Music and Sonic Art

Music and Sonic Art:

Theories and Practices

Edited by

Mine Doğantan-Dack and John Dack

Cambridge
Scholars
Publishing

Music and Sonic Art: Theories and Practices

Edited by Mine Doğantan-Dack and John Dack

This book first published 2018

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-5275-1353-X
ISBN (13): 978-1-5275-1353-2

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

Figures

Tables

LIST OF EXAMPLES

Examples

ACKNOWLEDGEMENTS

We would like to thank the authors for their contributions to this volume, and for their presentations at the *Music and Sonic Art Conference* held at *Institut für Musikwissenschaft und Musikinformatik* (IMWI), Karlsruhe, in 2012 and 2013, which provided the initial impetus for this project. Special thanks to Professor Thomas Troge, Director of IMWI, who has been co-organising and hosting the *MuSA Conference* since 2011.

FOREWORD

Since its emergence as a distinct contemporary art form in the 1980s (though precedents can be traced to Russolo, Duchamp and the Fluxus "happenings") Sonic Art has evolved to become an academic discipline with a growing body of theoretical and critical discourses that articulate its individual characteristics and perspectives. Although the first book to use the term "Sonic Art" developed from Trevor Wishart's practice as an electroaoustic composer (*On Sonic Art* 1985/1996), a recent tendency can be identified to distance Sonic Art from Music both as an academic discipline as a practice (Voeglin 2010; Gibbs 2007; Licht 2007; LaBelle 2006; Kim-Cohen, 2006). Frequently, Sonic Art is promoted as providing a perspective on sound, hearing and listening that is categorically different from the perspective presented by Music. There is often a social-political agenda to separate Sonic Art practices from historical and contemporary musical practices and an on-going debate whether it should be regarded as in essence a visual arts practice within Fine Art.

We initiated the annual international "Music and Sonic Art: Practice and Theories" conference in 2009 specifically to explore and build on the historical, theoretical and practical connections and similarities between Music and Sonic Art: we wanted to bring a different perspective to the relationship between the two areas, one that thrives on regarding them as displaying continuities and links, along a broad spectrum of hearing and listening practices and art-making that use sound. We noted that research in Music and in Sonic Art are both interdisciplinary by nature, and that the theoretical and aesthetic concerns of contemporary practitioners in the two domains might be more similar than is currently assumed. The nine MuSA conferences we organized since 2009 have indeed confirmed our assumption that practitioners and researchers in Music and Sonic Art share many methodological, creative, theoretical concerns and approaches—that it is infinitely more productive to consider Music and Sonic Art not as clearly delineated, separate disciplines but rather the manifestations of one discipline along a continuous spectrum of theories and practices.

The chapters in this volume all have their origins in presentations given during MuSA 2012 and MuSA 2013. The topics covered include: philosophies of listening and of the art work; the role of the instrument in

performance; critical perspectives on performance; strategies for compositional analysis; collaborative practices; artistic research; technology and creativity; interdisciplinarity; aesthetics and politics. A wide range of methodologies are employed including historical, analytical, critical, philosophical, and artistic approaches. The volume progresses from broadly critical, philosophical and analytical engagements with Music and Sonic Art in the first eight chapters to practice-led or artistic research undertakings in the remaining five chapters. The editors believe that the volume will open up areas of important debate that will be of relevance to all those who work with sound, who want to push the creative boundaries of practices that employ sound, and who wish to propose novel interpretative approaches to studying sound in all its creative manifestations.

References

Gibbs, T. (2007). *The Fundamentals of Sonic Art and Sound Design.* Lausanne: AVA Publishing.

Kim-Cohen, S. (2009). *In the Blink of an Ear—Toward a Non-cochlear Sonic Art*. New York: Continuum

LaBelle, B. (2006). *Background Noise: Perspectives on Sound Art.* New York: Continuum.

Licht, A. (2007). Sound Art: *Beyond Music, Between Categories.* New York: Rizzoli.

Voeglin, S. (2010). *Listening to Noise and Silence: Towards a Philosophy of Sound Art*. New York: Continuum.

Wishart, T. (1985). *On Sonic Art.* Amsterdam: Harwood Academic Publishers.

CHAPTER ONE

BEYOND THE FIXITY FALLACY: RETHINKING THE WORK CONCEPT IN THE AGE OF ELECTRONIC MUSIC

ADAM STANOVIĆ

For almost one hundred years, analytical philosophers have articulated a "musical work" concept. In doing so, scored instrumental works, which continue to occupy the primary point of philosophical interest, have been described as *schematic* or *indeterminate* formations that admit a degree of acceptable variability in performance. The recent development and proliferation of electronic music has inspired a number of contemporary philosophers to rethink this concept; electronic works have been described as *replete* or *fixed* formations that subsequently fail to admit any degree of variability in performance. Unsurprisingly, this turns out to be a fallacy; works of electronic music are not fixed, but equally schematic. To demonstrate this point, they may be placed on a continuum with extremely thick works at one end and extremely thin works at the other. At the thick end of this continuum, one finds multi-channel installations, which—despite the specificity of their various properties—are radically altered by the acoustic influence of listening spaces and the frequent lack of decoding transparency common to all forms of electronic music. At the thin end, one finds algorithmic works in which the vast majority of properties are determined during performance, resulting in an unprecedented degree of instantial novelty. Intervening cases include works for diffusion, tape and instrument, live electronics, and open works in which sounds are entirely determined during a performance. These examples imply that we *should* rethink the work-concept, but only so that we may account for the wildly heterogeneous forms of music making that have emerged in an age of electronic music.

The Fixity Fallacy

In 1931, Roman Ingarden, a well-known Polish philosopher, offered a conception of musical works that continues to inform contemporary thought. In *The Work of Music and the Problem of its Identity*, Ingarden considered the relations that hold between scored, instrumental works and their various performances (1986 [English translation]). He spoke of a *sphere of irrelevance* that exists within such works, noting that they are "not as rigorously defined as one would think [and are] not in every respect univocally determined" (Ingarden 1986: 22-3). With this in mind, he went on to suggest that works of music are schematic formations filled with indeterminacies; performers must make decisions about how to fill in, or concretise, such indeterminacies in order to instantiate specific works in performance. Notions of interpretation and authenticity rest upon this decision-making process, which, in turn, accounts for variations amongst two or more performances of the same work.

Contemporary philosophers may use a range of different terms, but most present a variation on the same theme. For example, Stan Godlovitch and Roger Scruton both suggest that works *underdetermine* their various performances (Godlovitch 1998; Scruton 1999). For Godlovitch, this means that works are essentially frameworks, displaying a structural incompleteness that underpins performance (1998: 86-7). Stephen Davies, Julian Dodd and Andrew Kania arrive at a similar conclusion: works contain *gaps* which are sufficiently large so as to render performances, and therefore particular interpretations, interesting (Davies 2004; Dodd 2007; Kania 2005). Others, such as Susanne Langer and Linda Dusman, claim that works are simply incomplete (Dusman 1994; Langer 1953); for Langer, "performance is the necessary completion of a musical work" (1953: 138).

While the above views perpetuate a relatively uniform conception of musical works, they arrive at such in different ways. For Godlovitch and Kania, gaps in works are an inevitable consequence of musical notation; scores offer an incomplete, schematic prescription for performance, and this explains why two performances of the same work may contain conspicuous differences in spite of the fixity of the notation itself (Godlovitch 1998: 86-8; Kania 2005: 92). For Scruton, performances instantiate works by realising their *salient* features. However, certain features are more salient than others, and this is why we distinguish *versions* of a work, without denying their identity with the original (Scruton 1999: 109-110). Along similar lines, Richard Wollheim suggests that musical works have *properties* that determine, at least in part, the

nature of their various instances such as performances and recordings (1980). Most works have fewer properties than those instances, leading Wollheim to conclude that composers do not necessarily specify everything in advance; intentional variations in specificity allow performers to make decisions that fall in the realm of musical *interpretation* (Wollheim 1980: 82).[1]

The development and proliferation of electronic music has challenged some philosophers to rethink the above conception of works. Evidence for this goes all the way back to Ingarden, who—when considering recording technologies of his time—made the following claim:

> We may use gramophone records or tape-recordings, thus achieving a full definition of a musical work … [to] … insure that, at least in principle, we could have identically sounding works, a state of affairs that would affect crucially our discussion regarding the identity of a musical work. (1986: 117)

With this short statement, Ingarden intentionally cleaves apart the world of musical works: those created using electronic technologies are deemed to be fully determined, or fixed, during the creative process, and therefore distinct from their scored, instrumental counterparts, which are necessarily schematic.

Ingarden did not develop his thesis any further; he was, after all, writing in 1931, and therefore before the birth of electronic music. Even so, a number of contemporary philosophers have presented and defended similar views. For example, in *Musical Performance: A Philosophical Study* (1998), Godlovitch considers the compositional methods employed in the creation of electronic music, and suggests that the resulting works are fully determined, in advance, by the composer. He argues that

> Electronic music is not executed, and so is uninterpretable by an executant. Like bronze, it is cast, and persists historically independent of and uninfluenced by any performance traditions. By fixing the last detail of each sound, nothing remains for any performer to do. (1998: 118)

---

[1] Wollheim makes this point in the following way: "It follows … that anything that can be predicated of a performance of a piece of music can also be predicated of the piece of music itself: to this we must now add that not every property that can be predicated of the former *ipso facto* belongs to the latter. This point is generally covered by saying that in such cases there is essentially an element of interpretation" (1980: 82).

Godlovitch goes on to say that underdetermination, which is common to scored, instrumental works, is not found in the world of electronic music, in which works are necessarily fixed during the act of composition.

Unsurprisingly, there is often an overarching agenda involved in the dissemination of such views, in which both ontological and epistemological conclusions are at the service of a broader ideological thesis. For example, Godlovitch claims that electronic music is not part of any performance tradition. This claim, which focuses upon the ostensible fixity of electronic works, is expressed in ontological terms. However, it serves a broader ideological agenda in which performance, presented as the primary carrier of aesthetic value in the art of music, becomes the preserve of specific musical traditions, particularly those of the Western classical tradition. Similar views have been presented by Kania, who writes that "if electronic works are not counter-examples to a theory of Western classical music as a tradition of works for performance, you might wonder what would qualify as a counter-example" (2005: 34). Along similar lines, Davies argues that "Some kinds of works are created for playback, not performance" and he describes two distinct categories, which he calls *musical works for performance* and *musical works that are not for performance*, situating electronic music firmly in the latter (2004: 20-34). In both of these cases, it is not merely an ontological argument which is on offer, but a value system in which performance, the defining achievement of certain musical cultures, appear to trump the mere playing-back of a fixed work. This view is presented more directly in the writings of Lydia Goehr, who concurs with the notion that works of electronic music are essentially fixed, claiming that "notation and performance can be given a form approximating more closely than ever before to the condition of the work itself" (2007: 267). She suggests that mechanical reproduction, a term which implies a sympathetic nod towards the arguably negative views of Walter Benjamin (2002), has neutralised the work-concept, eliminating romantic associations typically related to our conception of works in general. For Linda Ferguson, the situation is far more extreme: electronic works cannot even be called *music*. Because they are not performed, such works depart from our traditional understanding of this term and tape compositions are therefore "in search of their metaphysics" (Ferguson 1983:1).[2]

[2] Ferguson's view may be aligned with those of Claude Lévi-Strauss (1969) and James Urmson (1976), who both suggest that electronic works are more closely related to painting than to music. A similar position has been offered by Nicholas Wolterstorff (1980), who claims that the use of electronic media associates works with the plastic, concrete arts, such as sculpture and film.

The views outlined above are based on a common assumption: that electronic works are somehow *fixed* during the compositional process. Since most other kinds of works are deemed to be schematic formations that underdetermine their various performances, fixity appears to mark a radical departure from the established norm, thus requiring a rethink of our prevailing conception of musical works. That this view feeds into a plethora of ideological positions is perhaps incidental or, following Richard Sharpe's view, unavoidable; ontology equals ideology (Sharpe 1995). Whilst it is tempting to undertake a lengthy discussion of this point in relation to electronic music, it is beyond the scope of this chapter. Instead, we shall simply note that the underlying ontological argument, which perpetuates the notion of fixity, is based on a fallacy: not only are electronic composers incapable of fixing sounds in all their details, they typically work with performance in mind and, in doing so, defer a degree of decision-making to performers. As a result, it seems reasonable to suggest that they necessarily and intentionally encourage differing degrees of performance variability, which implies that electronic works are, like their scored, instrumental counterparts, equally schematic and indeterminate. To fully understand this point, we must first establish a series of principles that can be used to counter the notion of fixity before considering a range of case studies to demonstrate key points.

Beyond the Fixity Fallacy

It is not difficult to appreciate how and why the notion of fixity developed in the first place. Electronic technologies enable composers to harness and control sonic details that were previously inaccessible; furthermore, musical scores, which typically offer an incomplete, schematic prescription for performance, are rarely used in electronic music making; instead, most composers employ an encoded medium, such as magnetic tape, vinyl disc or, as is now common, CD or DVD, which is subsequently decoded when works are presented in concert. Consequently, electronic works have the potential to display an unprecedented degree of specificity, and it may seem, at least to someone unfamiliar with such music, that everything has been determined in advance. Electronic works appear to be replete with sonic information that can emerge, in full, when presented over headphones, loudspeakers or a loudspeaker array.

The above view may be challenged on a technical level. Composers of electronic music *may* realise their works to an unprecedented degree of specificity. However, the process of decoding an electronic medium is never transparent and, as a result, modifications always occur. The type of

encoded medium employed, the algorithm or method used to access the code, the type of loudspeaker system used to replay the sound, the specific type of loudspeaker employed,[3] the placement and number of loudspeakers, the various objects situated in front of and around the loudspeakers, the position of listeners relative to the loudspeakers and the acoustic qualities of the listening space are amongst the various factors influencing the process of decoding, often radically affecting the experiential quality of the musical materials. In short, decoding, no matter where it takes place, has an impact upon the sounds that emerge and are experienced. With this in mind, Jonty Harrison suggested that "it is the medium which is fixed, not the music" (1999: 1). Similar points have been made by both Robert Wilsmore (2010) and William Echard (2008), who argue that electronic media do not *store* or *fix* sounds—such terms offer a convenient, yet misleading, account of the use and function of such media:

> the concept of storage implies that the same entity can re-appear after a period of absence, whereas I ... hold with the view that repetition as such (unaccompanied by difference) is not possible. Any performance of music, including playing a recording, is an event. If we have heard this music before, then the event might feel like a re-occurrence, as if the same music that happened before is happening again. However, each event is particular and unrepeatable. (Echard 2008: 29)

Echard suggests that "repetition always entails difference" (2008: 22) and concludes that it is not possible to *fix* musical works, even if they are created using electronic media.

Philosophers advocating the notion of fixity may well reject the above point, perhaps arguing that differences, should they occur, are marginal, insignificant, or even irrelevant. Practitioners invariably disagree; since composers of electronic music spend significant lengths of time sculpting, crafting and shaping their chosen sound materials to extremely high degrees of specificity, it is reasonable to assume that modifications or changes resulting from the process of decoding are, at least potentially, highly significant.[4] This point was raised by Denis Smalley, who suggested that acoustical changes, resulting from the specific listening situation, may

[3] Harrison and Wilson have noted that loudspeakers "cannot be treated as strictly neutral and transparent conveyors of fully and ideally realised sound material" (2010: 240).

[4] Jonty Harrison appears to agree with this point: "it seems strange that the acoustic peculiarities of the public playback space itself are frequently given little consideration in [tape playback]" (2000: 1).

have consequences for the perception of musical content and structure, potentially undermining the sonic articulation and clarity considered so important, and dealt with so carefully, by composers (1991: 123). The lack of decoding transparency matters precisely *because* works are so specific.

For some, the above argument will seem fairly weak; performances *may* be differentiated by certain acoustical changes which *may*, in turn, affect the character of a given work. However, such changes do not prove that electronic works contain gaps or indeterminacies; as should be clear from the discussion above, schematisation must be *intentional* and, as a result, the notion of fixity can only be countered if one is able to demonstrate that works and, by extension, their composers, *intentionally* account for such changes. This point is relatively easy to demonstrate; as we shall discover, most composers of electronic music do account for such changes and they often make compositional decisions with them in mind. Furthermore, it is not merely acoustical changes that are considered during the act of composition; most works of electronic music pre-empt acts of performance and interpretation, by employing an increasingly diverse range of both human and technological agents. As such, variability comes in different forms and scales. To demonstrate this point, we shall employ some terminology, and an associated conceptual framework, proposed by philosopher Stephen Davies. This will enable us to compare and contrast works of electronic music, and thereby identify and discuss degrees of variability that emerge in performance. This is not to suggest that performance, in the context of electronic music, necessarily corresponds with established notions of instrumentation, human agency, virtuosity, skill, and the like. Rather, it is to suggest that the underlying ontological relationship, between works and their performances, is remarkably similar, if not identical, to those found elsewhere. In short, electronic music is ontologically similar to all forms of music that are intended for performance.

In *Musical Works and Performances: A Philosophical Exploration*, Davies argues that works for performance are "always thinner in properties than any of their accurate renditions" (2004: 20). Nevertheless, he maintains that works vary in the extent, depth and saturation of their *properties* and, with this in mind, places them on a continuum with *thin* works at one end and *thick* works at the other:

> If it is thin, ... most of the qualities of a performance are aspects of the performer's interpretation, not of the work as such. The thinner they are, the freer is the performer to control aspects of the performance. Pieces specified only as a melody and chord sequence are thin. Some tin pan alley songs are of this kind. For them, the player creates the larger structure of the performance by deciding on the number of repeats, variations,

> elaborations, links and the like. … By contrast, if the work is thick, a great many of the properties heard in a performance are crucial to its identity and must be reproduced in a fully faithful rendition of the work. The thicker the work, the more the composer controls the sonic detail of its accurate instances. Igor Stravinsky's *The Rite of Spring* (1913) is a thick work by comparison with Mozart's *Divertimento in D, K. 136*. Thicker yet is Edgard Varèse's *Déserts* (1954) for tape, wind, percussion, and piano, because the contribution made by the tape is both essential to the work's identity and extremely specific. (Davies 2004: 20)

It is clear from the above statement that Davies' thick-thin thesis does not seek to quantify the various sounds occurring during a given performance: "performances of thin works are as replete with acoustic information as are those of thick works, but, for performances of thin works, more of this information is referable to the performance than to the work" (Davies 2004: 20). Thus, large orchestral works are not necessarily thicker than solo piano works; one must discover how many of the properties encountered in performance have been predetermined in order to assess the relative thickness of a given work.

Davies' thick-thin thesis is designed to account for scored, instrumental works. However, his discussion of Edgard Varèse's *Déserts* demonstrates that a broader application is possible. Since the basic argument of this chapter foregrounds variability in electronic works, Davies' terms, and the associated conception of works, offer an appropriate means of discussing and considering how electronic works vary in the extent, depth and saturation of their various properties.[5] Accordingly, we shall now consider six case studies and, in doing so, locate works of electronic music on a continuum, which extends, in both directions, beyond that described by Davies: at the thick end one finds multi-channel installations and at the thin end are algorithmic compositions, with numerous intervening cases between these polarities. These case-studies are not intended to showcase the entire spectrum of electronic music making. Instead, they serve to demonstrate some of the manifold ways in which works potentially underdetermine their various instances.

[5] Davies refuses to discuss electronic music using the same terms, and advocates the notion of fixity, arguing that electronic works are at the level of acoustic detail that technologies permit: "Because an electronic work is sounded directly when it is instanced, the properties defining it are at the same level of detail as those characterizing performances, whereas the work-defining properties of pieces created for performance are not so fine-grained" (2004: 27).

The Forty Part Motet

If any form of electronic music can be described as *thick*, it is multi-channel installations, as found in the electroacoustic tradition. Such works are generally composed using a fixed medium, and are designed to be presented over a specific number of loudspeakers.[6] In such cases, composers do not merely realise sound materials to an unprecedented degree of specificity; they also determine particular spatial placements, movements and trajectories, as permitted by multi-channel encoding. Despite this, it is common to find that installations admit a degree of flexibility in their instantiation, with composers intentionally thinning the spatial details of their compositions in order to account for the acoustic influence of different listening spaces. To demonstrate this point, we shall briefly consider Janet Cardiff's *The Forty Part Motet* (2001).

Cardiff's installation, a deconstruction of Thomas Tallis' sixteenth-century choral work *Spem in Alium*, presents forty separately recorded voices over forty individual speakers. The various loudspeakers are then distributed around a listening space, enabling solo voices to be heard close to individual speakers, and novel mixes, or clusters, of voices to be encountered at a distance. Consequently, space is aesthetically central: voices merge and blend according to the acoustic qualities of the listening space and the relative position of each listener, who is encouraged to move throughout the listening space, around the various loudspeakers, to create their own mix of the music whilst becoming intimately connected with the polyphonic voices.

Despite the centrality of space, Cardiff's work is not created with any *particular* space in mind. This is because, like the vast majority of multi-channel installations, it strives for a degree of instantial flexibility, as is immediately apparent from the extensive list of public presentations which the work has received; over the past ten years, presentations have taken place in numerous cathedrals, churches, art galleries, exhibition halls and arts centres, amongst others. Clearly, such flexibility must be predetermined in order for a work to be equally and ideally successful in numerous different spaces, despite differences in terms of their size, construction and acoustic. In this case, the spatial, dynamic and reverberant properties in this work are intentionally thin; the forty different loudspeakers are arranged into five groups of eight, but beyond this, they may be configured according to the unique characteristics of the listening space, thus enabling

[6] Eight, sixteen or twenty-four loudspeakers are relatively standard since, amongst other factors, these correspond to the number of audio channels on commercially available audio interfaces

each public presentation to take advantage of the unique acoustic of the given venue. Such an advantage may be further enhanced through control over dynamic levels, which, given the lack of artificial reverberation composed into the various channels, serves to establish different acoustic colourations, ensuring that each presentation is unique. Thus, in a sense, *The Forty Part Motet* performs the space.

The desire for instantial flexibility *always* requires the composer to consider the transference of their work from a composition space, typically a studio, to an unknown installation venue. Transference always affects the resulting sound materials, since there is often a significant mismatch between the two spaces. Venues, by virtue of the requirement to host an audience, are often much larger than composition studios and this often means that it is difficult, if not impossible, to replicate the conditions under which a composition was created; this becomes increasingly pronounced when spatial features are aesthetically central, as with most multi-channel installations. This point may be demonstrated by reference to Smalley's notion of spatial consonance and dissonance (Smalley 1991). In "Spatial Experience in Electro-Acoustic Music", Smalley introduces the term *composed space* to describe the totality of materials, and their associated structural functions, found in electronic works (1991: 123). The composed space is embedded in the musical content of a work, yet this is typically transferred to a *listening space*, such as a concert hall, which usually lies outside the composer's control. As a result, the listener is confronted with what Smalley refers to as a "superimposed space"—a nesting of the composed space within the listening space (ibid.).

Smalley suggests that the superimposition process does not necessarily have a negative impact upon a given instantiation of a work; to demonstrate this point, he introduces the terms *spatial consonance* and *spatial dissonance* as a means of discussing the relationship between the composed space and the listening space (ibid.). In some cases, the spatial images embedded in works are consonant with the listening space. However, this is not always the case; an intimate composed space presented within a large listening space may result in a loss of intimacy, potentially obstructing the listener's apprehension of the musical content, resulting in spatial images that are dissonant (ibid.). Smalley concludes by noting that the issue of consonant and dissonant spaces is not always acknowledged by composers and performers:

> Surprisingly there are many composers who remain ignorant of superimposed space and the potential of diffused space, both because they lack sufficient direct comparative experience, but more seriously because

> they possess a fixed "image" of their music as conceived and perceived within the composed space of recorded formats. (Smalley 1991: 124)

Indeed, some composers advocate the creation of site-specific, multi-channel installations; this enables the creation of spatial images that are not transferable between locations. For example, in "Music, Space and Theatre: Site-specific Approaches to Multichannel Spatialisation" (2010) Stefani and Lauke make the following point:

> When a composer is fortunate enough to work in the space where the music will be performed, from the beginning of a project, the space becomes embedded within the compositional philosophy and the development of techniques. The composer is able to direct where loudspeakers will be positioned and can access the acoustic properties of the space as parameters within a composition, by creating a diffusion setup which can be used to excite modes at specific frequencies within the space, or which can be used to provide dramatic contrasts between dry and more reverberant (or distant/off-stage) sounds. There may also be opportunities to plan for sounds which appear from above or below the audience, or from hidden locations within the listening space. In this way, the listening space becomes the central feature. (Stefani and Lauke 2010: 251)

Stefani and Lauke are right to identify some of the many advantages offered by site-specific composition. However, there are also drawbacks. Firstly, access to specific spaces is extremely difficult to guarantee, and often impossible if the compositional process is somewhat protracted. Stefani and Lauke accept this point, but suggest that "even one or two days of working in a space with a customisable diffusion system should make a significant difference to the quality of musical results" (2010: 252). This may well be true. However, unless the compositional process is extremely short, composers must still make compositional decisions with the listening space *in mind*: in this sense, they still make works which are necessarily thinner than their instances. Ultimately, multi-channel installations are, on the whole, more closely related to Cardiff's *The Forty Part Motet*; works are ontologically thinner than their various instances, since they are composed with spatial flexibility as a central criterion during the compositional process.

Hot Air

Acousmatic works are a step closer to the thin end of Davies' thick-thin continuum. This is because the vast majority of acousmatic works are intended to be diffused in concert. Sound diffusion, which involves "the

real-time (usually manual) control of the relative levels and spatial deployment *during performance*" (Harrison 1999), requires both a bespoke diffusion system[7] and a diffuser or performer. Sound diffusion, a form of performance practice which can be traced back to the early days of musique concrète, initially emerged as a means of controlling dynamic levels and spatial placement within concert halls (Dack 2001). As such, it was primarily *corrective*, serving to present a sound-field similar to that heard during the compositional process. Thus, by raising and lowering the faders on the mixing desk, the performer may correct dynamic levels that are otherwise compromised by the concert situation or, by activating a large number of loudspeakers, ensure that all members of the audience receive a spatial image that is more or less consistent with that intended by the composer.

Despite the above, sound diffusion is no longer merely corrective; rather than simply counteracting what is compromised by the listening conditions of a public auditorium, the performer may take what is known to be there on the fixed medium as point of departure. Whilst this approach was probably not considered by early diffusion practitioners, who were invariably more concerned with corrective acts of diffusion, it has become established practice within the field of acousmatic musical performance, and frequently described as a form of performance interpretation (Dack 2001; Harrison 1998, 1999). In this context, acts of sound diffusion may be used to further dramatise, enhance, enlarge, exaggerate, expand and/or spatialise what is on the fixed medium. In such cases, one moves away from the merely *corrective* towards the *expressive*. For example, the performer may situate or place sound materials at various points within the performance space, using any number of loudspeakers from a single stereo pair to the full loudspeaker array, thus creating the impression that sounds are situated at particular points or areas within the listening space. This may enable the sounds to create the impression of intimacy, immensity,

[7] Most diffusion systems link a decoding device, such as a CD or DVD player, to a loudspeaker array. The number of loudspeakers in the array is often greater than the number of tracks on the "tape" and will be fixed in a certain formation for the duration of a given performance. The decoding device is used to send a signal to the array via a control interface, such as a mixing desk, which is typically the point of agential contact; a performer engages directly with the control interface and is able to regulate the level of the signal being sent from the decoding device to the loudspeaker array. This typically involves the real-time movement of faders on a mixing desk, enabling the performer to increase or decrease the amount of signal being sent from the decoding device to any given loudspeaker, or set of loudspeakers, within the array.

elevation, distance, surprise, and so on. Furthermore, acts of sound diffusion often involve the movement of sound materials: when the performer increases the signal sent to one or more set(s) of loudspeakers whilst decreasing the signal of others, this creates the impression that the sound moves from one to the other. In doing so, one may employ longitudinal movements, lateral movements, diagonal movements, circular movements, vertical movements, or combinations thereof.

Acousmatic composers, particularly those familiar with the practice of sound diffusion, often consider the various possibilities that diffusion presents during the creation of their works. In such cases, composers make compositional decisions with these various possibilities in mind, and in this sense their works presuppose acts of sound diffusion. The degree and nature of these presupposed acts will vary depending upon the work in question, and may be more or less crystallised in the mind of the composer. However, in all such cases, works created with diffusion in mind are thinner than their instances, with the former underdetermining the concrete details of the latter. This point is supported by Jonty Harrison who, in "Sound, Space, Sculpture: Some Thoughts on the 'What', 'How' and 'Why' of Sound Diffusion" (1998), makes the following claim:

> [Acousmatic music] grows, mutates, evolves, permitting a certain fluidity and flexibility in the final aural manifestation of the sound (along the lines of Varèse's thinking on the development of crystals), thereby permitting diffusion the possibility of further expanding the underlying argument. (1998: 125)

Although he does not use the term *thin,* Harrison clearly has something similar in mind when he writes:

> The simple fact is: much electroacoustic music, particularly that in the musique concrète and acousmatic tradition is intended to be diffused, has the variability of performance underlying its aesthetic base. (1998: 124)

In this context, the term *variability* is particularly significant, since it implies that acousmatic works are not replete or fixed entities, but schematic, indeterminate formations that may be concretised in a variety of different ways. To demonstrate this point, we shall briefly consider comments that Harrison made about the composition of *Hot Air* (1995)—a fixed-medium acousmatic work that includes a range of referential, mimetic and environmental recordings, connected by association with balloons and accompanying conceptions about air. Unusually, the piece

has two different stereo versions. Harrison explained the development of these two versions as follows:

> I knew that the work would be premiered on the GRM's Acousmonium on the deep stage of the Salle Olivier Messiaen. The piece contains a very long "Mediterranean nightscape" section which recedes very slowly into the distance, to the vanishing point... . I knew that I would be able to sustain this structural effect in diffusion, but when I came to release the work on CD, I shortened this section, feeling it was too long for a personal or domestic listening context, without the benefits of diffusion and real loudspeakers in distant positions. (2011: 6)

The difference between the two versions of *Hot Air* may reveal certain aspects of Harrison's performance related intentions and may, as a result, serve as a model for a performance. However, it also demonstrates the extent to which sound diffusion was considered during the act of composition. Harrison clearly worked with a range of movements and placements in mind, which—although not composed into the work—are intended to be realised during performance. Recognising that diffusion systems differ, often substantially, between venues, Harrison is prepared to adapt instantiations accordingly. His work is subsequently thin.

Clarinet Threads

Electronic media may be used in conjunction with acoustic instruments, leading to works which are, despite the somewhat anachronistic term, referred to as *tape and instrument.* Such works take another step towards the thin end of Davies' continuum, introducing the same kinds of schematic indeterminacies common to all forms of instrumental music. Davies is certainly aware of this. As we have already seen, he locates Varèse's *Déserts* on his continuum, albeit at the thick end, before making the following claim:

> works for performance range from those in which the performer plays everything to those in which the performer's part is small, while the bulk of the work is replayed from disc or tape without being performed. The more minimal the input required from the performer, the thicker with constitutive properties does the mixed-media work become. (2004: 28-9)

In fact, the situation is much more complex than Davies suggests; in order to establish a clear distinction between the *fixed* tape part and the *live* performance part, Davies overlooks various interactions that necessarily

hold between the two. To demonstrate this point, we shall briefly consider *Clarinet Threads* (1985), a tape and instrument piece composed by Denis Smalley.

Clarinet Threads is written for a clarinet in B-flat and electroacoustic sounds. The work is scored, and foregrounds various extended instrumental techniques which are augmented by the tape part. Acoustic clarinet sounds are captured by four microphones, enabling sounds that might not otherwise be heard to become part of the performance. Thus, as Smalley points out, amplification is compositionally essential (in Austin 2000: 15). Amplified sounds are subsequently mixed with the tape parts and presented through the same set of loudspeakers. This enables Smalley to realise one of the basic themes of the piece: the score instructs the performer to stand at some considerable distance from the audience so that the direct acoustic sound of the clarinet does not overpower the amplified sound. In the programme notes Smalley writes: "The clarinet is threaded through the electroacoustic fabric, sometimes merged with it, sometimes surfacing in a more soloistic role" (1985/1992). Acts of sound diffusion enable projection around and behind audience, further enhancing the connections that hold between the live clarinet and electroacoustic sounds.

When discussing the above piece, the term *tape and instrument* is clearly misleading; *Clarinet Threads* does not offer a simple dichotomy, but an inseparable binding of the live, the amplified and the recorded. Accordingly, the entire work, as opposed to just the instrumental part, is thin; given the propensity towards extended instrumental techniques, the instrumental part anticipates degrees of variability in performance, as may be found in all forms of scored, instrumental music. Even so, variability does not stop with the live instrument: amplification, which captures microscopic sounds, serves to produce novel interactions that cannot be anticipated in advance and, as a result, variability emanates from the loudspeakers. Beyond this, the work affords a further degree of variability in being intended for live diffusion. While it may be possible to predetermine certain acts of diffusion, the diffuser must respond to whatever emerges during the performance; given the potential for novel interactions between the amplified clarinet and the electroacoustic sounds, acts of diffusion cannot be determined in full and are, as a direct consequence, necessarily variable.

Laminate

It is extremely difficult to generalise about live electronic works, since they comprise a class distinguished by, amongst other things, exceptionally

diverse forms of music making. Despite this, such music has the potential to display significant degrees of thinness, in which most of the qualities of a given performance are aspects of the performer's interpretation, rather than of an associated work. Thus, compositions such as Mark Summers' *Laminate* (2013) must be located towards the thin end of Davies' thick-thin continuum.

The overall form of *Laminate* is largely predetermined; although the duration of a given performance is variable, being decided upon in advance by a performer, it takes the form of a drawn-out crescendo which starts in relative silence before building to a noise-based climax and terminating abruptly. Although it has been most regularly performed by Summers, who plays the viola de gamba, any instrument may be selected for a given performance. The work is not scored but issued in the form of a short set of instructions, written in relatively brief prose. These instructions require the performer to improvise, slowly at first, using short bursts of sound. The improvisation is then recorded, via a microphone, and segmented into short chunks of audio; these are subsequently played back into the concert space over a loudspeaker system. At first, the chunks are played back with an eleven-second delay. However, as the performance progresses the delay time is gradually reduced, the chunks become increasingly numerous and their length is truncated. The performer continues to improvise throughout, adding additional layers of materials which are, once again, recorded, segmented and played back into the concert space via the same delay. As a result of this process, the form of the work is relatively uniform; initial acts of improvisation are ultimately subsumed into a continuous texture which becomes both louder and more detailed as the performance develops and the crescendo builds. The instructions issued to the performer suggest nothing more than the use of noise-based materials, free from pitch or rhythmic articulation, preferably utilising the instrument's entire range. In theory, this prevents the listener from identifying the technologically-mediated process underlying the work, allowing the crescendo to be heard as a smooth continuum that gradually becomes saturated with a palette of diverse materials.

There is a striking difference that separates *Laminate* from the works discussed above; the composer has only loosely prescribed the kinds of sound materials which may ideally constitute a given performance. As such, the work itself is akin to a structural framework, in which the player is free to stamp their authority upon each individual instantiation, controlling, to a large degree, the sonic character of each and every performance through their acts of improvisation and interpretation. In response to this, one might understandably argue that we are no longer

dealing with a musical work, but a form of free improvisation in which the performer has substantial autonomy relative to their performative acts. Such an argument could certainly be elaborated and, perhaps, rationalised. However, it would be at odds with our prevailing conceptions of works, which have typically highlighted multi-instantiability as a primary condition; as Roger Scruton pointed out in his well-known chapter on musical ontology, our conception of works is invoked whenever we "experience the thing listened to as 'the same again'" (1999: 98). In the current context, it is not those sound materials (improvised or otherwise) which are experienced as "the same again", but the overarching structural framework which the performer fills with sound. Whilst this conclusion may affront ontological theories that foreground historical, and therefore contextual, conceptions of works, it is entirely consistent with the analytical approach offered above; as Davies points out: "Works can be long or short, simple or complex, vocal or purely instrumental, highly detailed in their determinative characteristics or merely skeletal" (2004: 19). Thus, in the case of *Laminate* we have a highly skeletal work that is essentially thin; there are relatively few constitutive properties, with most restricted to the broader formal arrangement of materials which emerge out of improvisatory acts. This observation requires that we broaden our conception of works to account for electronic music that, whilst admitting multi-instantiability, may be constituted in vastly different ways.

Transitory States

Once again, Adrian Moore's *Transitory States* (2008) moves a step further away from the work concept, towards music making *simpliciter*.[8] Whilst probing the intersection of free improvisation and electroacoustic composition, Moore designed a system in which pre-composed sound materials may be accessed, transformed and structured in real-time during a performance. In doing so, he produced an extremely thin work which, like Summer's *Laminate*, is essentially a structural framework, producing a high degree of instantial novelty. In this case, however, specific sound materials *have* been determined, but the framework itself is no longer sequential. *Transitory States* involves thirteen pre-composed sounds spread across an electronic graphics tablet, thus offering the entire structural

[8] This term is borrowed from Davies: "In almost all cultures at all times, one encounters what I call music making *simpliciter*: spontaneous and unregulated playings that are not of works. Extended improvisations are of this kind, as are many doodlings and finger exercises" (2004: 11).

framework simultaneously; all of the thirteen sounds may be accessed and transformed using a controller on the tablet, and this allows the performer to structure such sounds as they see fit, during a given performance.

It is tempting to view Moore's tablet as an instrument rather than a work; one must learn to "play" the tablet in order to perform, yet Moore has not issued the kind of instructions or prescriptive recommendations that one might expect to find associated with a composed work. Despite this, the amount of pre-composition involved in the production of sound materials dictates a broader aesthetic preoccupation characteristic of the acousmatic tradition, and Moore's own compositional voice, which is undeniably recognisable, is always present. Moore also encourages the formulation of a structural plan which underpins acts of performance. His own plan is outlined as follows:

> Recent performances have followed a semi-structured plan which begins by defining the working area of the tablet with gestures from bottom-left to top-right, creating a particular sound object. Similar gestures, lingering at points along this trajectory allow for quite audible but subtle development. At one point the performer is directed to move the pen continuously in a small area of the tablet, so creating an undulating texture. This is then sampled and looped allowing the performer to explore other areas of the tablet (or to rest). Clearly, we must question whether sampling into a buffer during performance is worth the musical "wait" or whether this also is something that should be pre-composed. The ability to sample into a buffer is required if interesting improvisation is to be extended. However, if a compositional plan is to be adhered to, perhaps a greater palette of pre-composed materials is required (with different methods of selection and performance). (2008: 2)

Consequently, it seems reasonable to describe Moore's *Transitory States* as a thin work rather than a purely improvised performance: the composer has determined many of the materials heard in concert, but most qualities of a performance are aspects of the performer's interpretation, rather than of the work.

Livecell

At the extremely thin end of Davies' continuum, one finds algorithmic works. It is, once again, difficult to generalise about such works because, as a class, they are also characterised by extreme heterogeneity. Even so, most display unprecedented degrees of schematisation. To demonstrate this point, we shall consider *Livecell* (2010)—an interactive, generative work by Kingsley Ash and Nikos Stavropoulos. This work is thinner than