

NINE FOR ONES IN NINE: A SCHIZOPHRENIC CYBORG LOVE STORY

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ABSTRACT

*By appropriating the images of the schizophrenic and the cyborg from Deleuze and Guattari, and from Donna Haraway respectively, this paper seeks to discuss the relationship between human and computer, composer and performer in a way that undermines and subverts the normal binaries commonly employed, and even implied in the descriptions of these relationships in this paper. “Nine for ones in nine”, despite employing the use of the OpenMusic software in its composition, retains a degree of choice and indeterminacy for the performers; despite employing the use of precise just harmony in its design and intent, the work depends upon the imprecision of human control rather than ceding to the precision of a synthesiser. Given the vast possibilities opened up to composers by the use of computers to calculate and create sound, why then do composers continue to employ performers in the realisation of their designs, and rely on sometimes hundreds of years-old technology to articulate them in real time? The very social and imprecise aspect of the act of performance is key to the messy, compromised, and complicit product that scores such as *Nine for ones in nine* aim to produce.*

‘Nevertheless, computers cannot make aesthetic decisions in their own right. They can only follow orders. Aesthetic decisions are made by composers’ [1].

By appropriating the images of the schizophrenic and the cyborg from Deleuze and Guattari [2], and from Donna Haraway [3] respectively, this paper seeks to discuss the relationship between human and computer, composer and performer in a way that undermines and subverts the normal binaries commonly employed, and even implied in the

descriptions of these relationships in this paper. *Nine for ones in nine* [4] despite employing the use of the OpenMusic software in its composition, retains a degree of choice and indeterminacy for the performers; despite employing the use of precise just harmony in its design and intent, the work depends upon the imprecision of human control rather than ceding to the precision of a synthesiser. Given the vast possibilities opened up to composers by the use of computers to calculate and create sound so that the sky is, indeed, the limit (but why stop at the sky? surely we can dream further than that?), why then do composers continue to employ performers in the realisation of their designs, and rely on sometimes hundreds of years-old technology to articulate them in real time? The very social and imprecise aspect of the act of performance¹ is key to the messy, compromised, and complicit product that scores such as *Nine for ones in nine* aim to produce.

The theoretical basis of the work is relatively simple. Major thirds derived from otonal² ratios, minor thirds derived from utonal³ ratios are combined resulting in a ten step scale, with two additional 15:16 semitones added to make up the full chromatic. Every possible interval of this scale was reduced to its simplest ratio, resulting in a set of thirty four unique tunings. A durational series then distributes these intervals above and below the central tone of C, which is heard throughout the work as a drone played either electronically or on an instrument with fixed sustained pitch such as a pipe organ. This framework was devised for *for one* [7] a twenty three minute work for solo sustaining melody instrument which itself grew out of the structure of a work for trio, *for three* [8], but the possibilities of this framework for further exploration have been developed in the present work. Without dwelling too much on the precise details of the organisation of the piece, the use of

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¹ See for example [5]

² Derived from the overtone series

³ Derived from the undertone series (see [6] for more information)

OpenMusic allowed for easy calculation of tunings relative to equal temperament, and the quick calculation of the durational proportions which allowed multiple variables to be altered, with the results visible a short while later. It allowed a twenty three minute harmonic framework to be compressed to nine minutes, and for nine variations on the existing solo part to be derived. The use of other software permitted the ratios to be heard and studied rather than just theorised, as the sound of the work became an embodied reality.

Digital technology is employed in performance through the use of digital tuners provided for each instrument. The precision with which each performer will be able to tune each interval will vary, but the tuner will ensure that the pitching is near to the desired frequency. In addition, the performer is invited to employ a synthesised track against which to tune their performance, which may be mixed in with the input from their own contact microphone and/or with a microphone capturing the output of all nine performers.

Rather than seeing the employment of computer aided performance as an indictment of the limitations of human performance, it can be seen as an extension of the use of computer aided composition and, furthermore, an acceptance of the implicit intertwinedness of the human and the technological that is a fundamental aspect of contemporary living. While Deleuze and Guattari deconstruct the individual into a series of interlocked 'machines driving other machines, machines being driven by other machines' [2, p. 1], it is clear that the inclusion of the musician's instrument introduces an additional layer of technological mediation [9] that is no more natural and no less artificial than the use of computer aided performance or composition [10]. If, in writing as a collaborating pair meant that '[s]ince each of us was several, there was already quite a crowd' [11], the combination of human, instrument, and technology promises to result in a veritable legion. Musicians become focal nodes of production in a network rather than becoming reduced to instrumental (following orders) roles, almost like 'biotic components' [3, p. 303] of a larger integrated machine 'in which the difference between machine and organism is thoroughly blurred' [3, p. 303]. The implications of adopting this integrated cyborg identity engages with larger

questions to do with the agential split between performer and composer [12] and the wider political implications of musical material [13] which will be visited later in this paper.

Despite all nine musicians being placed in the same space for this performance of *Nine for ones in nine*, there is nothing to stop this work being played by nine musicians in nine separate areas linked by a computer network, and there is much in common between this and the work of Max Neuhaus in his invitation to participants to engage in a 'playful exploration of a network environment' [14] and his recognition of the 'role of the composer as a designer of a musical environment' [14, p.365] rather than an omnipotent god-figure directing her human puppets to realise her perfectly imagined creation. There exists the potential to release further versions of this work in which the precisely notated durational values of the sustained tones of each performer are entirely removed in favour of algorithmic mediation controlling not simply the frequencies available to each performer but also the rate at which the tonal framework is traversed. The rules that drove the creation of the current score can be abstracted and rendered in such a way as to produce a substantially similar sounding result without duplicating the work, or rendering it irrelevant. In fact, multiple versions of a work exploring similar material exposes what we might call the 'content' of a work family as opposed to the 'style' of individual constituent works [9]. The reflections of Collins on musical form in algorithmic composition [15] reinforce this, especially when examining Koenig's differentiation between the 'potential' and 'actual' form [15, p. 106]; if we equate the 'potential' form with the pitch framework, and the 'actual' form with the articulation specified by any individual member of this work family, and given that the close interweaving of the components of the 'potential' form and the manner in which the rules governing the articulation of the 'actual' forms are themselves dependent upon the 'potential' form and are therefore interwoven with it, from most perceptual standpoints the differentiation between the experience of these different articulations will be the same: 'the potential is then in practice the form itself' [15, p. 106].

Collins primarily discusses the awareness of form governed by "in-time" listener

experience...founded in human cognitive capacity' [15, p. 105] as being of fundamental concern for algorithmic composition, however the relationship of *Nine for ones in nine* with regards to this category of formal awareness is difficult at best. Given the multiple presentations, sometimes simultaneous of variants of the same interval class, the ability of the listener to construct a musical reality congruent with their usual listening experience is problematized and new strategies must be devised to 'make sense' of what is heard (for example as deviations from a central 'true' tone, or as a microtonal space in which standard understandings of interval types are dissolved). More generally, this tends to push the listener into the mode of approaching the form as devoid of 'teleological trajectory' [15, p. 105], experiencing the moment as complete in itself regardless of its position within the larger framework. The opportunity for multiple auditions of the work (and possibly of multiple versions of the work family) as well as the ability to explore the different tunings of the interval types through computer aided listening promises engagement with an 'analytical view of musical architecture' [15, p. 105] which would allow the listener to recognise the emergence of the 'potential' form from the promise of the 'actual' form. In the context of this work it should be noted that no one approach to form is better or more valid than another, and the multiple perspectives on form granted to the listener will probably vary from moment to moment, as well as from listener to listener. Far from being regarded as a failure of composition, this should be seen as an intrinsic aspect of the 'potential' form and the 'content' of the work.

Involving human error and imprecision implicitly recognises and exposes the necessity of constraints in the compositional act [16]. If we are to survive beyond the compass of the atmosphere, we must wear a space suit after all. If we are given an infinite choice, how can we make meaningful decisions as composers without constraints, and how can listeners make meaningful judgements without understanding at least some of these constraints? Music, having no physical existence, exists in the process of perception and (subconscious) analysis and is therefore forever in the past: a memory not an object. Regarding music as the 'product of a society or of individuals' [16, p. 206] rather than as a 'particular social activity' [16, p. 206] risks reifying the work-concept and

favouring a particular reading of a work (either performative or auditive) over another. These socially imposed constraints on musical notation and form are those which are inherited, 'socially shared and historically constituted' [17] and the acceptance of this fact means 'taking responsibility for the social relations of science and technology... reconstructing the boundaries of daily life, in partial connection with others, in communication with all our parts' [3, p. 316].

Despite the starting point and inspiration provided by the works of La Monte Young [18-21], the philosophical basis for the tuning system differs significantly. While Young's music is rooted firmly on a shared fundamental (usually 7.5 Hz [20, p. 141]) that unifies the whole work, the overlaying of multiple transpositions of the intervals taken from the source scale in *Nine for ones in nine* persistently defers the resolution to any shared fundamental, countering with constantly varying difference tones. Young's harmonic world and philosophy, like many working with just intonation, point towards a 'natural' world of vibrations that technology has obscured. This nostalgia for a musical past, an 'original dream of a common language' [3, p. 312], that probably never existed is incompatible with the politics of cyborg identity, which 'struggle against perfect communication, against the one code that translates all meaning perfectly' [3, p. 312].

The employment of a feminist text to explore issues raised in a work that is identified as the work of a male producer is itself contentious. The complicity of the author in the systematic oppression of others must form the central focus of any socially and politically aware artist and itself forms part of the cyborg identity. The simultaneous breakdowns 'of clear distinctions between organism and machine and similar distinctions structuring the Western self...cracks the matrices of domination' [3, p. 311]. An awareness of and alienation from the inherent artificiality and hyper-reality of all the parameters and constraints that are employed recognises other traditions, other cultures, other identities as independent streams of equal worth and potential [13]. From this standpoint, inequality can maybe begin to be addressed.

The cyborg overlaps with Deleuze and Guattari's schizophrenic, the 'universal producer'

[2, p. 7]. By failing or refusing to categorise and resolve multiple streams of perception into purposive functionality, the schizophrenic's actions and creations become indistinguishable from her products [2, p. 7] just as the 'potential' form is indistinguishable from the 'actual' form, and just as the technology employed in the composition and performance of the work become indistinguishable from the instrumental technology employed by the performer, and from the constituent elements of the performance or of the performer's own body (tongue, vocal cavity, diaphragm, etc.).

Instead of judging that the computer cannot make aesthetic decisions, the love song of the schizophrenic cyborg instead invites us to identify the role of constraints and rules in our own aesthetic judgement, to identify ourselves as 'machines driving other machines' and to examine our own programming. Rather than seeking to programme an AI to make these aesthetic judgements in our place, we can accept ourselves as cyborgs and see the computer as an extension of a lifeworld [22] that emerges through networked and complicit performance [23].

'The machine is us, our processes, an aspect of our embodiment' [3, p. 315]

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