

The Workshop of Art

~ towards a dynamic and open way of thinking about form in music ~

by Dr. Archer Endrich

Visiting Research Fellow,
Dept. of Mathematical Sciences, University of Bath
12 Goodwood Way
Cepen Park South
Chippenham, Wiltshire
SN14 0SY
archer@trans4um.demon.co.uk

ABSTRACT

The process of ‘working your material’ is the workshop of art. It takes more than a splash of colour, a purple patch, an arresting sound to make a good composition. It takes the formation of relationships between component ingredients, from the micro to the macro level. This paper focuses on the micro level of form, and outlines a simple but effective analytical method with which to build up a deeper understanding of musical relationships. This method can be employed in an aural, non-technical way, respecting as it does the natural musicality that most people possess. It may also be pursued to any level of technical depth, as may be required by the musical creator. With a few very specific examples, I try to provide a window on a way of thinking which can both stimulate and nourish creativity.

Introduction

There are two key milestones in a composer’s development:

- Working the initial sonic materials such that one learns to do a lot with a little: to vary, prolong, etc. in endless ways. Such work is enhanced by a sense of micro-form, an awareness of shapes and processes of an inherently musical nature, creating an experience of time, the ‘sonorous image of passage’ (Langer 1953: 113).
- Appreciating the role of the overall idea for a composition, which has a life of its own and has a shaping influence on the materials. Indeed, the materials often need to *give up possibilities* in order to remain in service to the overall idea. Otherwise some materials may not fit in, becoming akin to ‘purple patches’ in literature. (This is just as true even if the overall idea is to have no form or to be something that arises gradually through the live improvisation of musical people, listening to each other.)

When these two processes start to weave together, a new composition is underway, the overall form guiding the evolution of, ‘motivating’ the micro-forms, the micro-forms evolving in their richness and variety in service to, and often taking specific features from, the overall form. One recent example of this can be seen in a work produced by that genius of community music, Barry Russell: *Opening Doors*, written for the opening of the Michael Tippett Centre at Bath Spa University College. The “opening doors” idea was everywhere in evidence, beautifully realised in an astonishing variety of ways, with contributions from several community groups, dancers, artists, and professional musicians.

This paper discusses these issues and is therefore concerned with developing a practical creative methodology. It outlines a way of thinking about creative work — with special care to emphasise the dynamic, evolving, open-ended aspect of form-building. The principles outlined are, I believe, universal in nature, but implied throughout are the challenges facing the development of electroacoustic and algorithmic music; the text is oriented towards practical compositional issues. At the same time, the approach can help to deepen musical understanding for those musicians who enjoy and make music in an aural, non-technical context.

Working your material (general observations)

We are all familiar with Picasso's 'blue' period and with the concept of exploring a restricted palette of colours and shapes. This is an example of 'working your material'. In music we find a number of ways to evolve and extend material, such as:

- Repetition with slight variants
- Repeating rhythms, figures ('motive-spinning') or 'grounds' comprising pitch and/or duration patterns
- Creating chords & variants of chords or other simultaneities (various inversions or mirror images, open and closed forms etc.)
- Prolonging tones, chords, figures, sounds — processes of extension
- Exploring the possibilities of a limited set of materials, such as the 24 permutations of 4 notes, pantonal combinations, rhythmic sieves
- Changes of tone colour such as by vowel transitions, orchestration, transformations of a given source sound (such as by filtering, transposition, frequency shifts, splitting into bands, tuning, blurring, or by using different mutes or beaters)
- The use of similar linear shapes or gestures
- Transferring the same shape across parameters in electroacoustic music

One of Bernard Rands' favourite composition exercises for his students was to have them write a minute or two of music for unaccompanied flute, an exercise which forces the composer to 'do a lot with a little'. One is soon concerned with variation techniques as one seeks to evolve the initial ideas — I don't mean variations on the grand scale, but variation on the micro level.

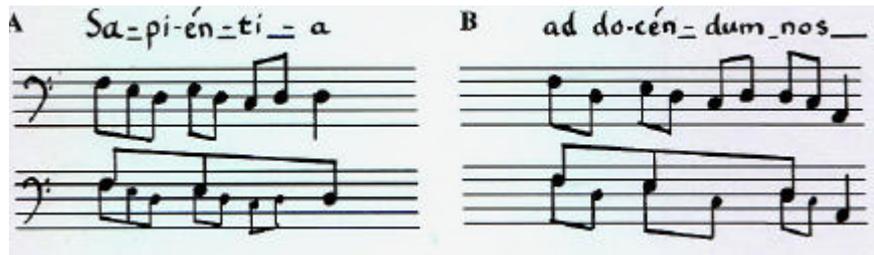
The result of such 'working of material' is an overall sense of integration of material, an 'organic' quality as if it had all grown naturally from the initial seeds. Another important result is the creation of 'sameness' against which different materials and shapes will *perceptibly* stand out, thus enabling the listener to follow developments and perceive contrasts. From the composer's point of view, this is the ability to create forms, it is technique indivisibly interwoven with a sense of form.

Even forms that emphasise contrast and a *mélange* of materials draw upon the more intimate working of material in order to make the contrasts perceptible and effective. A great game of artists is to create *apparent* contrast that is in fact rooted in similarity on a deeper level: to evolve material beyond conscious perceptible link, while subconsciously there remains a sense of belonging.

Micro-form

In this paper, I would like to focus on 'working your material', which is, I believe, a core compositional discipline that can be enhanced by thinking of the various possibilities as 'micro-forms'. To illustrate this we can consider the generic musical idea, *expansion/contraction*, when durations are involved also called *augmentation/diminution*.

- In Gregorian Chant, we find phrases which repeat, but sometimes more extended and sometimes more condensed. These two phrases from the beginning and near the end of the antiphon 'O Sapientia' (*Liber Usualis*: 1950: 340) are similar in that both descend through a minor third (F-E-D), but they vary remarkably in detail. The 1st (A) begins with the 3-note descent in diminution. The 2nd (B) condenses these three notes to two, makes use of interlocking intervals, and extends the figure downwards.



- The rate of harmonic change in various passages by Johannes Ockeghem speeds up as the final cadence approaches (more information in less time), a feature referred to as the ‘rush to the cadence’.
- We observe a phrase in the 2-part motet by Orlando Lassus *Beatus Homo* (Lassus 42): in which a figure in quavers is repeated in crotchets, i.e., in successive time-frames. This I refer to as ‘horizontal expansion (or diminution)’.



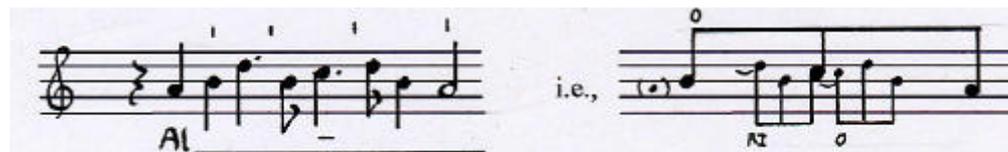
- The opening bassoon solo of Stravinsky’s *Rite of Spring* (1913) expands and contracts as it repeats the same figure several times, each with a different rate of movement (Stravinsky 1967: 1).



- The powerful concluding theme of Stravinsky’s *Firebird* (1910) weaves the same descending 4-5 notes into itself within the same time-frame, the notes with shorter durations outlining the same phrase in augmentation – a process I call ‘vertical diminution’ (Stravinsky 1947: 71). This focus through self-similarity and the internal layering revealed gives the melody a perhaps unsuspected cohesive strength and intricacy of design.



- Similarly, in much earlier music, the opening Discant phrase of Ockeghem’s *Alma Redemptoris Mater* also contains vertical diminution, the same shape enfolded inside itself within the same time frame. Here the shape is not an exact repetition, but a re-ordered repetition, labelled O (original) and RI (Retrograde Inversion), just as is done with tone rows. (Ockeghem 3):



- An example of diminution on a grand scale is the famous recapitulation in Stockhausen’s *Mantra*, which encapsulates the structure of the whole composition in a fast-moving, dynamic passage.
- The same 6-note figure is woven together at different speeds in this bar from No. 13 in my cycle of piano pieces, *Time-Span* (Endrich 1980: 27):



You will notice that these illustrations concern very small fragments, and yet contain a wealth of musical patterning. Vertical diminution is an interesting case because it weaves ornament out of structure. In his profound and endlessly illuminating *A History of Melody*, Bence Szabolsci identifies one of the forms of ornamentation as ‘structural’, meaning that the embellishing figures in a melodic line are drawn from the shape of the line itself or create the shape of the line: “The Oriental ornament, on the other hand, not only acts as a stimulant and a unifier, but weaves the very fabric of which the music is made.” (Szabolsci 1965: 261). This leads us directly towards all the many opportunities for self-similarity, i.e., enfolding the same shape inside itself.

These, then, are a few tiny illustrations of what it means to ‘work material’ at the micro-form level. This is familiar territory for any practising artist, but important to emphasise nonetheless because it is so crucial for creative work and also so open-ended: one is always finding new ways to shape and relate materials. The study of previous artists’ work is a valuable way to learn useful techniques at this level. In music, it is a matter of shaping felt time — what Susanne K. Langer calls ‘the sonorous image of passage’ (Langer 1953: 113).

Here is a shortlist of *some* micro-forms (in no particular order), to offer some more illustrations of this fluid, intermediate area of form-building: There are many more and, indeed, the constant aim is to find/create new ones and add to the list.

- | | | |
|---|---|------------------------------|
| repetition | movement towards | skip and fill & v. vs. |
| sustaining | circling of nodes | stepwise movement |
| sustaining + movement (such as pedal points) | change of weight | interlocking shapes |
| vertical diminution: structural | decorations: UN, LN, APP PT .. | trace outlines (abstraction) |
| horizontal diminution: temporal | isorhythm | withholding |
| transition (many possibilities) | multi-event textures | masking |
| chordal horizontalization (there are several degrees of this) | processes of extension | convergence |
| layering | sonic transitions | motive-spinning |
| heterophony | applying the breakpoint shape of any parameter to another, such as an envelope shape to the pitch parameter | melodic contour shapes |
| interpolation | cross-synthesis | density of information flow |
| expansion/contraction | proportional durations | foreground/background |
| unfolding by addition | | |

There are several interesting features of this list.

1. These micro-forms have a certain universality: we can identify them in many different kinds of music, and we can realise them with vastly new materials, such as in electroacoustic music, composing with sounds. Thus they are open-ended, malleable, shape-shifting ‘formal units’, as it were.

2. They occupy a musical terrain *between* style constraints and random data manipulation. They are not even musical techniques as such — they need to be realised with some specific technique. And yet they are the grist in the mill of the ‘workshop of musical art’.
3. They are more than a ‘datum’, a sound, note, chord, or sound transformation technique. *They encapsulate relationships*. This is why I refer to them as ‘micro-forms’ rather than simply as ‘techniques’. As in the examples: the varied phrases of the Gregorian example, repetition of a motif with rhythmic augmentation or diminution, ‘reflections’ of a pattern in diminution as in the Lassus, Ockeghem, Stravinsky and Endrich examples. All the micro-forms in this shortlist enable and invite an aural comparison between component parts. Thus they also occupy a musical terrain between the single datum and the larger passage or overall form.
4. Also and significantly, they are for the most part directly aural. You don’t really have to know anything technical about music in order to recognise these patterns — you just have to listen and observe. *This really is very important*. Among other things, it helps us to appreciate how music-making can broaden out, how a ‘harmonic choir’ of non-musicians can, in ‘toning’ together (singing long, sustained tones) create wonderful music, how a ‘scratch orchestra’ can realise scores which outline and suggest possibilities (Cardew, Cage etc.), how children and non-musicians in the community can, with guidance, create very effective musical results. On the other hand, the understanding and realisation of these musical components can be studied to any level of technical depth.

Consider this passage from Susanne K. Langer, which many years ago influenced how I began to approach musical studies:

‘The traditional preoccupation with the ingredients of music has had a somewhat unhappy effect on theoretical study, connoisseurship and criticism... It has led people to listen for the wrong things, and suppose that to understand music one must know not simply much music, but much *about* music. Concert-goers try earnestly to recognize chords, and judge key changes, and hear the separate instruments in an ensemble — all technical insights that come of themselves with long familiarity, like the recognition of glazes on pottery or of structural devices in a building — instead of distinguishing *musical elements*, which may be made out of harmonic or melodic material, shifts of range or of tone colour, rhythms or dynamic accents or simply changes of volume, **and yet be in themselves as audible to a child as to a veteran musician** (my emphasis). For the elements of music are not tones of such and such a pitch, duration and loudness, nor chords and measured beats; they are, like all artistic elements, something virtual, created only for perception.’ (Langer 1953: 107)

My own musical journey has been largely concerned with searching for and articulating these ‘musical elements’, which paradoxically have as much to do with deep structure as with surface flow.

As one plays with and shapes these micro-forms, inevitably, consciously or unconsciously (how an artist ‘thinks’ is an interesting topic), *relationships* between these micro-forms are formed. Again, I must emphasise the open-ended aspect. Pondering the above shortlist should lead not to repetition of the past but to the imagining of new approaches. For example, in describing the approach taken in the MITA system, Robert Spalding Newcomb writes:

‘... an important design component involves implementing the concept of hierarchical linkages within our musical database, or more precisely, within the variables that define our perspective upon this musical database. Several high-level control variables representing conceptual characteristics such as *abstraction*, *density* and *repetition* [NB these are micro-forms – my emphasis (AE)] modify themselves during the assembly process.’ And ‘...providing a capability that allows for customised dynamic models to be constructed from a set of dynamically defined individual model attributes. The attributes themselves are developed by taking the mathematical information present in the source data, creating hierarchical relationships within the attribute space, and yielding an attribute set of potentially infinite size.’ (Newcomb 1999: 12-13)

My concern in this paper is to find a way to allow the genius of other composers to leaven our own work, to search for and identify truly *musical* processes, to avoid forms of data processing which may work in mathematical terms, but do not produce musical results. As we search out the possibilities of a new type of music based on sounds and algorithmic procedures, we have to ask ourselves what is missing when a process is too predictable or formalised in a way which doesn’t seem to speak to the human spirit, or when good sounds are made but they don’t seem to add up to anything or move us very much. Of course, everything must be explored. One cannot prejudge on the basis of

existing conceptions. The study of micro-form, that fluid area between sonic material (whether ‘notes’ or ‘sounds’) along with the relationships between micro-forms and the overall large-scale form of a composition, is my own way to seek answers.

In the next section I present a simple and practical approach whereby we can learn from others in a constructive and open-ended way. The emphasis is on micro-form as a practical source of compositional inspiration; specific materials, techniques, and macro-forms are the province of the individual creator.

A simple analytical method

Historical overview

There are many approaches to musical analysis, as befits such a rich and multi-faceted medium. All are useful and valid, in my opinion, and can teach us a great deal about music. To set my own approach into a wider context, I will briefly summarise and comment on a number of existing approaches:

- There is the familiar study of macro-form, where we learn about and see models of binary and ternary forms, block forms which repeat or otherwise refer back to previous material, the classic forms of sonata, fugue, thematic variations, etc. Important and useful as this is, I feel that it fails to provide sufficient advice for the creative artist: it is too broad and misses out on all the micro activity I have described above as ‘the workshop of art’. Indeed, it is through the micro activity that the larger forms ‘grow’ in a dynamic, ever-different way: no two sonatas or fugues, for example, are alike.
- There is the study of harmonic movement, where we learn about chord sequences — often restricted to a formalised view of a very small segment of musical history. In this case, we often have a seriously unbalanced focus on simultaneities, with very little attention given to linear design. This is particularly apparent with regard to the study of traditional counterpoint, which can consist almost entirely of ‘rules of harmony’, by-passing the mechanisms by which the lines of these *linear* forms are shaped, and making no mention at all of the type of relationship existing between the horizontal and vertical dimensions (see below).
- Even studies of the ancient melodic forms fail to reach into the creative mechanisms. They correctly identify phrase types and show how they form templates that are conjoined and altered. But they do not reach into these phrases to identify the micro-form processes by which they are shaped: the intervallic linear designs and how they relate to the underlying node structures of a particular mode. The latter comprise, however, the information needed by the creative artist.
- More recent approaches focus on statistical data: how many intervals of such and such a type, what figures and figure variants, how often and when. Again, this is useful, particularly for designing new computer-based approaches to data handling and manipulation. I would, however, prefer to add into the equation musical micro-forms and their fluid evolution. These are also subject to algorithmic formalisation and, I think, bring us closer to the attainment of effective musical processes.
- There are studies of musical styles, with some interesting applications for transitions between patterns of style constraints. These can be limited in scope if the stylistic features are taken in too fixed a way: certain chord progressions, certain turns of phrase, certain rhythmic patterns. Too much music and too much listening is overly constrained stylistically, leading to social divisions and creative impasse. Newcomb makes some very useful remarks about this (Newcomb, 1999: 13). My own point of view is that it can remain too much on the surface, and not get down into the more fluid and open-ended, new form-building of the micro-level.

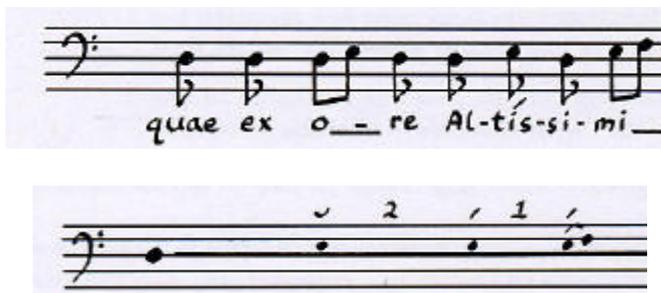
Suggested approach to analysis for creative purposes

The aim here is to unlock the internal, dynamic, fluid, form-building processes. In the various illustrations above, we have seen this simple analysis method at work. These are the steps:

- **identify nodes** — these are defined as *aurally perceptible reference points*, and therefore appeal to a common sense, look-for-what’s-obvious approach. We are looking for *points of emphasis*, which can be done aurally or in a more systematic way: duration, accentuation, skipping to or from, or any other way by which an event might stand out from its surroundings.

- **map out the position of these nodes in vertical and temporal space** — this mapping reveals both the *harmonic* and basic *durational* structure; radically different types of harmonic structure occur. The mapping can be done by direct aural observation as well as by drawing out on paper more detailed meta-structures.
- **identify shapes** — this is *pattern recognition*, where existing knowledge of micro-form is useful, but with the proviso that one has to take what is given and find hitherto unknown patterns if that is what is there. These shapes may be present in all the different dimensions of the music: linear, vertical, rhythmic, timbral etc.
- **plot how the shapes relate to each other and to the nodes** — here we look beyond individual components to the *relationships* which exist between components. This completes the study of micro-form and provides the basis for observing how the micro-forms relate to the overall ‘commanding form’, if indeed they do so. Again, this can be a matter of aural observation of similarities and differences, or a result of detailed workings out.

An example of ‘change of weight’ enables us to review this approach (also from ‘O Sapientia’).



What could be simpler? And yet what a wealth of musical activity it contains. We hear the upper note gaining in prominence through increased accentuation and durational compression. There are relationships between:

- the increasingly weighted upper notes
- the increasing energy of the upper notes and the ‘ground’ formed by the repetitions of the D-node
- the compressing durational intervals between the upper notes

Thus we have a sense of emergence from a background, an increase of energy and focus by a combination of durational compression and increased accentuation. When described in this generic way, we can see how this little micro-form could become a seed ground for new realisations, from tiny fragments to the central musical idea for a whole composition. The generic description is also a step towards realisation by algorithmic means.

A second example is drawn from electroacoustic music, *Klang*, by Jonty Harrison (Harrison. 1981: CD). This marvelous composition opens with several sounds made by the earthenware casseroles used as part of the source material. If we list and describe these first few sounds, we find a micro-form very similar to the ‘change of weight’ Gregorian example above, i.e., something which ‘leans forward’, which evolves with purpose and focus.

1. ca 3 sec. A sharp attack making a bell-like sound which rings on for about 3 seconds.
2. ca 3 sec. A softer attack which rings on for 1 sec., followed immediately by a second, which rings on for 2 seconds. The two similar sounds are close enough in time to make a two-note group.
3. ca 4 sec. A louder, stronger attack after which the resonance is very prominent.
4. ca 3 sec. A 1 sec. gentle scraping sound ending with a soft bell-like stroke, which then rings on for 2 seconds.
5. ca 5 ½ sec. A ½ sec attack followed immediately by a strong stroke which rings on for about 5 sec. A pause concludes the section.

Similar, yet each different, these opening sounds focus on one source sound, and make it very clear that this is what the piece is about. This is thematic material. The variants therefore become very important:

- changes in strength and type of attack, which affect loudness and resonance
- varied, flexible duration structure, with a notable compression of the double-strokes: 1 sec to ½ sec
- a tendency for the resonance part of the sound to lengthen
- the very important (gentle) scraping attack, which stands out from the other attacks

Overall, this opening – as a micro-form – is brimming with possibilities for future growth and development. *Klang* lives up to its promise as each of these features develops into longer sonic passages. In particular, the resonance motif evolves into an extended passage of extraordinary beauty. The growth characteristic of the opening micro-form becomes the overall form of the whole composition, binding everything together into an organic whole.

Pattern and relationship

‘Where is the music?’ I like to ask myself, ‘What makes music, music?’ A plausible and door-opening answer is that *the music is in the relationships*. And there is a certain intriguing universality in these relationships.

To look at this briefly, relationships form on various levels. Firstly, there are the relationships which exist within the micro-forms: repetitions, similarities, transformations, transitions etc. that take place in the temporal sequence of events. Then there are relationships that are formed when overlays of materials take place in the vertical dimension. When the components of such overlays have their own horizontal logic, we have various contrapuntal situations, such as *fugato* (with notes or sounds), or a sustained tone (pedal point) above or around which other materials flow, or more generally, multi-dimensional features. Both serial and electroacoustic music tend towards a series of linear-sequential events, even if textured, and it is a challenge to incorporate a truly structural multi-dimensionality.

A particularly important relationship is that between the horizontal and vertical dimensions generally, i.e., the degree of horizontalization. When a vertical simultaneity is unfurled in horizontal time, we have a ‘horizontalization’. The unfurled material can relate to the vertical simultaneity by the degree of matching involved, from complete equivalence to just a few matching points. When there is full or near equivalence, the underlying simultaneity ‘shines through’ the texture. When there is minimal equivalence, the horizontal patterning predominates. The whole history of (Western) melody can be schematised from this point of view — necessarily the subject of a much more detailed study in which various types of prolongation (radically different types of harmonic structure) are relevant.

When variation technique is viewed from a ‘group’ point of view, we can consider the relationship between components, aspects which remain the same and aspects which alter: sometimes the chord sequence stays the same, sometimes a linear shape, sometimes a rhythm, sometimes a textural density pattern, sometimes an envelope shape. Then the question can be asked as to whether or not there are any shared features at the micro-level.

These few observations show that the types of relationship can vary considerably: some are very much part of the fluid flow of the micro-level; others create passages on a larger scale, moving closer to the realisation of large-scale forms.

Micro and macro form

The very concept of ‘macro form’ can be controversial, with some announcing the end of the ‘work of art’. The real issue is, I suggest, a matter of establishing a motivation for the processes which take place. That a given composition or spontaneous event has an overall form is inescapable — the question is, what kind of form is it. Also, I believe that the macro form is an objective entity that acts on the listener on the basis of what it *is*, not on the basis of what the artist may *want* it to be.

Susanne K. Langer writes:

’ ...as soon as he recognizes it as an individual symbol and sets forth its outline it becomes the expression of an impersonal idea and opens, to him and to others, a deep mine of musical resource. For the commanding form is not essentially restrictive, but fecund...The great moment

of creation is the recognition of the matrix, for in this lie all the *motives* for the specific work; not all the themes — a theme may be imported if it fits the place — but all the tendencies of the piece, the need for dissonance and consonance, novelty and reiteration, length of phrase and timing of cadences...That is why one may puzzle for a long time over the exact form of an expression, not seeing what is wrong with this or that, and then, when the right form presents itself, feel it going into place almost with a click.' (Langer: 1953: 123)

- Sometimes the macro-form idea comes first, and the micro-workings flesh it out.
- Sometimes ideas start at the micro-level by playing with material, and only gradually does a larger form emerge.
- Sometimes the micro-forms provide the main focus, forming a flow with very little in the way of larger-scale design — indeed, such design can be deliberately eschewed, or simply inappropriate for the given composition or situation.
- Sometimes micro-forms and macro-form integrate closely, the one echoing the other in structure.
- Sometimes materials contrast wildly and are held together by their own micro-level internal workings and by simple large-scale shapes or continuities.

Forms can relate and give expression to the 'spirit of the age'. Insofar as this is achieved, a case can be made for the role of art as a provider of the conditions in which a civilisation can endure.

In the creative process, what is essential is that the micro-forms serve the purposes of the macro-form. An understanding of the micro-form processes helps enable the observer to identify how this is done. It is wide open and the possibilities are endless.

Closing observations

To conclude:

- Thinking about micro-forms can be beneficial for the creative musical artist. This, I believe, applies to all types, whether folk artists, performance artists, electroacoustic composers, or those writing music for concert performance. The basic principles of musicality are universal. Music is wonderful and moving for a reason. This is the 'workshop of art'.
- A study of relationships among (flexible, malleable) formal components can reveal where the 'music' is and help to achieve a richly musical sonic tapestry — the 'sonorous image of passage'.
- The forms speak for themselves, whether we like it or not — no amount of emotion or rhetoric alters what the form is as an objective entity.
- All this applies to electroacoustic music as much as to any other approach to music. An understanding of forms both micro- and macro- is essential, I believe, to creating music in any guise. The many wonderful composers of the 20th century have devised a wide range of new formalisms with a vastly extended portfolio of musical materials, such as the 'constellations' of Varèse, the polytonal layerings of Stravinsky, the serial techniques of Schoenberg, the group, block and proportional forms of Stockhausen, the textures of Xenakis, the multitudinous theatricalities of Berio, to name but a few.

Many in our generation have been focused on the development of new computer tools to manipulate instruments, assemble compositions, and work directly with sonic materials to an extent previously not possible. My own view of our current situation, and my own assessment of what challenges us most, now that we have many more tools with which to move forward in new ways, is that an understanding of processes on the micro-level can facilitate achieving musical results. These forms/processes need to be articulated in a generic, open-ended way, so that all aspects of musical understanding can be reshaped within the context of an ever broader range of sonic materials, sometimes in new types of written or improvised music, and sometimes through an encapsulation of these processes in programmed algorithms, thence to be manipulated by computer-based techniques. No matter what the musical context, the challenge of musicality remains in place.

References:

Endrich, T.J. 1980. *Time-Span*. Zurich: Edition Eulenburg

Harrison, Jonty. 1981. *Klang*. on the CD *Klang*. 1996. London: NMC Recordings Ltd. (Sonic Arts Network Collection 1).

Langer, S.K. 1953. *Feeling and Form: A Theory of Art*. New York: Charles Scribner's Sons.

Lassus, Orlando. Beatus Homo. *Sacred Chorus Collection by Old Masters for Equal and Mixed Voices III*. New York: Kalmus.

Newcomb, R.S. 1999. Music in the Air: a theoretical model and software system for music analysis and composition. *Organised Sound* 3: 1.

Ockeghem, Johannes. Alma Redemptoris Mater. *Old Netherlands Motets*. New York: Kalmus.

Stravinsky, Igor. 1947. *Suite from The Firebird* (1910). As quoted in *Score Reading* 1947: New York: M. Witmark & Sons.

Stravinsky, Igor. 1967. *The Rite of Spring* (1913). London: Boosey & Hawkes.

Szabolsci, B. 1965. *A History of Melody*. London: Barrie and Rockliff.