 'dialogue' that requires that the deeper meaning of the implications of a listening silence be grasped.

In bringing into focus a more-than-human realm (the earth, animals, plants) which he predicts will increasingly exercise ethical minds, Abram casts an alternative light on a wide range of discourses. When the discourse of the other applies beyond the human, it seems to render some existing arguments inadequate. I have attempted to show that the curiosity and awareness of the visual artist can make a contribution to a true dialogue between human beings and the earth. The *Arte Povera* artists approached this goal by their openness to the simple poetic energy inherent in the materials of nature and by embracing energy itself as valid art material. Their works (Flood & Morris 2001:14) 'are dialogues with the materials and process and with the physical and metaphysical

dimensions of life' that acknowledge the basic intuitive intelligence of ordinary human beings to make their own metaphors and meanings. Performance artists, like Anderson, so abundantly employ the body as ground for, and energizer of, exploration of every conceivable dialogic possibility of presence and absence, that an interplay of the senses is embodied in virtually every aspect of their work. With Earth art, the dialogue – or lack of – between human and earth is determined by the position from which the artist works, the attitudes ranging from a more modernist position, perceiving the earth as just another formal art material, to those of Ecovention artists who call into question the framework within which westerners define art and the notion that aesthetics serves only itself.

I have attempted in my thesis to construct a system of concepts that describes and approaches relationality as expressed in the writing of others. To this end I have kept in mind the threads of intuition and energy that run through all human activity but are articulated in different ways, in different disciplines of thought. Bohm's (1980) image of reality, one in which subatomic particles were not separate from one another and moving through the void of space, but in which all things were part of an unbroken web and embedded in a space that was as real and rich with process as the matter they moved through, possibly influenced art writer, Suzi Gablik (1991:22), who proposes 'When this perception of a unified field is applied to human society and culture, it makes us a co-determining factor in the reality-producing process; we are not just witnesses or spectators'. She proposes that the function of the artist will have to change if we want to play a significant part in moving humanity to a position of a benign presence rather than destructive force in the world. Gablik (cited in Spaid 2002:150) calls for 'a vision dedicated to a single perception: how to live appropriately in an interconnected universe'.

The ecological content of my thesis is relevant to this study as the interplay of the senses must be grounded, they must dwell somewhere. Canadian composer and writer, R. Murray Schafer (cited in Cox 2004:37-38), presents an argument for an 'acoustic ecology' that entails a re-evaluation of silence as the prerequisite for a reenchantment of the world. He envisages the 'soundscape' of the world as encompassing a huge macroscopic composition which deserves to be listened to carefully.

Because silence is being lost in our time, it has become the focus of much attention in western contemporary music. John Cage, in an attempt to find out if there is such a thing as complete silence, entered an anechoic chamber at Harvard University.⁴⁵ According to Woodward's thesis (1992:39), in the special circumstances of the chamber, 'the human ear can detect sounds as soft as the bumping of air molecules on the eardrum. The eardrum motion resulting from this sound is only one hundredth of a millionth of a centimeter'.⁴⁶

Cage used silence extensively in his work, making the audience aware that all sound is relevant compositional material and thereby fine-tuning their awareness to their environment.⁴⁷ For Cage and Schafer, lack of listening contributes to the lack of identification with the natural world. Calling for a recovery of a positive silence, a condition which has been unfashionable in the western world for a long time, Schafer (cited in Cox 2004:37) writes: 'In Western society silence is negative, an embarrassment, a vacuum. Silence for Western man equals communication hang-up. If one does not speak, the other will speak. This has not always been so, nor is it so for all peoples today'.

Fiumara, in her philosophy of listening, addresses exactly this issue, attempting to repatriate the concept of logos to its more pliable and inclusive potential. It seems we may learn much from other cultures, for whom the concept of flux was never a problem. The Indian mystic, Kirpal Singh (cited in Cox 2004:38.), explains:

The essence of sound is felt in both motion and silence, it passes from existent to nonexistent. When there is no sound, it is said there is no hearing, but that does not mean that hearing has lost its preparedness. Indeed, when there is no sound, hearing is most alert, and when there is sound the hearing nature is least developed.

⁴⁵ Woodward (1992:39) explains: 'Such a chamber is usually built underground with thick walls, ceiling and floor, lined by three-foot glass fibre wedges pointed inwards. The room has a suspended steel grillwork on which one can walk. Compared with normal environments, this chamber appears to be oppressively silent'.

⁴⁶ Cage did not find silence in the anechoic chamber, but a subtle high noise and a low noise, which were subsequently explained to him to be the sound of his nervous system and the sound of his blood circulation.

⁴⁷ Cage (Duckworth 1999:12) called the 'proper work' of the artist: 'Either the imitation of nature in her manner of operation, or the sobering and quieting of the mind making it susceptible to divine influences'.

This thesis has, as subtext, the proposal that as artist, I am inclined to uncertainty or doubt in the most positive sense of the word, as well as to a condition of being wary of all peddlers of certainty. In closing, I would like to introduce a theory that questions the automatic assumption of the existence of five senses, sight, hearing, smell, touch and taste. Elkins (1996:136-140) proposes that we have at least three more: heat, or a sense of temperature is the sixth sense and the seventh is gravity. As the eighth sense he proposes proprioception, 'the body's internal sense of itself', also described as 'a low-level awareness of sensation inside the body'. What he is describing is empathy, a quality that 'embraces the involuntary sharing of sensations between our bodies and something or someone we see', a quality which is required for the participatory consciousness that leads toward a philosophy of ecology. By introducing this uncertainty regarding the basis on which the senses were defined, I aim to enrich the elements at work in the system of interplay that nurtures imagination and artmaking, and strengthens the possibility of inherent and unspoken connectivity between people, as well as between them and their environment.

Sources consulted

- Abram, D. 1997. *The spell of the sensuous*. New York: Vintage.
- Ackerman, D. 1995. *A natural history of the senses*. New York: Vintage.
- Anderson, H. 2006. *Sounds emanating from the self: an investigation of the role of sound and music in the healing of disturbed self states*. M.A.Thesis Cape Town: UCT.
- Anderson, L., Johnson, S. Davis, A. & Reich, S. in Ferguson, R. Olander, W. Tucker, M. and Fiss, K. (eds.).1992. *Discourses:conversations in postmodern art and culture*. Cambridge, Massachusetts: MIT
- Archer, M. 1997. *Art since 1960*. London: Thames & Hudson.
- Archer, M. Brett, G. & de Zegher, C. 1997b. *Mona Hatoum*. New York: Phaidon.
- Auslander, P. 1994. *Presence and resistance: postmodern and cultural politics in contemporary American performance*. Ann Arbor: University of Michigan Press.
- Baggini, J. & Stangroom, J. (eds.). 2004. *Great thinkers A-Z*. London: Continuum.
- Baines, A. 1961. *Musical instruments through the ages*. London, Penguin.
- Bauman, Z. 1992. *Intimations of post-modernity*. New York: Routledge.
- Beardsley, J.1998. *Earthworks and beyond: contemporary art in the landscape*. New York: Abbeville Press.
- Bentov, I. 1988. *Stalking the wild pendulum: on the mechanics of consciousness*. London: Destiny.
- Berman, M. 1981. *The re-enchantment of the world*. London: Cornell University Press.
- Beyer, R.T. 1999. *Sounds of our time: two hundred years of acoustics*. New York: Springer
- Blocker, J. 2004. *Where is Ana Mendieta? identity, performativity, and exile*. Durham: Duke University Press.
- Bohm, D. 1980. *Wholeness and the implicate order*. London: Ark.
- Bohm, D. & Peat, F.D. 1987. *Science, order, and creativity*. London: Routledge.
- Bourassa, S.C. 1991. *The aesthetics of landscape*. New York:

Bellhaven.

Bourriaud, N. 2002. *Relational aesthetics*. Dijon, France: les Presses du Reel.

Breazeale, D. (ed. and trans.). 1979. *Philosophy and truth: selections from Nietzsche's notebooks of the early 1870s*. New Jersey: Humanities Press.

Briggs, J. 1992. *Fractals and the patterns of chaos*. London: Thames & Hudson.

Briggs, J. & Peat, F. D. 1989. *Turbulent mirror*. New York: Perennial.

Bryson, N. 1983. *Vision and painting*. London: Macmillan.

Bryson, N. 1988. *Calligram*. Cambridge: Cambridge University Press.

Burgin, V. 1986. *The end of art theory: criticism and postmodernity*. New Jersey: Humanities Press International.

Cage, J. 1968. *Silence*. London: Calder & Boyars.

Capra, F. 1972. *The Tao of physics*. London: Fontana/Collins.

Christov-Bakargiev, C. (ed.). 1999. *Arte Povera*. London: Phaidon.

Cilliers, F.P. 1990. The brain, the mental apparatus and the text: A post-structural neurophysiology. *South African Journal of Philosophy*, 9 (1), February: 1-8.

Cilliers, F.P. 1998. *Complexity and postmodernism: understanding complex systems*. New York: Routledge.

Collpitt, 1992. *Knowledge: aspects of conceptual art*. Seattle: University of Washington Press.

Cope, D. 1971. *New directions in music*. Iowa: WCB: WM. C. Brown

Corradi Fiumara, G. 1990. *The other side of language: A philosophy of listening*. London: Routledge.

Cosey Fanni Tutti. 2005. When does a sound become art? *ArtReview* Vol. 2, LVI May 2005.

Cox, C. & Warner, D. 2004. *Audio culture: readings in modern music*. New York: Continuum.

Crary, J. 1992. *Techniques of the observer*. Cambridge, London: M.I.T.

Cropper, W. H. 2001. *Great physicists: the life and times of leading physicists from Galileo to Hawkins*. New York: Oxford University Press.

Cubitt, S. in Roberts, J. (ed.). 1994. *Laurie Anderson: myth, management and*

platitude. London: Verso.

Danto, A. 1997. *After the end of art: contemporary art and the pale of history*. Princeton, New Jersey: Princeton University Press.

Davies, P. & Gribbin, J. 1991. *The matter myth*. Great Britain: Viking.

Dawkins, R. 1998. *Unweaving the rainbow: science, delusion and the appetite for wonder*. London: Penguin.

Degenaar, J.J. 1987. *Art and the meaning of life*. Cape Town: University of Cape Town.

Degenaar, J. J. 1997. *Die vindingrykheid van metaforiese taalgebruik*. Stellenbosch: Universiteit van Stellenbosch.

Degenaar, J.J. 1970. Iets oor metafoor, *Die Tydskrif vir Geesteswetenskappe* Jg. 10, No. 4, Des. 1970. Pretoria: Kommissie vir Publikasies: 303.

Deleuze, G. & Guattari, F. *A Thousand plateaus: capitalism & schizophrenia*. 1993. Minneapolis: University of Minnesota Press.

Derrida, J. 1974. *Glas*. London: University of Nebraska Press.

Derrida, J. 1976. *Of grammatology*. Baltimore: John Hopkins University Press.

Dewey, J. 1958. *Art as experience*. New York: Capricorn.

Drury, C. 1998. *Silent spaces*. London: Thames & Hudson.

Duckworth, W. 1999. *Talking music: conversations with John Cage, Phillip Glass, Laurie Anderson, and five generations of American experimental composers*. New York: Da Capo.

Ehrenzweig, A. 1967. *The hidden order of art: a study in the psychology of artistic imagination*. Berkeley: University of California Press.

Elkington, D. 2002. *In the name of the gods*. London: Green Man.

Elkins, J. 1996. *The object stares back: on the nature of seeing*. London: Harcourt.

Elkins, J. 1998. *Pictures and the words that fail them*. Cambridge: Cambridge University Press.

Elkins, J. 2003. *Visual studies: a skeptical Introduction*. New York: Routledge.

- Elkins, J. 2005. *Master narratives and their discontents*. New York: Routledge.
- Fineberg, J. 2000. *Art since 1940: strategies of being*. London: Laurence King.
- Fiumara, Corradi C. 1990. *The other side of language: a philosophy of listening*. London: Routledge.
- Flood, R. & Morris, F. 2001. *Zero to infinity: Arte Povera 1962-1972*. London: Tate Gallery Publishing.
- Freeland, C. 2003. *Art theory: a very short introduction*. Oxford: Oxford University Press.
- Freud, S. 1933. *Standard edition of the complete psychological works. Volume XXII*. London: Vintage.
- Friedman, T. & Goldsworthy, A. 1990. *Hand to earth*. London: Thames and Hudson.
- Fontana, B. 2005. When does a sound become art? *ArtReview* Vol. 2, LV1, May 2005:p. 75.
- Foster, H. (ed.). 1983. *Postmodern culture*. London: Pluto.
- Foucault, M. 1967. Of other spaces, Heterotopias. (online) Available: <http://www.foucault.info/documents/heteroTopia/foucault.heteroTopia.en.html>
- Fouche, F. in Snyman, J. (ed.) 1993. *Conceptions of social inquiry*. Pretoria: Human Sciences Research Council.
- Fuller, P. 1988. *Theoria*. London: Chatto & Windus.
- Gablik, S. 1991. *The reenchantment of art*. U.S.A: Thames & Hudson.
- Gardner, K. 1997. *Sounding the inner landscape: music as medicine*. Massachusetts: Element.
- Godfrey, T. 1998. *Conceptual art*. London: Phaidon.
- Goldberg, R. 2000. *Laurie Anderson*. New York: Harry N. Abrams.
- Goldberg, R. 1998. *Performance art: live arts since the sixties*. London: Thames & Hudson.
- Goldberg, R. 2001. *Performance art: from futurism to the present*. London: Thames & Hudson.
- Goldsworthy, A. 1990. *Hand to earth*. London: Thames & Hudson.

- Gould, S. J. 2003. *The hedgehog, the fox and the magister's pox*. London: Jonathan Cape.
- Harding, S. 1986. *The science question in feminism*. U.S.A: Cornell University Press.
- Harraway, D. J. 1989. *Primate visions: gender, race and nature in the world of modern science*. New York: Routledge.
- Harraway, D.J. 1991. *Simians, cyborgs, and women: the reinvention of nature*. London: Free Association.
- Heidegger, M. 1997. *The question concerning technology and other essays*. New York: Harper Torchbooks.
- Hiley, B. & Peat, F. 1987. *Quantum implications: essays in honour of David Bohm*. New York: Routledge.
- Hiller, S. 2000. *Witness*. London: Artangel.
- Hockney, D. 2001. *Secret knowledge: rediscovering the lost techniques of the old masters*. London: Thames & Hudson.
- Howe, K. S. 2005. *Basia Irland: Archivist of Waters*. (online), Available: <http://www.unm.edu/~basia/BIRLAND/HTML/essay1.html> (2005, 08.22).
- James, J. 1995. *The music of the spheres*. London: Abacus.
- Jay, M. 1993. *Downcast eyes: the denigration of vision in twentieth-century French thought*. Berkeley: University of California Press.
- Jones, A. 1937. *Sound: a text book*. London: Chapman & Hall.
- Jones, A. 1998. *Body art: performing the subject*. Minnesota: Minnesota University Press.
- Jung, C.G. 1964. *Man and his symbols*. London: Aldus Books.
- Kaden, M. 2002. *Herrinnering, geskiedenis, identiteit: n ondersoek na beeld en teks in mito-poësis*. Universiteit van Stellenbosch.
- Kearney, R. 1988. *The wake of the imagination: toward a postmodern culture*. London: Routledge.
- Kemp, M. 2006. *Seen/Unseen: Art, science, and intuition from Leonardo to the Hubble telescope*. Oxford: Oxford University Press.
- Kaufmann, W. in Breazeale, D. (ed. and trans.) 1979. *Philosophy and truth: selections from Nietzsche's notebooks of the early 1870s*. New Jersey: Humanities Press.

Keller, E.F. 1985. *Reflections on gender and science*. New Haven: Yale University Press.

Kenny, A. (ed.) 1994. *The Oxford illustrated history of western philosophy*. Oxford: Oxford University Press.

Keuler, J. *Stellar acoustics: as input for music composition*. (online), Available: [http://www./konkoly.hu/staff/kollath/stellarmusic\(24.03.2007\)](http://www./konkoly.hu/staff/kollath/stellarmusic(24.03.2007)).

Kim-Cohen, S. 2005. The Lost Voice. *ArtReview*. Vol. 2, LVI May 2005: pp. 66-69..

Kirby, P.R. 1953. *The Musical instruments of the native races of South Africa*. Johannesburg: Witwatersrand University Press.

Krauss, R.1999. *The originality of the avant-garde and other myths*. Cambridge: MIT.

Kruger, J. 1989. Rediscovering the Venda ground-bow. *Ethnomusicology* Vol. 33, No 3 (Autumn): pp. 391-404

LaBelle, B. 2006. *Background noise: perspectives on sound art*. New York: Continuum.

Lauterwasser, A. 2003. *Wasser, klang, bilder*. Munchen: AT Verlag.

Leopold, A. 1966. *A sand county almanac*. New York: Oxford University Press.

Levin, D. 1989. *The listening self: personal growth, social change and the closure of metaphysics*. London: Routledge.

Lewis-Williams, D. 2002. *The mind in the cave: consciousness and the origin of art*. London: Thames & Hudson.

Lippard, L. 1983. *Overlay:contemporary art and the art of prehistory*. New York: New Press.

Lucie-Smith, E. 2001. *Movements in art since 1945*. London: Thames & Hudson.

Madden, C. 1999. *Fractals in music: introductory mathematics for musical analysis*. Salt Lake City: High Art Press.

Mandelbrot, B. 1982. *The fractal geometry of nature*. New York: Freeman.

Manguel, A. 1997. *A history of reading*. London: Flamingo.

Marcus, J. 1988. *Art and anger*. U.S.A.: Ohio State University Press.

- McLary, S. & Leppert, R. (eds.). 1987. *Music and society: the politics of composition, performance and reception*. Cambridge: Cambridge University Press.
- Merleau-Ponty, M. 1962. *Phenomenology of perception*. London: Routledge.
- Merleau-Ponty, M. 1964a. *Sense and non-sense*. U.S.A. Northwestern University Press.
- Merleau-Ponty, M. 1964b. *The primacy of perception*. U.S.A. Northwestern University Press.
- Merleau-Ponty, M. 1968. *The visible and the invisible*. U.S.A. Northwestern University Press.
- Meskimmon, M. 2003. *Women making art: history, subjectivity, aesthetics*. London: Routledge.
- Mirzoeff, N. (ed.) 1998. *The visual culture reader*. London: Routledge.
- Nietzsche, F. 1979. *Truth and lies in a nonmoral sense*, in D. Breazeale (ed. & trans.). *Philosophy and truth: selections from Nietzsche's notebook of the early 1870's*. New Jersey: Humanities Press.
- Norris, C. 1987. *Derrida*. Cambridge, Massachusetts: Harvard University Press.
- Owens, C. 1983. *The discourse of others: feminists and postmodernism*. In Foster, H. (ed.) *Postmodern culture*. London: Pluto.
- Oxford Dictionary of English*. 1998. S.v. 'intuition'. Oxford: Clarendon.
- Oxford Dictionary of English*, 1998. S.v. 'metaphor'. Oxford: Clarendon.
- Pierce, C. & van de Veer, D. 1955. *People, penguins and plastic trees: basic issues in environmental ethics*. U.S.A.: Wadsworth.
- Polanyi, M. 1958. *Personal knowledge: towards a post critical philosophy*. Chicago: The University of Chicago Press.

- Polanyi, M. 1967. *The tacit dimension*. New York: Doubleday.
- Polkinghorne, J. 2002. *Quantum theory: a very short introduction*. Oxford: Oxford University Press.
- Pollack, G. 1999. *Differencing the canon: feminist desire and the writing of art's histories*. London: Routledge.
- Pribram, K.H. 1971. *Languages of the brain*. New Jersey: Prentice Hall.
- Primack, R.B. 2002. *Essentials of conservation biology*. U.S.A. Sinauer.
- Rappolt, M. 2006. *Born of frustration: Idris Khahn's icons of iconoclasm*. *ArtReview* Issue 02 August 2006.
- Ramachandran, V. & Hubbard, E. 2003. *Hearing colors, tasting shapes*. (online) Available: [Scientific American.com](http://www.scientificamerican.com). April 13, 2003.
- Ree, J. 1999. *I see a voice: a philosophical history of language: deafness and the senses*. London: Flamingo.
- Rich, A. 1995. *American pioneers: Ives to Cage and beyond*. London: Phaidon.
- Ricoeur, P. 1978. *The rule of metaphor: multi-disciplinary studies of the creation of meaning in language*. London: Routledge.
- Roberts, J. (ed.) 1994. *ART HAS NO HISTORY! The making and unmaking of modern art*. London: Verso.
- Rose, C. & Nicol, M. J. 1997. *Accelerated learning for the 21st century*. England: Accelerated Learning Systems.
- Rothfork, J. 1995. *Post-modern ethics: Richard Rorty & Michael Polanyi*. (online), Available: <http://www.geocities.com/Athens/Sparta/6997/rorty.htm>.(2005,08,06).

- Sachs, C. 1940. *The history of musical instruments*. London: J.M. Dent & sons.
- Sacks, O. 1991. *Seeing voices: a journey into the world of the deaf*. London: Pan Books.
- Schafer, R.M. 1969. *The new soundscape*. Toronto: Berandol Music Ltd.
- Schori, A. 2005. All the right notes. *ArtReview* Vol. 2, LV1 May 2005: pp. 60-65.
- Schwarz, K. R. 1996. *Minimalists*. London: Phaidon.
- Slouka, M. in Cox, C. & Warner, D. 2004. *Audio culture: readings in modern music*. New York: Continuum.
- Snyman, J. (ed.) 1993. *Conceptions of social inquiry*. Pretoria: Human Sciences Research Council.
- Spaid, S. 2002. *Transform ecovention. current art to ecologies*. USA: Greenmuseum.org. The contemporary Arts Center and Eco-artspace.
- Stevens, I. 1996. Postmodernism, structuralism, post-structuralism, deconstruction and art criticism. *De Arte* (54), September 1996: pp.32-42.
- Stokoe, W. 1965. *A dictionary of American sign language on linguistic principles*. Washington: Gallaudet College Press.
- Stuckenschmidt, H. 1969. *Twentieth century music*. London: World University Press.
- Talbot, M. 1991. *The holographic universe*. London: Harper Collins.
- Tallman, S. 1996. *The contemporary print from pre-pop to post-modern*. London: Thames & Hudson.
- Tisdall, C. 1979. *Joseph Beuys*. New York: Thames & Hudson.
- Tracy, H. 1948. *Ngoma, an Introduction to music for southern africa*, London: Longmans, Green.
- Valdes, M. (ed.) 1991. *A Ricoeur reader: reflection and imagination*. Toronto: University of Toronto.
- Van Dorston, 1991. *Laurie Anderson & feminist-postmodernist representations: can oppositional avant-garde performance make a difference in mass culture?* (online), Available: http://www.fastnbulbous.com/_anderson.htm (2005/01/14)
- Weston, A. (ed.) 1999. *An invitation to environmental philosophy*. Oxford: Oxford University Press.

Woodhouse, B. 1984. *When animals were people*. Johannesburg: Chris van Rensburg Publications.

Woodward, S. 1992. *The transmission of music into the human uterus and the response to music of the human fetus and neonate*. Thesis (Ph. D) Cape Town University.

Woolf, V. 1994. *A change of perspective: collected letters III. 1923-1928*. London: Hogarth Press.

Wright, D. 1969. *Deafness: a personal account*. London: Allen Lane the Penguin Press.

Zajonc, A. 1993. *The entwined history of light and mind*. Oxford: Oxford University Press.

Zimmerman, M. 1994. *Contesting earth's future: radical ecology and postmodernism*. Berkeley: University of California Press.

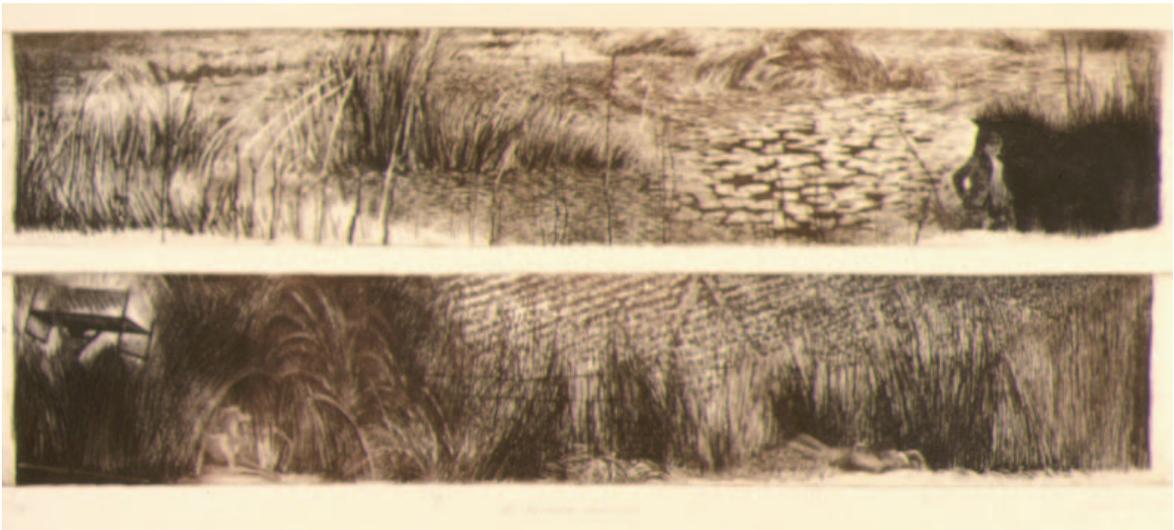


Fig. 1 Lyn Smuts, *Narrative Landscape* (1999).
Etching.
23 x 60 cm.



Fig. 2 Lyn Smuts, *Lives* (1987).
Stoneware.
Each: 2 x 1.5 cm.



Fig. 3 Lyn Smuts, *Tuinman (Garden man)* (1988).
Ciment fondu.
23 x 33 cm.



Fig. 4 Lyn Smuts, *Flute* (1989).
Stoneware.
23 x 33 cm.

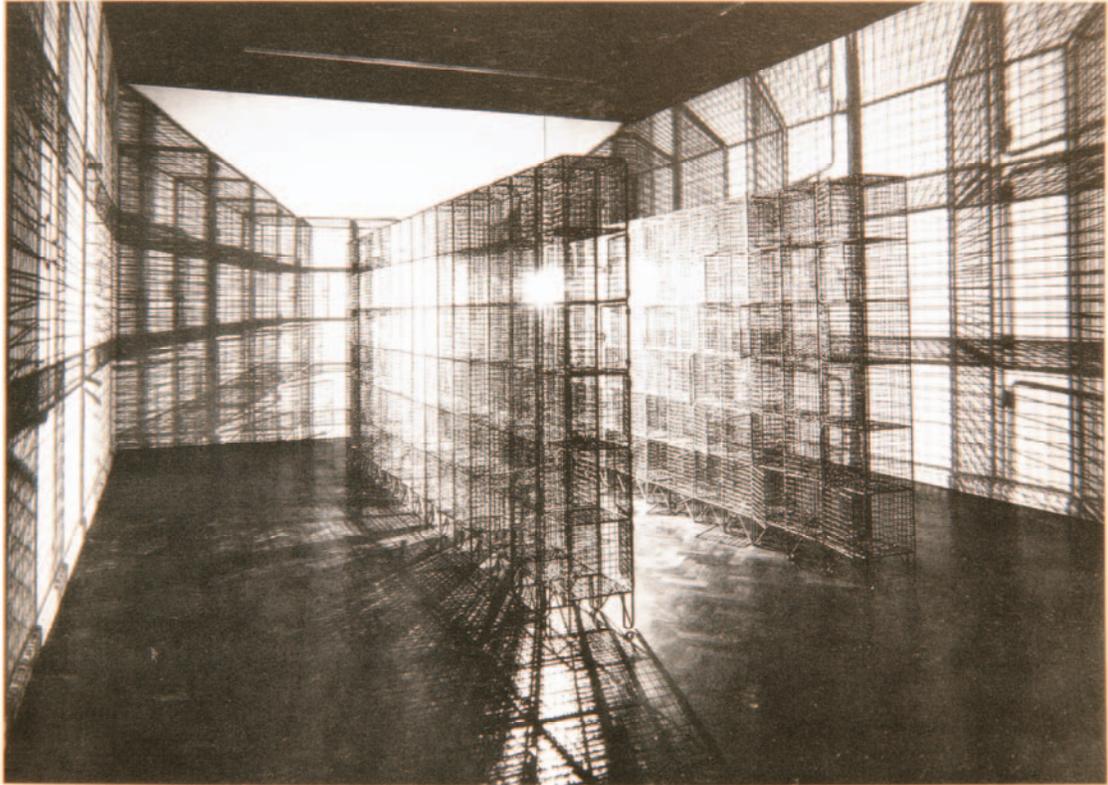


Fig.5 Mona Hatoum, *Light Sentence* (1992).
Wire-mesh lockers and a single light bulb.
(Source: Archer, M. 1997:211.)

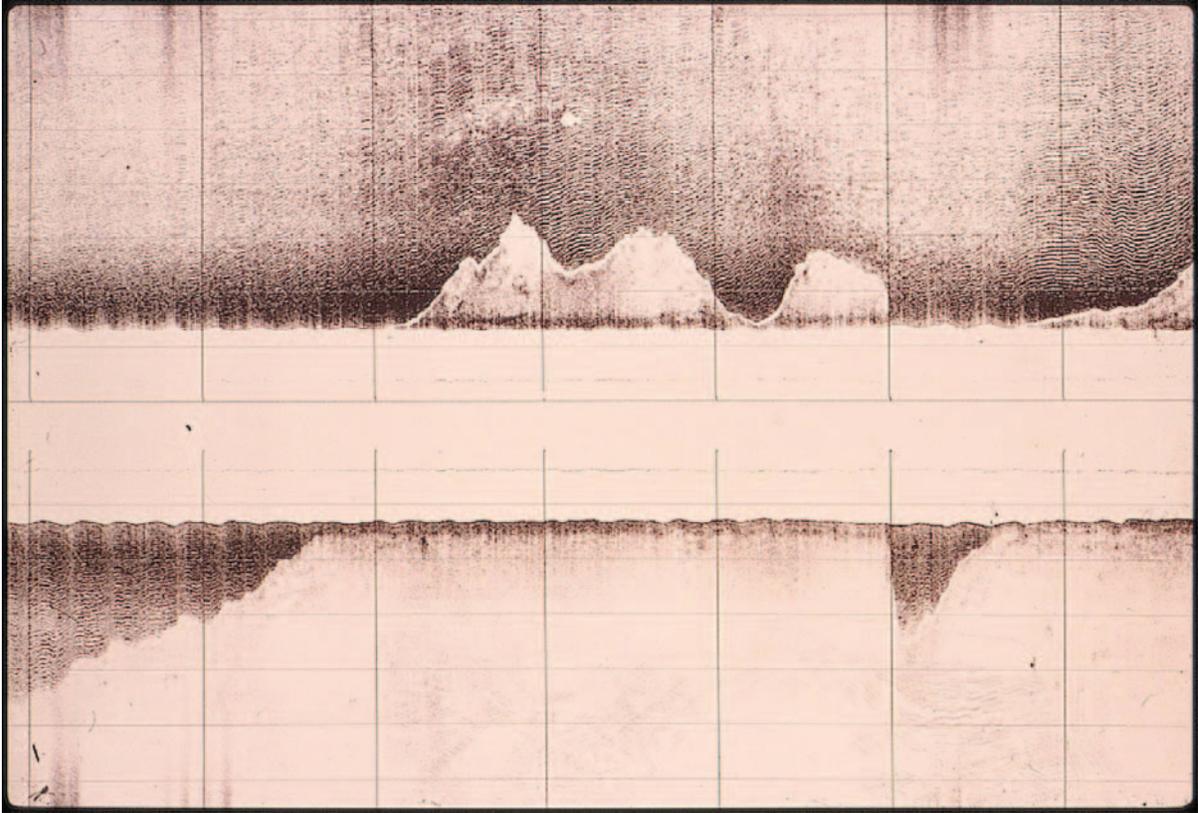


Fig. 6 *Sonar Printout* (1980).
Sonar echo translated into electrical impulse scorched onto damp paper.
42 x 110 cm.
The Stellenbosch Institute of Oceanographic Research.
(Source: collection Lyn Smuts, Stellenbosch.)

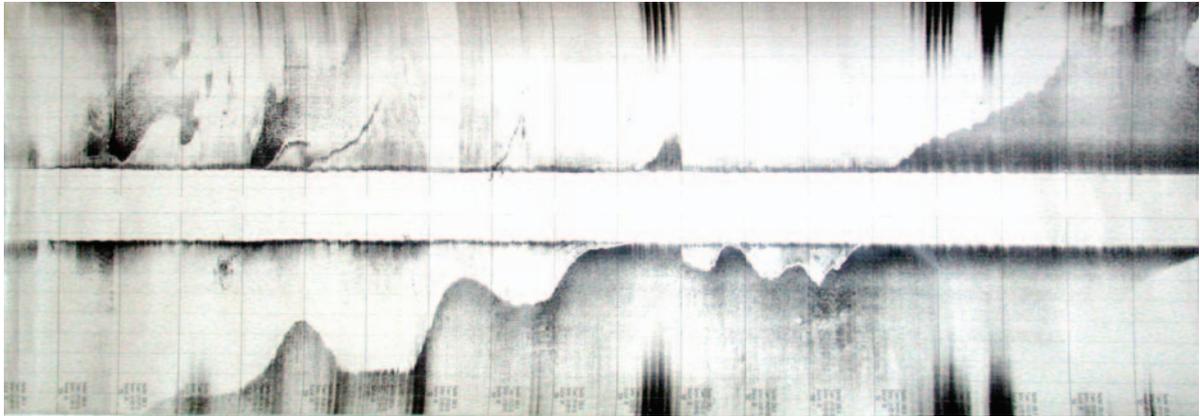


Fig. 7 *Sonar Printout*, (1990).
Electronic sonar printout.
42 x 200 cm.
The Stellenbosch Institute of Oceanographic Research.
(Source: collection Lyn Smuts, Stellenbosch.)



Fig. 8 Lyn Smuts, *Transferred Waves*, Gifberg (2002).
Graphite on rice paper.
65 x 138 cm.



Fig. 9 Lyn Smuts, *Transferred Waves*, Gifberg (2002).
Graphite on rice paper.
65 x 138 cm.

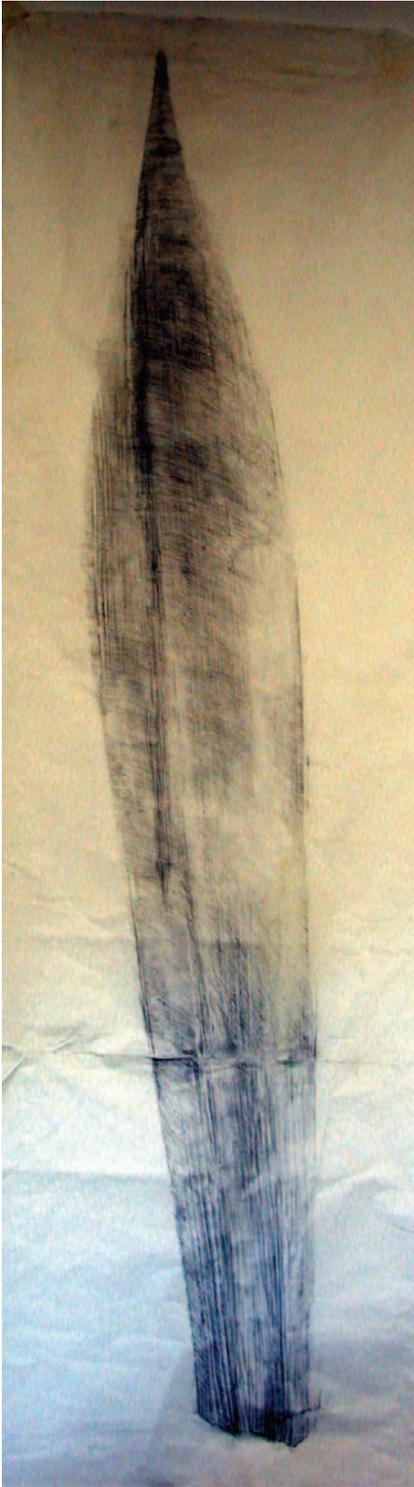


Fig. 10 Lyn Smuts, *Vessel* (2003-4).
Graphite on rice paper.
189x 60 cm.



Fig. 11 Lyn Smuts, *Vessels* (2007)
Wood, graphite, carbon rods.
14 x 2 x 155 cm.

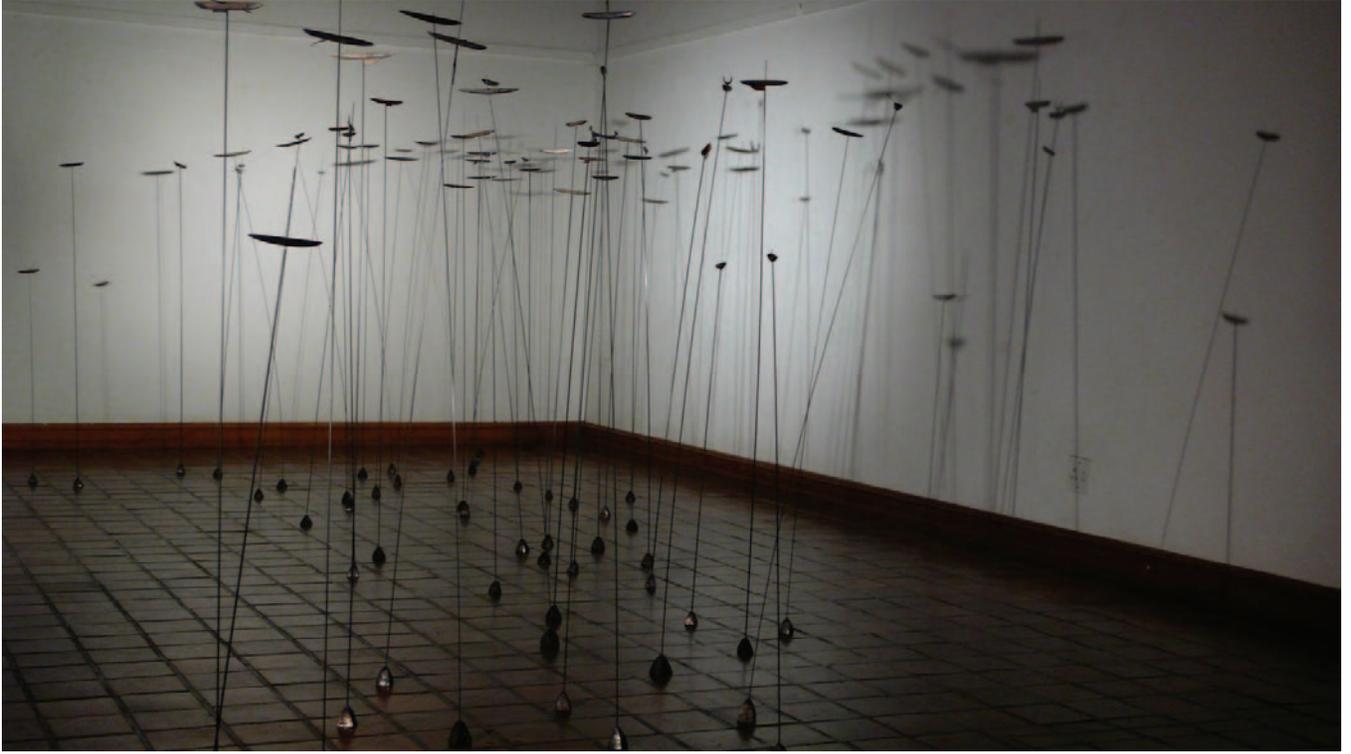


Fig. 12 Lyn Smuts, *Vessels* (2007).
Wood, graphite, carbon rods.
14.2 x155 cm.



Fig.14 Lyn Smuts, *Vessels* (2007).
Wood, graphite, carbon rods.
14.2 x 155 cm.



Fig. 14 Lyn Smuts, *Vessels* (detail) (2007).
Wood, graphite, carbon rods.
14.2 x 155 cm.



Fig. 15 Lyn Smuts, *Resonant Earth* (2004).
Aquatint on copperplate.
50x 34 cm.



Fig. 16 Lyn Smuts, *The shape of silence* (2006).
Monotypes, metal powder on paper.
Each: 38 x 30 cm.



Fig. 17 Lyn Smuts, Katherine Glenday and John Turest-Schwartz. *Sound Still* collaborative exhibition (2006).

Chladni video, porcelain vessels and *Conversation*: porcelain sheets and metal powders

Irma Stern Museum, Cape Town, September 2006.



Fig. 18a Lyn Smuts playing a frequency pattern in iron oxide on a copper plate

Fig. 18b Katherine Glenday about to transfer an oxide powder pattern onto a sheet of damp porcelain.



Fig. 19 Lyn Smuts and Katherine Glenday, *Sounding* (2006).
Porcelain and metal powder.
30 x 23 cm.



Fig. 20 Lyn Smuts. *The shape of silence* (2006).
Metal powder on porcelain and paper.
Monoprints on paper: 30 x 38 cm.
Monoprints on porcelain: varying dimensions.



Fig. 21 Lyn Smuts and Katherine Glenday, *Sounding* (2006).
Sheets of porcelain with transferred sound patterns, prior to firing.
Glenday's completed bowls in the background.



Fig. 22 Lyn Smuts and Katherine Glenday, *Sounding* (2006).
Porcelain and metal powder, prior to firing.
Dimensions variable.



Fig. 23 Lyn Smuts and Katherine Glenday, *The chiasm* (2006).
Porcelain and metal powder.
Each: 15 x 33 cm.



Fig. 24 Lyn Smuts, *Sound Script* (2006).
Iron oxide on porcelain.
(60 x 48 cm).



Fig. 25 Lyn Smuts, *Sound script* (2006).
Porcelain and metal powder.
60 x 48 cm.



Fig. 26 Katherine Glenday and Johan Rautenbach, *Conversation* (2006).
Porcelain and metal powder.
Each: 13 x 30 cm.



Fig. 27 Lore Heuermann and Remix dance company, *Performance work* (2006).
Artist Lore Heuermann drawing whilst a dancer from Remix dance company performs.
Collaborative *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006.



Fig. 28 Remix Dance Company, *Second time broken* (2006).
Photograph of dancers with porcelain vessels made by Katherine
Glenday.
Collaborative *Sound Still exhibition*, Irma Stern Museum, Cape Town,
September 2006.
(Photograph by Tania Scott.)



Fig. 29 Lore Heuermann and Remix dance company. *Performance work* (2006). Artist Lore Heuermann drawing whilst dancers from Remix dance company perform. Collaborative *Sound Still* exhibition, Irma Stern Museum, Cape Town September 2006

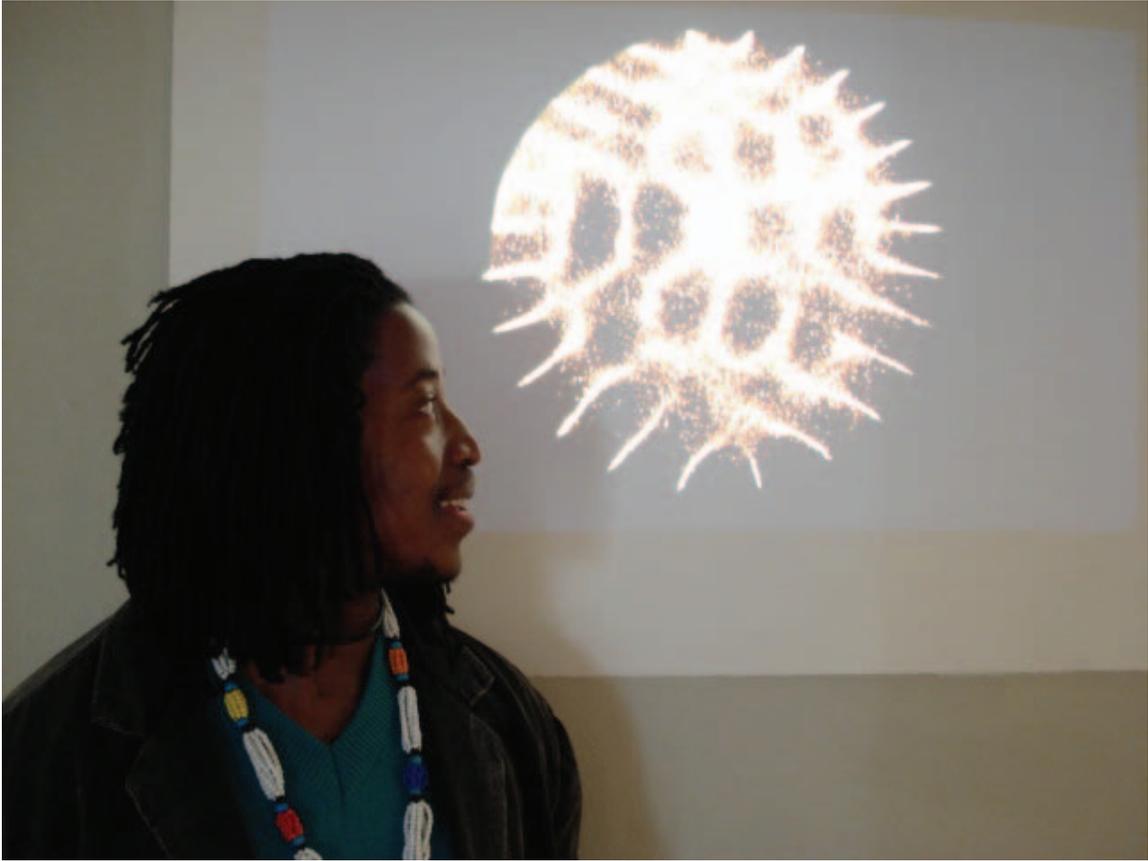


Fig. 30 *Chladni* (2006) video installation at the *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006, with viewer.

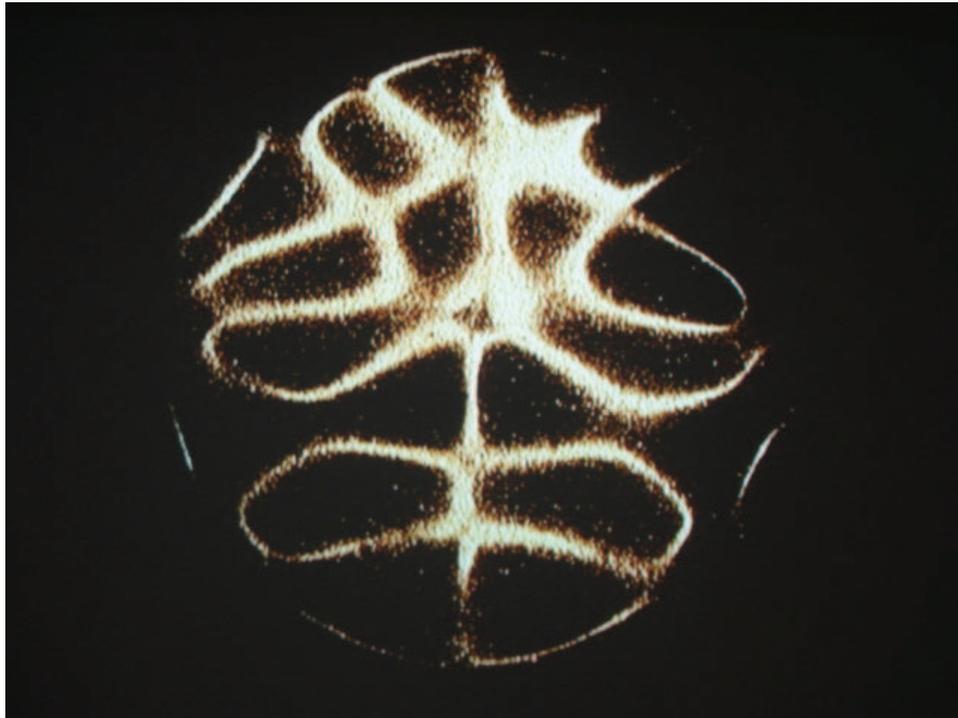


Fig. 31a. Lyn Smuts playing a vibrational plate during filming of the *Chladni* video directed by John Turest-Schwartz and filmed by Robert Hofmeyr

Fig. 31b. Still from the *Chladni* video projected at the entrance to the *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006.

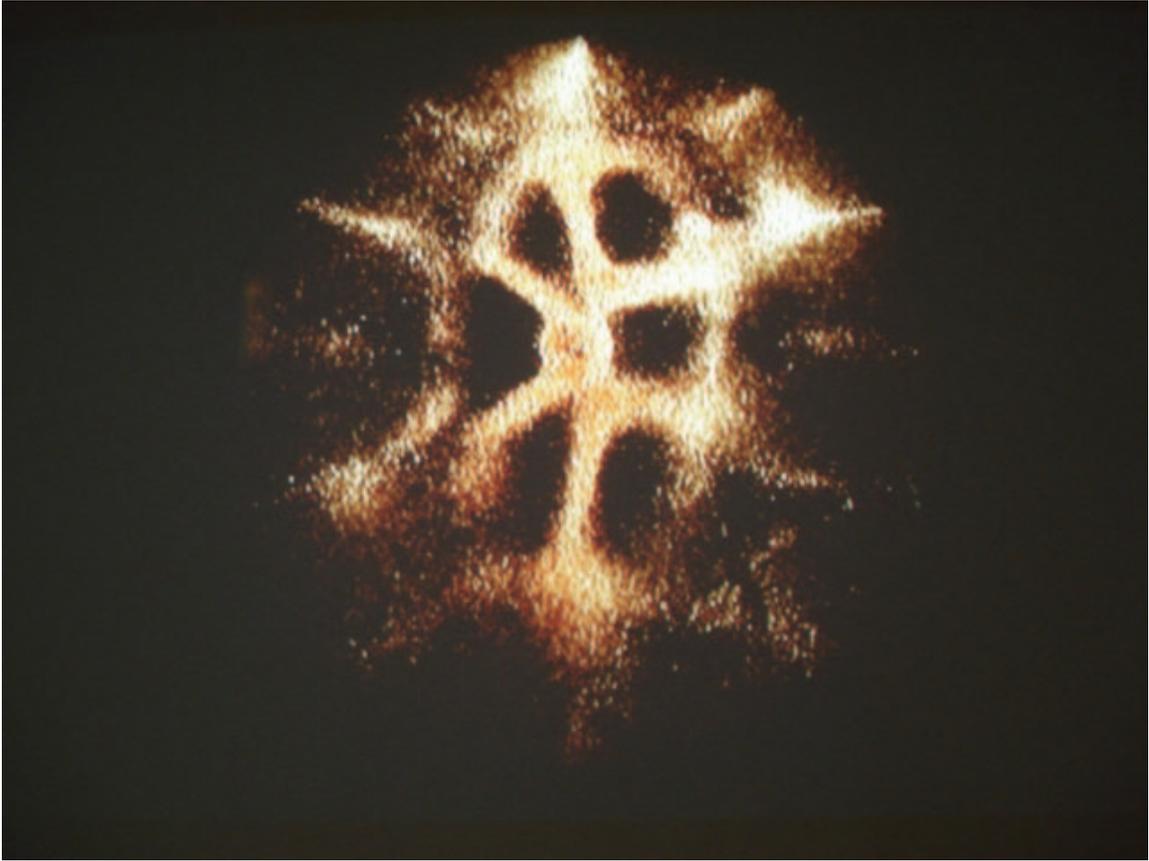


Fig. 32 John Turest-Schwartz (director and soundtrack) Robert Hofmeyr (film) and Lyn Smuts (performer) *Chladni* (2006).
Video.
Collaborative *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006.



Fig. 33 John Turest-Schwartz (director and soundtrack), Robert Hofmeyr (film) and Lyn Smuts (performer) *Chladni* (2006).
Video.
Collaborative *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006.



Fig. 34 John Turest-Schwartz (director and soundtrack), Robert Hofmeyr (film) and Lyn Smuts (performer) *Chladni* (2006).
Video.
Collaborative *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006.

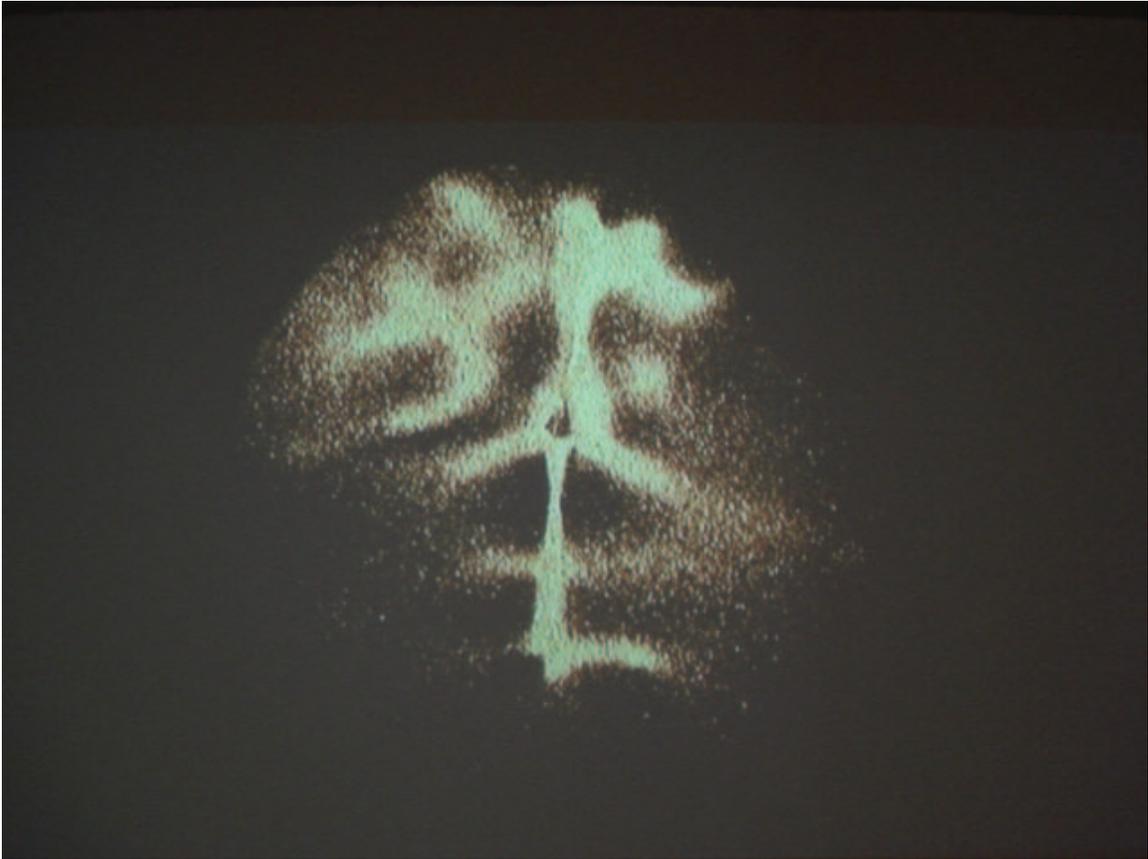


Fig. 35 John Turest-Schwartz (director and soundtrack), Robert Hofmeyr (film) and Lyn Smuts (performer) *Chladni* (2006).
Video.
Collaborative *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006.



Fig. 36 John Turest-Schwartz (director and soundtrack), Robert Hofmeyr (film) and Lyn Smuts (performance) *Chladni* (2006).
Video.
Collaborative *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006.



Fig. 37 John Turest-Schwartz (director and soundtrack) Robert Hofmeyr (film) and Lyn Smuts (performance) *Chladni* (2006).
Video.
Collaborative *Sound Still* exhibition, Irma Stern Museum, Cape Town, September 2006



Fig. 38 Rirkrit Tiravanija, *Untitled (One Revolution per Minute)* (1996).
Le Consortium, Dijon.
(Source: Bourriaud, N. 2002: cover photograph.)



Fig. 39 Jannis Kounellis *Senza titolo (12 cavalli)* (*Untitled [12 horses]*) (1969).
Installation at Galleria L' Attico, Rome.
(Source: Flood, R. & Morris, F. 2001:50.)



Fig. 40 Giovanni Anselmo, *Respiro* (Breath) (detail) (1969).
Iron, sea sponge.
905 x 6 x 11 cm.
(Source: Christov-Bakargiev, C. 1999:79.)



Fig. 41 Gilberto Zorio, *Serpentine* (1989).
Copper, glass, wax, alcohol.
160 x 813 x 121.9 cm.
(Source: Fineberg, J. 2000:333.)

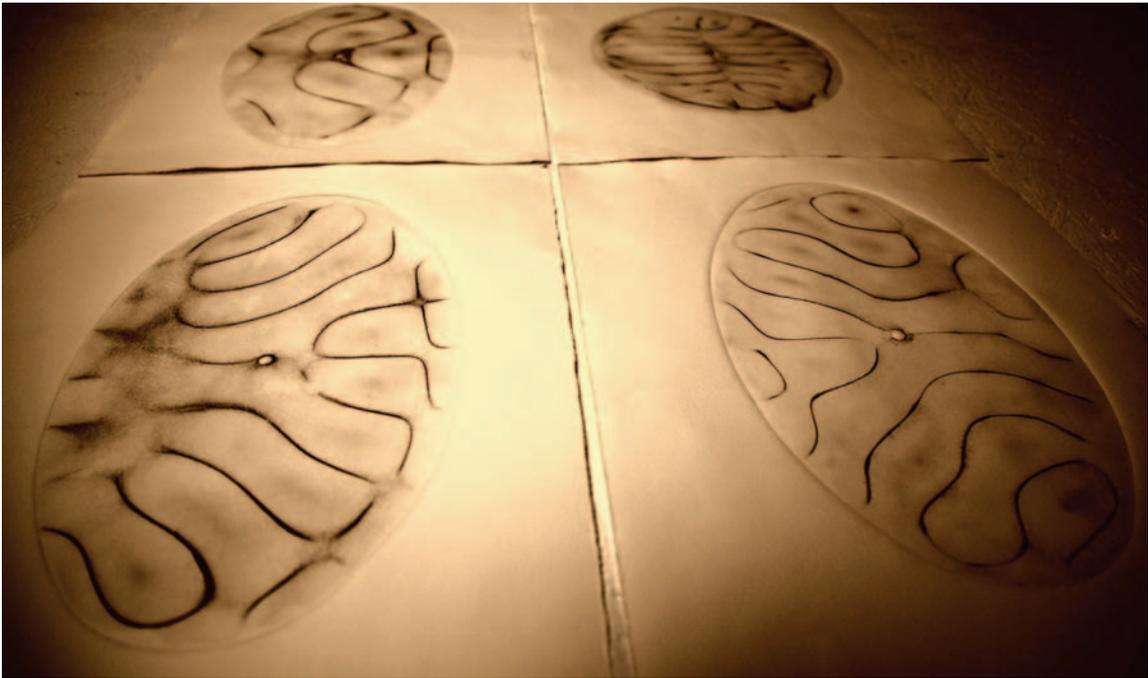


Fig. 42 Lyn Smuts, *The shapes of silence* (2006).
Paper and metal powder.
Each: 30 x 40 cm.

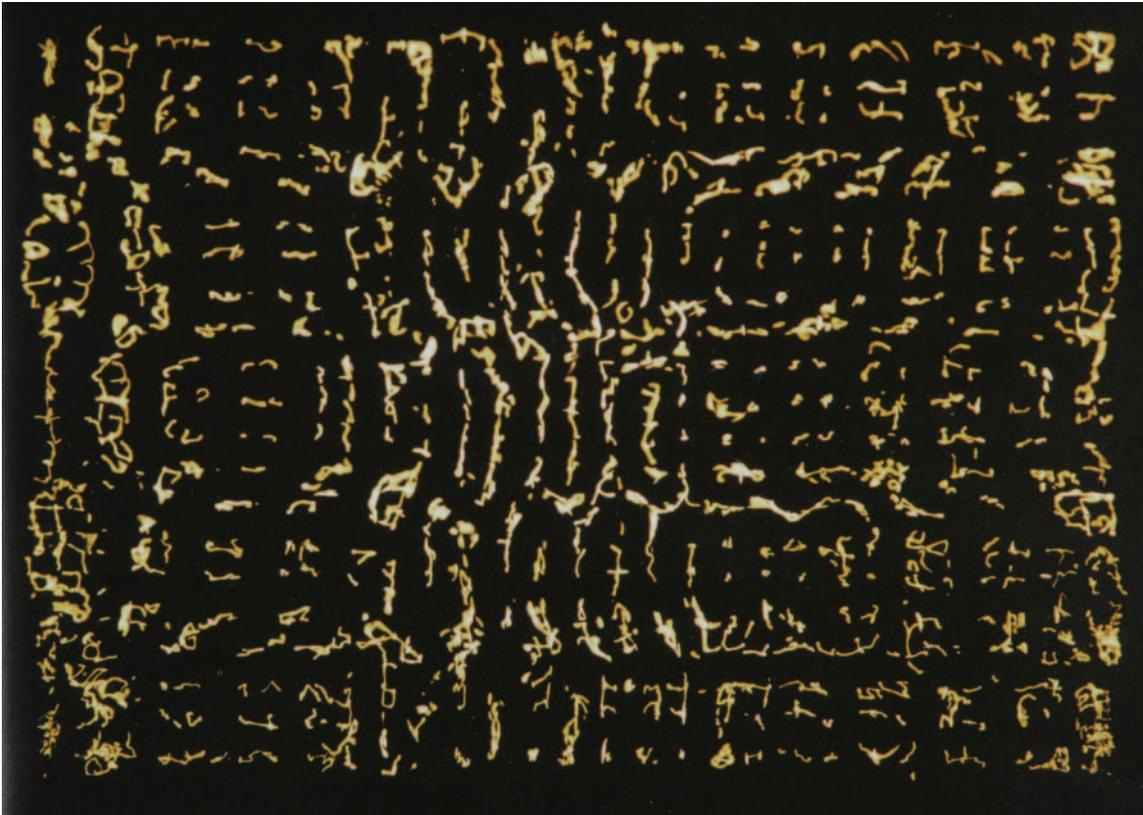


Fig. 43 Lauterwasser, A. *J.S.Bach Orgeltoccatà F-Dur* (2003).
Photograph of frequency patterns in water created by the music of J.S,
Bach.
(Source: Lauterwasser, A. 2003:159.)



Fig. 44 Lauterwasser, A. *Karlheinz Stockhausen* (2003).
Photograph of frequency patterns created by the music of Stockhausen
in water.
(Source: Lauterwasser, A. 2003:130.)



Fig. 45 Lauterwasser, A. *Didjeridoo* (2003).
Photograph of frequency patterns in water created by the sound of a
didgeridoo.
(Source: Lauterwasser, A. 2003:118.)

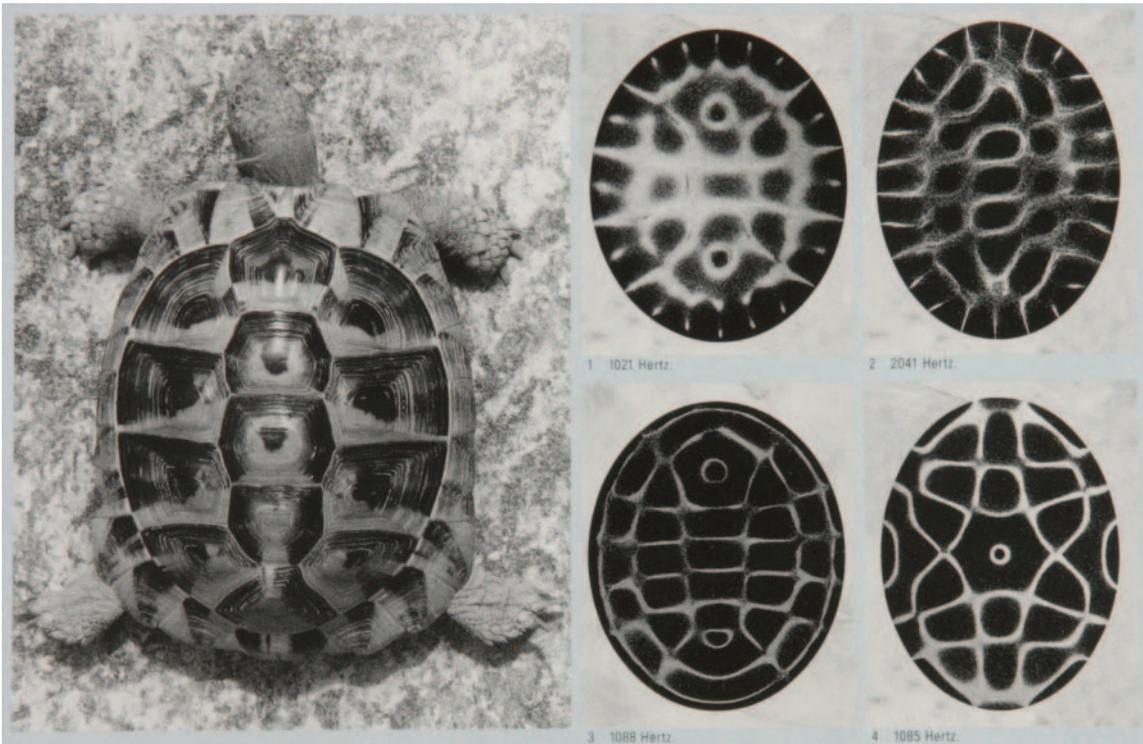


Fig. 46 *Tortoise-shell and four Chladni patterns* (2003).
Photograph of a tortoise shell and of four vibrational Chladni plates.
(Source: Lauterwasser, A. 2002:62.)



Fig. 47 Laurie Anderson, *Songs and stories for the insomniac*. (1975).
In these performances Anderson wore a long white shift that she called
a Screen dress, onto which film was projected as she played the violin
and told stories.
(Source: Goldberg, R. (2001:138.)



Fig. 48 Laurie Anderson, *Artist introductions*, from *Alive from off centre* (1987). Still from a video produced by PBS where Anderson appeared with a male video clone of herself. (Source: Goldberg, R. 2001:132.)



Fig. 49 Stephen Vitiello, *Installation* 1999.
Photograph of view from the 91st floor studio at the World Trade
Center, New York showing the artist's microphones installed
on the window.
(Source: *ArtReview* May 2005 Vol.2, LV1:67.)



Fig. 50 *Peitgen set*.
Fractal computer print.
(Source: Briggs, J. 1992:76.)



Fig. 51 Unknown, *God creates circles, waves and fractals* (12th century).
French *Bible Moralisée* Manuscript.
(Source: Mandelbrot, B. 1977:C1.)

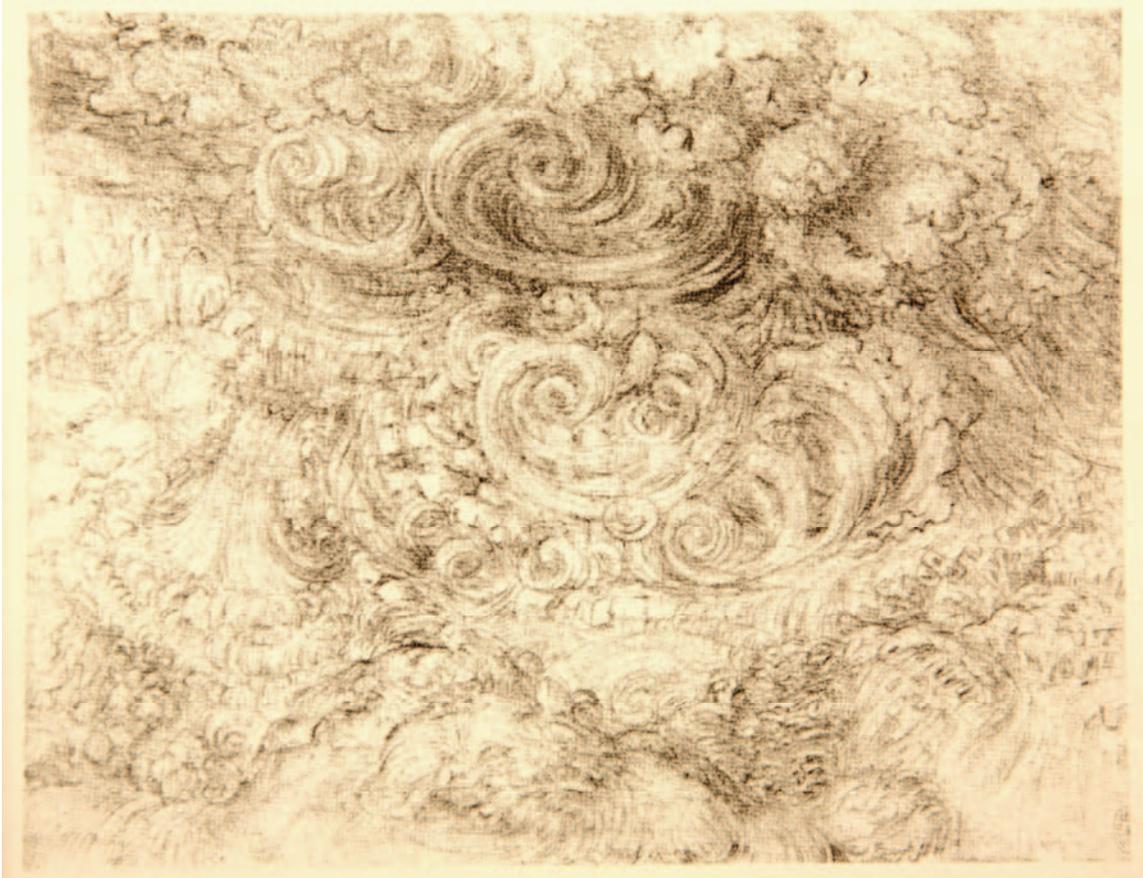


Fig. 52 Leonardo da Vinci, *The Deluge* (1517-18).
Drawing.
(Source; Mandelbrot, B. 1977:C3.)

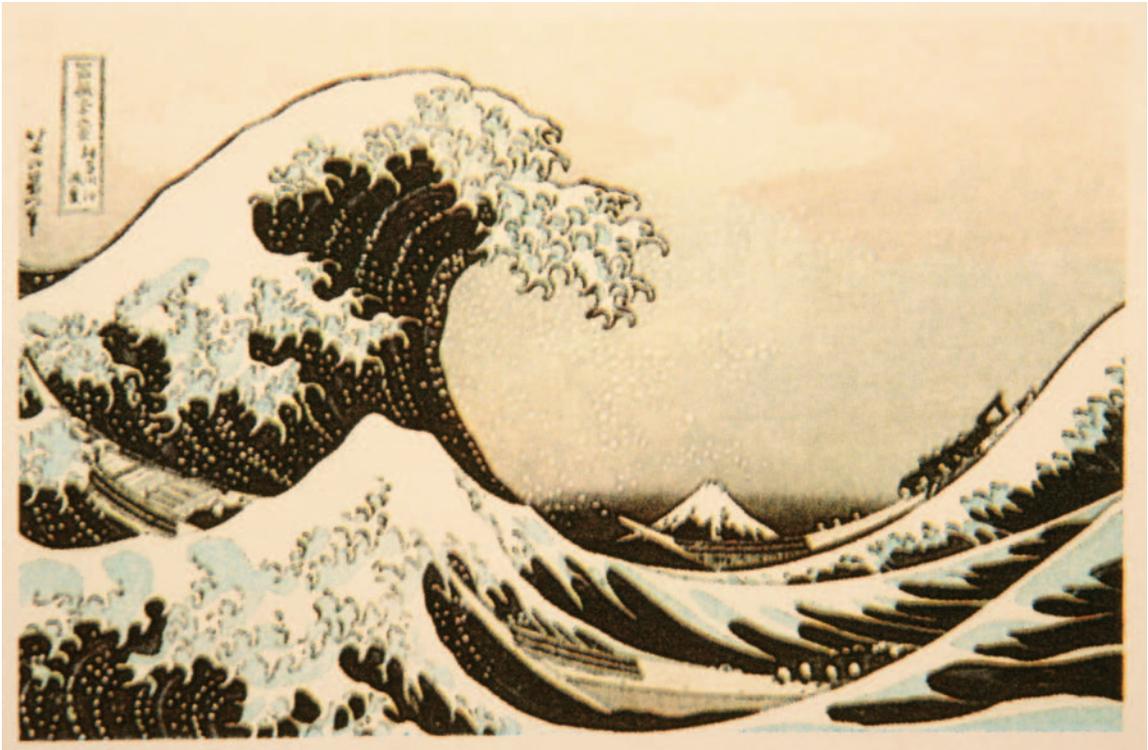


Fig. 53 Hokusai, *The Big Wave (The great wave off Kanagawa)* (1831).
Colour woodcut.
(Source: Mandelbrot, B. 1977: C16.)



Fig. 54 Lyn Smuts and Katherine Glenday, *Shards* (2006).
Porcelain, oxides and lead.
Dimensions variable.

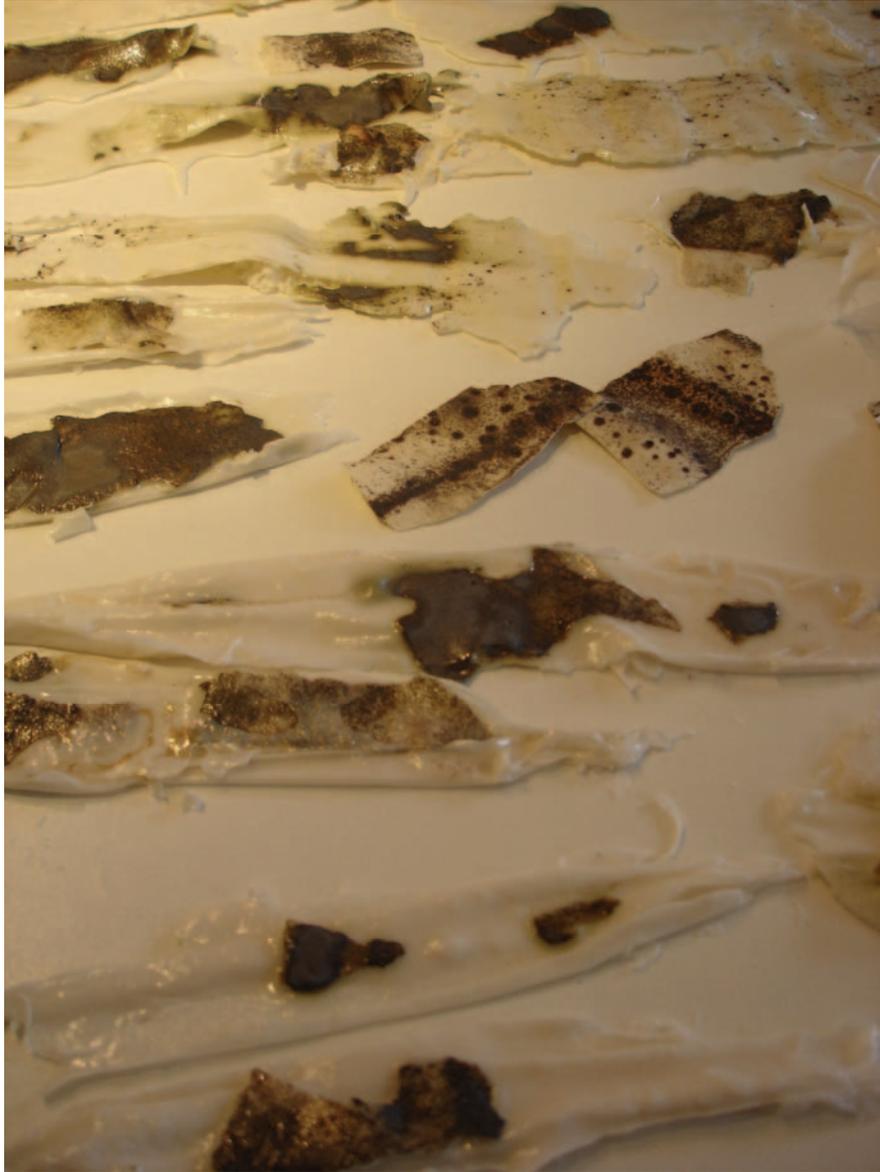


Fig. 55 Lyn Smuts and Katherine Glenday, *Shards* (2006).
Porcelain, oxides and lead.
Dimensions variable.



Fig. 56 Lyn Smuts and Katherine Glenday, *Shards* (2006).
Porcelain, oxides and lead.
Dimensions variable.



Fig. 57 Katherine Glenday, *Storing and gathering* (2006).
Porcelain sheets packed in kiln prior to firing.
Workspace of Katherine Glenday, Cape Town.



Fig. 58 Joseph Beuys, *Energy plan for western man* (1974).
Photograph taken at the ICA, London.
(Source: Tisdall, C. 1979:211.)



Fig. 59 Joseph Beuys, *Bog action* (1971).
Photograph.
(Source:Tisdall, C. 1979:39.)



Fig. 60 Michael Heizer, *Double Negative* (1969-70).
1,500 x 50 x 30 ft.
Near Overton, Nevada.
(Source: Beardsley, J. 1998:15.)



Fig. 61 Robert Smithson, *Spiral Jetty* (1970).
Black basalt and limestone rocks, and earth.
Length: 1,500ft.
Great Salt Lake, Utah.
(Source: Beardsley, J. 1998: 24.)



Fig. 62 Walter De Maria, *The lightning field* (1974-77).
Stainless steel poles.
Average height of poles: 20ft 7 1/2 in. overall dimensions 5,280 x 3,300 ft.
Near *Quemado*, New Mexico.
(Source: Beardsley, J. 1998:61.)



Fig. 63 Richard Long, *A line in Scotland, Cul Mór* (1981).
Photograph by the artist.
(Source: Beardsley, J. 1998:43.)



Fig. 64 Ana Mendieta, *Untitled (Silueta series)* (1976).
Colour photographs documenting earth/body work with sand, water and pigment, executed in Salina Cruz, Mexico.
13 x 20 inches
(Source: Blocker, J.1999:110.)



Fig. 65 Ana Mendieta, *Untitled*, from *The tree of life* (1977).
Colour photograph documenting earth-body sculpture with tree and
mud.
Old Man's Creek, Iowa City.
(Source: Beardsley, J. 1998:163.)

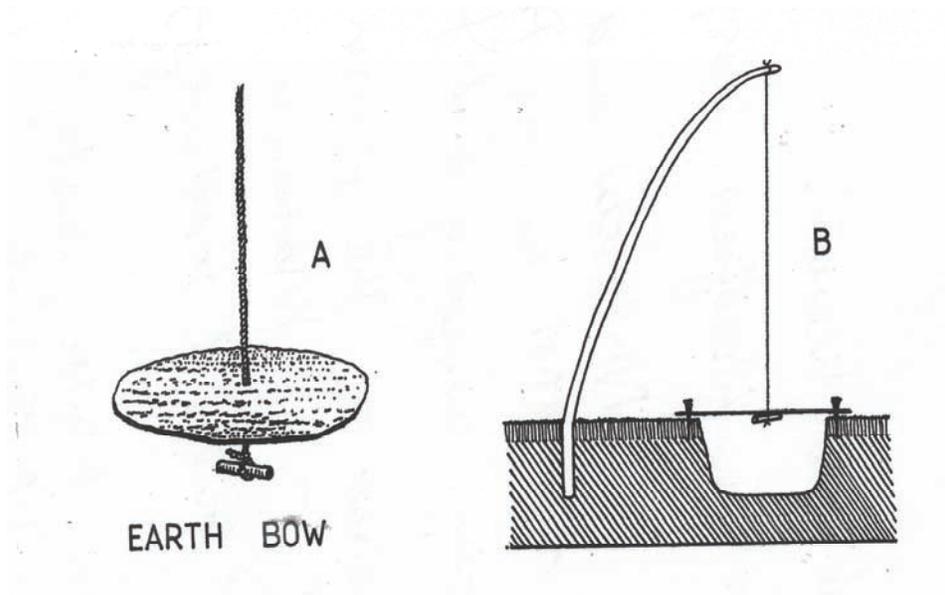


Fig.66 *Earth Bow*
Drawing
(Source unknown.)

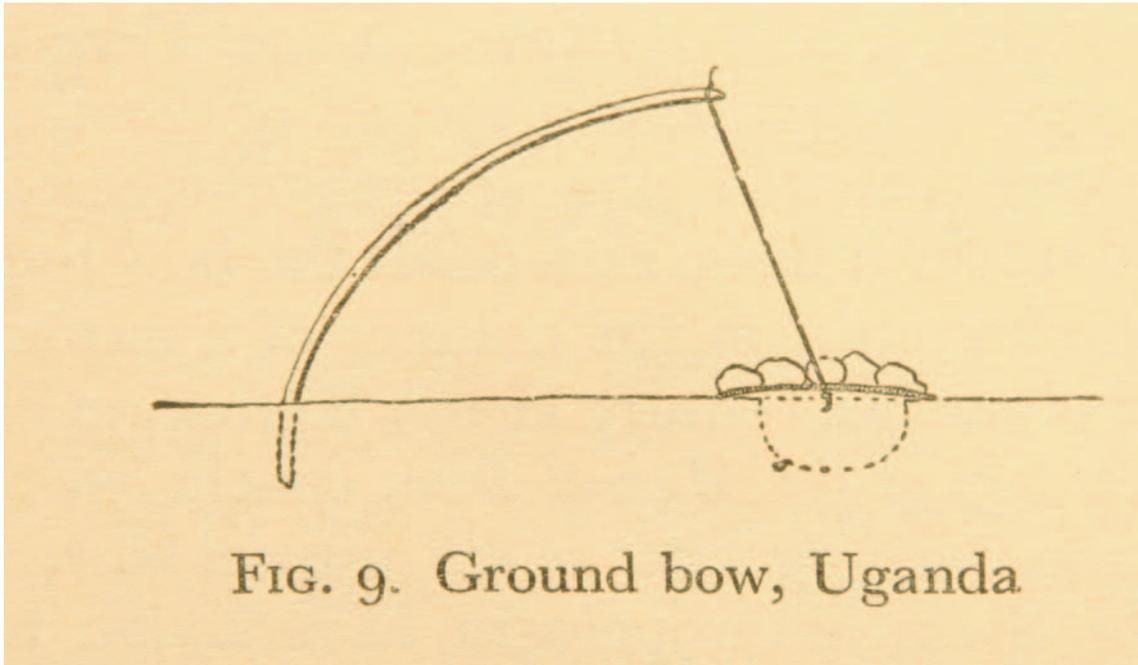


FIG. 9. Ground bow, Uganda.

Fig. 67 Ground bow.
Drawing.
(Source: Baines, A. 1961:39.)



Fig, 68 Lyn Smuts, *Kalinga* (2005).
Steel rod, wood, wire, stones, earth.
(Source: own photograph.)



Fig. 69 *Kalinga*.
Sapling, rope, earth, resonator.
(Source: Kruger, J. 1989: 393.)