SAMPLING, POWER, AND REAL COLLISIONS

Tim Hodgkinson
from Resonance Magazine vol 5 issue 2. 1996

THE ARGUMENT BETWEEN REED AND PIPE

Begin at the other end. Begin with the physics of sound, the old ear and the old physics. Play a clarinet: tongue stopping the reed briefly, lungs pushing up air pressure this side of it, then the tongue's sudden flip downwards off the reed releases a burst of energy, and the reed crash-starts into motion. Held by ligatures, the reed moves only vertically. Restoring forces would simply return this disturbed object to its former restful state, but the reed's inertia first delays this return, then exaggerates it. Elastic, the reed bends backwards and forwards, passing repeatedly through its equilibrium point, vibrating with constant frequency and decreasing amplitude. Attached however, it communicates its disturbance to the pipe of the clarinet, an almost one-dimensional cavity that itself begins to resonate and to pass its own vibration back to the reed.

This is an acoustic system at work - an assemblage of interacting vibrating parts producing an output total vibration. Any such system will have characteristic behaviours shaped by the interplay of restoring forces, inertias, and the disturbances that elicit them. Some of these behaviours are sequential. So, in the example above, an argument develops between reed and pipe before the compromise steady-state perceived as a note is reached. This argument is the transient behaviour of the system. Other behaviours are non-sequential; they are modes of behaviour between which the system chooses, or jumps. Musically, the most important of these are the harmonic modes of vibration, but other candidates include the varied behaviour of reeds, with strong blowing causing temporary closure of the aperture, and weak not.

Consider too that many of the most controllable sources of vibration, such as plucked or bowed strings, are too weak to produce sounds other than of extreme intimacy. Acoustic amplification being more efficient at narrow frequency bands, different resonators, or modes of resonance, may be used to cover different regions of the frequency spectrum. Typically, nodal points in the system's behaviour will occur as it jumps from one resonator to another.

In short, the acoustic systems that we use in music tend to be complex, combining different materials and structures with varied and discontinuous behaviours. The points at which these systems swing from one mode to another are hard to control because tiny movements produce relatively massive differences and the proportionality of movement to result breaks down. Because traditional musics favour stable timbre and melodic control they have not exploited all the physical potentials of acoustic systems. Certain behaviours are censored. Audible changes in mode, and unstable phenomena such as 'wolf tones' in violins, are shunned, demonised.

UNSTABLE BUT ALERT

Take away this cultural censorship, and a world of rich, complex, but relatively unstable and hard-to-control timbre possibilities opens up. The substance of free improvisation as an aesthetic practice distinct from previous musics consists precisely in its openness to transient, effectively accidental, detail that would be occluded from expectations and responses in those musics, and in its willingness to unlock the mutual incoherence of the sub-elements of acoustic systems as a source of interesting sound. So there is an underlying convergence between the potentials of unstable physical systems, and the aesthetic project of openness.

Not that free improvisation is about abandon: on the contrary, players strive to register the consequences of the instabilities they've unlocked. Free improvisation is the synthesis of receiving the detail - including that which would be excluded were conventional frame consistency and stability to be insisted on - and giving the response, the movement towards a musical contextualisation of the detail, to be temporarily sustained or in turn immediately challenged. This produces the unique reception identity and even psycho-rhythmic identity of player and audient, a state of shared alertness within variable or uncertain frames. And this makes free improvisation quintessentially a performance music, with all that that implies about the specifics of the psycho-physiological activity, social occasion, and so on [(1)].

This description, though incomplete, will serve to show that free improvisation has an identity as a specific practice, emerging at a particular time and for particular reasons. I reserve the term "aesthetic" for everything that is germane to the demands of this and of other such determined practices, not to attempt a definition of aesthetics, but to hint at what it is that we must not allow the reduction of, when we bring them into relation with such quite other complexes as technologies or discourses. I will argue here that, amongst the aesthetic requirements of free improvisation, are matters of control and of limit; that there are currents of use of new technologies that are associated with slackness of control and with inadequate limitation of material, and finally that these losses are often legitimated by references to discourses of power.

TECHNOLOGY AND CONTROL

In practice, control and absence of control can be described as interwoven potentialities of technologies. Two interconnected processes happen in relation to new technologies; a process of positive valuation and application, and a process of psychological assimilation. Electronic amplification, for example, developed historically in response to an expansion in scale of intimate social events. This fundamental character of expanded intimacy is present in its capacity to transform singing styles, to open up microscopic, previously inaudible, sound-worlds, and so forth. Our psychological assimilation of amplified music makes it easy, nevertheless, to overlook that difficulties of control in the application of simple electronic amplification to acoustic instruments are still sometimes unresolved in concerts today. The risks are: loss of control of the player over the sound; distortion of

information returning to the player; divergence between what the player hears and what the audient hears.

Obviously the fact that an amplifier and loudspeaker have inherent characteristics is not a difficulty per se. However, where the sound level is such that the unamplified instrument is inaudible, the characteristics of the amplifier are disproportionally weighted. These would include: time delay, distortion of spectrum, compression of differences between variables, and so on. The fact that electronic amplification dispenses with mechanical linkage, and therefore physical proximity of system elements, creates the potential for blurring listeners' location of sound sources by both direct and reflected sound within acoustic spaces. The importance attached to stereo placement in the production of recorded sound indicates the importance of source differentiation for the listeners' aesthetic appreciation.

Loss of source differentiation is even more likely with the use of secondary amplification, such as PA systems, which also greatly increases the potential disparity between what the musician hears and what the audient hears. It is still common today for the musician on stage to be palpably not hearing what is coming out front-of-house. The routine use of artificial reverbs, which, unlike reflections in actual space, are added to signals in a quantitative manner can further compromise the use of acoustic space as a field of difference. In short, amplification is liable to reduce the degree of tightness of control achievable by a musician. The interpolation of additional materials and processes between musician and audient risks a loss of musical energy, a loss of directness in the immediate communication of sound-detail. As listeners, our psychological assimilation of this energy loss represents a potential real loss in alertness to certain levels of musical detail, and in our capacity to appreciate fully musics which depend on it.

GRABBING AND SQUINTING

Passing on to purely electronic instruments, is it useful to generalise on the basis of Glenn Gould's criteria for keyboard evaluation? As a concert pianist more interested in honing communication of musical structure than in the sensual quality of the sound, what Gould wanted from his pianos was maximum control, and he analysed this control into three strands:

1. Tactile grab and immediacy; an instrument should have a working minimum of delay in linkage, inertia, slackness of connection, elasticity of materials, and so on. Movement should be translated as immediately as possible into sound.

2. The instrument's response should be proportional and consistent to the player's action; information should return directly from the tactilities of the instrument.

3. The instrument should be easy to assimilate, demanding minimum attention qua instrument whilst being played [(2)].

How does a set-up like mother-keyboard-linked-to-sampler-fed-to-amp-and-speaker match up to the Gould criteria? Well, tactility of keyboard can in theory be optimised because there is nothing beyond the keywork to have any necessary effect on its action. On proportionality, the sampler would ab initio score badly. There is, and by design, absolutely no necessary proportionality between the physical behaviour of the human-instrument interface and the specific sound produced. The third criterion - of ease of assimilation - does not fit well to this case. An instrument is obviously less assimilatable if it demands different types of activity during performance, such as loading from disk, pressing pre-set select buttons, or squinting at tiny grey LCDs whilst turning data entry control knobs. But this is not unique to samplers. Orchestral percussionists use rest bars to silently retune drums for the next-but-one section, to lay out beaters, turn music, and so on. The difference is that in the latter case the psychology of switching between multiple types of activity is subsumed into the psychology of following a written part, and of having your time, activity, and (importantly) non-activity, determined for the duration of the piece.

PERFORMABILITY

Can the sampler exempt itself from the Gould criteria by claiming to be not an instrument but an unlimited set of potential instruments? If so, are these potential instruments actually realisable? A sampler can be 'used' and 'operated', but can it be 'played'? As a machine for manipulating recorded sounds, a sampler must be prepared for performance, but does this process turn it into an instrument? Are tape-recorders and gramophones usefully described as musical instruments? What makes them so is performability; that is, what is done with, and to, the (in this case) recorded material during performance, and further, how conducive the system is to the psychophysiology of live sound performance. For a sampler, the question resolves into the following: to what extent can the programmer assign tight linkage between the most interesting potential behaviours of the system and the most precise human motor control and sensory monitoring?

This leads to the observation that in samplers the real-time interface is actually extremely narrow relative to the potential behaviours. The design is such that much of the creative work is in the programming which must take place prior to the performance; in this the sampler follows the same trajectory as the shift from analogue to digital synthesisers - a deleterious one for any music which calls for a public and audible dismemberment of sound.

CRAWLING UNDER THE PIANO

Moreover, where use depends on a system of non-self-evident knowledge, it is more likely to be structured by the form in which that knowledge is presented. It becomes harder to impose agendas other than those implicated in design and its promise. A piano in a room makes a self-evident promise to any child. Sofia Gubaidulina has written about growing up in a room with a piano, crawling under it, singing into it, a vast world of resonant possibilities opening up. In contrast, a sampler's promise is hard to disentangle from its accompanying verbiage. Difficult to imagine a Thelonious Monk of the sampler,

difficult to imagine any primal curiosity getting very far with it. And this verbiage, what does it say? The 200-odd page manual that comes with a sampler will tell you, for example, how to rectify looping problems caused by data corruption of the sample header file. The piano's equivalent would be not finger exercises but instructions on how to compensate for flacidity in bottom C# by tightening the fourth nut down on the sound-board by one and a half turns. Always a danger, then, that technical procedures substitute themselves for musical ones, that we slip under the spell of an adolescent male fascination for boy-things, for self-contained zones of manipulation and consequence from which irreducible problems are simply excluded.

SEALED FROM YOU

But around this layer of technical language floats, sometimes explicit, sometimes implicit, the promise, the love affair, the gleam of your new machine. The promise is two-fold - Adaptivity (the moulding of the instrument to the individual's personality) and Power - though both of these may bethought of as facets of empowerment.

A sampler offers itself to be shaped by individual desire and, by the same token, to be part of the shaping of the individual. But this increase in adaptivity to the individual person (it does everything you want it to do) is obtained in exchange for a decrease in access to vital system elements. The box is sealed, so to speak, before it leaves the factory. In the sense that access to its working parts requires esoteric knowledge, it is sealed even before it leaves the design laboratory. This increasing remoteness of effective power and knowledge reflects a general characteristic of the current socio-technological tendency; the individual (and social) field of action shrinks as the interface with remote centralised systems is pushed further and further into it: an anti-democratic programme carried out in the name of enhanced individuation.

USE ALL SOUND

Then, and equally integral to the sampler's design, comes the promise of power - first in the form of infinite sound possibilities, and then, hidden within this, the possibility of a vengeful mastery over cultural texts. The limits imposed by earlier technologies appear as obstacles that the new technology has jumped over. Investment of time and money in the new technology is justified precisely in order to overcome these limits. The point of a sampler is that it imposes no limit qua instrument on the sound it stores and emits. The point of using it is to use all sound. The promise of the sampler and the responsibility of the performer contradict one another. Two mutually exclusive forms of power are implicated. Within aesthetic practice, performance is the means by which the performer's actual power is placed at the service of a hypothesis, a sequence of organised acts which are formally separated from having literal consequences in the real world. But performance can also be an exhibition of the actual power of the performer; this is counter-aesthetic because this display is an actual appeal for admiration or coded submission in the real world outside music. In the case of skill and effort subtle cultural arrangements may operate whereby the mastery of the player, whilst admired, is simultaneously understood as a submission to the dictates of the aesthetic project. In the

case of limitless sound at the touch of a key, however, the performer risks being revealed as the agent of the technology, with the performance degenerating into a public ritual of submission to alienated social power [(3)].

But let's imagine that the point is not to use all sound, but only all sound that matters - that our performer, in other words, is conjuring not so much with sound as with cultural texts. The after-hours activity of zapping between channels in hotel rooms is suddenly presentable as art, because something is being said with it, and if the performance seems a bit shapeless then that's because the something that is being said is that in fact nothing can be said, perhaps because the simultaneous diffusion of so many channels seems to subvert the significance of what is transmitted down any one of them. This is a far cry from montage, which, as Eisenstein described it, ruthlessly exposed the artist's basic intentional line at the cost of all ties to logical, natural or literary traditional pieties. Far from deploying a critical power against the structures of the information environment, our imaginary performer merely rehearses some of their consequences.

IMPORTED DESIGN AGENDAS

I have said that free improvisation is a real-time musical practice requiring, in a specifically ludic sense, both control of detail and aesthetically adequate limitation of material. These demands have to be applied to new technologies coming into the improvisation field. Where they conflict with new technology design agenda, the conflict must, at the very least, be aesthetically registered.

My second assertion was that, where improvisation's priorities succumb to imported design agendas, aesthetic submission routinely looks to discourses of power for self legitimation. At this point an argument which has been perhaps artificially presented in the exclusive context of free improvisation necessarily broadens out, because no meaningful typology of music-technology discourses could restrict itself to their importance for this type of music alone. Therefore, I retrospectively add that the point of my claim that free improvisation is a specific practice implying specific constraints is precisely that the equivalent thing could be said of any other identifiably distinct music, and that musics are not determined in any necessary way by factors from outside their own nature as practices. This is not to say that music is not famously vulnerable to the projection of discursive meanings, nor is it to say that it can or should purify itself of such meanings. Music will, however, by hook or by crook, aestheticise these meanings, that is, take them knowingly as a burden and submit them to an aesthetic context. (This description of an unavoidable choice between domination and submission rests on the observation that the cultural tension between music and discourse is such as to exclude the likelihood of discovering free-floating resources in the space between musical sound and discursive meaning.)

ART AS SCIENCE

On what basis is a technical discourse normally today imported into an aesthetic context? The question can be linked historically to the development of modern forms of state

funding for the arts. High art lacks the inbuilt legitimation of mass appeal and commercial success; it therefore needs an appropriate form of cultural legitimation. It seeks to present aesthetic activity as technical and scientific activity. In this way art acquires some of the necessary and objective value conferred on science. It becomes the acceptable reflection of an a-conflictual technocratic state. It elides with progress and promises an increasingly refined domination over nature.

The language surrounding and legitimating high art can be read as a kind of contract between two sections of the bourgeoisie, those who make directly financial and material profits and those who produce and maintain the cultural environment in which the market operates. It's a language haunted, then, by the need to convert itself into money. Despite the need for high art to distinguish itself in the strongest terms from commercial art, its linguistic hegemony goes far beyond its own boundaries. Major state-funded art institutions, such as IRCAM, are enormously influential in spreading the practice of routinely de-aestheticising musical decisions and procedures, and placing positive value on technical and impersonal results. IRCAM-type thinking deals with musical problems by asking whether the mathematical or cognitive structural model is correct, or simply banishes aesthetic questions to the low status category of subjective experience [(4)].

STATE OF IMMERSION

Opposed to this high-art perspective comes a utopian one which sees the impact of new technology as anti-hierarchical. Hierarchy is here abstracted from its social basis and presented as a state of mind. New technology is not sensed as technical, in the sense of demanding skill or analytical understanding, but as the new state of mind sweeping away the old one. Music is not something to be performed but something to be put in place or set in motion. Hence the point of new technology in music is that it allows a state of immersion in an autonomous process. Some allowance is made for the aesthetic responsibility for the immersee, but without transference of an actual means of response.

A more sophisticated perspective proposes that the aesthetic priority is always, in every case, to actively explore the potentials of the medium. In this view, musical practices are shaped by the material configuration which constitutes the medium. Indeed, the form of any practice is determined by the resistance of physical materials to human intentions. The impact of technological change is seen as over-riding aesthetic considerations, which have no value beyond their appropriateness to the earlier technology which shaped them. The urgent task is therefore to develop the new aesthetic appropriate to the new medium. However, in practice, the emphasis is exclusively on the immanent potentials of the new medium, even if one can glimpse room for foreplay between what is immediately do-able and the broader promise. The shaping of these immanent potentials to a general historical character is a pre-emptive and selective act. It is argued, for example, that the existence of recording technology per se makes sound itself the proper matter of musical creation, when, in fact, digital memory is precisely and quintessentially the form of memory which is detached from any one sensory mode - allowing us, for example, to record a sequence on a computer just as easily as a sound on a sampler.

Essentially the rush to historicise the present, to think art in history-book chapter headings, serves to legitimate a demand for obedience to the spirit of the age.

REPETITIVE BARRIER-BREAKING

Several characteristics of new technology in music are noted as constituent of a new aesthetic. Thus sampling proposes, as an inherent quality of the medium, intertextualisation, or 'levelling'; the breaking down of distinctions between different musics or between music and non-music. But, unless properly aestheticised, such a priority is likely to be of only marginal interest. To begin with, a barrier can only be broken down once before the point is made. Repetitive barrier-breaking suggests an excessive interest in re-programming audiences' perceptions, which has nothing to do with art. On the formal level the result is repetitive juxtaposition, declaring the inter-reaction of the constituent elements, but without inflecting their subsequent trajectories, and therefore neither demanding, nor rising to, prolonged and inquisitive attention. Elements are treated as givens and even as signs because their presence is primarily to point to the ensembles of elements to which they belong and which extend outside the scope of the work.

Furthermore, interpenetrations of different musics, where attempted, will depend precisely for their effect on a nuanced recognition of the boundaries purportedly dispensed with. If respect for boundary - the same interdependence of transgression and limit - is as important for the musician as for the listener, it becomes doubly so in the case of improvisation, where, as I've noted above, a ludic respect for frame definitions is a pre-requisite for consequentiality.

AVANT-GARDE CIRCUS

Finally, the urge to eradicate boundaries, as if they were merely formal and psychological, fails to register the social basis for distinctions between musics. No real interpenetration of high and low art, for example, could take place without a radical redistribution of material and cultural benefits in society. Of course such a redistribution is in fact taking place, but, unfortunately, in quite the opposite direction; the current fashion for breaking down barriers merely reflects the euphoric globalisation of capital through new infrastructures capable of smashing cultural resistance [(5)].

The old avant-garde circus of shock, purgation, and psychological trauma is sometimes wheeled in to underwrite a kind of training programme for audiences inhibited by obsolete category distinctions from attaining an authentically contemporary and global aesthetic experience.

Further along the same path comes the rejection of any notion of the aesthetic, in favour of a notion of the 'real' or authentic. In this pessimistic view, only the new technology allows the production of music which is sufficiently inhuman, mechanical, and violent, to constitute an adequately authentic response to the de-humanisation of the real world. The pressure of the real forces contemporary art to display rawness of material and

incompleteness of assembly. Machines appear in such art as angels of death and agents of vivisection. The work exhibits in its assemblage a horrible toxicity towards any residual organicism. Perhaps the giving up of the aesthetic hurries into fetishistic admiration for elements of the victim situation. The work seems all too adequate as a reflection. It ceases to have any character of an alternative hypothesis. It mingles with the impulse to absorb into self the destructive power of the alien world.

DISOBEY HISTORY

So what does all this add up to? The collisions occurring between particular musics and particular technologies are real collisions. We have, as individuals, so little power to confront what appear as autonomous processes of history that we are, each to a different degree, tempted to align with them, to possess them. Yet no better models for obedience to history exist than those other individuals we presume to be very powerful. Where music chooses to act out on its own small stage the logic of the given, this echoes curiously the form of other graver capitulations on greater stages. If we read the statements made by the presidents and managers of the world's most powerful institutions, such as those currently accelerating the privatisation of all human culture, we see them revealed as mere agents of what they deem to be historical necessities. Only by the most ruthless submission to Power do such individuals hold power over us. If music is to affirm another kind of power, arising in us, yet both from, and for, others, it must vigilantly disobey history, especially when history promises the neon thrill of violating the past. However the technological discourse of triumphant capitalism is negated, aesthetic autonomy is the only guarantee of critical force. Whatever music speaks, it speaks in itself. I like to think that improvisation, in particular, could speak in itself that moment in which the duality of stability and subversion has ceased to be an intelligent paradigm.

NOTES:

1). Some of this argument draws on earlier articles, and in particular *Sulla Libera Improvvisazione* in Musica/Realtà 15, Milan, Dec 1984.

2). The best exposition on Gould's ideas about this is in *Glenn Gould, Music & Mind* by Geoffrey Payzant, Key Porter, 1984.

3). For a discussion on sadomasochism in music performance, see the first part of Edward Said's *Musical Elaborations*, Chatto & Windus, 1991.

4). On IRCAM I highly recommend *Rationalizing Culture* by Georgina Born, University of California Press, 1995.

5). Best critical overviews I've found on this are assembled in Le Monde Diplomatique, May 1996, in the dossier Internet, L'Effroi et l'Extase.
