

'...like a solid shaft of steel...' - Time-Space and Time-Form in George Antheil's *Ballet mécanique*

Abstract

George Antheil, the eponymous 'Bad Boy of Music', wrote of his ultra-modernist *Ballet mécanique* (1924) that it represented a unique experiment in time-form, time-space and the fourth dimension of music. Antheil's inexorable essay in noise was appropriately realised through instruments of his present - mechanically-operated pianos, percussion instruments, airplane propellers and sirens - enabling a level of complexity of temporal organisation hitherto unknown. Antheil's ideas also gained enthusiastic support from Ezra Pound who, in *Antheil and the Treatise on Harmony* (1924), argued that music should delineate itself principally by its passage through time, rather than by its 'state' at any moment in time. In the process, Pound reasserts the notion of the primacy of a predominantly temporally-informed mode of perception: music as a phenomenon existing in time-space, and articulating time-form.

In this illustrated paper I will examine ways in which *Ballet mécanique* might embody a realisation of these concepts, 'wherein time functioning in music differs from ordinary time and the series of deductive and also physical phenomena that follow it.' In *Ballet mécanique*, the compression and expansion of events within time moments, the metamorphosis of events within a past-present-future paradigm, the utilisation of simultaneous time-series, and the placing of events in time frames that lie beyond the scope of human memory recall, are all enabled through a quasi-computational mode of composition. Whilst the manipulation of sound material in such ways is often the very stuff of music compositional practice, I will argue that the use of machines in *Ballet mécanique* allowed for the construction of a previously unimagined (and unimaginable) temporally-constructed soundscape. Moreover, the physical limitations of both the human and machine protagonists, imbued as they are with notions of effort in the moment of performance, might lead us to consider a noumenological reading of a work so apparently located in the phenomenological.

Paper

A short introduction

George Antheil, born in Trenton, New York in 1900, moved to Berlin in 1922 (where he met the composer Igor Stravinsky), then to Paris in 1923. Antheil lived above Sylvia Beach's bookshop, *Shakespeare & Company*, and soon made the acquaintance of the Paris modernists: Joyce, Pound, Hemingway; the composers Satie and Virgil Thompson; and later Cocteau and Léger. The self-styled 'Bad Boy of Music' earned the appellation 'ultramodernist' due, as much to the uncompromising aggression of his compositions – including the *Second Sonata*, 'The Airplane', *Sonata Sauvage* (1922-3), and the *Third Sonata*, 'Death of Machines' (1923) – as to his energetic and aggressive manner as a performer. *Ballet Mécanique*, initially conceived as a film and music project with Fernand Léger, Dudley Murphy and Man Ray, was composed alternatively for four pianos, then pianola, then multiple pianolas, pianos, percussion, sirens, bells and airplane propellers, and finally, in an antiseptic version of 1953, in which the onslaught of the pianola was replaced by a tinkly ineffectiveness of the glockenspiel. The debut public performance in Paris in 1926 – a semi-engineered *succès de scandale* – established his reputation, whilst the disastrous repeat in New York's Carnegie Hall a year later, ruined it. Antheil returned permanently to New York in 1933, establishing a successful career as a film music composer in Hollywood from 1936. He died in 1959.

Of his work, Antheil wrote the following, in the journal *de Stijl*, in 1925:

My Ballet mécanique is the new FOURTH DIMENSION of music.

My Ballet mécanique is the first piece that has been composed OUT OF and FOR machines, ON EARTH...

My Ballet mécanique is the first music ON EARTH that has its very germ of life in the new fourth-dimensional phenomena wherein TIME FUNCTIONING IN MUSIC DIFFERS FROM ORDINARY TIME and the series of deductive and also physical phenomena that follow it.

My Ballet mécanique is neither tonal, nor atonal. In fact it is of no kind of tonality at all. It has nothing to do with tonality. It is made of time and sound...the two materials, FUNDAMENTAL materials, that music is made of...

My Ballet mécanique is the first TIME-FORM on earth.

My Ballet mécanique comes out of the first and principal stuff of music...TIME-SPACE...

My Ballet mécanique has a closer connection to life than any of the tonal music that preceded it. But it is a musical and not a literary connection.

In my *Ballet mécanique*, I offer you, for the first time, music hard and beautiful as a diamond...

The *Ballet mécanique* is the first piece IN THE WORLD to be conceived in one piece without interruption, like a solid shaft of steel...

reprinted from 'My Ballet mécanique', *De Stijl*, vol. 6, no. 12 (1925)

Music and time

Antheil's tantalising, unequivocal, but unqualified statements about *Ballet Mécanique* present us with three interesting notions to consider: music as a *representation* of ontological time, necessarily differing from perceptions of psychological time in its progress; music arising from 'time-space'; and music articulating 'time-form'. Whilst Antheil wrote little beyond the statement published in *de Stijl* by way of further explanation – and in any case, Antheil's often bombastic writings are to be treated with some caution; he was, in modern parlance, not backwards in coming forwards – we are aided towards an understanding of his view of the temporal aspects of music through the writings of his some-time friend and fellow composer, Igor Stravinsky. Writing in his autobiography of 1936, *Chronicle of My Life*, Stravinsky makes claim for the unique immediacy of the musical experience:

Music is the sole domain in which man realises the present. By the imperfection of his nature, man is doomed to submit to the passage of time - to its categories of past and future - without ever being able to give substance, and therefore stability, to the category of the present. (Stravinsky, 1936)

Stravinsky's musical 'present' can, however, only exist, if it exists at all, through processes of recollection (memory) and anticipation (inference), although these processes in themselves imply an irreconcilable recursivity.

In his *Poetics of Music in the Form of Six Lessons* of 1942, Stravinsky, acknowledging the work of his friend, the musician-philosopher Pierre Souvtchinsky (and through him, the theories of Bergson), provided a fuller account of the relationship between musical time and 'ordinary' time:

What gives the concept of musical time its special stamp is that this concept is born and develops as well outside of the categories of psychological time as it does simultaneously with them. All music, whether it submits to the normal flow of time, or whether it disassociates itself therefrom, establishes a particular relationship, a sort of counterpoint between the passing of time, the music's own duration, and the material and technical means through which the music is made manifest.

Mr. Souvtchinsky thus presents us with two kinds of music: one which evolves parallel to the process of ontological time, embracing and penetrating it, inducing in the mind of the listener a feeling of euphoria and, so to speak, of "dynamic calm." The other kind runs ahead of, or counter to, this process. It is not self-contained in each momentary tonal unit. It dislocates the centers of attraction and gravity and sets itself up in the unstable. (Stravinsky, 1947)

Stravinsky proceeds to make qualitative judgements concerning the nature and merit of music that is 'based on ontological time' versus that which 'adheres to psychological time.' For Stravinsky, the former manifests itself through principles of order, repetition (an important point when considering *Ballet Mécanique*), similarity and variation (that is, variation arising from a concept of unity), whilst the latter is characterised by contrast and continuing processes of development, the very matter of being for much music of the nineteenth century. Souvtchinsky, in his 1939 article *La notion de temps et la musique*, expressed this apparent polarity more forcefully, labelling 'classical music' as *chronometric* (that is, an expression of time) and 'Romantic music' as *chronoametric* (a violation of time) [Druskin, 1983].

The (implicitly favoured) chronometric view of music, music passing in accordance with, and subdividing, ontological time, has further significance when considering the nature of form in music. Without delving too deeply into the complex area, we might broadly summarise Souvtchinsky's chronoametric music as that which is often (or even, generally) articulated through a *sense* of super structures – harmonic frameworks – that are implied by notions of tension and release, expectation and resolution, approach and withdrawal. Such frameworks provide an implied structure for the unfolding of the surface material – the melodies and their interplay – and inhabit a different, and often atemporal, course of progress. Chronometric music not only seeks to coalesce Stravinsky's triumvirate of time – psychological, metrical and musical – but must, necessarily, seek out its own form in the process of unfolding. Form becomes forming. This view finds expression through the writings of Ezra Pound in *Antheil and the Treatise on Harmony* of 1927, a work that was to cause Antheil satisfaction and disapprobation in equal measures. Pound writes, in no uncertain terms, that:

The early students of harmony were so accustomed to think of music as something with a strong lateral or horizontal motion that they never imagined any one, any one could be stupid enough to think of it as static; it never entered their heads that people would make music like steam ascending from a morass. They thought of music as travelling rhythm going through points or barriers of pitch and pitch-combinations. (Pound, 1927)

This reaction against harmonically-informed music – 'steam from a morass' – also finds voice in the writings of fellow American composer and iconoclast, Henry Cowell. In his *New Musical Resources* of 1930, Cowell not only makes an argument for the liberation of the ordering of time through the establishment of rhythm as a principal musical determinant, but further proposes that rhythm, when manifested through the sonic articulation of periodic time events, becomes coexistent, and even coterminous, with our perception of pitch, and consequently, melody. By extension, form may be felt to arise from the path that melody, itself born from rhythm, articulates through time. For Pound, the multi-stranded interplay of melodic lines which is the matter of the polyphonic music of the medieval, Renaissance and Baroque periods, music whose trajectory is neither constrained nor informed by an overtly functional harmonic underlay, becomes the model to which contemporary music should return. Antheil's time-space and time-form may therefore, in part, be seen as instances of this ancient, but at the same time, urgently modernist preoccupation.

If Antheil's statements may not be as ground-breaking as his rather excitable text implies, his manner of realisation is both original and entirely modern. That *Ballet Mécanique* was 'composed OUT OF and FOR machines' does not simply signal it as example of the modernist glorification of the emergent machine age, but crucially allows

for the aural realisation of the concepts of 'time-space' and 'time-form' to degrees of complexity, precision, and significantly, speed, hitherto unachievable and unknown. The use of the pianola is central here and, whilst the instrument was virtually outdated by the time Antheil employed it, it allowed him access to the mechanical equivalent of today's computer-based music sequencer. Hand-made pianola rolls facilitate a mathematical ordering of events to virtually any degree of durational calculation, and a rendition of those events at a speed and level of rhythmic complexity beyond the scope of human performers. The setting of the order of events within the static framework of the paper roll, which lies silent until activated by the combined mechanism of the pianola and its operator, might be seen to correspond to the C series of time events, proposed in John McTaggart's *The Unreality of Time* (1908), in which the ordering of events is non-temporal and not yet indicative of direction. Moreover, parallel orderings – a plurality of nascent time series – are possible, as performance is limited only by the number of notes simultaneously playable on a pianola, and not by the digital and mental dexterity of the performer.

Time repeated, time reordered, time silenced

In *The Unreality of Time* McTaggart proposes that '...time involves change... A universe in which nothing whatever changed (including the thoughts of the conscious beings in it) would be a timeless universe.' The notion of timelessness, or the cessation of change, finds a degree of sonic embodiment through the musical use of the ostinato, the unvarying repetition of (often non-melodic) motives, that may both neutralise a sense of progress and frustrate a sense of arrival. It is through repetition that much of *Ballet Mécanique* proceeds, the mid-level material often comprising variations of a limited range of micro-structural material. This technique, inspired in part by the music of Stravinsky, finds uncompromising expression towards the end of the piece, where a cluster-based phrase is repeated thirty-four times, with very limited variation. If this is not the 'one hundred times' Antheil claimed, it nevertheless provides an extraordinary example of the coalescence of – to recapitulate Stravinsky – 'the passing of time, the music's own duration, and the material and technical means through which the music is made manifest.' It should be noted here that the predominance of cluster-based material, which tends towards noise, negates any sense of harmonic or melodic structuring. This is important to clear the field, as it were, for the music's focus on the exploration of time.

As previously mentioned, much western music relies on listeners' abilities to recall earlier events and to recognise their reappearance, often at structurally important moments. Furthermore, composers' techniques of transforming events may imply musico-semiological relationships or even narrative significance. At a technical level, such transformations, which include the compression, augmentation, reflection, reversal, or superposition of various musical elements such as pitch sequences, rhythmic patterns, volume or articulation matrices, had become stock-in-trade compositional devices by the early part of the twentieth century. However, in the place of standard recapitulation techniques, Antheil employs an extended example of what we might term 'fast-reverse playback', in which large chunks of the opening section of the piece are presented at double or quadruple speed and backwards. Recollection is challenged through the extreme compression of this earlier material, whilst the ordering of events is, of course, reversed. This section also reveals either an attempt by Antheil to indicate the unplayable, the unknowable, or an incomplete knowledge of the pianolas capabilities, as the instruments cannot execute the proliferation of notes indicated in the score.

Perhaps the most audacious moments of *Ballet Mécanique* lie not among the saturated totality of its noisy surface, but in the ever-prolonged silences that Antheil uses just before the close of the piece. Here, Antheil presents the listener with the antithesis of time articulated by sound, silence becoming the structural determinant. Psychological research on rhythm perception has demonstrated that listeners have difficulty connecting individual sound events much greater than 1.5 seconds apart, whilst the recognition of groups of organised sound events – rhythmic cells – is possible up to and

beyond 5 seconds duration. As if to make explicit the disconnection between the chronometry of the music and the listener's psychological perception of the passing of time, Antheil introduces ever wider gaps between the punctuating sound events (events that do little in themselves to establish a sense of ordered time), testing the listener's ability to maintain a sense of temporal relationship within the material presented. Antheil also makes the point explicit in the printed score by somewhat pointlessly subdividing the silences into multiples of tiny units. The prolonged use of silence here pre-empts, by several years, the emancipation of non-activity found in works by John Cage and others. (Note: in performance, these silences are, in fact, not silent, but are accompanied by the surreptitious creaking of the mechanism of the pianola as the pianolist diligently pumps away.)

Coda

As Carol Oja has commented in *Making Music Modern* (2000), 'the overall surface of the work is often flat and non-directional... Antheil's *Ballet Mécanique* may have aimed to generate a sense of the fourth dimension by eliminating the third – that is, by creating the musical illusion of a two-dimensional surface.' In performance, *Ballet Mécanique* presents the listener with an experience verging on the visceral. The inexorable hammering out of tone-clusters, the percussively non-resonant sound palette, and the virtually relentless dynamic assault serve to ensure the receptive experience remains anything but passive. Stravinsky's 'dynamic calm' becomes 'dynamic turmoil.' In addition, the *sight* of *Ballet Mécanique* in performance, combining the effortful stasis of the pianola with the synchronised dynamism of the percussionists, reminds one of the human-machine environments in Fritz Lang's *Metropolis*, which premiered in Berlin three months to the day before *Ballet mécanique's* disastrous American debut.

Antheil's experiment in manifesting time-form, time-space and the fourth dimension in music remains a realisation of a conglomeration of musical and philosophical concerns, strongly informed by the sometimes febrile environment of its birth. By his own admission, *Ballet Mécanique* was:

'not successful *en toto*, but it was a "try" towards a new form, new musical conception, extending, I think, into the future.'

In this respect, Antheil's comments were, indeed, prescient, finding fuller realisation in the music of many later composers, and going some way towards re-establishing the primacy of temporality within music.

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