2. **Score: the Score as Environment and the Environment as Score**

2.1 **Scores Re-Imagined**

Since the mid twentieth century, musical practices exposed the limitations of conventional Western notation in a variety of ways. Non-tempered tuning systems using different divisions of the octave may require a notation beyond the five line staff. Notations for exploring extended instrumental techniques must be invented graphically and descriptively explained with footnotes or a key. Explorations into graphic scores, where visual imagery and spatial layout take the place of conventional notations, composer Cornelius Cardew’s *Treatise* (1971) being perhaps the most extreme, laid greater emphasis on the audio-visual interpretation. ‘Event scores’ often made as instructions in text and developed in Fluxus performance art by Alison Knowles, Yoko Ono, La Monte Young and others, opened up possibilities of a changing relationship between composer and performer, whereby the composer offered suggestions of possible interpretations, and the performer entered into the music more in the role of a collaboration. Improvisation, sound art and electronic music appeared to make the score in the traditional sense superfluous in that there was no necessary communication between composer and performer. Indeed, the musical structures and processes of these forms suggest a very different idea of a score that contains memories, spatial practices and technical processes, audio-visual combinations and sound recordings among others.

In order to understand the relevance of the score in today’s practice and technological environment, a complete rethinking is required. Any form of notation or ‘translation’ into coded form, emphasises some aspects over others. The choice of which parameters to translate and represent, and how, is part of the interpretative mapping. This is a key point in sonifications, audifications and visualisations, and translations from any form into another media. The score is therefore just one specialised example in a larger array of concerns.

2.2 **The Score as a Bridge between Sound, Self and Environment**

This chapter re-thinks the musical score as conceptually relevant for cross-media issues encountered in sound art, electronic music and audio-visual practices. These multi-disciplinary practices have developed over the last century alongside purely musical practice.
I often ask myself how the score is relevant to my work. I continually come back to the idea that, even in sound art works without the traditional composer-performer-text relationship, there are aspects of the score that are conceptually useful and need to be articulated. There is a tendency to think of the score only in terms of notational systems, as a fixed entity or as an instructional device for communication between composer and performer. Rather than conveying precise instructions, I think of notation more in terms of facilitating and articulating relationship, actively negotiating the gaps between time and space, the visual and the sonic, one person to another. This ‘relational quality’, as theorized by LaBelle and Dyson (see Introduction), is characteristic of sound itself, binding people in space in a contextual manner. The implications of this notion of relationality necessitates finding ways of conceptualizing the multitude of practices that do not build on the hierarchy and unidirectional structure of composer – performer – audience. Through a fluid notion of the score I describe my own works in mapping, navigation and audience participation, and the need for a concept of what I call ‘Scorescapes’.

I consider the musical score, not as a solid entity - object-like, given, a definitive document, visual – but rather, fluid, system-like, interactive, interpretative, transductive and communicative, more like sound itself. This notion of the score, extending from the ‘open’ score as theorised by Umberto Eco (Eco, in Cox, 2007: 165-75, 187-8), is characteristic of the transformation of art in the late twentieth century from object to process to participation. Scorescapes takes these ideas further into sound art practices of mapping and navigation, data translation and sonification. I begin this chapter by outlining my early interest in experimenting with the notion of scores through my practical work. Next, I briefly contextualise historical transformations of the score. Following this, I analyse two classic examples from Lucier and Oliveros and introduce ideas of sound and navigation in my work.

2.3 How I arrived at the notion of Scorescapes through my practice.

My artistic practice has always been concerned with investigating the gaps between image and sound, the visual and the audible. In my early work in the mid-1990s this took the form of graphic notations, in which I experimented with visualisation techniques and differing interpretations by musicians who turn those images into sonic phenomena. I realised that the score itself was more than a vehicle for transmitting specific musical information, and could be treated rather as an arena that allowed communication and interpretation between
people. This flexible approach included the skills of improvising and challenged the visual perception of notations and their imaginative interpretation into sound.

Cardew writes of the difficulties of finding and probing this area of skills in his introduction to *Treatise* (1971), his 193 page graphic score with no instructions.

Ninety percent of musicians are visual innocents and ignoramuses, and ironically this exacerbates the situation, since their expression or interpretation of the score is to be audible rather than visible … graphic artists do not necessarily have sufficient control of sound media to produce “sublime” musical performances. My most rewarding experiences with *Treatise* have come through people who by some fluke have (a) acquired a visual education, (b) escaped a musical education and (c) have nevertheless become musicians (Cardew, 1971: 129-30).

Inspired by Cardew, in my piece *Walking the Line* (1997), a sixty-six page book of hand-drawn, black and white ink graphics with no instructions, I worked for two weeks with another improviser and composer Sam Richards to generate a musical performance of 45 minutes for two pianos. Working on and through the implications suggested by the graphic images alone involved a process of constant negotiation between us, the score acting as a springboard for musical generation and conversation. In *Tidal Nomad Mad* (2002), written for the sixty piece Banda Municipal de Barcelona, I used only one graphic line element in an otherwise conventional notation system, where the line indicated the order of playing between each individual member of the orchestra. Without a time-signature or a conductor, the orchestra had to coordinate itself in order to move forward, and the graphic notation system encouraged an intensely concentrated dynamic, binding the orchestra members together in a way that was audible in the performance.

At the same time, walking and navigating through environments was a central part of my artistic investigations. These included a four-day walk that left a trail of sound sculptures using found material in *Walk for an Absent Public* (1996) and a seven day and night sea crossing from Florida to Bermuda in a 15 meter sailing yacht, notating sounds and navigation techniques in the famous area of absence and loss, *Sargasso Sail across the Bermuda Triangle* (1997). These projects investigated relationship of scores to environments in the absence or absent presence of an audience or public. In contrast to the traditional notation of music which precedes performance and is manifested as a written notation on a page, here the scores were discovered, imagined and enacted in environmental space. In these early pieces I was considering the score as an act of relationship through environment, rather then merely
a notational device, a concept that forms the basis of my notion of Scorescapes I am now elaborating.

Noting the basic discrepancy between the static image of the score and the temporal nature of the music produced, in the early 2000s I worked on dynamic visual scores using video and animation. This led me to research the interaction of sound and image in architectural space at Cambridge University, generating an MPhil dissertation and practice on the symbiosis of architecture, moving image and music through the notion of movement. I developed the idea of ‘dynamic placing’ where sound and image could be placed in space to interact with it and the audience, and in doing so to extend that space beyond its architectural limits. These researches developed into live interactive audio-visual performances using custom-made electronic instruments such as The Video-Organ (2001-3) with which I performed throughout a variety of architectural venues in Europe and delivered a paper at the NIME conference (New Instruments for Musical Expression) (Harris and Bongers, 2002). Experimenting with this ‘dynamic placing’ beyond internal architectural spaces and into environmental locations, we developed and performed with the Video-Walker (2003-4). This was a portable projection and sound instrument designed to carry through various environments (Harris and Bongers, 2003), once more resonating with the practice of walking in art, pioneered by land artists including Richard Long and Hamish Fulton beginning in the 1960s and more recently with locative media art among others (see chapter three for more detail on walking).

These spatial experiments led to my practice-based research project Score Spaces (2003-5) at the Jan van Eyck Academy in Maastricht. Score Spaces attempted to join my exploration of sound, space, time, movement and architecture more explicitly into an expanded spatial notion of the score. For example, I used dynamic symbols of light and sound within the environment, such as lighthouses, in the audio-visual performance Light Phase (2006) at the International Film Festival Thessaloniki and the sound installation A Collection of Circles (or Pharology) (2005) at the CCNOA (Centre for Contemporary Non-Objective Art) in Brussels. In this installation, the circular movement of sound in space, based on sonifications of lighthouses, and the bodily interaction with the sound by the use of laser beams and light sensors, generated a perceptual awareness of a physical spatial score within the space of the gallery. Although this ‘score’ was not visible, one was conscious of it as a map filling the space through sound. It was described as follows in art historian Edward Shanken’s Art and Electronic Media:
Exploring the perceptual relationship between light and sound by eliminating the former, Yolande Harris’ *A Collection of Circles (or Pharology)* (2005), translates the rotating field of illumination that emanates from lighthouse looms into a 3-D sound installation in which the viewer triggers and experiences only the sonic sceptre of light, as its audible apparition revolves around a central axis, changing in response to its environment (Shanken, 2009: 19).

I developed this score space further in *Spin* (2006) for turning trombonist, quadraphonic sound, light sensors, lasers and video. Using the technical infrastructure and conceptual notions of rotation and interaction that I had developed for the *Pharology* installation described above, *Spin* explored the re-introduction of a musician into such a sound space during performance. The sounds were based on a work by Dutch composer Louis Andriessen *Rage, Rage, Against the Dying of the Light* (1966), inspired by Dylan Thomas’ poem of the same name, and originally conceived for four trombonists walking along a paper score displayed around the edge of the performance space. In *Spin* the pre-recorded parts were played back around the space in a constant circular motion, while the trombonist Hilary Jeffery performed by physically spinning in circles. His motion interacted with the laser beams and light sensors, adding percussive layers to the sound playback. A video of the spinning trombonist in other locations folded other spaces and times into the circular motion of *Spin*.

*Score Spaces* also included *The Meta-Orchestra* (2004/5), a process-based project involving a group of multi-disciplinary musicians, artists, designers and engineers, using electronic extensions to their instruments and tools (Harris, 2005). In the site of a 20,000 square meter abandoned coalmine in Belgium, this group explored the dynamics of group improvisation extended over wireless networks and vastly reverberant natural acoustics. The digital networked technologies provoked questions of leadership and collaboration, and a dynamic interactive notion of the score. It also demanded an analysis of space and instrument that was broader than one instrumentalist, leading to the publication ‘The Building as Instrument’ (Harris, 2007c). The changing relationship between body, instrument and score as provoked by technology became a central notion in this research, leading to another publication in a special issue of the *Contemporary Music Review* on body-instrument-technology, titled ‘Inside-Out Instrument’ (Harris, 2006).

These ideas and projects led to the works that form the basis for the concept of *Scorescapes*. With the desire to investigate more intimately and thoroughly the relationships between technology and environment, I began research into historical, contemporary and animal
technologies of navigation, particularly through sound. The graphic nature of the score returned in my interrogation of mapping and strategies of interpretation in mapping the land through sound, image and new technologies. My multi-media sound and video projects *Taking Soundings* (2006-7), developed at the Academy of Media Arts in Cologne, and *Sun Run Sun: On Sonic Navigations* (2008-9) developed at the Netherlands Media Art Institute and STEIM in Amsterdam, create embodied experiences that relate a cognition or consciousness of space and environment to an abstracted version of that environment through sound. These works question how we create and share knowledge of environmental locations through abstractions such as maps and technologies of navigation, and how these meanings can be built up mainly from embodied interactions in space (Harris, 2007a and 2007b; Harris and Dekker, 2009). These projects filled me with a personal need to explore and articulate this relationship between environment, sound and score in more detail, forming the basis for this dissertation.

2.4 Scorescapes: Sound and Place

The ‘-scape’ in Scorescapes comes from landscape and seascape, emphasising historical continuity with 19th century painting and Land Art beginning in the 1960s. It is also a reference to the ‘soundscape’, a term that is most commonly associated with the Schafer, his publication *The Tuning of the World* (1977), and the related Acoustic Ecology movement, all dealing with various aspects of environmental sounds. Schafer’s notion of the soundscape refers to the sound environment in a distinct location, which is considered in terms of relationships between interlocking systems that form an overall sonic context. Building on the visual discourse of Land Art and the sonic discourse of Acoustic Ecology, Scorescapes presents not the material itself (sound or land) but the underlying relationships between interacting systems.

The search for a coherent relationship to environment can be found in sound art and media art dealing with landscape and new technologies, such as locative media and eco-aesthetics and other practices (as discussed in chapter three). Among the various interpretations of environment, walking, mapping and forms of navigation and way-finding, are recurrent. These build on the idea that a fundamental way of engaging with place and actively understanding our movement through environments is by conceptualising them as maps and journeys. This is more than just a functional relationship to environment, more than getting from A to B, rather, it rests on an embodied understanding of how one moves and how one decides the
way, creating physical journeys that can be re-told, followed and notated. The map itself is abstracted from the land, much like the musical score is from the sound it denotes, but comes alive literally in the embodied process of interpretation. Likewise, sound embeds us within an environment by giving aural information about the context we are moving through.

2.5 Scorescapes in the Mind

Pauline Oliveros has developed practices and techniques of meditative processes that occur in music making particularly through expanded listening and improvisation. She is arguably one the most important living composers connecting musical practice and the contemplative condition in a profound way. What she calls “Deep Listening”, begun in 1991, is a growing series of techniques and compositions involving an international community of musicians, therapists, teachers and artists. In her week-long Deep Listening Retreats, listening and walking meditations are combined with non-verbal time, dream practices, body movement, and group improvisation. By concentrating on fundamental processes that underlie music making her work seeks an expanded awareness of our connection to the environment and each other through sound, teaching and community. Known as one of the foremost electronic music pioneers, Oliveros combines these non-technological techniques with the latest forms of technology, most recently involving distributed social networking, including platforms such as Skype and Facebook, to expand the communities and create continuity between the intense retreat periods. Her work attempts to allow participants (no longer divided as composer, audience and performer but integrated as hybrids of all three) to reach a form of presentness, even over global distances, through sound. Such work emphasizes connectedness and group communication over distance through sound and exemplifies, in an expanded form, the idea of the role of a score(scape) as facilitating relationship.

Alvin Lucier’s work can be interpreted as a score based on relationships, by revealing the workings of sound, in the mind and its environment. His work often makes the inaudible audible (and at times visual) in space while emphasising a notion of psycho-acoustics, whereby the music takes places within the mind and perception of performer and audience (Lucier, 1995; 152). As such, Lucier is an unusual example of fluidity between audification, sonification and visualisation. In Music for Solo Performer: for enormously amplified brain waves and percussion (1965) EEG electrodes on the performer’s head translate sub-sonic alpha waves (8 to 12 hertz) into electrical signals which are amplified. These are made audible by using the loudspeakers to physically activate percussion instruments placed throughout the
space. This early piece combines audification of inaudible existing signals (the alpha waves produced by Lucier live on stage transduced into electrical waves that power loud-speakers) and sonification of those signals into sounds through the physical activation of percussion instruments by the moving speaker cone. At the same time *Music for Solo Performer* is a visualisation of the process as we see Lucier in a meditative state needed to produce alpha waves, the cones of the speakers, and the percussion instruments moving, we connect the three elements visually as well as sonically. Interestingly, the more alpha waves are produced, the more sound is created, which must directly feed back to the performer who may hear it but must not be distracted by it as this would bring him out of the alpha state. The performer is paradoxically active in an inactive state and his relationship to the sound itself is as one part of a larger feedback system. This piece has complex layers of process, transformation, listening and performance embedded into it through multiple feedback loops, and takes us through audible and inaudible states of sound and mental activity. The work is a sonic externalisation of internal listening, building what we might call a complex interconnected Scorescape.

### 2.6 Scores, Mapping and Navigation in my work

The exhibition entitled ‘Possibility of Action: the Life of the Score’ at the MACBA (Museum of Contemporary Art in Barcelona), sought to “document a revolutionary change in the way we notate and transmit music, from early graphic scores by composers such as John Cage, Christian Wolff and Morton Feldman, to intermedia experimentation and contemporary sound art” (Held and Subira, 2008: 4). It contained a wide variety of notations, scores, videos, electronics, clothing and interactive software. It included work from the 1960s to the present by composers as diverse Cage, Ashley, Behrman, Oliveros, Lockwood, Tenney, Cardew, Niblock and many more. My own work *Taking Soundings* (2007-8), named after a technique of determining the depth of the sea-bed beneath a boat by lead and line, was exhibited in this context. It traced navigations I made on coastlines around the world by satellite GPS, redrawn digitally in audio-visual performances, resulting in three chart sized prints and a sound work of environmental sound recordings and sonified GPS data (Harris, 2007a and 2007b). As I wrote for the catalogue:

> These images exist on the edge between a score and a map, line and sound, an event and a recording. Produced from satellite data collected by GPS of travels at sea and along coastlines, the work is “taking soundings” of position and movement. These
images are the result of re-drawing those traces during a performance; as each part of the line is digitally drawn the data is transformed simultaneously into electronic sounds. The score then is being re-created, re-drawn, and so re-interpreted at the moment the sound comes into existence. These static prints become a record of a personal map, the memory of a shared performance, and encourage new interpretations by audience and viewer. (Harris, in Held and Subira, 2008: 14).

As evidence of this deep connection between music and mapping, Taking Soundings was re-exhibited in the 2010-11 travelling exhibition ‘Ground Level’ curated by Kit Hammonds for Hayward Touring and the Southbank Centre in London. In addition, Hammonds selected my video installation Navigating by Circles, or Sextant, which combines the view through the eyepiece of a sextant onboard a boat, with sonified GPS data. Both these pieces use a combination of moving image and sound to emphasise the negotiation through technology that is necessary to understand and calculate our position in a constantly shifting environment. In his catalogue essay ‘Beating the Bounds’, Hammonds outlines his rationale for exhibiting works that present a form of map-making that is experiential and physically “on the ground” rather than exclusively mapping from a bird’s eye view. He writes,

Ground Level brings together works of art that use forms of mapping to consider how we make sense of the world, how we belong to a place and to a people, and how we connect to the land we inhabit through negotiation, experience, memory and technology. The artists in the exhibition enact forms of research on the ground that echo the processes used by cartographers to draw up the land on charts, maps and legends. Rather than putting forward definitive surveys, however, the works presented open up alternative readings of the landscape, blurring the boundaries between here and there, us and them, me and you. (Hammonds, 2010: 6)

The ground level perspective is an involved, embodied experience of place and mapping, in which one experiences an intimate knowledge of the environment one moves through, contextualised as experience rather than as objective instructions. It recognises a personal relation to environment that is continually made and remade with every movement and orientation, as a way of making sense of the world one moves through and inhabits. The parallels with the score are evident in this approach, but only if the score is rethought not as a “definitive survey”, or fixed musical text, but as personal alternative readings of the musical concepts as experienced and interpreted by composers, performers and audience.
2.7 Scores and Relational Aesthetics

The opening up of the role of music to encourage participation, aiming to influence and critique social situations, is reflected in the concept of relational aesthetics in contemporary art. Curator Nicolas Bourriaud articulates the emergence of art that works not with objects but with the relationships between social groups that contest the institutional frame of contemporary art (Bourriaud, 1998/2002). Sound art and media art have however been dealing with these issues for a number of years. LaBelle, who makes the argument for sound’s inherent relational quality, which has manifested itself in sound art over the last thirty years and increasingly through digital technologies, states that “while insightfully recognising current trends within contemporary art, it seems also important to supplement Bourriaud’s relational viewpoint with the legacy of sound art, which seems sorely lacking in his perspective” (LaBelle, 2007: 249).

The disciplinary distinctions between contemporary art, sound art and media art were bridged by the exhibition ‘Playing the City’ at Schirn Kunsthalle Frankfurt, curated by Matthias Ulrich in 2009-10. On seventeen consecutive days, several interventions and situations occurred throughout the city of Frankfurt that stimulated the social relations with public space, enticing the audience to a direct involvement with environment and social context. Ulrich writes:

the viewer plays a part in the production of art works and the traditional roles of artist as producer and audience as recipients have largely been dissolved. This has brought forth a variety of forms of interactive, cooperative and interdisciplinary methods that, however, defy a precise classification (Ulrich, 2009).

Citing Bourriaud’s theory of relational aesthetics, he argues that the works in ‘Playing the City’ “offer new forms of communication to the recipients of art, hence relational art acts as an antidote to social alienation” (Ulrich, 2009).

My project Sun Run Sun: Satellite Sounders (2008-9) was selected as part of Ulrich’s exhibition project. Sun Run Sun investigated sonic navigations, furthering my earlier work on satellite GPS navigations, by turning the data from satellites into sound in real time. The Satellite Sounders were a series of hand-held instruments that I custom-built to sonify the movements of the satellites as they came in and out of focus orbiting overhead, listened to on headphones while walking. The experience of the walks that I instigated and led with members of the public, allowed them to walk off by themselves through the city while listening to their connection to orbiting satellites. The contrast in scale combined with the
revealing of the technological process through the use of sound composition, produced an experience that many participants described as completely shifting their perspectives. Akin to Oliveros’ concept of Deep Listening, their active involvement in the work, and the personal experiences that resulted, help realign ideas of audience, performer and composer into a more collaborative and balanced relationship. If there is a score embedded in a work like this, it is not simply to be found in the musical ‘text’ of digital code and sonifications, but in the way the work invites people to act, to navigate and to explore their own relationship to environment through sound and movement, from a new perspective (for a more detailed description of this work see chapter four and the interview “Aiming for Dead Reckoning” (Harris and Dekker, 2008).

2.8 Scorescapes and Composition as Research

By understanding sound and navigation in combination, I arrive at an idea of artistic practice that is embodied, practical and poetic, and which places the participant in the centre of an active experience. This approach literally turns inside-out a conventional concept of musical composition, and this inevitably requires a re-thinking of the phenomenon of the score. Rather than learning to listen in order to organise sounds into final compositions, this approach asks us to use the process of composition in order to learn new ways of listening to sound. Dunn describes this method as inherently unfamiliar to the trained composer, as it generates an argument for musical activity and composition as learning to listen (personal conversation, 2009). It comprises a field in which sound enables a focused presentness that links the internal and the external, joining the individual human consciousness with a larger field of consciousness that is not anthropocentric. Along these lines, La Monte Young realized that “sounds and all other things … were just as important as human beings and that if we could … give ourselves up to them … we enjoyed the possibility of learning something new….” Composition itself becomes a research method. This resonates with LaBelle’s comment that “Composition becomes a form of research conveying cartographic routes in and through relations to place.” (LaBelle, 2008: 198). Scorescapes facilitates and instantiates this notion of composition.