The electroacoustic harpsichord

Simon Emmerson

The Electroacoustic Harpsichord

Simon Emmerson

This article examines six works from the repertory for harpsichord and electronics by François-Bernard Mâche, Kaija Saariaho, Roderick de Man, Mike Vaughan, Elsa Justel and Simon Emmerson. The author defines 'local' considerations which seek to extend but not to break the live instrumental presence, while 'field' transformations place these in a landscape or environment. The various possibilities of local and field combinations between the two poles of live harpsichord and electronics are examined and contrasted between the works. A wide variety of possibilities is illustrated to suggest ways of composing for such mixed resources. The response of composers to the sound morphology of the harpsichord is also thereby contrasted.

KEY WORDS: electroacoustic, electronic transformation, live/electronic relationship, harpsichord sound morphology

Introduction: the harpsichord with electronics

Any instrument has a cultural history within which it lives and which it carries around like a tortoise its shell, its mechanism the result of a process of evolution resulting from a complex of forces, musical, social and technological. Perhaps none more obviously so than the harpsichord, revived in the 20th century with the rise of our museum culture and its search for an elusive 'authenticity'. This gives it an air of 'otherness' — 'both near and far at once' — a double attribute which (I shall argue) has been grasped and exploited by those adding a dimension to it through the use of electronics.

The term 'electronics' can mean many things. Firstly we may distinguish works with electroacoustic sounds on tape or other fixed media[1] from those using live electronics where the sound derives from real-time signal processing of the harpsichord's sounds. Especially for the harpsichord, the simple act of amplification is a form of this latter type and we shall discuss the role of this and all aspects of sound projection.

To this end six works will be examined. François-Bernard Mâche's *Korwar* (1972), Kaija Saariaho's *Jardin Secret II* (1984–6), Roderik de Man's *Chordis Canam* (1989), Mike Vaughan's *Crosscurrents* (version with tape: 1990) and Elsa Justel's *La Ventana Deshabitada* (1990–92) combine amplified harpsichord with tape while the author's own *Points of Departure* (1993) is entirely live-electronic, requiring an active second performer who continually manipulates two signal processing devices.

All works should be considered as necessarily involving an additional performer responsible for sound diffusion. While in many ways contrasting, these works all have in common a preoccupation with the simple fact of the harpsichord's unique sound: its acute attack and relatively short-lived decay. Whether it is an apparent desire to extend the sounds, to exploit and project the resonances of the instrument or to amplify in order to place on an 'equal' footing with more complex sounds, there is no avoiding some engagement with this unique *morphology*.

This article will not be a traditional blow by blow analysis of these works. I wish to explore the different *relationships* of instrument to electronic sound using basic concepts I have developed in earlier writings (Emmerson 1994a, 1994b, 1995). The essence of the argument must be summarised briefly. The use of live instruments with electronics remains to a great extent a problem genre. Composers who are adept at tape composition find it hard to reconcile the malleability and almost infinite possible variety of sounds they usually employ on tape with the relative fixity of the instrument in space and usually in timbre. The instrument often does not blend, sitting uneasily in its brave new soundworld, sometimes straightjacketed into stopwatch time and deprived of any real expressivity.

To help us unravel some of these difficulties I have tried to establish the notion of *local* and *field* functions. Local functions pertain to the

---

1. Michel Chion has coined the phrase *sons fixées* for this genre. Tape may be replaced by disc or other storage media. The essential point is that there is minimal control over the sounds which have been 'fixed' in advance. We may influence their perception, however, through the art of diffusion (see below in main text).

instrument, the essential 'liveness' of the performance, flowing from its being fixed centre stage. That is not to say that all the sounds are produced in real-time. We may create a tape part whose sounds relate directly to the instrument, its performance gestures and sound world. The *appearance* of a musical relationship is all that is required. Field functions place the instrument in a context or landscape which can be antagonistic or supportive, and can be nearly empty or full of other 'actors'. Local and field functions can overlap, be ambiguous, transform into each other, dominate or be subservient; yet I believe them to be inherently part of a humanistic analysis of the genre.

François-Bernard Mâche: Korwar

Korwar must have a special position in any discussion of this repertoire. While by no means the first to combine harpsichord and electronics,[2] it remains one of the earliest to have made a lasting and continuing impression. In the 1960s the move by several factions within French electroacoustic music to reclaim the 'recognisable' in environmental sounds (and not merely to use them as 'abstract' sound material), allowed Mâche to develop the idea of *zoomusicology*. He has brought to musicians' attention the wealth of research on animal song (and other sound) production as a rich source of inspiration.[3] Figure 1 shows a 'trio' between boar (*verrat*) and wild boar (*sanglier*) on tape with the harpsichord interacting.

The 'field' to which Mâche refers in *Korwar* is possibly the widest imaginable and looks directly back at one of the deep roots of musical gesture:

> *Korwar* is an attempt at a response to the nature-culture dilemma. The role of the harpsichord is neither to be opposed to the recorded sounds nor to comment on them, but most frequently, 'plated' onto them, to signify, itself, this instrument of charged heredity, the profound identity between musical gesture, animal cry and the palpitations of the elements. (Mâche cited in ten Hoopen & Landy, 1992, p. 86)

In this sense the 'local' instrument quite literally dissolves into the field. But in situations such as this it would be quite logical to view the process

---

2. It featured, for example, in the earliest *opéra concret*, the ill-fated *Orphée 53* (1953) by Pierre Schaeffer and Pierre Henry.

3. A broader word than 'material', Mâche uses many of the timbral, rhythmic and even 'social' relationships embodied in the animal sound transcriptions and recordings. See Mâche (1992).

Figure 1 Mâche, *Korwar*: trio of harpsichord, boar and wild boar. Reproduced by permission of Editions Durand S.A., Paris/United Music Publishers Ltd.

as exactly the opposite: the field has dissolved into the harpsichord. In that the specific sounds in this piece, while sometimes 'loud', are hardly on a vast scale, this integration suggests a sensitive and intimate contemplation of the 'dilemma' referred to by the composer.

There are two types of mimesis involved in this (in Mâche's word) 'modelling' of the natural into the cultural domain of the concert work. One is spectral, the attempt to imitate as closely as possible the sound of the natural (animal or elemental) phenomenon; the other is syntactic, the imitation of rhythm, dynamic curve, emphasis and contour. The two are frequently combined in this work.

There is sometimes perfect coordination and duplication of the rhythms on the tape, sometimes a tightly defined rhythmic dialogue,[4] which Martha Graboscz aptly describes as 'gesticulating, conversational nature' (Grabóscz, 1993, pp. 155 and 158–9). This puts great demands on the performer who must at many points synchronise perfectly with the sounds on tape (Figure 2 gives an example). Perhaps Elisabeth Chojnacka's comment on *Korwar* is idealised but telling:

[. . .] a good performance should make the distinction between the natural sound such as that of a bird and the 'cultural' sound of its imitator — the instrument — impossible. (Chojnacka, 1992, p. 73)

Mâche has chosen sounds from three of the four classical elements or animals associated with them, for example: Earth (wild boar), Air (bird calls, wings rustling), Water (whale, shrimp, rain).[5] Each is in some way the subject of the harpsichord's mimetic imitation; the instrument becomes a source of pitched and unpitched sound complexes.

The role of the sound diffusion is to assist in this integration. Mâche, however, is most clear in the notes to the score that the two elements (the 'natural' tape and the 'cultural' harpsichord sound) should not be mixed and that the instrumental sound's amplification be confined to loudspeakers in its close vicinity.[6] Thus we are always aware of the dilemma posed by the composer and his attempt to build bridges across the apparent divide. The performer must match as nearly as possible many of the sounds on the tape — merely executing the verbal instructions in

---

4. While sometimes consisting of two layers, instrument and single 'natural' sound, there are several sections built on more complex and polyphonic superpositions.

5. Other of Mâche's works make reference to Fire (*Terre de Feu* (tape, 1963) most notably combining water and fire sounds (see ten Hoopen & Landy (1992) pp. 80–84).

6. He specifies one microphone feeding one loudspeaker placed directly behind the harpsichord with an option to double this up still keeping the speakers close to the instrument.

Figure 2 Mâche, *Korwar*: strict coordination of harpsichord and starling. Reproduced by permission of Editions Durand S.A., Paris/United Music Publishers Ltd.

the score (which give broad indications to produce noises from the action, pedals etc.) would probably be largely inadequate. The pitched material varies from the exactly defined to the cluster. As in some other areas of the French post-*concrète* tradition pitch has a somewhat ambiguous role in this work. On the one hand there are moments where the pitches notated are an attempt at the exact imitations discussed above, at other times (most especially in the opening *Xhosa* language section) Mâche has derived a model which maps vowels to pitches to create what he describes as an 'arbitrary syllabary' which combines with the original to form 'a new hybrid' (Mâche 1992, pp. 185–188).[7]

7. While the *syntactic* mimesis remains very much intact with exact coordination of the elements, the pitch/vowel mapping is harder to perceive if not learnt in advance!

Kaija Saariaho: Jardin Secret II

In Kaija Saariaho's *Jardin Secret II* the role of the tape is as a much more intimate extension of the 'space' of the harpsichord. There are two types of material on the tape, sounds derived from the harpsichord itself and vocal sounds.

The vocal materials are whispered or murmured 'breathy' sounds. These are further developed into two main sound types: textures or drones, varying from unpitched noise to semi-pitched noise bands; and also short 'breath' clusters which are articulated rhythmically (usually in synchrony or hocketing with harpsichord chordal material). The harpsichord sounds used on tape tend also towards vagueness of pitch: material is mostly derived from trills, clusters and glissandos across the strings.

In this work 'local' and 'field' considerations are closely woven together, material moving seemlessly between the two. Thus there is a strong surreal element in this landscape that needs careful performance to convey, the elements continually intersect, blend and separate. At one moment the focus of attention is firmly with the solo instrument, at another an instant later the environment has enveloped (or extended in a surreal way) the harpsichord sound — usually with vocal material. Figure 3 shows some of these ideas at work: the tape moves from harspichord trills to whispering, the composer's ideal balance of live to tape is indicated below the stave.

In the opening section, for example, the harpsichord extends out from itself into the dreamscape: local attractions spread out into the field. The tape builds progressively and quickly out from the live solo trill line into denser textures and the first introduction of the whispering vocal/chordal texture. Indeed this field of intimate close voices is usually an ambiguous one as it appears at once outside us yet is (in fact) inside — a mindscape hinting at the 'intimate immensity' described so well by Gaston Bachelard (1964 chapter 8).

The construction of the work in a sequence of blocks, permutes and juxtaposes the elements introduced in the first section: trills are used both as independent textures and as backbones for polyrhythmic 'morse code' materials (from single notes to chords); the chordal material synchronised to a greater or lesser extent with the vocal material on tape becomes an increasingly independent element. In the first part of the work the pace is relieved only rarely with aperiodic meditative material usually combined with sustained tape material. These two elements contribute increasingly to a fragmentation, dissipation and final repose.

This 'playing with perspective' is very much in line with Saariaho's overall concerns in using electronics in this period. *Jardin Secret II* was

Figure 3 Saariaho, *Jardin Secret II*: transformation of environment (local to field). © Copyright 1987 Edition Wilhelm Hansen AS, Copenhagen. Printed with permission

written at almost exactly the same time (1984–86) as *Lichtbogen* (for nine instruments and live electronics, 1985–86). The live electronics in this latter work focus on the progressive 'removal' of recognisable instrumental sounds which acts to bond textures together and to create subtly distorted perspectives. In Emmerson (1998) I delineate four keywords for this (live electronic) process: *foregrounding, estrangement, homogenisation* and *rebalancing*. Almost exactly the same musical functions exist for a mixed solo instrument and tape work such as *Jardin Secret II* except that effectively foregrounding and rebalancing amount to the same thing. They are, however, fulfilled in a somewhat different way.[8]

Foregrounding (and *rebalancing*): the forward projection of an instrument, removed from its standard (or expected) place on the sound stage. This can apply not just to the live instrument but to its pre-recorded alter ego on tape. We may include here, too, amplification of recognisably 'small' sounds from the live instrument or pre-recorded materials projected on tape. This happens most obviously in the opening section, but also the projection (on tape) of glissandos from inside the instrument.

Estrangement: the apparent detachment of the sound from its source with slight (usually ambiguous) transformation of its timbre which remains relatable to the original. In this work this happens most noticeably with certain textures on tape, other harpsichord-related 'noises', and (usually bass) drone materials.

Homogenisation: the application of electroacoustic transformation to a group of sounds which results in their becoming indistinguishable and inseparable. For a mixed work such as *Jardin Secret II* this tends only to be possible when harpsichord material is very similar both live and on tape.[9] There are, of course, many such instances in this work. But the combination of chord material and breath sounds suggests at times an attempt to blend and create a unified more complex texture — which is extremely difficult in practice for the performer and sound projectionist.

8. The four terms pertained to an ensemble work with live electronics within which *foregrounding* referred to an individual line and *re-balancing* to changes for groups of instruments; in the case of a solo work with tape these two functions have an essentially different realisation technique while remaining related to those for an ensemble at a musical level.

9. Its use in larger ensembles is more complex and rich in possible combinations and variations.

Saariaho suggests that the diffusion 'can be rather loud but not painfully so!' (score notes); she gives clear indications for instrument/tape balance changes throughout the work, reinforcing the changing perspectives and functions of the tape. In practice I have found the work to be most successfully heard the greater the blend and integration of live and tape part. Any perceived separation of the two tends to isolate some tape sounds (most notably the rhythmic breath sounds) leaving them overexposed. Properly balanced the harpsichord appears itself to breathe. This is chamber electroacoustic music, intimate and sometimes forceful, but never overpowering.

Roderik de Man: Chordis Canam

In the notes to the recording *Chordis Canam* Roderik de Man implies the creation of a meta-instrument (as in Mike Vaughan's work): '[. . .] all sounds (except one) were derived from this harpsichord [. . .]. It was my object to bring the sounds on tape and the live harpsichord as close together as possible.' (Sleeve note to the recording[10]). But the composer has created a sort of 'extended double'. The tape sounds do not merely extend the range and sounds of the instrument we perceive being performed; the relationship is more complex. There is a continuous oscillation between together and apart, from near unanimity of material to contrast (albeit in this case always well-balanced and complementary).

A recording of this work appears in Vol. 19, Part IV.

0″–35″ [3–4/2][11]

In the opening section the 'double' (on tape) firmly establishes its presence as a 'meta-harpsichord' of greater resonance.[12] We hear a well-paced forward/reverse envelope cluster which creates immediately a kind of hyper-reality when combined with its live counterpart in the opening gesture of the work.

---

10. Very specifically, as 'this instrument' refers to Annelie de Man's harpsichord which was used in the recording cited.

11. The score is marked in 'time elapsed' only at points necessary for performance coordination. The time figures given are from the recording; I have also indicated the page/system in the published score (e.g. '4/2': page 4, second system).

12. The bass attack resonance on tape which punctuates the work at irregular intervals could conceivably be produced by the live instrument but the specific amplification needed would be prohibitive.

35″–1′08″ [4/2–6/1]

The tape part introduces a high drone texture (this recurs at several points in the work) which acts as backdrop to an exchange between the live instrument and its straightforward mirror on tape. The two coalesce perfectly from 43″, become more complex and polyrhythmic in their discourse only to diverge again from 1′08″.

1′08″–1′53″ [6/1–8/2]

In this section the material of the two parts may be divergent but there is a balance and counterpoint of resonances and other textures from the tape with strongly chordal material from the live instrument.

1′53″–3′20″ [8/2–12/2]

The rhythm which comes to the foreground on the tape (with which the live performer must synchronise) has a manic aspect to its performance involving at times near superhuman tempi and articulation (see Figure 4). This section is divided into two by the first 'Chordis Canam' interlude: a young child's voice speaks the words over the recurring high texture.

3′20″–5′10″ [12/2–16/2]

Following a long melismatic 'upbeat' (3′20″–3′48″) for the soloist there is a section based on the alternation of rapidly played chromatic 'clouds', moving into and out of perfect synchronisation with the tape. The tape is once again a 'perfect' mirror of the live sound.

5′10″–6′17″ [17/1–18/2]

Tremolo material on the live instrument leads to a reminiscence of the polyrhythmic materials of the previous section; this concludes with the second 'Chordis Canam' interlude and texture.

6′17″–7′44″ [19/1–21/1]

A short isolated section of bass resonance attacks over filtered memories of the previous interlude leads to a GP, a point of repose within the work.

7′44″–9′16″ [21/2–24/2]

The tape is dominated by an increasing layering of polyrhythmic percussive resonances. The live part emerges from a cluster to an increasingly frenetic response to the tape's clock-like rhythms (see Figure 5).

9′16″–10′15″ [24/2–end (26/2)]

A variant of the opening using the same resonance material both live and on tape. (With a final exasperated shout of 'Chordis Canam!' from the child).

The tape part is somewhat like a comet around a sun which always exerts its pull. De Man is careful to create complex continuous drone textures and resonances which retain a point of contact with the original instrumental origin, often, as in many works in this field, used to extend and sustain. The 'double' has also a degree of perspective *estrangement*

Figure 4 de Man, *Chordis Canam*: rhythmic interaction of harpsichord with tape. © Donemus, Amsterdam. Printed with permission
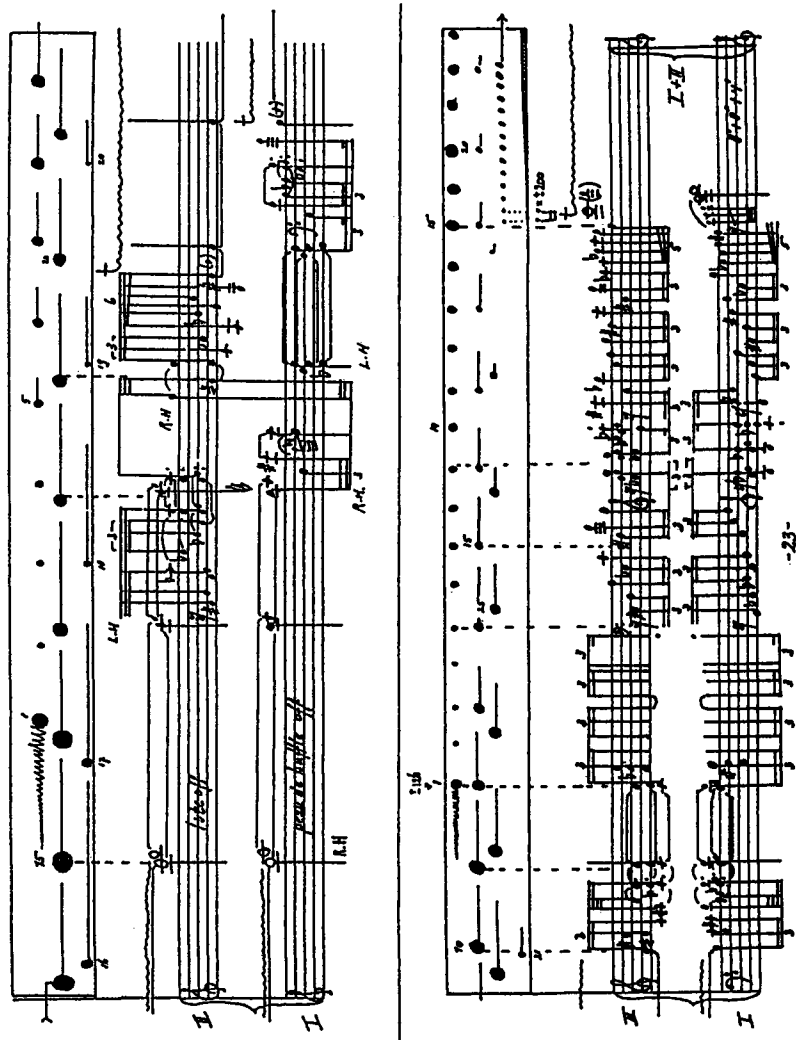
Figure 5 de Man, *Chordis Canam*: harpsichord reaction to polyrhythmic 'clock ticks'. © Donemas, Amsterdam. Printed with permission

through filtering and transposition which lends it at times a surreal (or dream-like) quality. Both these processes allow a strong identification with the original sounds. The transpositions are often simple pitch bends (for example at 1'18") that suggest a fluidity to the instrumental double, just as the filtered material suggests a detachment from the main body of the 'instrument'.

Mike Vaughan: Crosscurrents[13]

This piece has an energy and dynamism which appears to be quite exceptional amongst works for harpsichord and electronics. The composer writes that —

Crosscurrents takes the form of a concerto with the tape providing expansions and extensions of the harpsichord material using different combinations of synthesised and recorded sounds. [. . .] The piece deals with various forms of interaction between the harpsichord and tape suggested in part by the different characteristics of the sound-world produced by the idioms of the instrument (including the mechanical sounds only revealed fully under amplification).

(Vaughan, 1996)

Indeed Vaughan has drawn on all the 'concerto' traditions of the solo/group relationship. The first section (forming, in his own words, a 'meta-instrument') projects and extends the harpsichord sound-world out from the instrument into a rich texture formed from a myriad fast-moving fragments and gestures. Jane Chapman has explained that for this section: 'The player has to wrench the sound out of the instrument using the entire range to create a wild and monstrous dance.' (Chapman, 1994, p. 11). The combined sound of the live and tape parts is remarkably homogeneous. Vaughan has confronted the characteristic shape of the harpsichord's sound ('attack/decay' with its relative lack of sustain) and created a discourse which hugely increases the *density* of attacks as 'compensation'. This is a very real extension of the toccata tradition (and one virtually impossible to develop on the piano) (see Figure 6).

But emerging from this initial declaration is a classical balance of live and tape, antiphonal (sometimes heterophonic) exchanges. Further, and more importantly, the sound world of the tape broadens quite clearly, ceases to be an extension of the live instrument and moves through a contrasting to a quite antagonistic role. Throughout the work there is an almost cinematic use of the 'fast cut' from one scene to another. Far

---

13. Mike Vaughan deals further in detail with this work in his own contribution to this volume; I have confined myself to the theme of instrumental/electroacoustic *relationships* rather than dealing with the materials of the work as such.

Figure 6 Vaughan, *Crosscurrents*: dense toccata figurations against the tape part. © Mike Vaughan. Printed with permission

from creating a sense of frustration, however, this scenic montage creates an extraordinary energy almost unique in the works examined here. 'An enormous commitment is demanded from the player just to keep ahead and in control: the work has to be sculpted into something comprehensible rather than be allowed to go untamed.' (Chapman, 1994, p. 11).

In the senses I defined the terms above, there is in this work a kind of 'modulation' between predominantly local and field considerations. While remaining on the surface unrelentingly energetic the underlying trajectory changes the focus of the work steadily over longer spans. Vaughan's approach to the materials on tape is 'classically' *concrète*: the vistas he creates are far from the naturalism of Mâche, for example. He uses very little reverberation,[14] no direct imitations of 'real' spaces. The space is that of the harpsichord proper; a close image, we are immersed in the sound and its extensions and processes. As there is very little material not directly relateable by the listener to its origin in the instrument — and what is not is electronically produced to have a similar morphology — the entire soundworld is centred firmly in the instrument and a dramatic stage defined clearly by its sonic range.[15]

Elsa Justel: La Ventana Deshabitada

La ventana deshabitada, for harpsichord and tape, was written for Vivienne Spiteri between 1990–92 and realised in the studios of IPEM (Ghent) and GMEB (Bourges). Four pitches in the octave or so above middle C on manual 1 are tuned a quarter tone higher. This adds an ethereal quality to many of the chords and melodic fragments in the treble range. She also employs a 'triple touch' technique at the opening which involves coupling the manuals and depressing keys so slowly that each of the three 'coupled' strings plays separately in turn.

In an analytical article on the work (Justel, 1993), the composer has described the piece as having an introduction followed by three sections linked by two transitions (: 40).[16] Her working out of the live/tape

---

14. The exception that proves the rule is the last gesture of the work from the tape: a harpsichord sound disappears into reverberation. We never hear it again to confirm the space that might have been defined around the sound.

15. 'Defined' by its sonic range is not the same as 'limited' thereby: of course the actual soundworld used is larger, yet always related to it.

16. Her terminology stresses musical function and not duration or impact: the two transitions are each longer than the section (2) they sandwich.

relation uses many of the possible combinations of the local and field characteristics we have defined. Use of space is an extremely important part of the work.

'[. . .] the space constructed on the tape has different dynamic reliefs, mainly lateral plains and three different depth plains. The live instrument is alternatively protagonist or an element fused with the sound mass of the tape which gives it its appropriate depth of field.'
(Justel, 1993, p. 53)

Although not quoted in the score, she has also (in the article cited) described a spatial 'narrative' for at least some of the sections which should be followed by the performer responsible for sound diffusion in concert. This is indicated in italics in the following summary of the most important material relationships of the piece.

Introduction (0″–40″): local projects into field
The tape prolongs and extends resonances from the live part.
Section 1 (40″–1′58″): balanced local/field contexts
As the live part moves from vertical block sonorities (chords and arpeggios) to more linear and polyrhythmic material, the tape part moves from gestural sounds (often 'interacting' with the instrumentalist) to more extended textures.
Moves from centre rear to more lateral spaces.
First transition (1′58″–2′51″): local becomes field through projection
Against a fast textural (statistical) mass of notes (at first linear then chordal), the tape part contains sparse, quiet material as a passive backdrop.
To establish more presence, the use of 'global' space.
Section 2 (2′51″–3′15″): local projects into field
The instrumental part alternates fast linear writing with low clusters which are 'caught' and extended on the tape.
Separation of the two protagonists — harpsichord forward, tape distant
Second transition (3′15″–4′10″): local and field unified and integrated
As in the first transition a purely textural argument dominates: the instrumental clusters and tremoli appear to be the 'grain' of massive sounds on the tape (see Figure 7).
Section 3 (4′10″–5′21″): local and field struggle — no resolution
Clusters, glissandi, chords and tremolandos are mirrored and developed on the tape in a final struggle which remains unresolved at the end.
Increased lateral activity of the tape but firmly based quite distant: the harpsichord struggles to maintain its presence in front of this activity.
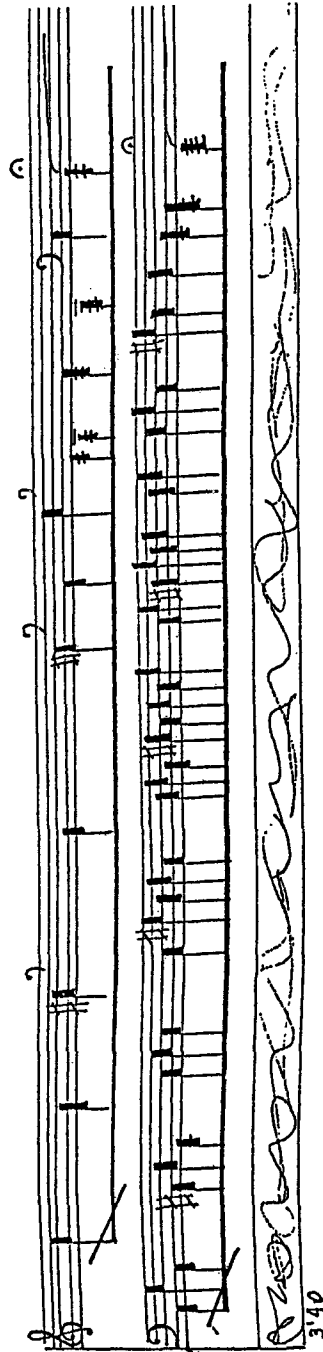
Figure 7 Justel, *La ventana deshabitada*: harpsichord material as 'grain' of the tape part. © Elsa Justel. Printed with permission.

Thus the concert diffusion actively supports the structure (or, more accurately, the narrative) of the piece, reinforcing homogeneity, differentiation, balance or antagonism.

Justel uses the term 'subjacent' to describe those metaphoric programmes (often summarised in the titles of electroacoustic works) used by the composer to describe relatively 'abstract' yet narrative structures. If we know them in advance of the listening experience these often influence through suggestion our approach; but providing such a guide does not amount to brainwashing we may benefit considerably.[17] The meaning of 'La ventana deshabitada' is deliberately ambiguous,[18] the composer describes —

'[. . .] a state of spirit at the moment of writing the piece. The title constitutes also a symbol with several interpretations (a window empty of images, a moment of incertitude: at the same time a computer screen which reflects the music).'

(Justel, 1993, p. 63)

Such narrative spaces coexist, of course, and the power of an ambiguous metaphor encourages us to create new relations through the listening process.

Simon Emmerson: Points of Departure

My own work, *Points of Departure*, written for Jane Chapman in 1993, is the only work in this group to use live electronics. For me the term 'live' has specific connotations which distinguish it from the term 'real-time' which has more commonly been used since the introduction of computers to electroacoustic performance.[19]

Since the advent of recording we have seen an increasing dislocation of cause and effect in the production of sound, a trait which has most specifically been exploited with the development of electroacoustic music since 1948. Such a break can be used creatively; we may create 'games' with the ear attempting to ascribe a general or specific cause to sounds which we hear over loudspeakers, unable to *see* any further cause. Our ear as detective has evolved as a key tool for survival in a

---

17. We approach any work—especially for the first time—influenced by our expectations, of which a programme note is but one small component.

18. Literally 'depopulated window', but better perhaps 'emptied screen'.

19. My argument is summarised in the following paragraph. For a fuller discussion of this 'live' versus 'real-time' issue see Emmerson (1994a).

sometimes hostile environment. We search out links and chains in sounds we hear. If however the link becomes arbitrary — I press *Play* on a CD player and I hear any sound — then such powers become function-less. That action did not *cause* the sound in any but the most superficial sense. Much computer generated music of recent years may indeed be generated 'on stage in real-time' but bears no identifiable relation to human action and may just as well have been prerecorded. It is in this sense that I wish to reclaim the 'live' of 'live-electronic', namely a real and perceivable relationship of the sounds produced to their origin in instrumental human gesture.

In this work the sounds produced by the harpsichord are processed using two relatively simple devices.[20] A second performer at the console has a highly active part, capturing sounds (using faders), changing process patches (using program advance pedals) and varying parameters within each process (using continuous controller Midi pedals).

The two devices correspond to the 'local' and 'field' functions I have already described. The first processor is responsible for a basic set of transformations whose function is to subtly distort the harpsichord sound directly and continuously. This transformation is projected only on speakers in the close vicinity of the instrument. There should be no dislocation of direct and processed sound. These are mostly 'frequency domain' processes involving filter, flange and phase effects controlled by the second performer.

The second group of processes are coordinated much more closely to the material of the live part. From the harpsichord we hear scales, arpeg-gios and tremolos reminiscent of a baroque toccata (senza misura) which slowly coalesce and fan out over the entire keyboard, sometimes dis-turbed by 'clouds' of points. The harmony is consonant but not tonical, shifting around a series of temporary centres which are never stable. The work is constructed from phrases of varying length which freeze and settle momentarily on notes, chords or tremolos, halting the irregular flow. These short moments are caught on the live electronics and 'thrown out' to the audience while the movement continues again. Several exam-ples of the materials captured are given in Figure 8: simple held pitch, tremolo and tremolo chord. The process thus creates and articulates the field within which the harpsichord is placed, giving the audience some sense of 'being within' a space and place.

The processing uses a combination of frequency domain and delay line patches. For this the harpsichord produces a particularly appropriate

---

20. Alesis Quadraverbs, although it is anticipated that other devices may be programmed similarly.

Figure 8 Emmerson, *Points of Departure*: increasing density of 'captured' material. © simon Emmerson. Printed with permission

sound type: we are able to locate a sound with attack much more clearly than a continuous one. Hence movement and spatial gesture can become part of the musical argument to a much greater extent.[21]

Conclusion

It is very difficult to summarise the very wide range of approaches composers have taken to the combination of harpsichord and electronic means. But we can see some points of common cause.

The piano displaced the harpsichord as the predominant keyboard instrument in the western concert tradition in the late 18th century. This was not, of course, 'progress' so much as evolution and adaptation to new demands at a nexus of social, economic and consequent musical

---

21. The composer's programme note refers to the 'image [. . .] of an insect flitting across the surface of an initially still pond which becomes increasingly agitated. The ripples spread from the points of contact while the surface of the water reflects a subtly distorted image'.

changes in the tradition. It is perhaps ironic that we see now the displacement of the piano itself by the mass availability of electronic devices with a consequent shift of expressive capability from the mechanical (physiological) to the electronic (aural), and that it is just these electronics which have been one component of the rescue of the harpsichord as a contemporary concert instrument.

The demands of the classical movement for greater tonal expression, dynamic gradation and acoustic power — all traits to be exaggerated and overblown in the evolution of the piano in the romantic century to follow — may all in some senses be reintroduced to the harpsichord's range through electronic amplification and projection, as well as through the vast possibilities of electroacoustic sound in addition (although in the terms of this article rooted firmly ('locally') in the instrument itself rather than becoming an 'orchestra' surrounding the soloist).

Most of the composers discussed here tackled head on the basic morphology of the harpsichord's sound (its strong 'attack/decay' profile) through electroacoustic extensions and sustains, while often utilising the well-researched ability of such a sound to be located clearly in 'loudspeaker space'. If the need was to preserve a sense of pitch the composer might use literal 'stretching' on tape or with live electronics, or through 'metaphoric' extensions of the harpsichord sound appearing to trigger events and textures on tape. Moving towards noise the composer might use two options both involving increased density. The first, vertical, includes massive events comprising increasing cluster density; the second, horizontal, moves towards texture, increasing the sheer density of toccata material, tremolos or trills; the composer often shaped the result into textures of changing pitch width and internal complexity as a major means of defining narrative trajectory.

Less easy to encapsulate in a single summary is the differing approach of composers to the 'tradition' the harpsichord carries with it, already referred to. It seems that even composers who have tried to create afresh without reference to such a history have in their inner ear an inevitable relation to it. In this sense the problems are curiously similar to those encountered when writing for an instrument of another tradition in a contemporary western context where 'cultural tourism' is all too easy - and there is increasing evidence of a 'historical tourism' emerging recently in other areas of contemporary practice. It is through close composer/performer working relations that such superficial approaches may be avoided: luckily those harpsichord players who have championed the rebirth of their instrument in a contemporary concert tradition have for the most part demanded such a role and been willing to take risks in the commissioning and programming of such new work.

Scores[22] and Recordings

François-Bernard Mâche *Korwar*
Score: Editions du Mordant (France)
Recording: Elisabeth Chojnacka (harpsichord), ADDA (France) 581233

Kaija Saariaho *Jardin Secret II*
Score: Edition Wilhelm Hansen Helsinki AB (1989): HH 00102
Recording: Jukka Tiensuu (harpsichord), Finlandia (Finland) (1987): FACD 357

Roderik de Man *Chordis Canam*
Score: Donemus Amsterdam
Recording: Annelie De Man (harpsichord): *Cultures Électroniques 6 (GMEB)*: Le Chant du Monde (France): LDC 278053/54

Mike Vaughan *Crosscurrents*
Score: Mike Vaughan (University of Keele, UK)
Recording: Jane Chapman (harpsichord), NMC (UK) (1996): NMC D035

Elsa Justel *La ventana deshabitada*
Score: Elsa Justel (Paris)
Recording: Vivienne Spiteri (harpsichord), J&W Recordings (Canada) CD931

Simon Emmerson *Points of Departure*
Score: Simon Emmerson (City University, London, UK)
Recording: Jane Chapman (harpsichord), (forthcoming); Vivienne Spiteri (Harpsichord), Isodorart (Canada) CD ('The door in the wall')

Bibliography

Bachelard, G. (1964). The Poetics of Space. Boston: Beacon Press
Chapman, J. (1994). 'The Challenge of New Music', *Harpsichord and Fortepiano* 5(1) (October 1994) pp. 7–13
Chojnacka, E. (1992). 'Le clavecin', *Les Cahiers du CIREM*, Numéro double 22–23 ('François-Bernard Mâche') pp. 73–78
Emmerson, S. (1994a). 'Live' versus 'real-time', *Contemporary Music Review* 10(2) pp. 95–101
Emmerson, S. (1994b). 'Local/field': towards a typology of live electroacoustic music', Proceedings International Computer Music Conference Aarhus, 1994 (San Francisco: ICMA) pp. 31–34

---

22. Including performance tape where applicable.

Emmerson, S. (1995). '*Live* performance: how do you know it's me you're listening to?', Symposium Proceedings (Report No. 16, Stockholm: Royal Swedish Academy of Music) pp. 9–15

Emmerson, S. (1998). 'Acoustic/Electroacoustic: the Relationship with Instruments', *Journal of New Music Research* 27 (1–2) pp. 146–164

Grabócz, M. (1993). 'The Demiurge of Sounds and the poeta doctus (François-Bernard Mâche's Poetics and Music)', *Contemporary Music Review* 8(1) pp. 131–182

Justel, E. (1993). Memoire DEA (Université de Paris VIII)

Mâche, F.-B. (1992). Music, Myth and Nature or The Dolphins of Arion. Chur: Harwood Academic Publishers

ten Hoopen, C., & L. Landy (1992). 'La musique électroacoustique', *Les Cahiers du CIREM*, Numéro double 22–23 ('François-Bernard Mâche') pp. 79–96

Vaughan, M. (1996). Sleeve note for *Crosscurrents* (NMC D035)