

Instrumentalizing: Approaches to Improvising with Sounding Objects in Experimental Music

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Within improvised experimental music the need to define a musical instrument can be superseded by acts of bespoke, and often temporary, uses of any sounding object. The performer's perspective of a musical instrument is also effectively changed from the traditional role of being a predetermined *thing* that realizes a musical language outside or indifferent to its self, to being an *act* that explores an object for its inherent sonic properties. This exploratory process seeks to create artistic statements that are responsive to the emerging sonic properties of an adopted or appropriated sounding object. The combination of artistic approach and performer activities that underpin this practice are considered here as the notion of *instrumentalizing*.

Instrumentalizing seeks to discover the performability, intrinsic sonic palette and possibilities for sonic manipulation of objects. It can be exercised on any object that has the potential to sound or manipulate sound in real time, and it need not be complex. Sticks, combs, tables, cases, shoes and vegetables are a few of the objects that have been successfully explored as sound-making devices for improvised performance. There are also many examples of the 're', or more accurately 'de', contextualizing and adaptation of a wide range of technologies. This includes those designed for music production to equipment that was intended for use in telecommunications, medicine, electrical engineering, entertainment and toys, road safety, surveillance, radio technology and domestic appliances.¹

The process of instrumentalizing can provide the resulting artistic content of an improvisation, and may also become the performance strategy. There is a symbiotic

1 For current examples of artists exploring the artistic and performance possibilities of many of these technologies, see Nicholas Collins (ed.), 'My Favorite Things: The Joy of the Gizmo', *Leonardo Music Journal*, 17 (2007), in particular the collection of artists' statements on pp. 29–50; Brian Marley and Mark Wastell (eds), *Blocks of Consciousness and the Unbroken Continuum* (London, 2005), and David Toop's insightful observations in *Haunted Weather* (London, 2004).

relationship between the exploration and the emerging sonic material being discovered. Recordings of performances by artists that engage with this practice can exhibit many examples of the sonic potential in the objects they are instrumentalizing. However, there has been little discussion about *how* one approaches the activity of exploring a sounding object as a musical performance tool.

The aim of this chapter is to outline a practical method that can offer new performers and interested listeners an insight into this, all too often elusive, artistic practice. It is also an appreciation of how improvising and experimental performers can skilfully approach sounding objects as the core materials for performance. Of course, such a discussion will never be comprehensive. Every performer offers a personal aesthetic with a related personal practical approach in their exploration of sound-making objects and the subsequent rationale for organizing sound. For many the very idea of deconstructing an approach to performance may be an arbitrary exercise, and even counter to the musical aesthetic they are engaged in. This is especially the case if the very nature of the work is to question, confuse or even undermine its own rationale.

Historical Context: The Emancipation of *All Sounds*

The introduction of new sounding acoustic objects has been slowly augmenting Western music's palette of instruments over time. This has included developments in mechanical technologies which led to complex chromatic additions such as the piano and the saxophone. Through the twentieth century a combination of aesthetic, cultural and technological advances instigated the notion that *any* sound could contribute to the musical palette. Composers in the early part of the century, such as Varèse and Russolo, began to shift music-making away from the dominance of equal temperament and the organization of pitch towards 'the organization of sound'. Cage's (now canonic) 1937 lecture 'The Future of Music: Credo'² articulates the excitement of introducing the emerging experimental aesthetics being explored within other art forms into a musical arena. 'The sound of a truck at fifty miles an hour. Static between radio stations. Rain. We want to capture and control these sounds, to use them not as sound effects but as musical instruments.'³ Two years later Cage composed *Imaginary Landscape No. 1* (1939), which Nyman cites as being the first composition to incorporate live electronics.

It uses two microphones, one to amplify the two 'regular' percussion instruments (a large Chinese cymbal and a piano played in an unorthodox manner by sweeping the bass strings with a gong beater, or by muting the strings with the palm of the hand while playing the keyboard). The other

2 John Cage, 'The Future of Music: Credo', in *Silence: Lectures and Writings* (London, 1980), pp. 3–6.

3 Ibid., p. 3.

*microphone picks up the sounds of the primitive electronic 'instruments' – recordings of constant frequencies which are test recordings used in acoustic research and radio stations. These are played on variable speed turntables.*⁴

As had been the case for 'exotic' sonorities during previous centuries, sounding objects that could not contribute pitched material were often presented or perceived as percussion during this early period. Again, Cage heralded the trend by suggesting that 'Percussion music is a contemporary transition from keyboard-influenced music to the all-sound music of the future. Any sound is acceptable to the composer of percussion music; he explores the academically forbidden "non-musical" field of sound insofar as is manually possible.'⁵ However, listener interpretation could shift between the referential, the conceptual or a purely sonic experience, as many newly discovered or 'found' musical instruments had resonances with the *objet trouvé* of the visual arts. For example, Cage's *Water Music* (1952) incorporated the use of kitchen and domestic appliances, and Christian Wolff's instructional composition *Stones*, from his *Prose collection* (1968), was performed predominantly on stones.

In line with the pioneering developments occurring in studio composition, emerging audio technologies, such as the phonograph, magnetic tape, microphones and oscillators, were also being explored for their unfamiliar sounds and 'foreign' performance techniques. 'Composers of the musical avant-garde championed such instruments precisely because of their unique sonic characteristics and their explicit rejection of past musical technique.'⁶ The use of new technologies in performance became accepted practice, and Chadabe comments that 'an electronic musical instrument can look like modules in a rack, or like a computer, or like a lot of grey boxes on a table, or like a violin, or for that matter, like virtually anything'.⁷

In contrast to the fixed nature of a studio composition, forever committed to tape, compositional strategies for experimental live performance could explore greater degrees of indeterminacy. Many composers began to offer less 'notation', instead exploring the use of graphic or text-based scoring systems for performers. This loosening of composer instruction came with an expectation on the performer to create, or improvise, much of the detail within a performance. The shift in the hierarchical grip of musical instruments became an important precursor to the development of 'free' improvisation. Bailey points out that free improvisation ultimately emerged as a cohesive movement in the early 1960s, as a result of the philosophy and extensions in indeterminate compositional approaches in European 'straight' music, combined with greater freedoms in jazz music.⁸

4 Michael Nyman, *Experimental Music: Cage and Beyond* (London, 1999), p. 45.

5 Cage, 'Future of Music', p. 5.

6 Paul Théberge, *Any Sound You Can Imagine: Making Music/Consuming Technology* (London, 1997), p. 44.

7 Joel Chadabe, *Electric Sound: The Past and Promise of Electronic Music* (Englewood Cliffs, NJ, 1997), p. 215.

8 Derek Bailey, *Improvisation: Its Nature and Practice in Music* (New York and London, 1992), p. 84.

In combination both of the above developments in experimental music liberated traditional notions of musical sounds and the musical instrument. They also created a performance practice outside of the composer-performer paradigm that has its primary focus on the exploration of new sonic territories. As *any* sound had come to meaningfully contribute to musical experience, then any sounding object could be considered a potential music-making instrument. Perhaps the need for a line between what is and what is not a musical instrument was firmly broken at the same time as the traditional polarities of noise and music became an artistic continuum. Théberge suggests that 'an instrument is never really completed at the stage of design and manufacture at all; it is only made "complete" through its use'.⁹ In experimental improvisation this notion needs to be extended, accommodating temporary or fluid acts of instrumentalizing. The creation of a music-making tool need not have any intentional design process, or ever reach any sense of an instrument's 'completion'. How a performer approaches the practical techniques of 'playing' such a loose definition of a musical instrument is addressed in the following sections, beginning with the artistic notion of creative abuse.

Creative Abuse

Creative abuse is a fundamental element of instrumentalizing, as it offers an artistic approach that seeks to exploit a sounding object by any means necessary in order to access its potential sonic palette. Atkinson and Landy define it as an approach that explores 'instruments, objects and/or digital protocols for use in manners that differ greatly from those known generally'.¹⁰ The term has come to be an umbrella term for varying degrees of remove from the intended function of any sounding object or technology, offering a performer access to new sounds and extended parameter manipulation in acoustic, electronic or digital domains.

For existing musical instruments creative abuse encompasses 'prepared' and 'extended' techniques.¹¹ Bailey points out that in free improvisation 'the unorthodox technique is commonplace'. 'An extension of technique might have certain musical implications which might in turn produce further technical implications, which might reveal further musical implication.'¹² As extended techniques become more exaggerated there is a point at which the original intention of the instrument design is forgotten, or is so fractured that it becomes a new sounding object in

9 Théberge, *Any Sound*, p. 50.

10 Simon Atkinson and Leigh Landy, *EARS: ElectroAcoustic Resources Site*, <http://www.mti.dmu.ac.uk/EARS/> (accessed 11 July 2008).

11 For example, see Bertram Turetzky, *The Contemporary Contrabass: The New Instrumentation* (California, 1974) or Claus-Steffen Mahnkopf and Peter Veale, *The Techniques of Oboe Playing: A Compendium with Additional Remarks on the Whole Oboe Family* (Kassel, 1998) as clearly documented accounts of possible extensions and preparations.

12 Bailey, *Improvisation*, pp. 99–100.

its own right. This more open approach moves far beyond the possible stigma of classifying sonic explorations with the codified notion of extended technique.¹³ It can even include the sonic possibilities of the instrument's case, any associated maintenance tools that may be at hand or anything that may be on the concert platform during performance.

Michael Nyman states that 'experimental music exploits a [musical] instrument not simply as a means of making sounds in the accepted fashion, but as a total configuration – the difference between "playing the piano" and the "piano as sound source"'.¹⁴ Eddie Prévoist encourages participants during his free improvisation workshops to discover 'the sounding properties of the objects you have', restating Nyman's notion that 'the musical instrument is just "material"', so 'no part of the instrument should be left unexplored'.¹⁵ A clear example of this in context is performer Graham Halliwell's approach to 'the saxophone as a variable acoustic chamber with its own unique properties, enabling subtle changes in pitch, timbre, and harmonics'.¹⁶

Another form of creative abuse can be seen in John Richards's notion of 'bastardization', which describes a conceptual approach to the use of technology. He describes it as 'forcing a system into a state in which it was never intended, or appropriating something for a use other than what it was initially designed for. For example, in analogue terms, this may involve circuit bending or hacking a sound generating device, or forcing a circuit to oscillate through a feedback loop'.¹⁷ Often, the use of extreme parameter combinations, and even manipulations of the expected supply voltages to battery-operated equipment, can push electronic or digital/virtual systems into the fruitful 'edge boundaries'¹⁸ of unstable sonic activity. This is exemplified by David Tudor's recognition that

13 John Butcher's comments on the 'crude' terms used by journalists to describe his technical explorations: 'Much of that terminology is derogatory for sounds that 30 years ago people might have found unusual.' 'Slap-tongue automatically associates a sound with vaudeville and is dismissive of the fact that, the more you explore a technique, the more degrees of subtle differentiation you find inside it. My distrust of sounds labelled as "extended technique" comes from the world of composerdom, where there is a school of conventional instrument playing and other things added on top' (John Butcher, quoted in Philip Clark, 'Between Thought and Expression', *The Wire*, 289 (2008): 28–32, at 32.

14 Nyman, *Experimental Music*, p. 20.

15 Guidance and instruction given by Eddie Prévoist at an improvisation workshop, held at the Cube Microplex Bristol 14 June 2008, attended by the author.

16 Graham Halliwell, 'What Are You Doing With Your Music?', in Marley and Wastell, *Blocks of Consciousness*, pp. 52–3.

17 John Richards, '32Kg: Performance Systems for a Post-digital Age', *NIME 2006 Proceedings* (Paris, 2006), pp. 283–7.

18 Ben Nevile, 'An interview with Kim Cascone', *Cycling '74*, <http://www.cycling74.com/community/cascone.html> (accessed 12 December 2007).

*an electronic component can seem to have a personality ... If you really examine a device that you might buy, like a filter or a small mixer, and you actually try to experience its capabilities, you have to push it, to ask it to do something that it's incapable of doing. When you make those experiments you find out that unique things are happening.*¹⁹

Marley and Wastell conclude that 'one of the characteristics of free improvisation is its hunger for new sounds, new ways of making sounds, and new ways to (dis)order them. Often these sounds are realized through the misapplication of a piece of music technology (such as Sachiko M's empty sampler) or the personalized modification of an existing instrument (such as Andrea Neumann's inside piano).'²⁰ Creative abuse is therefore at the core of instrumentalizing, providing the artistic licence to approach objects in whatever way is necessary to evoke sound.

Assessing an Object for Sound and Playability

Assessing the artistic and performative potential of a sounding object involves an exploration of its sonic capability combined with the physical possibilities to excite, influence and shape that sonic capability. Pressing cites auditory, tactile and visual as three key areas of performer feedback used when learning a musical instrument.²¹ The same is true within instrumentalizing, as aural feedback focuses on emerging sounds, whilst tactile and visual feedback contribute towards an appreciation of the object's playability.

Consciously acquiring information aurally is often referred to as 'active listening'.²² John Young suggests that for the composer aural analysis is 'a process of gaining understanding of the materials that will give rise to the musical "outcome", and for the musicologist, analysis dissects and contextualizes the final musical "fact"'.²³ During the process of instrumentalizing the performer needs a third type of aural analysis that is responsive to real-time activity. Experimental performer Xavier Charles considers this a 'virtuoso listening', where 'listening quickly doesn't

19 Teddy Hultberg, "I smile when the sound is singing through the space": An Interview with David Tudor by Teddy Hultberg in Düsseldorf May 17, 18 1988, available at <http://www.emf.org/tudor/Articles/hultberg.html> (accessed 24 June 2008).

20 Marley and Wastell, *Blocks of Consciousness*, p. 4.

21 See Jeff Pressing, 'Improvisation: Methods and Models', in John Sloboda, (ed.), *Generative Processes in Music* (Oxford, 1987), pp. 129–78 and 'Cybernetic Issues in Interactive Performance Systems', *Computer Music Journal*, 14/1 (1990): 12–25.

22 See Barry Truax, *Acoustic Communication* (Stamford, Conn., 2001); Pauline Oliveros, *Deep Listening: A Composer's Sound Practice* (Lincoln, Nebr., 2005); Michel Chion, *Audio-Vision: Sound on Screen* (New York, 1994).

23 John Young, 'Sound Morphology and the Articulation of Structure in Electroacoustic Music', *Organized Sound*, 9/1 (2004): 7–14.

mean hurriedly, but rather being able to move to a listening of the elements at play in an improvised moment'.²⁴

The language of experimental music is not restricted to, or reliant upon, the arrangement of pitch-based material, often not referring to it at all. Therefore virtuoso listening has a primary focus on what Rodolfo Caesar refers to as the 'interiority' of sounds, addressing the sonic qualities of mass, grain, spectral content and dynamic envelope.²⁵ This notion of interiority has its roots as a studio compositional tool, with the assumption that sonic material will be both fixed in nature and isolated from its original source, cause and context.²⁶ Within improvisation sounds are generally emergent or in constant flux, not affording the performer the luxury of contemplation or exact repetition during assessment. Attempts to define a fixed typological categorization of the nuances available from the unstable oscillations of a hacked electronic circuit, or the complex spectral resonances of a scraped cymbal, could prove futile. For this reason a more fluid 'topology' of available sonic behaviours offers a useful way to map an elusive sound palette during performance.

In the context of instrumentalizing, sonic activity cannot be detached from the simple cause-and-effect relationship the sound has with its physical object or technological source. As a performer demands more responsive interactions with the object's sonic behaviour it becomes necessary to track the relationship between excitation method or parameter adjustments and the resulting sound. Audible changes can be correlated to physical manipulations. Actions can be repeated to re-access fruitful results, though, as mentioned above, these are often likely to be reactivated sonic behaviours rather than exact events or gestures. This activity ultimately begins to create a map of the object's available sonic palette. Some of the parameter interactions will be generic, such as gain and equalization, whilst others will be specific to that object. Many technologies being explored will incorporate a high percentage of sonic colouration and behaviours that are artefacts of their own sound-making medium or processing routines. For example, a dictaphone will have an intrinsic colouration due to tape surface noise, tape speed and the sound quality of the in-built speaker.

Lee Patterson clearly describes his process of assessing the sonic potential of objects, linking sonic results with developing playing techniques.

24 Xavier Charles, 'What Are You Doing With Your Music?' in Marley and Wastell, *Blocks of Consciousness*, pp. 88–9, at 88.

25 Rodolfo Caesar, *The Composition of Electroacoustic Music*, PhD Thesis (University of East Anglia, 1992), p. 52.

26 Caesar's notion of interiority is an extension of the acousmatic composition tradition, and owes much to the lineage of Denis Smalley's 'Spectromorphology' (1986, 1997) and Pierre Schaeffer's original 'Typo-morphology' (1998, originally 1967). Both are comprehensive tools for interpreting and categorizing sounds within *music concrète*, acousmatic and/or tape-music composition. See Dennis Smalley, 'Spectro-morphology and Structuring Processes', in Simon Emmerson (ed.), *The Language of Electroacoustic Music* (London, 1986), pp. 61–93 and 'Spectromorphology: Explaining Sound Shapes', *Organized Sound*, 2/2 (1997): 107–26; Pierre Schaeffer, *Solfège de l'objet sonore* (Paris, 1998).

Often, when a new kind of object is identified as a source of interesting sound, or as a potential instrument, then almost obsessive collecting of similar objects ensues. This is done in order to explore the range of sounds available from any particular type of object ... Sound as a material property of objects is uncovered by detailed sonic investigations ... As part of the same process, new playing methods are developed.²⁷

An object's playability is defined by its physical interface. The focus of instrumentalizing is on exploring or exposing the sonic properties of objects, rather than instrument design. This can create a challenge, as the performer is forced to work with interface controls that were only designed to access the object's original function. Assessment of these controls is based on both tactile and visual cues. However, when working with electronics, tactile feedback is rarely akin to a more haptic exchange, whereby the object gives a physical sensation that indicates a sonic change to the performer.²⁸ The fixed-scope dials and buttons inherent on a 'found' electronic instrument may not give any responsive mechanical behaviour. Their manipulation can result in the sound becoming saturated through gain or even degraded into complete collapse, but nothing in the feel of the controls would indicate this. The knowledge that a button is in or out, or a dial has reached the end of its scope, is only useful when considered in conjunction with aural and visual feedback.

Visual information proves valuable when learning a musical instrument where the physical interface is clearly mapped out, and its effects are 'literal', such as the frets on a guitar or a piano's keys.²⁹ With acoustic objects such as wine glasses or saucepans this visual reference becomes an important resource. Through experience it may also be possible to visually edit control parameters for instrumentalized electronics to revisit known areas of sonic activity. However, controls may be relative, multi-function and in the case of feedback oscillators they are even non-linear, and therefore not literal enough for visual appearance to be a reliable indicator.

It is possible to create a detailed sonic and playability mapping of an object with the use of these assessment methods. However, a performer can also consciously leave assessment findings fluid or unresolved, choosing to reinvestigate or rediscover fruitful interactions during subsequent performances. An outline of general practicalities for performer interactions is discussed below as sound-shaping.

27 Lee Patterson, 'What Are You Doing With Your Music?', in Marley and Wastell, *Blocks of Consciousness*, pp. 120–35, at pp. 127–8.

28 See Pressing, 'Improvisation' and 'Cybernetic Issues'; Brent Gillespie, 'Haptics', in Perry Cook (ed.), *Music Cognition and Computerized Sound: An Introduction to Psychoacoustics* (Cambridge, Mass., 1999), pp. 229–45.

29 Pressing, 'Cybernetic Issues', p. 15.

Sound-shaping

Sound-shaping techniques are the practical activity of instrumentalizing, and can be used during initial assessment and in subsequent performances with an object. It is here that the freedom afforded by creative abuse really comes into play, as a performer can explore and exploit *any* fruitful actions on the object or its available parameter controllers. Examples are presented across three levels of performer interaction: *facilitate*, *influence* and *impose*.

Wishart suggests that 'any sound has an *intrinsic* and an *imposed* morphology',³⁰ where an intrinsic sonic shape is predetermined by the object making sound, as opposed to external gestural shaping imposed by the performer. Young extends this notion for use in the analysis of electroacoustic music. He considers an inner morphology to be the 'inherent shape characteristics of naturally occurring sound objects', and an outer morphology to include 'the morphological artefacts of signal processing routines'.³¹ Within live electronics Stan Templaars contributes a third tier to the inner and outer morphology notion, thus creating more of a continuum of possibility than an opposition. He distinguishes between '*internally generated* micro-modulation, which results from the properties of the instrument itself, and *externally generated* micro-modulation, which results from a performer's input'. Additionally one can make global-modulations that 'affect aspects of the entire sound, such as pitch and general loudness'.³²

When combined, the notions of Wishart, Young and Templaars can accommodate internal sonic complexities, either inherently from the object or the result of performer control, and an outer sonic morphology, imposed by the performer. These resulting three tiers can be simplified into the interaction levels of *facilitate*, *influence* and *impose*. Facilitate and influence both explore intrinsic sonic potential, whilst sound-shaping techniques that occur outside of the intrinsic can impose external spectral or temporal characteristics. The practicalities of each are discussed below.

The first interaction level is that of facilitating an object's intrinsic sonic properties. Methods for facilitating are based upon the acts of configuration and excitation. Configuration is perhaps more of a concern when working with combinations of sounding electronics or objects mediated through microphones, amplification or sound processing. The order in which an audio signal passes through processors or self-oscillating audio equipment has a profound affect on the resulting sound. Configuration can be considered a form of instrument design, and ultimately a compositional decision. It also includes the loading of any predetermined source material onto the likes of turntables, dictaphones or samplers. Burns and Burtner note that in 'working with feedback, much of the composer's control over the musical result is invested in the original design of the recursive system'.³³

30 Trevor Wishart, *On Sonic Art* (Amsterdam, 1996), p. 177.

31 Young, 'Sound Morphology', p. 7.

32 Quoted in Chadabe, *Electric Sound*, p. 242.

33 Christopher Burns and Matthew Burtner, 'Recursive Audio Systems: Acoustic Feedback in Composition', *Leonardo Music Journal*, 13 (2003), *Leonardo Electronic Almanac*,

To simply facilitate an object into sounding there has to be a neutral excitation. For example, acoustic objects can simply be struck, or dropped, and electrical or electronic objects can be 'turned on' to initiate what they do. A child's musical toy may be triggered to play its start-up melody, or a food blender's whir engaged by pressing the 'on' button. This facilitating level of interaction can be dictated by the simplicity of the object itself, but it could equally be artistic intent.

Influencing is the second level of interaction, which involves shaping the object's intrinsic sound through the use of available parameters or controls. The performer is consciously trying to influence the development of interior sonic attributes. A deeper level of excitation comes into play here, as it can also be a persuasive form of influencing. For instance, manipulating the regularity of the on/off switch, or bowing, scraping and rubbing as a way of both initiating and sustaining acoustic sonic activity.

With electronic equipment, manipulations that offer immediate change through switches and buttons are considered discrete, or continuous where controls such as dials and faders allow gradual change.³⁴ Choices made during configuration affect the availability of editable parameters, though these choices need not be restricted to a preparatory activity. Reconfiguring signal path routings to access new parameter editing potential can also be explored in real time. Hugh Davies describes any experimental electronics that have recursive feedback at their core as 'oscillators'.³⁵ The technology used is unlikely to have been originally conceived as an editable signal generator, but there may be many similarities to the sound design principles of synthesis. The sonic results of Tudor's pioneering output-to-input connections with off-the-shelf audio equipment, such as mixing desks and guitar effects pedals, offer examples of such oscillators. The sound of these bespoke oscillators can be influenced and shaped by using the objects' original editable parameters, but they are profoundly affected by the amount of system gain introduced by any internal volume or equalization.

The third interaction level explores Wishart's notion of an 'imposed' morphology, and occurs when the performer is sound-shaping 'outside' of the electronic system or object. This external activity can use spectral and temporal manipulation to change the sound's outer morphology, and includes volume shaping, filtering or equalization, and spatial processing such as reverb and delay. All offer extensive control on the final output signal. Imposed amplitude envelopes enable gestural shaping over a continuous resonance or oscillation. External filtering can help spectral placement when performing with multiple instruments, or create textural activity in static behaviours such as white noise or radio interference. One can also impose an outer morphology upon acoustic objects through the use of amplification

<http://www.mitpressjournals.org/doi/pdfplus/10.1162/096112104322750827> (accessed 10 January 2004).

34 Pressing, 'Cybernetic Issues', p. 14.

35 Hugh Davies, 'Electronic Instruments, IV, 6, iii: Electronic Oscillators', in *Grove Music Online*, <http://www.grovemusic.com/shared/views/article.html?section=music.08694.4.6> (accessed 28 June 2008).

and signal processing. For example, a volume pedal placed between the amplifier and a contact microphone that is attached to a resonating string can create a varying amplitude contour during the string's sustain.

Although discussed here in abstract, the levels of facilitate, influence and impose can be freely navigated in practice, and are often inseparably merged. Their use in no way indicates or prescribes any artistic, sonic or musical outcomes, but as a performer's experiential awareness of techniques within each level accumulates it is likely that a pool of skills will develop for use during future instrumentalizations. It is also important to note that the activities of the previous three sections are often completely intertwined. Object assessment is carried out from an artistic approach of creative abuse, using sound-shaping techniques.

Notions of Skill

The notion of performer skill within experimental music does not have the same aspirational allure that it does in most other forms of music-making. During instrumentalizing the acquisition and display of skill is guided by a combination of aesthetic and artistic choice, and the potential control intimacy afforded by the object being performed upon. Bailey offers insight into the perceptions of an improviser's skill.

Opinions about free music are plentiful and differ wildly. They range from the view that free playing is the simplest thing in the world requiring no explanation, to the view that it is most complicated beyond discussion. There are those for whom it is an activity requiring no instrumental skill, no musical ability and no musical knowledge or experience of any kind, and others who believe it can only be reached by employing a highly sophisticated, personal technique of virtuosic dimensions.³⁶

Bailey also adds the pithy comment that 'virtuosity doesn't have to be empty',³⁷ for it can be wrongly interpreted as an indicator of more traditional performance values. Many performers consciously challenge audience expectations of skill by placing a primary focus on seemingly simple tasks or procedures that facilitate sounds to be 'free' of performer intention, or invite degrees of indeterminacy. Within composition Cage made a call to 'free sound from all psychic intentionality. Sound is sound and man is man. Let sound be itself, rather than a vehicle of human theory and feeling.'³⁸ In the following interview extract with Hultberg, Tudor describes Cage's principle from his own performance context.

36 Bailey, *Improvisation*, p. 85.

37 Ibid., p. 100.

38 Wim Mertens, *American Minimal Music*, trans. J. Hautekiet (London, 1983), p. 106.

TH: Like Cage, you have said that you are interested in leaving sound to itself, that sounds should be themselves, that sounds have to be free. Do you still hold that view?

DT: Yes, I certainly do.

TH: Why do you want to free sounds?

DT: (laughter) It might be presumptuous of me to think that I could free them. The thing is I want them to be free. As we were talking before, when the sound appears to be live in the space, then it's free, it seems to flow by itself and not to be caused by some specific intention, especially of an intellectual nature. If you put yourself in a situation of unpredictability and then find that it's completely possible to accept it, then you become an observer. Then you see that the sound can be free. I know it's hard to be clear about that, because a sound is something that you receive, but when you put sounds together, they are in a context and if that is burdened by an intention to conquer or an intention to impress, then ... well, if I find myself in that situation, I'm rather unhappy. I smile when the sound is singing through the space.³⁹

Navigation through the previously discussed interaction levels of facilitate, influence and impose can be viewed from Evan Parker's notion of instability-to-control during performance.⁴⁰ If desired, one can acquire a balance of general skills such as manual dexterity and response speed, although performers are not judged by their ability to control an object. However, there are times when artistic intention may require greater levels of skill. There are two more specific skill areas important to instrumentalizing, each representing experiential knowledge acquired through practice. The first is a performer's ability in the actual process of instrumentalizing; the second is a performer's skill on a particular instrumentalized object.

A skilful ability to assess any object's potential through a wide range of excitation and sound-shaping techniques enables confident explorations of new objects within a live performance situation. This includes having an eye for a fruitful object to perform on in the first place. In fact for many, being guided by the spontaneous discoveries of sonic properties in the object becomes the primary content of a performance. Prévost describes this exploratory approach in his own work as *heuristic*, stating that 'the intention is making music, and listening to it, as if for the first time', by 'transcend[ing] all previous experience of music production and music consumption.'⁴¹ He also expands this into a wider improvisation principle by saying that *heurism* 'is the practice of problem solving during performance.'⁴²

39 Hultberg, "I smile when the sound is singing through the space".

40 Evan Parker, in conversation with the author May 2007, during a collaborative Sonic Arts Network/PRSF commission with Bath Spa University's Behaviour ensemble.

41 Edwin Prévost, *No Sound is Innocent* (Matching Tye, Essex, 1995), p. 3.

42 Edwin Prévost, *Minute Particulars* (Matching Tye, Essex, 2004), p. 53.

Although Tudor is cited as an example of 'setting sounds free' the breadth of his work also offers an example of this exploratory, or heuristic, technique. He stated that 'I put myself into the most difficult and complex situation and try to get out of it.'⁴³ Gray suggests that 'Tudor's goal was always to control the situation. [But] if ever he fully achieved this goal, he would change the parameters of the whole setup to force himself once again into a new level of complexity. In many ways he enjoyed the hunt as much as the end result.'⁴⁴ Repeatedly placing himself in unfamiliar and unstable territory gave Tudor a high level of exploratory skill in performance. Adams recalls that 'his ability to control multiple stages of amplification without the system "taking off" was simply virtuosic'.⁴⁵

The level of exploration, or heurism, can be increased still further when high degrees of inherent object indeterminacy are combined with live circuitry construction or configuration. Pentos Fray Bentos's 'unstruments' are 'a form of real-time "sonic Lego"'. The starting point is a "feedback element" – which could be a simple oscillator or something more complex – to which electronic components are spontaneously added.'⁴⁶ Similarly, John Bowers's 'ad hoc instruments' are constructed during the course of performance through responsive interaction.⁴⁷ Much skill is needed in the exploration process for such precarious situations to be successful.

Having a detailed and informed knowledge of a particular object being performed upon forms the second skill area important to instrumentalizing. A type of control intimacy of the object is acquired, mapped through familiarity gained in assessment and/or accumulative improvisations. This in turn can lead to practised operational skills, more decisive excitation and more subtle sound-shaping of timbral nuances. Prévost suggests that the relationship a performer may have with a particular object is akin to traditional instrumental ability, establishing the development of 'neural pathways in the body (in golfing parlance "muscle memory")'. In effect the musician is physically reshaping the body to enable particular actions.'⁴⁸

The distinction between the specific and the more general instrumentalizing skills can at times be unclear. This is in part due to the fact that performers may gravitate towards particular known objects they perform on, slowly evolving the internal details, configurations and combinations, but also introducing new objects and sound-shaping methods. Many performers have a pool of instrumentalized objects on which they have developed an informed knowledge, making it possible for them to engage with differing performance situations. It is also not uncommon

43 Hultberg, "'I smile when the sound is singing through the space'".

44 D'Arcy Philip Gray, 'David Tudor in the Late 1980's: Understanding a Secret Voice', *Leonardo Music Journal*, 14 (2004): 41–7.

45 John D.S. Adams and D'Arcy Philip Gray (eds), *The David Tudor Pages*, <http://www.emf.org/tudor> (accessed 23 April 2005).

46 Pentos Fray Bentos, 'Feedback at the Limits of Precise Control', *Resonance Magazine*, 9/2 (2002): 30–32.

47 See John Bowers and Nicolas Villar, 'Creating Ad Hoc Instruments with Pin&Play&Perform', *NIME 2006 Proceedings* (Paris, 2006), pp. 234–9.

48 Prévost, *Minute Particulars*, pp. 54–5.

for performers to be associated with their prowess or skill on a particular object or specific type of technology. Again, using the instabilities of electronic feedback as an example, Aufermann recognizes that 'after some time a player will develop some intuitive understanding of the instrument and will be able to predict roughly how and when the sound will change'.⁴⁹

Another key criteria when considering the acquisition of performer skill on a particular object is the object's ability for diversity. Is it a one-hit-wonder, perfect for 'that' moment, or does it contain enough nuance and complexity to enable differing performances in a variety of musical situations?⁵⁰ A successful rating within Sergi Jordà's musical instrument diversity mapping is dependent upon the activity needed to play being neither too simple nor too complicated, and having a potential for progression towards virtuosity with a learning curve that is rewarding to the performer. Jordà makes the important point that a successful instrument 'will allow its performers to play music and not only to *play with music*'.⁵¹

Jordà's diversity levels of 'macro, mid, and micro' reflect possibilities of expressivity and 'the freedom the instrument can offer the performer'.⁵² Macro-diversity (*MacD*) 'determines the flexibility of an instrument to be played in different contexts, music styles, and varied roles'. Mid-diversity (*MidD*) 'indicates how different two performances on the same instrument can be'. Micro-diversity (*MicD*) also has an affect on 'how two performances of the same piece can differ', but here it is more related to expressivity. 'Differences and nuances from one performance to another, from one performer to another.' '*MicD* is indeed essential for turning a musician into a potential virtuoso'.⁵³

Instrumentalized objects generally have a low *MacD* due to a limited control interface and an 'abstract' sonic palette. However, many allow high *MidD* potential, with a large amount of variation possible from performance to performance on some objects. They can also score well in the area of *MicD*. With enough practice and acquired knowledge high degrees of sonic nuances and individual performer approaches can be achieved. As can be seen from the descriptions of Tudor's performances with feedback electronics, a certain level of randomness or instability in the instrument can actually help the 'development of a finely tuned skill and expressive control'.⁵⁴

The following comment by Bailey encapsulates the elusory nature of skill within an experimental performance.

49 Knut Aufermann, 'Feedback and Music: You Provide the Noise, the Order Comes By Itself', *Kybernetes: The International Journal of Systems and Cybernetics*, 34 3/4 (2005): 490–96.

50 For an interesting discussion on the artistic merits of sounding objects that have a very limited playability, see Bowers and Archer's paper on 'infra-instruments': John Bowers and Phil Archer, 'Not Hyper, Not Meta, Not Cyber But Infra-instruments', *NIME 2005 Proceedings* (Vancouver, 2005), pp. 5–10.

51 Sergi Jordà, 'Digital Instruments and Players: Part 1 – Diversity, Freedom and Control', *NIME 2004 Proceedings* (Hamamatsu, 2004), pp. 59–63.

52 Ibid., p. 59.

53 Ibid., pp. 59–60.

54 Ibid., p. 61.

Although some improvisers employ a high level of technical skill in their playing, to speak of 'mastering' the instrument in improvisation is misleading. The instrument is not just a tool but an ally. It is not only a means to an end, it is a source of material, and technique for the improviser is often an exploitation of the natural resources of the instrument.⁵⁵

Referents for Performance

The activity of object assessment and explorations into sound-shaping techniques can lead to instrumentalizing skill through the development of a detailed knowledge base in an object's performance potential. This knowledge base can subsequently develop a web of possible referents for use in performance. Pressing suggests that 'to achieve maximal fluency and coherence, improvisers, when they are not performing free improvisation, use a *referent*, a set of cognitive, perceptual, or emotional structures (constraints) that guide and aid in the production of musical materials'.⁵⁶ As an example Pressing cites the chord chart, or cyclical harmonic sequence, used by jazz musicians as an implicit structure to maintain cohesion between ensemble members. Referent material in experimental improvisation can guide a performer in a range of areas, from the subtle attraction towards a previously discovered fruitful sonic area, to arranging coincidences of ensemble events on pre-arranged cues.

It may take a number of improvisations to develop an informed relationship with a sounding object. Some of these can be in more private sessions, away from the pressures of live performance. Roger Dean and Hazel Smith add a valuable perspective on improvisational performance approaches by suggesting delineation between 'pure improvisation' and the preparatory process of 'applied improvisation'. Pure improvisation consists of completely unprogrammed events unfolding in front of an audience. In contrast, applied improvisation does not normally occur in public, and it is a step towards producing a work that will eventually be played to audiences. It is not looking for the 'right' solution, and has a readiness to accept any possible outcomes.⁵⁷

Applied improvisation is also referred to as 'lab' or 'process' improvisation, and for many it allows a great sense of exploratory freedom, unhindered by durational constraints and audience gaze. The activity is often used as a preparation for performance, and a space to bench-test newly found objects to instrumentalize. When working with electrical or electronic objects it often leads to the consolidation

55 Bailey, *Improvisation*, p. 99.

56 Jeff Pressing, 'Psychological Constraints on Improvisational Expertise and Communication', in Bruno Nettl and Melinda Russell (eds), *In the Course of Performance: Studies in the World of Musical Improvisation* (Chicago, 1998), pp. 47–67.

57 Hazel Smith and Roger Dean, *Improvisation, Hypermedia and the Arts since 1945* (Amsterdam, 1997), p. 27.

of a particular combination or configuration of equipment. During this process possible referents readily arrive that can be used in subsequent live performances.

Referent strategies may simply involve setting a 'territory' for improvisation, such as:

- Sonic – a descriptive sonic landscape, dynamic, or contour
- Aesthetic – such as the indication to work very quietly, or with much ambient space
- Technological – working with previously discovered practical tasks on an object
- Organizational – time structures or arrangement ideas, with or without an expectation for a particular sonic content.

One particular referent strategy that can be readily perceived by the listener is the use of 'looped' sound material. Originally this was explored through lock-grooves on vinyl and 1/4" tape loops. The advent of electronic looping and delay units such as the Digitech PDS-800 EchoPlus Delay in the early 1980s made the process more immediate. They enabled fragments of improvisation to be captured and used as a texture-bed under further explorations. All three of these technologies are still very much in use today, alongside the software emulations and more sophisticated digital buffering systems. Software capture and looping may profess to be the most malleable, but perhaps the most ubiquitous looping tool, seen in the technical set-up of countless improvisers, is the Boss RC-20 Loop Station foot-pedal.⁵⁸

The combination of a unique instrumentalized object(s) and the repeated use of a successful style of subtle referents across a number of performances can also aid the creative identity of a performer. Improvisations can occupy a particular referent territory for a number of performances, or use a similar approach strategy to different objects, on a continuous thread of exploration through a phase of a performer's work. An awareness of referents proves a very useful tool when seeking to understand the rationale or underlying thread behind a concert, as it is not uncommon to see familiar 'routines' performed by certain improvisers.

Artists can also work with referents that could almost be defined as compositional strategies, focusing a performance with the aid of a mental map of key activities or sonic events to present. This is perhaps a direct lineage to earlier experimental composer-performers who created bespoke compositional strategies to frame procedures with electronic instruments, such as Gordon Mumma, Alvin Lucier and Nicolas Collins. Mumma recognizes the implications of bespoke instrument design as a form of creating or 'coding' a compositional strategy for performance, and considers himself a 'designer-composer-performer'.⁵⁹

58 See <http://www.bosscorp.co.jp/products/en/RC-20/> (accessed 24 June 2008) for manufacturer details.

59 Barry Schrader, *Introduction to Electro-acoustic Music* (Englewood Cliffs, NJ, 1982), p. 205.

Summary

Instrumentalizing has been presented here as an exploratory performance approach that encompasses a number of key notions and activities central to improvised experimental music. The inclusion of *any* sound into the musical palette by the pioneers of experimental music through the early twentieth century, and the notion of creative abuse, which exploits objects for uses far beyond their intended function, form the artistic context to instrumentalizing. Practical activity often begins with an assessment of the music-making potential in an object, both its sonic capabilities and its physical playability. This is intertwined with a range of sound-shaping techniques that seek to manipulate available parameters of the sound's interior qualities. These are executed through degrees of extended techniques and general creative abuse, and occur across the performer interaction levels of facilitate, influence and impose.

Objects may require a learning curve to develop knowledge about the physical interface, the available sonic palette and the relationship between parameter adjustments and the resulting sound. As a consequence of prolonged engagement with a sounding object, awareness of effective performer activities is acquired. Whether gained during preparatory explorations or in live performance, this knowledge base can lead to the development of performer skill. However, perceived skill is not always an indicator of a performer's improvisatory ability or artistic integrity, as emerging sounds may be intended to be free of performer intention. Experiential knowledge can also lead to the discovery of a web of possible referents that a performer may choose to draw upon to focus improvisations. These referents can also move seamlessly into loose compositional strategies, ranging from a very open single word description or instruction, to more elaborate sonic or orchestration design.

As stated in the introduction, this model of instrumentalizing does not profess to be a comprehensive explanation of approaches used in improvised experimental music. Ultimately, a performer's activity is driven by artistic intent, and in fulfilling that artistic intent the techniques discussed here may be adopted wholeheartedly or in part, where elements of a certain activity may simply be referred to momentarily. However, with an openness to all sound as a musical material and the practice of creative abuse, the combination of a focused object assessment, tiered sound-shaping techniques and the use of loose referents become powerful tools for discovery and performance activity. They can also aid in developing clear artistic themes during phases of an improviser's work. For many performers the role of a musical instrument has changed its perspective from being something that can realize a musical language outside or indifferent to its self, to being an object that can create a music responsive to its inherent sonic properties. Any fixed definition of a musical instrument may be too concrete for sounding objects that remain in the fluid domain of instrumentalizing.

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