



Curatorial > PROBES

In this section, RWM continues its line of programmes devoted to exploring the complex map of sound art from different points of view, organised into 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

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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 #30

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. In **PROBES #30** artists, composers and performers make water, ice, glass, fire, wind and Styrofoam their soloists in installations, recordings and events designed for concert halls, galleries, the Phillips pavilion, TV series' and open air gatherings.

01. Transcript. Studio version

[Gregorio Paniagua, 'Anakrousis', 1978]

[Japanese Suikinkutsu, Kyoto]

Water has always been considered musical but it is seldom used as an instrument – though it *has* been used to *power* instruments. The classical Greek hydraulis, for instance, as well as being the first known keyboard instrument, was an organ driven by water.

Since his 1989 composition 'Soundshape', the Chinese composer, Tan Dun, has produced a number of works that explore the musical possibilities of organic materials including water, paper, wind, ceramics, metal, and stone. His 'Water Concerto for Water Percussion and Orchestra', composed in memory of Toru Takemitsu, was premiered in 1998, and 'Water Music' – for one or four percussionists – emerged from this as a tributary work in 2004. Each percussionist in 'Water Music' works with a large bowl of water and a handful of objects – including a soda bottle, a waterphone, a pair of tube drums and a gong.

[Tan Dun, 'Water Music' (excerpts), 2004]

That clanging sound was the waterphone – invented in 1967 by the appropriately named Richard Waters, who says he was inspired in its design by the Tibetan water drum and the nail violin.¹ The waterphone consists of a metal bowl with a cylindrical pillar in the centre and a ring of slim metal rods of varying lengths fixed vertically around its rim. As the water swirls around in the bowl, it modulates the pitch and timbre of the rods, which may be struck or bowed. You will have heard this instrument on a hundred horror movie soundtracks and probably filed it as something electronic, but it really sounds like this:

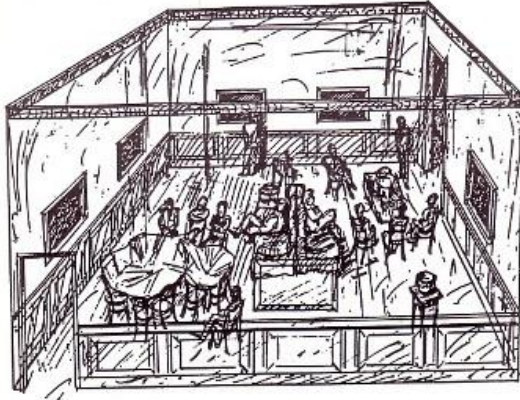
[Waterphone demonstration]

In 1992, the Russian percussionist Vladimir Tarasov set up a simple but effective installation that consisted of controlled water drips and an array of pots, pans, buckets, basins and jars. It's a principle a number of people have probed, the first I know of being the German kinetic sculptor and sound artist Gerhard Trimpin, whose 1991 installation 'Liquid Percussion' featured computer-controlled drips programmed to play highly complex patterns and rhythms as they fell into an arrangement of differently sized clay pots. Because of the height of the water pipe above the ground, the machine-like accuracy of the programmed rhythms as they hit the pots was curiously unsettling – but dramatically illustrated Galileo's observation that there's nothing remotely approximate about thirty two feet per second squared. It's an effect that's largely absent from Tarasov's 'Water Music', whose aesthetic, as you'll hear, is more organic – there's no imposition in it, only happenstance. The idea for the work came, he says,



WATER MUSIC

V. TARASOV



[Vladimir Tarasov, 'Water Music', 1992]

when he was sheltering in a small boat under a tree in the wake of a rainstorm and heard the last of the collected raindrops falling haphazardly from the leaves above him into the water around the boat. The whole composition last fifty minutes and was first installed in 1992.

[Vladimir Tarasov, 'Water Music' (excerpt), 1992]

A similar randomness is achieved in Céleste Boursier-Mougenot's 'Clinamen', first installed in 1997 – which consists of a flock of white porcelain bowls – at a density calculated to ensure a satisfying average tempo of collisions – floating in a large body of blue water, gently agitated by subaqueous currents. The word *clinamen* was coined by the Roman writer Lucretius to describe the 'unpredictable swerve of atoms'.

[Céleste Boursier-Mougenot, 'Clinamen' (excerpt), 1997]

And while we're skirting formal music, this is probably the place to mention John Cage's 1959 composition, 'Water Walk'. Although there's not so much water involved, it *is* full of all the other things we've been talking about in recent programmes: radios, bird calls, party poppers, a bottle, a glass and a bathtub half full of water – and then there's a watering can, a length of pipe, a pressure cooker, some ice cubes, a food mixer, a soda siphon, a vase of roses – and a grand piano. Cage first performed it on the Italian quiz show 'Double or Nothing' – from which he eventually walked off with the 5 million lira prize. In the course of his five appearances on the show, he performed several new compositions, which included, on the last day, 'Water Walk', which he conceived as a televisual event. The score obliges the player to carry out a series of designated actions following a stopwatch – with a handful of piano notes thrown in. Here's a more recent performance by the American percussionist Katelyn King. I include it for historical rather than aesthetic reasons. And I'd say it's not really a listening piece so much as an audio-visual *event*.

[John Cage, 'Water Walk' (excerpt), 1959]

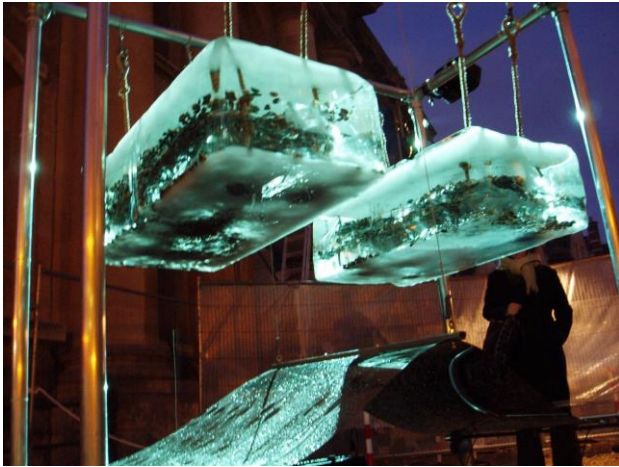
And here's the Japanese artist and performer Tomoko Sauvage with what she calls her 'natural synthesizer' – based on the Indian *jal tarang* but subtly amplified with hydrophones which – when set up exactly correctly – induce subaquatic feedback that can be delicately navigated in performance. The *jal tarang* is an ancient Carnatic instrument that consists of a range of pitched, water-filled, porcelain bowls. These are traditionally struck, but Sauvage concentrates more on sounding the *water* than the bowls themselves. It's a total, close-listening art.

[Tomoko Sauvage, performance at *Présences électronique* (excerpt), 2013]

Hugh Le Caine was a Canadian physicist, composer, and instrument builder who worked at the National Research Council on atomic measuring devices, and radar. But on the side, in his home, he set up a private electronic music studio presciently early. The electronic music studio in Köln wasn't established until 1951, and Pierre Schaeffer's work in Paris didn't really get underway until 1946 or 7. Le Caine started work in 1945. His electronic sackbut – one of the world's first synthesizers – emerged in 1948 and its success led the National Research Council to ask him to set up The Canadian Electronic Music Laboratory. He built his first Special Purpose Tape Recorder in 1955. This was able, unbelievably, to play six tapes simultaneously, and change the playback speed of each tape independently before recombining the total sound into a single recording. He made this piece, 'Dripsody' as a test for the Special Purpose Tape Recorder, and it is still regarded a classic of *musique concrète* since the entire work is generated from a single sound – one drop of water falling into a metal wastebasket – which was then looped and manipulated using the special purpose tape recorder linked to a customised keyboard to control the different tape-speeds. It's included here because it is groundbreaking work – and it uses water as its sole ingredient.

[Hugh Le Caine, 'Dripsody', 1955]

In general, water is tricky to work with, but if you cool it down, it acquires all



[Max Eastley, 'Glacial Soundscape', 2005]

sorts of new sonic possibilities. And it must be said, the sound of ice has its own immediate attractions; in fact, in 2003, the musician and recordist Peter Cusack made a whole record of the ice on lake Baikal, as it begins to thaw in the Spring.

[Peter Cusack, 'Baikal Ice' (excerpt), 2003]

But there is one really obvious drawback with ice as an instrument: it melts, and therefore goes out of tune and is hard to maintain. In season, however, many people have played, or built instruments with it. In the ski-town of Gelio, in Norway, for instance, there's been an Ice Music Festival every year since it was inaugurated by percussionist Terje Isungset and Pål Medhus in 2006, where not only the instruments but all the buildings and furniture – in fact as much as possible – is made out of ice. But of all the Ice pieces I've heard, the most interesting is this, by the Irkutsk percussion group Etnobit. It's not a composition and it's not a public performance; it's more the product of a chance encounter by a member of the ensemble with a particularly resonant spot on lake Baikal. When he informed the group, they immediately came back to the spot with video cameras and recording equipment and made recordings. This excerpt is from the finally edited video put online by the Siberian Times. Four people are playing, in real time, with a couple of ice-crashing inserts.

[Etnobit, 'Baikal Ice' (excerpts), 2012]

The British sound artist Max Eastley used ice as a random rhythm generator in his gallery installation, 'Glacial Soundscape', which involves stones being frozen into two huge blocks of ice, which are then suspended above an amplified aluminum sheet. In the ambient heat, the ice-blocks slowly thaw. It was first installed in 2005 at the Bodleian Library in Oxford as part of the Ice Garden project – sponsored by Cape Farewell, an international art and research programme founded by the photographer and film-maker David Buckland to commission and co-ordinate artist's responses to climate change.

[Max Eastley, 'Glacial Soundscape' (excerpt), 2005]

Ice shares some attributes with glass, a material that has seen a lot of musical use over time. We have already encountered bottles and glasses blown and struck, as well as Harry Partch's more majestic cloud-chamber bowls – and, of course, Benjamin Franklin's glass harmonica, with its repertoire stretching back to Beethoven and Mozart. This connection, between ice and glass, has been very explicitly drawn by the 'Game of Thrones' composer Ramin Djawadi, who uses a glass harmonica to represent the eerie others who inhabit the land of Always Winter. This is the theme he wrote for them.

[Ramin Djawadi, 'White Walkers Music' (excerpt), 2011]

The contemporary German composer Jörg Widmann also makes much use of the glass harmonica in his 2007 orchestral work, 'Armonica'.

[Jörg Widmann, 'Armonica' (excerpt), 2007]

The principle of the glass harmonica – that of exciting a glass surface with moistened fingers – was also put to extensive use by the brothers Baschet in a series of instruments they called Crystal Baschets – large and otherworldly constructions in which beautifully wrought steel sheets are used to amplify sounds made by dampened fingers sliding over slim glass rods – a technique that harks directly back to the Saxonian physicist and musician Ernst Chladni's long-forgotten Euphon.² In a future programme we'll be taking a closer look at the whole family of Baschet instruments, but for now, here's a fellow Frenchman Loup Barrow demonstrating the basics of the Cristal Baschet.

[Loup Barrow, Cristal Baschet demonstration]

But the essential figure, when it comes to glass, must be the New Zealand composer and performer Annea Lockwood who, in 1968, presented a series of concerts in London in which – over the space of about an hour – she played, a stage full of glass objects – first alone and then with her husband, Harvey Matusow – yes *the* Harvey Matusow, a man who really has the most extraordinary biography... I know legendary is a word far too easily deployed, but in the case of



[Annea Lockwood, 'The Glass Concert', 1968]

'The Glass Concert' it's probably justified, since they made a deep and lasting impression on London's art and music community at the time. The whole performance was sequential, with events presented in twenty-three episodes. I can only play four short excerpts here. The whole work can be found on Lockwood's website.

[Annea Lockwood, 'The Glass Concert' (excerpts), 1968]

With a different take on glass performance – perhaps more appropriate to the time of its making – comes this recording by the New York post-punk short-form rock band Dim Sum Clip Job. Credited to their saxophonist,³ this is a live recording – captured by microphones carefully deployed to register optimum depth and direction – of the band throwing two cases of small glass tumblers into the stone corner of engineer Martin Bisi's studio – at that time a two story space in an old civil war munitions factory. This is 'X-Mas', recorded in 1995.

[Dim Sum Clip Job, 'X-Mas', 1995]

And lastly, combining glass and water this is the French composer and sound designer Falter Bramnk, who here sets up and captures – again in real time – the barely audible sounds of condensation on glass just after it's been rinsed in very hot water. These are natural untreated sounds; the polyrhythms are a result of several glasses being recorded at once.

[Falter Bramnk, 'Classical Music' (excerpt), 2017]

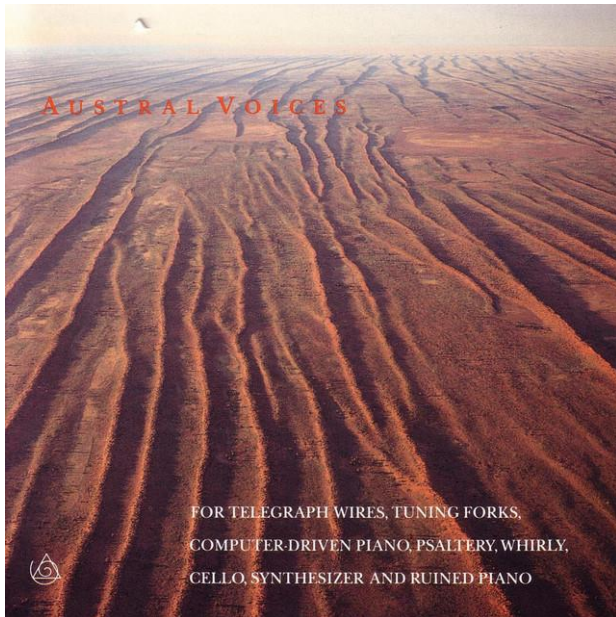
Fire, like water, has been used to power organs. The pyrophone, invented in 1870 by Georges Frédéric Kastner, has appeared in several varieties and these days is most often encountered in art installations. In terms of sound, however, they are just organs. More unusual is Iannis Xenakis' highly influential tape-work 'Concret PH', which was created in 1958 using basic musique concrète techniques. It was produced specifically to be played in the gaps between performances of Edgar Varèse's 8-minute masterwork, 'Poème Électronique' – the centrepiece of the now legendary *Philips Pavilion* – a remarkable building conceived by Le Corbusier and designed by Iannis Xenakis for the 1958 World's Fair, in Brussels. Inside the structure, a system of 350 separate loudspeakers⁴ built into the fabric of the structure itself, projected sounds in constant and calculated motion by means of a highly complex automated switching system that allowed three independent channels to move in different trajectories and at different speeds between all points of the building's interior. In contrast to the diversity and dynamic oppositions of the 'Poème' – 'Concret PH' was texturally homogeneous and without temporal progression – an early instantiation, in fact, of what would later come to be called granular synthesis. To make the piece, Xenakis used only the sound of burning charcoal, cut into one-second sections, which he then layered and transposed. The sound aside, historically, this is an important work because of its aesthetic prescience – it was a composition that sidestepped the thinking that drove both concrete and electronic music, anticipating instead the a-temporal non-linearity more typical of what we now call sound art.

[Iannis Xenakis, 'Concret PH' (excerpt), 1958]

Air is the breath of music and of sound itself. And it's the bane of recordists – even a frisky breeze can ruin a recording – and that's why outdoor microphones are almost always wrapped in foam or fur. So, with his decision to record the wind and only the wind – and to build a 57-minute composition from it, without altering it in any way, the Spanish sound artist Francisco López touched on something deep. Wind is elemental and gives voice to unquiet spirits; it stands for emptiness and lack and leaves destruction in its wake; it is a harbinger of ancient fears and superstitions. And just as we see faces in the fire, we hear voices on the wind. So there's a certain chutzpah and perversity – as well as the recognition of a technical challenge – in setting out solely to entrap the wind – the very thing that most recordists go to extremes to avoid.

[Francisco López, 'Wind (Patagonia)' (excerpt), 2005]

Much as water and fire have powered instruments, so has air. Our own breath, of course, we take for granted, but the wind has also been used to musical ends,



[Alan Lamb, 'Journeys on the Winds of Time', 1990]

most famously for sounding aeolian harps: these are zither-like sets of strings fitted onto a soundboard and placed anywhere the wind might set them into vibration. Although I read everywhere that this instrument has an ancient pedigree – the Greeks, the Indians and the Asians are all supposed to have known it in antiquity – until now at least, I've been unable to find any supporting evidence for that. Certainly, the instrument as we know it today was invented in the middle of the seventeenth century by the German jesuit scholar Athanasius Kircher. And his prototype has been the model for every variant since. The phenomenon itself, however, seems always to have been known – in fact it could hardly be avoided since it's heard whenever wind blows through any stretched ropes or wires – through the rigging of ships, for instance...

[Aeolian harp. San Francisco Exploratorium: 7 strings, 27 feet high, built by Douglas Hollis in 2013]

What is fascinating about aeolian instruments – and all the installations and applications that have appeared in public art based on their principle – is that the wind accentuates not the fundamental note of the string but all the attendant harmonics, setting up rich chordal drones. Modernity unwittingly built huge orchestras of Aeolian harps in its bid to shrink the world: 'As I went under the new telegraph wire', wrote Henry David Thoreau in 1851, 'I heard it vibrating like a high harp'; Percy Grainger too was inspired by the singing of the telegraph wires in the development of what he called *free music* – and they became a primary medium of work for the Australian sound artist Alan Lamb, whose interest had been piqued when, in Edinburgh studying neurophysiology in the mid seventies, he heard singing telegraph wires in the remote highlands of Scotland. When he got back to Australia he found and purchased a one-kilometer stretch of old abandoned telegraph wires in the Great Southern Outback, and began to experiment and record with them. Between 1981-1988, he produced his first telegraph wire CD in which, as with 'Concret PH' and 'Wind', the sounds he captured were organized but still permitted to retain all their natural characteristics. This is an excerpt from his *Journeys on the Winds of Time*.

[Alan Lamb, 'Journeys on the Winds of Time' (excerpt), 1990]

And finally, I must include this unusual work by the Lithuanian Composer Rūta Vitkauskaitė, written for small ensemble and a hot air balloon. Each year there is a festival in the health resort town of Druskomanija that features many open-air works that set out to explore spatialisation and mobility. In 2011, two of the festival's graphic designers, who just happen to be hot air balloonists, asked the festival director if she could write a piece that they could be part of. She wrote this: 'Children of the Wind – for hot air balloon, flute, bass clarinet, flugelhorn, trumpet, ocarina, melodica – and a conch shell', which she played herself. All wind instruments, of course. The piece is in seven movements and lasts about 25 minutes. Throughout, the balloon stays on – or very near – the ground. These excerpts are taken from movements six and seven.

[Rūta Vitkauskaitė, 'Children of the Wind' (excerpts), 2011]

To be economical, I'll mention just two more pieces. The first is by the German performer and sound artist Serge Baghdassarians, whose 2007 installation 'Leerlauf' – which loosely translates as *freewheeling* – consists of a very large number of empty plastic bottles – well over one hundred of them – and a strong sheet of glass. The bottles are rinsed out with very hot water and quickly placed neck down on the glass so that the temperature differential creates a vacuum seal. Then, as the bottles cool, the slow movement of air between the outside and the inside produces sounds – for up to twelve hours. With this number of bottles, the sounds are loud and rich – as you can hear from this recording of an installation made in Austria, in 2007.

[Serge Baghdassarians, 'Leerlauf' (excerpts), 2007]

And here's a performance piece by the Belgian percussionist Pierre Berthet using two instruments made of bicycle inner tubes and a set of loose aluminum pipes. The inner tubes are connected to the business ends of two reversed hoovers, with the result that they sweep back and forth across the floor like happy dog's tails – blowing air. Berthet simply moves the ends of the aluminum pipes in front of them – so that the air blast from the fast moving inner tubes creates a pattern of



[A waterphone]

shifting blown-bottle pitches. From this extremely minimal procedure Berthet can generate considerable complexity: polyrhythms from the two swishing inner tubes as they clatter across the floor, and constantly modulating patterns of pitches from the pipes as he rearranges them in the path of the moving air-streams. This was recorded at a performance in 2012.

[Pierre Berthet, 'Expireteur' (excerpts), 2012]

And lastly, polystyrene – a wholly unnatural and synthetic derivative of benzene, virtually unbiodegradable, carcinogenic, a neurotoxin and environmentally lethal. We make about 14 million tonnes of this stuff a year, so you can usually find some lying around. When bowed, it makes a sound close to what most of us would classify as ugly noise, and is especially penetrating in the very high frequencies. Improvisers like it because of its harmonic complexity – and shock value. But here, in 'Styroporos' – for violin, cello, clarinet, flute and bowed polystyrene – the Canadian composer Thierry Tidrow, is looking, he says, for 'the beauty in it' – and an explication of 'the dialectics of pitch and noise... the Styrofoam', he says, 'strives... to be beautiful and ...the instruments strive to be impure.' I'm grateful to him for providing this private recording, made at a concert in 2016.

[Thierry Tidrow, 'Styroporos' (excerpt), 2016]

In the next programme, people stop trying to use what's there and start to build their own instruments from scratch.

[Gregorio Paniagua, 'Anakrousis', 1978]

¹ Invented by the German violinist Johann Wilde in 1740, it consisted of a semicircular soundboard made of wood, with nails of different lengths hammered in to it that could reproduce a chromatic scale.

² This was another child of the glass harmonica, invented in 1790, which combined fingers, moisture and varying lengths of glass rod to make ethereal sounds

³ Gordon Knauer aka Mr. Dorgon.

⁴ Accounts differ, but Philips say there were 350.

02. 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.

03. Acknowledgments

Special thanks to David Petts; Linas Paulauskis, Vladimir Tarasov, Guy Harries, Yumi Hara, Jonas Vognsen, Hannes Fessmann, Max Eastley, Thierry Tidrow and Max Eastley.



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[The Cristal Baschet]