

The emancipation of sonority, timbre, and texture as essential aspects of compositional thought is among the defining stories of twentieth and twenty-first century music. Whereas the essential substance of, say, Bach's *Art of Fugue* (c.1740–6) can be understood principally in terms of pitch and rhythm relationships (harmony and counterpoint), a comparatively abstract work from the mid-twentieth century, Messiaen's *Mode de Valeurs et d'Intensités* (1949) for solo piano, is incomprehensible without the array of dynamics and articulations which serve to define the form and character alongside pitch and duration. The musical matter consists in the play of sonic detail. Looking to the large-scale, whereas orchestrational decisions were predominantly influenced by conventional instrumental roles before the 1950s, the striking identity of an orchestral work like Ligeti's *Atmosphères* (1961)¹ is inconceivable without its textural precision: notes become imperceptible atoms, and we experience the gradual shaping of the global sound-mass. Such a conception of the orchestra owes much to mid-twentieth-century technological developments. The post-war availability of resources for exploiting recorded sounds ('*musique concrète*') and for synthesising 'new' ones from basic elements ('electronic music') represents a historically seismic shift of compositional possibility.²

Electronic media enabled composers to work purely in sound itself, without the need to mediate through notation. 'The sound' was thus freed from 'the note'. It was also freed from 'the act', electronic and recorded sounds implying a decoupling from physical or embodied causation. Imbued with a newfound immediacy, sound could be an independent phenomenon. This chapter discusses composers who, inspired by such a conception, proceed from the 'the sound itself' as a compositional resource. The important context of electronic media notwithstanding, our focus is on compositional aesthetics in the work of predominantly instrumental composers.

To 'proceed from the sound itself' in the sense intended here is to make compositional decisions with some level of regard for cutting through the abstract frameworks imposed on musical space, such as by temperament

and instrumental design. We consider composers who can be characterised by ‘mistrust of abstraction ... [and] attention to immediate perception’.³ Wary of over-simplification, we posit two notionally opposed compositional attitudes. The first proceeds inwards, to the spectral structure of sound; the second, outwards from the sound, towards idiosyncratic instrumentaria. Our purpose is to illuminate various composers’ relationship with ‘the sound’ rather than to survey or frame a historical tradition. Nonetheless, by way of context, we cite Edgard Varèse, Giacinto Scelsi, and Karlheinz Stockhausen as luminaries.

Varèse’s radical musical vision was defined by a search for greater – more varied and more subtle – control of sound than was possible by the means at his disposal. Writing in 1924, he proposed:

Just as the painter can obtain different intensity and gradation of colour, musicians can obtain different vibrations of sound, not necessarily conforming to the traditional half-tone and full tone, but varying, ultimately from vibration to vibration ... We are waiting for a new notation – a new Guido d’Arrezzo – when music will move forward at a bound.⁴

For Varèse, who strove to treat ‘[s]ound as living matter’ and ‘musical space as open rather than bounded’,⁵ dividing the octave into intervals was restrictive, obstructing the possibility of working with the vibrations beneath the ‘surface’ of sound as perceived – or most certainly as written. Towards the end of his career, he was able to realise his conception with electronic media: *Déserts* (1950–4) and *Poème Électronique* (1957–8) cohere a diverse array of sonic materials, giving us a glimpse of his ideal ‘organised sound’. The earlier works are distinctive for their unconventional instrumental groupings even among his radical modernist contemporaries. *Composing the ensemble* was an essential part of composing the piece for someone who ‘occupied himself primarily with tone colour, to the extent that other aspects – harmony, melody and rhythm – were subservient and indeed reduced to their most elementary form’.⁶

Giacinto Scelsi’s music is yet more elemental. During a period of personal crisis – so the story goes – he recuperated by repeatedly playing the same note on the piano, for hours on end. In this act of directed, focused attention, he perceived that this single note was in fact a fluctuating multiplicity; a sonic world in itself. This discovery profoundly influenced his music. In *Quattro Pezzi su Una Nota Sola* (1959) for orchestra, ‘material’ and ‘form’ are reduced to something elementary by conventional standards: ‘minute sonic fluctuations (vibrato, glissandi, spectral changes,

tremolos) become not mere ornaments . . . but the text itself.⁷ Each strike of Scelsi's piano key, the qualities of the sound(s) arising were determined by instrumental design and intonational calibration. Respectively, these two factors derive from foundational conceptual frames for Western music prior to electronic resources: instrumental or vocal timbre (standardised sonority, rooted in conventional playing techniques, instruments, and ensembles) and harmony (musical grammars based on fixed intervals, underpinned by temperament).

Temperament is a lie . . . It pretends to be what it is not. It deceives you into believing that you recognize what it is. It deceives you into thinking that certain relationships are identical when they are not, and many similar psycho-acoustic chicaneries.⁸

The intervals used in scales and modes correspond approximately to the relationships between a fundamental and the lower partials of the harmonic series: the first overtone sounds at an octave, the second at a (compound) perfect fifth, and so on. Moving up the harmonic series, octaves recur as whole-integer partials (1:2, 1:4, 1:8, and so on), but otherwise, the parallel breaks down: the intervals in a scale recur consistently from one octave to the next, where the number of overtones doubles in each successive 'octave' of the harmonic series, such that the difference in pitch between two overtones varies from one to the next. This variance is 'corrected' in intonational systems to facilitate octave equivalence that enables scales. Johnston's perceived 'lie' consists in this (de)tuning: the intervals that we hear in tempered music are really just imitations of the overtone relationships. Thus harmony – on which Western music is founded – is a derivative of the harmonic spectrum; timbre is the source. Moreover, as organisms we are hard-wired to hear intervals:

The tendency of the ear to group partials . . . as overtones of the same fundamental suggests that we have a built-in bias towards such just intervals: the composer and theorist James Tenney has called the overtone series and the just intervals it contains the only perceptual givens in our understanding of pitch relationship.⁹

Stockhausen, who studied acoustics alongside conventional musical training, was also concerned with perception of sound. His creative exploration at the WDR studio in Cologne led to theoretical reflection, and several years later he noted:

Whereas . . . traditionally in music, and art in general, the context, the ideas or themes, were more or less descriptive, . . . of inter-human relationships or . . . of certain phenomena in the world, we now have a situation where the composition or

decomposition of a sound, or the passing of a sound through several time layers, may be the theme itself, granted that by theme we mean the behaviour or life of the sound.¹⁰

Like Varèse and Scelsi, he refers to sounds as having inner ‘lives’, accessible when they are broken down beneath the perceptual level at which they are heard as ‘whole’ (‘Splitting the Sound’ is the second criterion). Resident in an electronic studio, Stockhausen was able to ‘compose’ sounds from the elemental level upwards, having seen that they derive their character from changes in amplitude amongst the overtones above a fundamental frequency.¹¹ Thus, besides its harmonic aspect, the ‘inner life’ of sound also has a temporal one, based as it is on *changes* of amplitude within a single sonority.

Proceeding Inwards: Towards the Spectral Structure of Sound

‘Spectral thinking’ evokes the idea that knowledge of the inner structure of sound informs composition.¹² A source sound, once recorded, might be put through a Fast Fourier Transform (FFT) and spectrally analysed. Such algorithmic programmes map frequential salience, empirically: they analyse all the frequencies present within a sound, including those beyond the audible range. The output is a visual representation of the inner life of the source sound, which might be composed-out, to inform temporal structures (the changes of emphasis within the range of partials over time); and ‘vertical’ ones (the characteristics of the range at a given point). This implies the replacement of the concept of ‘pitch’ with that of ‘frequency’ (measured in hertz (Hz)). The potential for perceptual interchange between harmony and timbre resides in this ‘frequential harmony’.¹³

The property that defines a collection of frequencies as a ‘spectrum’, rather than a ‘chord’, is their ability to fuse into a single perceptual object; we hear a sound rather than a root, third, and fifth simultaneously. There is compositional possibility in the inherent tension between unity and multiplicity that spectra possess. Whether listeners are presented with ‘a sound’ or ‘sounds’ may seem a simple matter, but it can have profound ramifications.

When you are dealing with spectral matters you become very aware . . . of the dialectic between fusion and fission – that sounds can be part of a whole. And they are so much part of that whole that you can’t distinguish them any more as parts; . . . they lose their individuality. But the fascination is in the hide-and-seek

process where sounds you took to be individual, highly characterised sounds, identities, instruments, whatever, can hide themselves and blend so perfectly you can't see them any more. They come in and out of identity.¹⁴

Breaking down a sound to its constituent parts is central to spectral thinking, so fusion and fission is inevitably a compositional domain. It also translates to the listening experience. The idea of frequential harmony enables sounds to cross perceptual thresholds: composers can present sounds *undergoing* fusion/fission, rather than merely *as* fused/diffuse – an object that is heard as a combinatorial harmony at first can be made to transmute, such that it is heard as a unified timbre.

The matter goes beyond harmonic/timbral aspects, however. Grisey himself chose to refer to 'liminal' rather than 'spectral music',¹⁵ elsewhere distinguishing spectral thinking from serial aesthetics on the basis that parameters are dissociated in the latter.¹⁶ Naming 'identity' as a potentially manipulable property of a sound, Harvey invokes the role of perception *per se*. Discussing phenomenal relief in perceptual 'surfaces' in music, Clifton says: '[o]ne always perceives events as occurring, or objects being "on this or that side of a line"'.¹⁷ He distinguishes the opening of *Atmosphères* as phenomenologically flat, lacking any perceptual 'edges':

the timbre is so undifferentiated that nothing stands out as being 'on this (or that) side of . . . individual elements are absorbed into this amorphous mass of sound . . . the medium here is a phenomenal space formed by the particles of sound: 'the particles are not contained within a pre-existing space'.¹⁸

Although *Atmosphères* is dependent on equal temperament, Clifton's 'particles within a medium' could be reread as 'partials in a spectrum' – that phenomenal space exists 'inside the sound' is the starting point for composing with spectra. However, this 'attitude to sound' branches out into diverse compositional approaches. Horatiu Radulescu and Kaija Saariaho manifest spectral thinking in radically different, even opposed ways.

Case Study 1: Horatiu Radulescu

Radulescu was a composer for whom the expression and experience of the sacred were central, his work often manifesting 'a longing for an ancient conception of music's place in the spiritual life of humanity'.¹⁹ The fundamental premise of his technique is to *enter the sound*, which 'in itself is an endless ocean of vibrations'.²⁰ This 'ocean' is navigable with reference to

a ‘sound compass’ analogous to geographical space [Noise/North – Sound/South – Element/East – Width/West]. In practice, his musical materials are rooted in the mathematical ideality of the harmonic spectrum ‘that Pythagoras scrutinised two thousand years ago’,²¹ rather than the empirically observed (FFT) spectra typically associated with *instrumental re-synthesis* used by composers such as Grisey and Murail. For them, spectra inhere time: overtone relationships are subject to change within any time-frame, however thin the ‘slice’. By contrast, Radulescu worked with idealised, atemporal numerical relationships. In *Brain and Sound Resonance* (2003) he outlines an itinerary of techniques for creating ‘self-generating’ harmonic objects. These mimic acoustic sum and difference tones in various ways by adding and subtracting numbered overtones, which he referred to as ‘primal functions’. ‘For example: primal functions 4 and 7 produce in sum 11 and in difference 3’²² – this means that Radulescu combines overtones 3 and 11 with the dyad formed by overtones 4 and 7 of a given fundamental, forming a tetrad [3:4:7:11]. Such arithmetic approaches to generating materials imply immutability – $1+1 = 2$ in any context – which projects upwards to formal conception.

Radulescu’s large-scale concerns have less to do with the transformation of sound than with raw statements of (often remarkable) sound-states. This is exemplified in his Fifth String Quartet, Op. 89 (subtitled: ‘before the universe was born’). Twenty-nine sections, each exactly one minute (and one page of score) long, are heard as a ritual-like sequence of focused ‘moments’. Using a unique ‘spectral scordatura’, Radulescu transforms the quartet into a single, sixteen-stringed macro-instrument (starkly opposed to the classical conception of four discursive individuals). Each ‘moment’ offers a distinct window on the rich array of sonic possibilities opened up by this conception. The prevalence of open strings and natural harmonics means partials can undergo transformations of function, becoming fundamentals in their own right – a process which Radulescu called the ‘emanation of immanence’. On other occasions, such as the remarkable eighteenth page, the micro-melodic textural play creates a ‘sound-plasma’ of very high harmonics across all the strings, such that any sense of fundamental is altogether imperceptible. This reveals one of his overriding artistic concerns: to ‘conceal cause and effect, in order to obtain a fantastic phenomenon, which would be as beautiful as possible. It’s like an invasion of beauty . . . a special joy.’²³ In this way, ‘Radulescu’s music achieves the awesomeness of a thing both scientific (dependent on knowledge, on precision of . . . tuning, on clarity of method) and sacred (geared to singleness, presenting all phenomena as aspects of that singleness . . .).’²⁴

Case Study 2: Kaija Saariaho

In certain respects, Saariaho might be seen as an antipole to Radulescu. She starts with computer analysis of real sounds, leading to ‘multidimensional networks’ (Saariaho, 1987), where his ancient ideal of the harmonic spectrum serves as a single principle governing immutable, frequency relationships. Her article ‘Timbre and harmony’ (1987) sets out a quasi-scientific procession in her early work at IRCAM, manipulating variables and drawing conclusions piece-by-piece, leading to the coalescence of timbre and harmony in *Lichtbogen* (1985–6).

Two underlying principles seem particularly important in Saariaho’s evolving compositional approach. First, her acceptance, indeed embracement, of sonic evolution. Her source sounds are, in themselves, changes. *Lichtbogen* derives from two cello harmonic glissandi, and a bow stroke wherein pressure is gradually increased, to bring out noisy subharmonics. To accommodate such transformations as they project to higher structural levels, Saariaho conceives ‘continua’, such as the ‘sound/noise axis’, about which her materials trace curves of intensity, transmuting between ‘pure’ sounds (e.g. a sung vowel; a string harmonic) and overtone-rich noises (a consonant, breathing; *sul ponticello*, subharmonics). The continuum idea applies across various parameters. In *Verblendungen* (1982–4), intensity curves in seven parameters are superimposed, creating a ‘network’, wherein ‘[t]he interaction of all the parameters constitutes culminating points which determine the form of the work’.²⁵

This leads to a second fundamental principle: using ‘points’ to articulate processes. Saariaho’s evolving, seconds-long-or-shorter source sounds are drastically slowed down and subject to compositional processes, to form the minutes-long transforming shapes we hear in her music. Temporal magnification at that scale obstructs recognition: ‘In memory, a form is not perceived as a continuum; rather our comprehension reduces the whole into simpler structures based on different, strongly-defined details.’²⁶ To address this, Saariaho developed ‘interpolation’ – a means of determining ‘mileposts’ for sonic evolution. A computer analyses source sounds, organising the results in matrices. The relationships within that dataset can be scaled infinitely up or down, and mapped onto musical materials, which can be made to expand or contract, correspondingly. Any evolution-in-sound has preordained ‘poles’ (its beginning and end-states), and so composers can choose appropriate points as recognisably meaningful ‘inter-poles’; formal points at which strongly defined events imbue recognition as structurally meaningful for listeners.

Interpolative correlates can be used in various parameters. In *Jardin Secret I* (1984–5), interpolation determines dynamics and the duration of transitions relative to static chords. They also govern the transmutation between intonational systems, as a symmetrically divided octave is scaled up and down. Towards the end of the work, the sonority is ‘squashed’, such that it is no longer heard as pitch, but as noise. Saariaho’s declared goal in using computer programmes was ‘to construct a common framework for all the musical parameters’.²⁷ She achieved this in *Lichtbogen*, wherein harmony is derived, through interpolation, from timbre: ‘[i]t is thus that a chord “under tension” can be played with an over-pressure of the bow, like the sound originally analysed which had served to produce the chord in question.’

Proceeding Outwards: Towards Idiosyncratic Instrumentaria

‘Instrumentarials’ take a hands-on pre-compositional approach, to assemble, build, discover, and/or develop new timbres from extant instruments and materials. We cite Helmut Lachenmann and Frank Denyer as exemplars. Both are strikingly individual outsider-figures, notwithstanding Lachenmann’s influence on younger composers. Nonetheless, they share certain pre-compositional attitudes: a decided rejection of theoretically underpinned cultural-received ideas; a concern to work in, with, and on the physical means of sound production, leading to an extended and original timbral palette; one way or another, the general lack of vertical harmony creates a focus on immanent presence in performance – their music demands intimacy of its listeners.

Case Study 3: Helmut Lachenmann

Most of Lachenmann’s output uses standard Western instruments, often in familiar ensembles, though the sound is far from conventional. ‘To me’, he says, ‘composing means *thinking about music* and *building an instrument*. And thinking, says Ernst Bloch, means transgression.’²⁸ Lachenmann developed *musique concrète instrumentale* between 1968 and 1976,²⁹ where performers use extended techniques all but exclusively; their instruments effectively completely reinvented. In the solo-piano piece *Guero* (1970), fingernails run sweeping *glissandi* over the surface of the keyboard, none conventionally pressed. The eponymous ‘guero’ sound is recreated as the nails pass over the successive ridges of the keys. The mimicry has

a rather more profound implication than mere gimmickry, however. Listeners are drawn in to focus on the detail and ‘energy’ of the sound(s) in the absence of any ‘full’ notes. *Mouvement: vor der Erstarrung* (1983–4) is a more developed example of this ‘energy’. Within the phrases, the acoustic tension held by one player is released by the next in a micro-synchronised linear flow, tightly connected in a manner akin to that between phonetic sound in whispered speech; perceptually, the ensemble is a single instrument. A first-time listener could be forgiven for thinking this is electronic music; the immediate aural impression is that of a current passing through the ensemble. Nonetheless, it is wholly, exaggeratedly *instrumentale*, *concrète*-ness arising from its materiality:

sound as a message conveyed from its own mechanical origin, ... [it] may be bowed, pressed, beaten, torn, maybe choked, rubbed, perforated and so on ... pitch, duration, timbre, volume and their derivatives retain their significance only as subordinate aspects of ... energy.³⁰

Lachenmann’s focus is distinct from his immediate musical forebears, his composing philosophy being ‘anchored within an innovative phenomenology of sound’³¹ which ‘placed semiotic inferences [...] alongside the pure perception of a sound’s immanent characteristics’.³² He opens his article ‘The “Beautiful” in Music Today’ (1980) by positing the Darmstadt composers as zealous explorers of ‘a world centred on the *organisation* of sound-material’.³³ They were the first generation to fully explore electronic sound, typically treating sound itself as neutral material, subject to pre-compositional categorisation, and made adherent to serial structures. In *musique concrète instrumentale*, sounds are approached from the inside, through the physical actions used to create them. Lachenmann sees the pursuit of ‘beauty’ – ultimately manifest for him in this inner energy of sound – as ‘extremely this-worldly, down-to-earth’.³⁴ Pre-composition inevitably involves hours of working with players to develop and refine techniques, and herein is Lachenmann’s work ‘building instruments’. As for any other composer working ‘in sound’, abstraction is to be resisted: ‘thinking is transgression’.

Case Study 4: Frank Denyer

Denyer’s music uses instruments from all over the world and throughout history, as well as other found, invented, and modified instruments. The instrumentarium reaches its zenith in *The Fish That Became the Sun: Songs of the Dispossessed* (1991–4) which brings together a few ‘marginal’

conventional instruments (three double basses and contrabassoon, harmonium, heavily muted solo violin, eight cornets), but with a large ensemble of others, disinherited from their original contexts. Denyer's relationship to sound is informed by his having worked in non-Western cultures, notably in Kenya, India, and Japan. His book *In the Margins of Composition* (2019) gives insights to his aesthetic, including reflections on the significance of personal experiences on his music.

Physically, all sounds have a finite existence and then die away, but certain sounds linger in the memory and appear to be more than common sounds. They enjoy complex, and sometimes even bizarre afterlives through our minds. These afterlives are given their specific character, colour, and rationale by the cultural context in which they occur.³⁵

The aesthetic is subtle: there is a direct appeal to memory, through immediate acoustic impression. Timbre is a primary portal to meaning, although not in ignorance of sociocultural factors. One such memory is that of the 'tiny singing voice' of a woman sat in the desolation of a flood of the Sabarmati river in Ahmedabad.³⁶ He had to lean in to hear, even at a metre's distance. The moment is notable for its intimacy, as a product of its quietness, two distinctive features, especially of Denyer's recent music. 'Composing for the unaccompanied, unamplified solo voice can be thought of as equivalent to a painter working with the nude. It is to reduce music down to its fundamentals . . .'.³⁷ This reduction manifests throughout the output in pure melody, monodic lines focusing attention on fine microtonal nuance, as well as subtle changes of colour, thickness, and relief. The music does away with vertical organisation, such that listeners might grasp more of 'the whole' than in other music. It is motivated by a desire to promote intimate communion between individuals through a shared focus on sound itself.

Music encodes its precise secrets within abstract tonal relationships that are fleeting and difficult to apprehend. Still more elusive are the resonances, associations and memories these tonal relationships evoke . . . music is not only an art of remembering, but an art of forgetting as well. Attempts to resolve this dichotomy through composition go some way to explaining my attraction to the unaccompanied monodic line. I find monody an effective antidote for the excess of quantity in today's world.³⁸

Denyer's aesthetic is distinctively individualistic, grounded in the importance of perceived timbre, but also in his own experiences and introspection, and in memory and culture. It is difficult, and seems improper, to

spectral thinking, his major work *Vortex* is canonic – it directly influenced *Zwischen*; both pieces require instruments to be tuned to spectral partials; neither is full-blown ‘instrumentarial’. *Zwischen* certainly uses a ‘composed ensemble’ in the Varèse tradition, its bass woodwind instruments, steel drum, and ‘handkerchief harmonicas’⁴⁰ having a vital influence on the composite sound.

Both pieces employ quotation; a device, which is itself a convergence of times, spaces, and identities. Listening not only involves cognition but also involves recognition; not only of, say, a musical motif, but also of identities such as instruments and even sounds as distinct from one another. An aesthetic focus on immanence need not become a hermetic seal. So far, our designation ‘inside the sound’ has referred to phenomenal space – that of fundamentals and partials. In *Zwischen den Sternen*, the focus shifts to physical space; as it were, the ‘sound in the room’ rather than ‘the room in sound’. In *Vortex*, similarly, the time internal to the sound is notionally released, stretched, and compressed.

Case Study 5: Gérard Grisey

For Gérard Grisey, the ‘sound object is a contracted process, the process is a dilated sound object. Time is like the air that these two living organisms breathe at different altitudes’.⁴¹ *Vortex Temporum* explores temporal pliability inside a sound object: the ‘application of a same material to different times’.⁴² The material in question is a quotation from Ravel’s *Daphnis et Chloé* (1912) – an arpeggio-wave scored for piccolo and clarinet – and Grisey’s programme note sets out his three ‘times’: ‘ordinary’ human time (‘time of language and breathing’); the ‘expanded’ time of whales (‘spectral time of sleep rhythms’), and the ‘compressed’ time of birds or insects (‘time contracted to the extreme in which the contours blur’). The three movements of *Vortex* present Ravel’s arpeggio from radically varied perspectives: ‘a note becomes timbre, a chord becomes a spectral complex, and a rhythm a swell of unpredictable durations’.⁴³ As listeners our experience is defined, in part, by our ability to connect these varied sound states with our memory of the initial shard of material.

The first movement (in ‘human time’) flows and swirls with a bodily sense of dance and pulse, as the arpeggio is clearly and obsessively stated, with hypnotic effect. It culminates in a virtuosic piano cadenza, rich in ruptures and contrasts, jumping erratically between ‘variations’ of the

material: objects A–H are defined gesturally, rhythmically, and by their spectral and harmonic contents. This enables Grisey to stretch and compress the objects. As each one recurs, it dilates or contracts: temporally, its duration varies, as does its notated pitch range, in line with the implied distortion of the frequency relationships comprising its underlying spectrum.⁴⁴ To our ears, this range of spectra creates a sense of varied sonic tension.

The cadenza leads to a radical change of perspective, the ‘spectral time of sleep rhythms’ appearing in a slow movement, wherein the Ravel is dilated. Each of the nine sections derives from a note of the arpeggio figure and lasts for 43 beats (♩) at 50 beats per minute (though some include tempo variations). Each is identifiable by its harmonic, registral, dynamic, and timbral characteristics, and has its own perpetually pulsing piano chord. The large-scale shape is a wave covering more than five octaves, a scaling-up of the original half-octave motivic span. Aural attention is focused inwards, however, on the immediate beauty of the murkily beating instrumental sonorities and ever-descending lines, emerging from and receding into the perceptual surface. The music has a processional quality, as if passing slowly through an array of resonant spaces, each with its own particular light; yet there is also a balanced sense of symmetry achieved by the sequence as a whole.

‘Compressed time’ is saved for the final movement, where it sits alongside, dissolves into, and sets in relief the other two types. The relative temporal stability of the previous movements gives way to constant flux and self-questioning. Sometimes the sonic material is contracted to an extent that challenges perception of the original motif: ‘events disappear, [and] processes become gestures’;⁴⁵ and eventually obstructs our ability to identify materials at all: ‘[t]he music loses its characteristics and becomes very high and noisy’.⁴⁶ By presenting the dissolution of ‘sounds’ into ‘noises’ as structurally necessary, *Vortex* reveals its breadth and flexibility, achieving an expression profoundly rooted in its play with archetypal identities.

Case Study 6: Christian Mason

Christian Mason’s *Zwischen den Sternen* (‘Between the Stars’) is based on a spatial premise: listeners are literally brought ‘inside the sound’. The form is articulated by the progressive displacement of the eight musicians, their

continual reconfiguration aligned with ongoing musical relationships. The ensemble comprises a wind trio (bass flute, bass oboe, and bass clarinet), a string trio (violin, viola, cello, each doubling corresponding scordatura instruments, tuned to partials 7–15 of a C-spectrum), and piano (also scordatura) and percussion. The piano, percussion, and cello are all stationed on stage, in front of the audience, for all nine movements of the form; the other instruments move between various positions behind the audience, on stage, and surrounding the audience, at the points of a star (Figure 13.1). In a performance, space – and movement through it – plays a formative influence on listener experience, not only because of location, but also in terms of composite timbral identity.

The most distal configuration occurs at the outset, most of the ensemble placed behind the audience. Musical material is shared such that instrumental identities are called into question. In bar 7, a ‘barely audible’ steel drum tremolo begins at the back of the stage, entering in sustained unison with bass flute (at the back of the hall). Slowly, they grow louder, emerging from the resonance of the piano, the flute passing imperceptibly to violin and bass oboe (also behind the audience, on the same side), the energy of whose brighter spectra support the ensuing crescendo. At its peak, the steel drum reveals its unmistakable identity – so far having been presented as a continuous tremolo, there have been no perceptible attacks, only a hollow resonance. The energy, once gathered, culminates in a brief melodic burst (b.8). This model – ‘*emergence into identity*’ – recurs and intensifies throughout the first movement, the steel drum usually the protagonist. The musical material is elementally minimal: besides this crescendo gesture, only a few melodic scalar joins are added to the opening pair of dyads. It is a non-developmental ritual, the potential for repetitiousness transcended as the distal strings mimic (or echo) the bright steel drum with their own wild bursts of natural harmonics. Individual instrumental timbres intensify, but otherwise the principal musical matter is the dispersal of sonority from the stage around the audience: *Zwischen* opens up space as it begins in time.

The proximity of audience members to the sound changes as the music progresses. Four ‘moving moments’ employ short static or repetitive materials, that neutrality focusing listener attention on the spatial change in the global sonority, as players move around, playing from memory. The first three bring the musicians closer to one another and towards the stage; the last is one of Mason’s characteristic ‘exit processions’ in which the

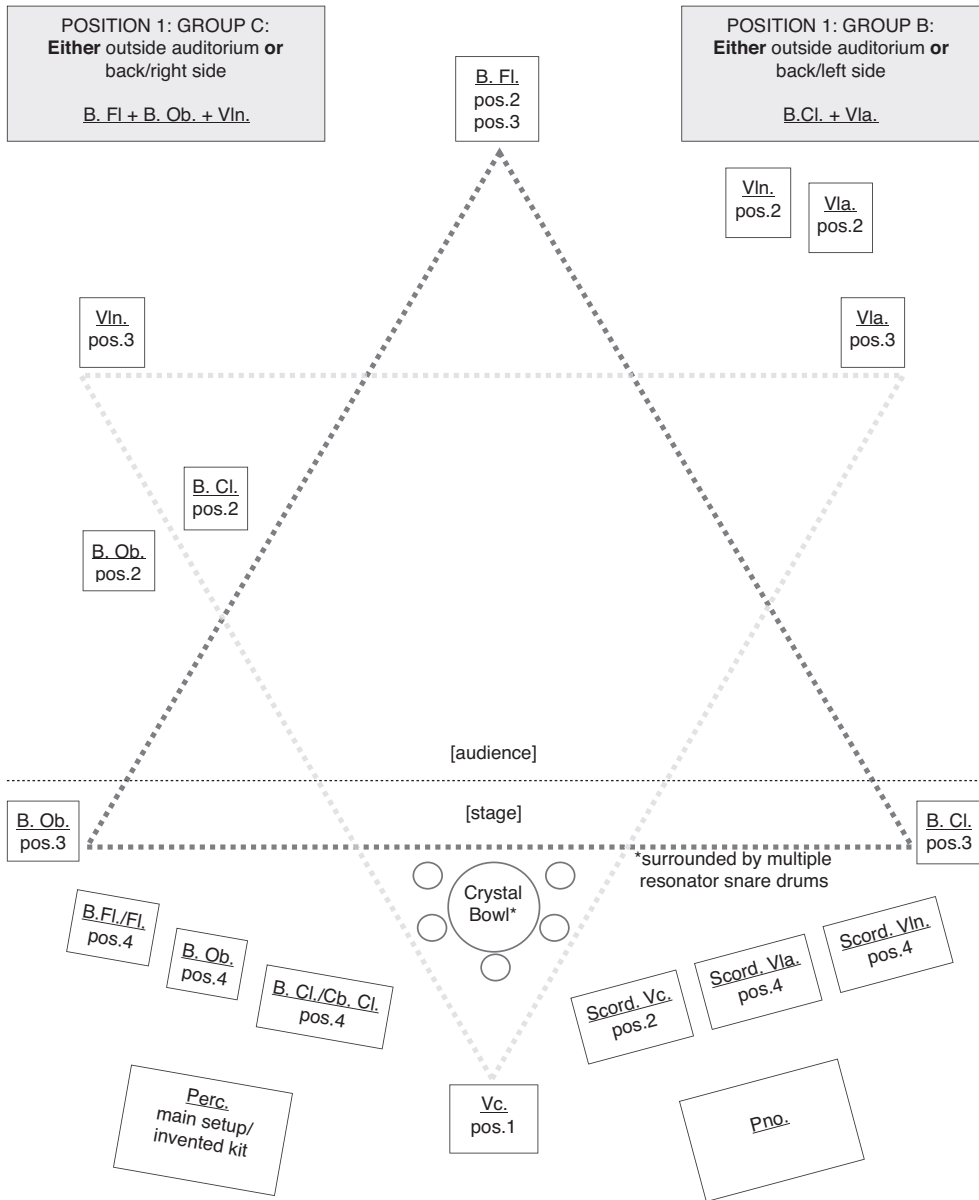


Figure 13.1 Performance space layout of *Zwischen den Sternen* (2018–19). © 2019 by Breitkopf & Härtel, Wiesbaden.

ensemble walks out of the hall, playing a repeating four-bar phrase, leaving behind a solo cellist. Wind and strings play a spectrally tuned harmonic progression, which repeats as they leave; percussion and piano exit playing

'handkerchief harmonicas'. A faint thread of communication is maintained between the separating layers, the violin and viola harmonics sounding as increasingly distant echoes of the improvising cellist.

Zwischen ends in dissipation. Its structurally opposite state – the maximum contraction – occurs in the fourth movement, 'Everything is far'. With the full ensemble together onstage, the string trio play their scordatura instruments. Previously, notional 'chromatic' and 'spectral' grids were held in tension; this change brings the strings into resonance with the piano. The closeness of the musicians enables melodic movement at different rates (time layers) to cohere, and continuous tempo changes (rallentandos and accelerandos) become a significant musical feature. Each bar represents a felt 'beat' (always articulated by the piano) within which a semiquaver micro-pulse passes through the hocketing string trio. The percussion articulates the start of each new section, while sustained woodwind dynamic shapes propel the energy towards arrival points. The zenith is reached (at Fig. U) in a brief quotation from Grisey's *Vortex Temporum* which soon dissolves into a notionally static moment of pure resonance (at Fig. W). This resonance is created by a large – visually as well as sonically striking – crystal bowl surrounded by snare drums (with snares on) which act as resonators. As the bowl vibrates, we hear the sympathetic resonance of the drums move in a circular motion around the bowl, creating a sound reminiscent of distant ocean waves, and defining a micro-space through which our attention is drawn into the sonic phenomenon.

Conclusion

Concerns with the *immanence* and *immediacy* of sonic identities are present one way or another in the work of all the composers discussed, informing their thinking at a higher level than specific compositional techniques. *Immanence* because the inherent energetic properties of sound(s) can be seen to influence their compositional decision-making; *immediacy* in the sense that their work generally presupposes the possibility of a direct (un-mediated) relationship between the listener and the sound phenomenon, who meet – as it were – at a particular intersection of time and space. Yet, many of our examples also reveal ways in which sounds can invoke and evoke ideas and associations beyond themselves. To compose with 'the Sound itself' is also to compose within the web of connections that likely precede the act of composition. This need not necessitate the rejection

of a wider field of associations. On the contrary, it implies the need to remain aware of the fact that ‘meaning is located in the processes occurring between the sounds of music and people, rather than being invested in the sounds of music themselves.’⁴⁷

Listening List

<https://shorturl.at/dxZ89>

Notes

1. Notably, Ligeti’s electronic works appear at a transitional period in his style, and in 1958 Ligeti planned an electronic piece with the working title *Atmosphères*, which was never realised.
2. This ‘revolution’ has continued apace, with the current widespread availability via laptops of what were once exclusive studio technologies defining contemporary approaches to creation.
3. Liam Cagney, ‘Synthesis and Deviation: New Perspectives on the Emergence of the French *courant spectral*, 1969–1974’, unpublished PhD thesis (City University, 2015), 62.
4. Quoted in Chou Wen-Chung, ‘Open Rather Than Bounded’, *Perspectives of New Music*, 5/1 (Autumn–Winter, 1966), 1.
5. *Ibid.*
6. Ton de Leeuw, *Music of the Twentieth Century: A Study of Its Elements and Structure* (Amsterdam: Amsterdam University Press, 2005), 111.
7. Tristan Murail, ‘Revolution of Complex Sounds’, *Contemporary Music Review*, 24/2 (2005): 176.
8. Ben Johnston, ‘The Corporealism of Harry Partch’, *Perspectives of New Music*, 13/2 (Spring–Summer, 1975), 88.
9. Robert Hasegawa, ‘Gérard Grisey and the “Nature” of Harmony’, *Music Analysis*, 28/2 (2009), 355.
10. Hasegawa, ‘Gérard Grisey’, 98.
11. Karlheinz Stockhausen, (programme note) ‘On the Situation of the Métier (Timbre Composition)’, *Domaine Musical* 1 (Paris, 1954), 7.
12. Jonathan Cross, ‘Introduction: Spectral Thinking’, *Twentieth Century Music*, 15/1 (2018), 4.
13. Tristan Murail, ‘After-thoughts’, *Contemporary Music Review*, 19/3 (2000), 8.
14. Arnold Whittall, *Jonathan Harvey* (London: Faber, 1999), 28.
15. See Cross, ‘Spectral Thinking’, 6.

16. Gérard Grisey and Joshua Fineberg, 'Did You Say Spectral?', *Contemporary Music Review*, 19/3 (2000), 1.
17. Thomas Clifton, *Music as Heard: A Study in Applied Phenomenology* (New Haven: Yale University Press, 1983), 156.
18. Ibid.
19. Bob Gilmore, (CD booklet) *Horatiu Radulescu: Piano Concerto – The Quest* (Germany: CPO, 1998) (CPO999589-2), 9.
20. Horatiu Radulescu, *Sound Plasma: Music of the Future Sign* (Munich: Edition Modern, 1975), 3.
21. Bob Gilmore and Horatiu Radulescu, 'Wild Ocean: An Interview with Horatiu Radulescu', *Contemporary Music Review*, 22 (2003), 121.
22. Ibid.
23. Ibid.
24. Paul Griffiths, *Modern Music and After* (Oxford: Oxford University Press, 1995), 249.
25. Kaija Saariaho, 'Timbre and Harmony: Interpolations of Timbral Structures', *Contemporary Music Review*, 2/1 (1987), 108.
26. Saariaho, 'Timbre and Harmony', 105.
27. Saariaho, 'Timbre and Harmony', 124.
28. Helmut Lachenmann, 'The "Beautiful" in Music Today', *Tempo*, 135 (December 1980), 21.
29. Ibid.
30. David Ryan and Helmut Lachenmann, 'Composer in Interview: Helmut Lachenmann', *Tempo*, 210 (October 1999), 21.
31. Laurence Osborn, 'Sound, Meaning and Music-Drama in Lachenmann's "Das Mädchen mit den Schwefelhölzern"', *Tempo*, 268 (April, 2014), 24.
32. Osborn, 'Sound, Meaning and Music-Drama', 25.
33. Osborn, 'Sound, Meaning and Music-Drama', 20; our italics.
34. Osborn, 'Sound, Meaning and Music-Drama', 22.
35. Frank Denyer, *In the Margins of Composition* (Farnham: Ashgate, 2019), 7.
36. Denyer, *In the Margins*, 42–3.
37. Denyer, *In the Margins*, 38.
38. Denyer, *In the Margins*, 15.
39. Lamella dyads are pairs of metal tongues affixed with clamps to an open-ended, hollow wooden box, which are 'strummed'; the 'cartoon doyyynnnnnng' sound that children make, flicking the end of their rulers over the edge of school desks.
40. Handkerchiefs are stretched over the blow holes of harmonicas, creating stratospherically high sounds.
41. Gérard Grisey, 'Tempus ex Machina: A Composer's Reflections on Musical Time', *Contemporary Music Review*, 2 (1987), 269.
42. Gérard Grisey, (CD booklet) *Gérard Grisey: Vortex Temporum/Talea* (Paris: Accord Una Corda/Universal, 2001) (UAC464292-2), 12.

43. Grisey, *Gérard Grisey*, 13.
44. Hasegawa, 'Gérard Grisey', 352–4.
45. Jean-Luc Hervé, *Dans le Vertige de la Durée – 'Vortex Temporum' de Gérard Grisey* (Paris: L'Itinéraire/L'Harmattan, 2001), 65.
46. Ibid.
47. Denis Smalley and Lelio Camilleri, 'The Analysis of Electroacoustic Music: Introduction', *Journal of New Music Research*, 27/1 (1998), 5.