

Curatorial > PROBES

With this section, RWM continues a line of programmes devoted to exploring the complex map of sound art from different points of view organised in curatorial series.

Curated by Chris Cutler, **PROBES** takes Marshall McLuhan's conceptual contrapositions as a starting point to analyse and expose the search for a new sonic language made urgent after the collapse of tonality in the twentieth century. The series looks at the many probes and experiments that were launched in the last century in search of new musical resources, and a new aesthetic; for ways to make music adequate to a world transformed by disorientating technologies.

Curated by Chris Cutler

PDF Contents:

- [01. Transcript](#)
- [02. Selected links](#)
- [03. Notes](#)
- [04. Acknowledgments](#)
- [05. Copyright note](#)

At the start of the seventies, Chris Cutler co-founded **The Ottawa Music Company** – a 22-piece Rock composer's orchestra – before joining British experimental group **Henry Cow**, with whom he toured, recorded and worked in dance and theatre projects for the next eight years. Subsequently he co-founded a series of mixed national groups: **Art Bears**, **News from Babel**, **Cassiber**, **The (ec) Nudes**, **p53** and **The Science Group**, and was a permanent member of American bands **Pere Ubu**, **Hail** and **The Wooden Birds**. Outside a succession of special projects for stage, theatre, film and radio he still works consistently in successive projects with **Fred Frith**, **Zeena Parkins**, **Jon Rose**, **Tim Hodgkinson**, **David Thomas**, **Peter Blegvad**, **Daan Vandewalle**, **Ikue Mori**, **Lotte Anker**, **Stevan Tickmayer**, **Annie Gosfield** and spectralists **Iancu Dumitrescu** and **Ana Maria Avram**. He is a permanent member of **The Bad Boys** (Cage, Stockhausen, Fluxus &c.) **The Artaud Beats** and **The Artbears Songbook**, and turns up with the usual suspects in all the usual improvising contexts. As a soloist he has toured the world with his extended, electrified, kit.

Adjacent projects include commissioned works for radio, various live movie soundtracks, *Signe de Trois* for surround-sound projection, the daily year-long soundscape series *Out of the Blue Radio* for Resonance FM, and **p53** for Orchestra and Soloists.

He also founded and runs the independent label **ReR Megacorp** and the art distribution service **Gallery and Academic** and is author of the theoretical collection **File Under Popular** – as well as of numerous articles and papers published in 16 languages.
www.ccutler.com/ccutler

PROBES #5

In the late nineteenth century two facts conspired to change the face of music: the collapse of common practice tonality (which overturned the certainties underpinning the world of art music), and the invention of a revolutionary new form of memory, sound recording (which redefined and greatly empowered the world of popular music). A tidal wave of probes and experiments into new musical resources and new organisational practices ploughed through both disciplines, bringing parts of each onto shared terrain before rolling on to underpin a new aesthetics able to follow sound and its manipulations beyond the narrow confines of 'music'. This series tries analytically to trace and explain these developments, and to show how, and why, both musical and post-musical genres take the forms they do. This fifth episode looks at timbre and the many routes to its extension, and then explores the somewhat exotic range of modifications, preparations and ways of subverting pianos that have been tried to date.

01. Transcript. Studio version

[Gregorio Paniagua, 'Anakrousis', 1978]

The gradual shift from pitch to timbre, and the slow incorporation of noise into formal composition, took many paths. It seemed that – as the beating heart of twentieth century modernism – noise and all its fascinations was not to be denied. And its acceptance brought with it new percepts, new discriminations and new ways of structuring the aesthetic world. Like disparate mountain streams these many strands began gradually to flow together, until they coalesced into an homogenised set of generally accepted practices. Practices to which we are now so acclimatised that, far from sounding wild or strange, they seem quite ordinary.

[Iannis Xenakis, 'Dämmerchein' (excerpt), 1994]

So, first, let's separate the strands.

If we start from the status quo ante of the late nineteenth century, we can easily identify a related group of probes that approached timbre from quite different directions. I'll group them here into seven loose categories:

[John Cage, 'The Perilous Night, part IV' (excerpt), 1943-44]

First, was the physical modification – or the preparation – of existing instruments.

[Sylvia Hallett, 'Untitled' (excerpt), 1983]

Second, the investigation, recovery or invention of extended performance techniques.

[Roberto Musci & Giovanni Venosta, 'Empty Boulevard' (excerpt), 1987]

Third, the acceptance and incorporation into new music of instruments belonging to other times, or other cultures.

[Jacques Lasry, François and Bernard Baschet, 'Danse du Cristal No. 2' (instrumental, excerpt), 1968]

Fourth, the invention of new instruments specifically designed to exploit new materials or new technologies; or to investigate new theories.

[Jean Hervé-Peron, 'Poem for Concrete Mixer', 2011]¹

Fifth, the introduction of intentionally non-musical sounds – or non-musical objects – into aesthetic listening contexts.



[Blind Willie Johnson]

[Karlheinz Stockhausen, 'Mikrofonie 2' (excerpt), 1965]

Sixth, the general extension of any existing instrument by means of amplification and electrification.

[Blind Willie Johnson, 'John the Revelator' (excerpt), 1930]

And finally the profound and revolutionary fact of sound-recording – which for the first time gave timbre – which is to say, the irreducible quality of a sound – both universality and permanence.

All of these elements have appeared – and continue to appear – in an effectively infinite variety of combinations and permutations. So in the next few programmes we'll have to race through what can only be a very broad and sketchy overview. Highlights that focus on the earliest, the most influential or the most extreme.

We'll start with **Physical modifications and preparations.**

But before we do, I have to introduce the first important caveat. I don't want to give the impression here that all the rulebooks were thrown away at the turn of the twentieth century so that that an entirely new music might be constructed from scratch. That might have been true in one or two cases – Luigi Russolo's, for instance – but, for the most part, composers had grown up in a musical tradition for which they had nothing but respect; they'd acquired deep roots and skills; they'd studied hard and mastered complex rules and grammars and they valued their existing culture's hard-won integrity. So these composers wanted not to destroy, but rather to extend and to deepen – indeed, for the most part, I would say, to save and make more relevant – the inherited eloquence of music. Some of them wished to break through into uncharted territory, but most were picking up threads or reviving and renewing ideas that had been abandoned or forgotten. Not reinventing then, so much as extending and making central what had formerly been peripheral. So, where pitch had once driven, and timbre followed, now these roles might easily be reversed. And in a similar way, techniques that had been used earlier only in great moderation, to exotic or expressive effect, now became ubiquitous – and functional.

Let's begin, as we always do, with the workhorse of art music: the piano.

[Scott Crothers, 'Quarter-tone Piano Prelude #8', 2009]²

In the first two programmes of this series, we encountered a number of physical modifications made to the instrument – in particular, the design and construction of quartertone, sixth and twelfth tone pianos – as well as the re-tuning of normal instruments to produce more natural harmonic resonances. These were all probes launched into tonal space. Now we are going to look at some preparations that address the more vexed question of timbral space.

[Johann Nepomuk Hummel, 'Recollections of Paganini' (excerpt), 1831]

At the turn of the nineteenth century, Turkish music was so popular in Europe that many pianos were manufactured with what was called a Turkish or Janissary stop built in to them – this was a dedicated pedal that would ring a bell, or make a padded hammer strike the soundboard to imitate the sound of a bass drum.³

[H Messemaeckers, 'March de la Belle Alliance' (excerpt) played by Luc Devos on a pianoforte built in late 1820s by Joseph Angsti]⁴

Paper has also long been used to modify the sound of a piano. To the degree that – again in the eighteenth century – pianos had been built with a mechanism installed that lowered a strip of paper onto the strings. Eric Satie, in 1914, asks for paper to be laid across the strings in the score of his *Piège de Méduse*.⁵

Here it is, recorded especially for this programme by Matteo Ramon Arevalos:

[Erik Satie, 'Le piège de Méduse' (excerpt), 1913, performed by Matteo, Ramon Arevalos, 2012]



[Choralcelo]

A more elaborate preparation was the mechanism patented by the Belgian inventor George Cloetens in 1919. He called it a Lutheal, and it was a rack of rather complicated iron machinery designed to be slotted inside a piano to act directly on the strings. It had four stops that lowered four different preparations, named after the sound they created.

This is the cimbalom:

[Cimbalom, GF Handel Praeludium, sample from the reconstructed Lutheal in the Musical Instruments Museum (MIM), Brussels]

Here's the harpsichord:

[Clavecin, GF Handel Praeludium, sample from the reconstructed Lutheal in the Musical Instruments Museum (MIM), Brussels]

Here's the harp, or lute

[Harp Tiree, GF Handel Praeludium, sample from the reconstructed Lutheal in the Musical Instruments Museum (MIM), Brussels]

The Lutheal convinced the composer Maurice Ravel, who wrote 'Tzigane' for it. But it disappeared anyway and was soon forgotten. 'Tzigane' was performed on standard pianos. Then, in the second half of the seventies, the violinist Theo Olof tracked down some rusting metal in the storeroom of the Bruxelles Conservatory that had once, he was told, been a Lutheal. He visited the Conservatory with the instrument restorer Evert Snel and obtained permission to rebuild it, a work that was finally completed in 1979. I couldn't find Olof's 1980 recording of 'Tzigane', but here is one made more recently by Daniel Hope and Sebastian Knauer. I have to warn you that, after a lifetime of listening to recorded pianos, many of which have been adjusted or electronically processed to produce often quite unrealistic sounds – this rather simple mechanical preparation no longer has the power to surprise.

[Maurice Ravel, 'Tzigane' (excerpt), 1924. Played by Sebastian Knauer (luth), Daniel Hope (violin)]

Cloetens also invented another forgotten attachment, the Orphéal. This was a keyboard instrument that could be played in its own right, or mounted inside a grand piano. The musicologist Curt Sachs described it as 'a combination of grand piano, organ and harmonium' – and it could be rigged to simulate cellos and horns as well as various keyboards. Ravel, again, arranged his 'Petit Poucet' from *Mother Goose*, for it but, like the Lutheal, the Orphéal never really caught on – and no one has ever restored one so no working model exists.

Finally, I have to mention the extraordinary Choralcelo. This vast extension of the piano was invented in Boston in the first years of the twentieth century by Melvin L. Severy and George Sinclair. Several models were made and apparently about 100 instruments were built in all, though there is no longer one that works to which we can listen. By all accounts it was a visionary instrument. Starting from a standard piano, Severy and Sinclair mounted magnets behind every string, feeding them with precisely timed pulses of DC current coinciding with the natural periodicity of the string. So – if an A string were tuned to 440, then 440 electrical pulses per second would be fed to its magnet – causing the string to vibrate without being struck or plucked, and producing an ethereal, sustained, bell-like tone. It was a vast undertaking, in both design and construction, since every individual note had to have its own mechanism, and each electrical pulse had to be calibrated perfectly or its note just wouldn't sound or sustain. The first model could be played normally – with the hammers striking the strings; or it could be played using both the hammers and the magnets; or just with the magnets. The second, more elaborate, version added an extra keyboard, which controlled not strings but resonating strips of steel, wood, aluminium or glass. In order for these non-magnetic materials to be moved by the magnets, iron armatures were attached to them. And because the Choralcelo was a purely acoustic instrument, the sound of these vibrating strips had to be amplified using large, resonating, tubes. Millions of dollars were invested in the Choralcelo. And the retail price was between a quarter and half a million dollars. Most of them,



[Glenn Gould]

understandably, were bought by the extremely rich to grace their private estates; although a few were installed in hotels, chapels and cinemas. After some years, as sales stagnated, the company closed and the instruments fell into disrepair. No working Choralcelo now exists. And though contemporary reports say that its sound was exquisite and ethereal, all we have to judge it by now is this scratchy and rather nondescript reference recording, made by the Choralcelo company itself in 1942.⁶

[Choralcelo: this abbreviated melody line of 'Poor Little Butterfly' is extracted from a badly scratched original 78 glass master recorded in 1942 by Regene Farrington, wife of Wilber Farrington, President of The Choralcelo Company]

Back in the world of popular music, somewhat simpler preparations were employed. Here's one we with which we are all familiar: the sound of drawing pins driven into the hammer felt. This is Russ Conway, playing 'Snow Coach', which was one of a string of hits he had in the late fifties.

[Russ Conway, 'Snow Coach' (excerpt), 1959]

The piano Conway used was a Steinway upright that had been modified to approximate the sound of a tack piano. In fact lacquer had been used to harden its hammers, and a few of the strings were always marginally detuned. Another popular pianist, Gladys Mills had a string of pub-style piano hits with it in the sixties. And, as one of the six house pianos in the Abbey Road studios, it was wheeled out whenever that evocative, rather brittle sound was needed. That's it on the Beatles' 'Penny Lane', for instance.

[The Beatles, 'Penny Lane' (excerpt), 1967]

On a slightly different mission, Glenn Gould had a Steinway fitted with metal T pins. He called it a Harpsipiano. The idea was to approximate the tone quality of a harpsichord but with a sound power that could compete with a modern orchestra. Because its strings are plucked like a guitar, and not struck like a pianoforte, real harpsichords are rather quiet – and since the plucking mechanism doesn't respond to variations in finger pressure – a real harpsichord is incapable of dynamic variation. The Harpsipiano was intended to overcome these limitations. I haven't been able to find any commercial recordings Gould made with it, but he does seem to be using it in this unidentified television broadcast where he is playing the Bach, 'Brandenburg No. 5'.

[John Sebastian Bach, 'Brandenburg No. 5' (excerpt), 1719, played by Glenn Gould]

The great leap forward in piano preparations came, of course, in 1938 with John Cage's commission to produce music for choreographer Syvilla Fort's 'Bacchanale'. Cage was working more or less exclusively with percussion ensembles at the time and Fort's space was too small, so Cage decided to retool a grand piano to make it sound something like a percussion ensemble. 'I remembered', he said, 'how the piano sounded when Henry Cowell strummed the strings – or plucked them, or ran darning needles over them...'

[Henry Cowell, 'Sinister Resonance' (excerpt), 1930]

'I went to the kitchen and got a pie plate and I put [that] and a book on the strings. I saw that I was going in the right direction. The only trouble with the pie plate was that it bounced. So I got a nail and put that in – trouble was it slipped. So it dawned on me to wind a screw between the strings. And that was just right...' This is 'And the Earth Shall Bear Again', from 1942.

[John Cage, 'And the Earth Shall Bear Again' (excerpt), 1942]

In the years that followed, Cage wrote at least 32 pieces for prepared piano, constantly evolving new configurations of preparations; never randomly – each set was carefully researched and annotated. Essentially Cage was designing a series of new instruments, of new timbre sets, and then writing for them. And since the preparation was, to all intents and purposes, the piece, because, obviously, playing these pieces on a normal piano would be completely pointless, the scores



[Henry Cow, Geoff Leigh, Tim Hodgkinson, Fred Frith, Chris Cutler and John Greaves, 1973]

meticulously specified the materials to use, and exactly where and how they were to be inserted. Here's 'Sonata No. 9' from *Sonatas and Interludes for Prepared Piano*, written between 1946 and 1948.

[John Cage, 'Sonatas and Interludes for Prepared Piano. Sonata No. 9' (excerpt), 1946-8]

It was a technique that migrated quickly across the genres. Here, for instance, is Tim Hodgkinson with the British experimental rock band Henry Cow. You'll hear him joined after a while by the guitarist Fred Frith whose instrument is also prepared in a similar way, with alligator clips fixed to the strings.

[Henry Cow, 'Concerts' (excerpt), 1976]

And this is Denman Maroney, three decades later, with his roots in jazz. His extended toolkit includes a wide variety of applied materials: copper bars, Tibetan prayer bowls, plastic audiocassette boxes, marimba mallets, rubber blocks, wooden dowels and E-bows... This all acoustic and taken from a live performance.

[Denman Maroney, 'Untitled' (excerpt), 2008]

And from the electroacoustic community, although here he only uses acoustic sounds, is the opening of the Turkish composer Erdem Helvacioğlu's 'Blood Drops by the Pool'.

[Erdem Helvacioğlu, 'Blood Drops by the Pool' (excerpt), 2012]

And lastly, let's listen to the Australian composer and pianist Anthony Pateras, one of the new breed of cross-genre composer-performers who have pretty much abandoned genre. In this piece the entire keyboard is prepared in sections using calculated combinations of Gaffer tape, screws, coins, bolts, cardboard wedges and bolts wrapped in tape. This is 'Descent' from 2007.

[Anthony Pateras, 'Descent' (excerpt), 2007]

Now we are entering a no-man's-land situated somewhere between preparation and technique.⁷ This is the Polish composer Zygmunt Krauze's 'Stone Music' for which large, rounded, stones are placed on, and moved across, the open strings of a piano. One hand works the keys, the other the stones.

[Zygmunt Krauze, 'Stone Music' (excerpt), 1973]

And here, nobody is playing the piano at all. This is an installation by the Canadian sound artist Marla Hlady, built around an automated and prepared twenties player-piano. The hammers are activated by perforations in a paper roll, which, by way of various microprocessors, also controls everything else. Everything else being a collection of machines that strum and – in memory of John Cage's early probe – press a pie plate against the strings.

[Marla Hlady, 'Playing Piano' (excerpt), 2006-2008]

And now on an epic scale, here's the Romanian spectralist Horatio Radelescu with what he calls his sound icons – these are grand pianos laid on their sides and played by sliding long threads through the strings. Sound icons appear in a number of Radelescu's compositions in and after the seventies. The tunings are specific to each individual score, and the how and the where of the bowing is closely specified. This piece, 'Clepsydra', composed between 1982 and 1983, calls for sixteen sound icons positioned – if you're lucky enough ever to hear it live – all around the auditorium. Shamefully, hardly any of Radelescu's music – this piece included – is currently available on CD. We have several hundred versions of Handel's 'Messiah', so I suppose some part of the choice agenda must be working. 'Clepsydra', the whole piece, lasts about 30; I'm afraid we'll have to be content here with only three of them.

[Horatiu Radelescu, 'Clepsydra' (excerpt), 1982]



[Ferrante & Teicher]

And now, a missing piece:

[Ferrante & Teicher, "S Wonderful" (excerpt), 1956]

Important, but routinely omitted in scholarly articles about piano preparation – perhaps because they are considered too profane by the serious music community – is the easy listening duo of Arthur Ferrante and Louis Teicher. Starting in the late forties, Ferrante and Teicher released an avalanche of popular classic and lounge music recordings, amongst which, from the very start were albums documenting their intense investigation of a vast panoply of preparations. With wads of paper, sticks, rubber, masonite, string, cardboard wedges and sandpaper they created mini-Cagian orchestras; they called them 'weird effects'.

[Ferrante & Teicher, 'El Cumbanchero' (excerpt), 1956]

In the sixties they signed with United Artists who gave them a real orchestra. Then they quickly became famous. And the experiments stopped. Here's 'Mississippi Boogie', recorded in 1956, just two live pianos – and a celeste.

[Ferrante & Teicher, 'Mississippi Boogie', 1952]

Good lord, is that the time? In the next programme we'll be looking at preparations applied to other the other instrumental families.

[Gregorio Paniagua, 'Anakrousis', 1978]

¹ vimeo.com/61194897

² www.wbsound.net/index.html

³ Percy Grainger, mimicking the eighteenth century Janissary pedal has the pianist strike various bass strings with a yarn-covered mallet in his 'In a Nutshell Suite', 1916.

⁴ This piano has six pedals: loud and soft, as usual, and then a bassoon pedal that brings a strip of parchment covered wood into contact with the lower strings; two celestial pedals that interpose a strip of felt between the hammer and the strings; and a Turquerie which simulates bells, cymbals and a drum. The bells are actual bells, struck when the pedal is depressed, but the cymbal sound is made by a strip of brass that drops onto the bass strings, and the piano frame is struck by a mallet to imitate the drum.

⁵ As does Heitor Villa-Lobos in his 'Chôros No. 8', in 1925 for two pianos and orchestra.

⁶ members.shaw.ca/elnore/choralcelo.htm

⁷ There's always a no mans land; it's where the probes meet to exchange ideas.

02. Selected links

Denman F. Maroney's website

www.denmanmaroney.com/Hyper.html

Zygmunt Krauze's website

www.zygmuntkrauze.com

Marla Hlady's website

www.marlahlady.com/Main.html

Marla Hlady talks about her installation 'Playing piano'

www.youtube.com/watch?v=PnJrB3raSSE

Horatiu Radulescu's website

www.horatiuradulescu.com

03. Notes

On length and edits.

The purpose of these programmes is to give some practical impression of the probes we discuss. This necessitates for the most part extracting short stretches of music from longer wholes, which, of course, compromises the integrity and disrupts the context inherent in the original works. I have also, on occasion, edited different sections of a longer work together, better to illustrate the points under discussion. So the examples played in the programmes should not be



confused with the works themselves. Wherever the word (excerpt) appears after a title in the programme transcript, this indicates that what follows is an illustration, not a composition as it was conceived or intended. If something catches your ear, please do go back to the source.

Notification

If you want to be notified when a new probe goes up, please mail remegacorp@dial.pipex.com with subject: Probe Me.

04. Acknowledgments

With thanks to Matteo Ramon Arevalos, Brian Brandt, Bob Drake, Yumi Hara, Marla Hlady, Laura Kuhn, Denman Maroney, Charles O'meara, Anthony Pateras, Dave Petts, Vitor Rua, Bill Sharp

05. Copyright note

2013. This text is licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License.

Ràdio Web MACBA is a non-profit research and transmission project. Every effort has been made to trace copyright holders; any errors or omissions are inadvertent, and will be corrected whenever it's possible upon notification in writing to the publisher.