



## JAN CARDELL ARTIST, INVENTOR, PROGRAMMER, COMPOSER

I became an artist in the mid-eighties. I was always torn between artistry and engineering. That resulted in an early engineering education, followed up with artist school where I specialized in working with metal sculptures. As a child I spent many hours with my uncle and grandfather in their wood workshop. I used to love hanging around them and since then always thought everyone should have their own workshop. Real people do. My artistry has always included hands-on work. I want to do everything myself.

In the beginning I used to experiment a lot with anodizing aluminium into different colours and textures. My electrochemical setup and process may have been more artistically interesting than the end result.

I started programming at an early age on an old ABC 80 computer. I've always loved experimental music and learned how to play the saxophone at some point. After trying out different artistic genres it all seemed to merge; the music, the engineering, the artistry and the programming, and I started developing instruments. I find it very interesting when art does something more, when people can interact and/or use it. And to combine sculptures with music was one way of doing it!

I made different sculptural music instruments that were operating with electromagnetic coils. Oh, I've made so many coils. If you look at the orchestra now, they will glimmer like the night sky.

The first instrument I built was a little cocoon in papier-mâché. It was supposed to become something completely different, but it sounded nice when I knocked on it. So I added a coil, mechanical arm, spring and some steel rods to it. And the blueprint for a lot of my instruments were born. I brought it home and connected it to my computer, and programmed a simple program to make it play. The effect was immediate and I laughed out loud when it started tapping away in the rhythm I had told it to.

I've built many variations of musical instruments since then, and tend to design them in very organic forms, borrowed from flowers, trees and insects. I like the easy and functional approach, and I want to do things from scratch. Every part of the art is built and invented and designed by me. I'm lucky like that, being interested in many varied fields, and still able to combine everything into art and make interactive, musical sculptures to tickle mind and senses. Of course, I also work with more classical large metal sculptures – but always tend to include a little more into it, such as the moving kinetic bronze sculpture Vera's Laboration, in Gothenburg.

The orchestra grew over the years. I've been able to mix, match and combine instruments in many situations. I've played festivals and set up installations, and still find it curious, challenging and interesting to combine material, form and sound into art. When in doubt, build a new instrument, I say. I have a lot of string instruments, as well as organs and percussions. The workshop is full of all kinds of instruments. And I've programmed an app and a system to arrange and play music with it. So it felt natural to set it all up and venture into recording an album.

Nille Perned and Maria Stålhammar are friends of mine, and they wanted in on this. We spent a lot of time tuning and adjusting instruments, and I did a lot of re-programming of the composing tool I built, so it would be fun and easy to create new tunes. I spent many hours experimenting with different rhythms and compositions to get a wide range of different raw material to use and explore.

And then onwards to the fascinating landscape of how to record good sound, what acoustics to set things up in, room and padding, how many times to record and which microphones to use. I didn't know that you could have a microphone with the sole purpose to catch the essence of the room. Well.

Several friends were interested in working with me and the orchestra, and we worked together in both composing and recording their songs. Some are joint ventures, some are more supporting arrangements, it varied with every cooperation. Andi came down with a text and chords. We played around with some riffs. L. T. Fisk brought down his organ to the workshop and had an idea about a song. We worked together to compose strings and rhythms to complement the organ melody. Maria played around with my composing program by herself. And on it went. Different interactions with different artists. We had heaps of fun, and I treasure every collaboration in its special way.

I usually play saxophone with my orchestra, but thought the clarinet would have an interesting and old-fashioned sound that I wanted to experiment with. So quite a few of the tunes have some clarinet jams.





Low Bass

High Bass



Bass Heron

Hurdy-gurdy



Reed Organ

Bass Organ



Harp



Acoustic Hammered Dulcimer



Electric Hammered Dulcimer

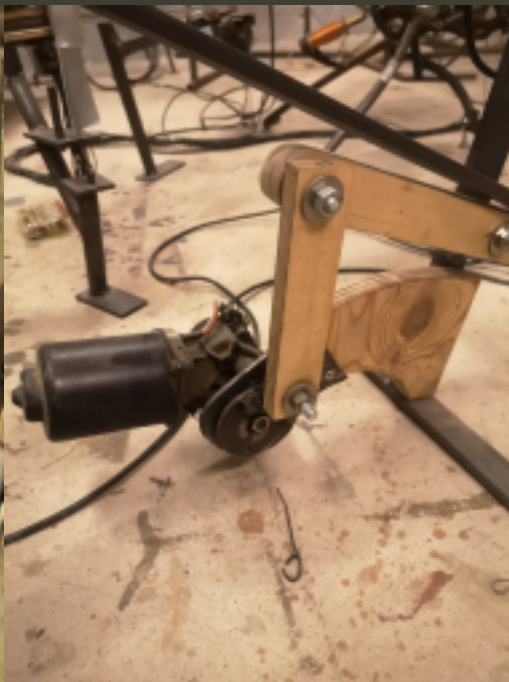


Hurdy-gurdy Wheel and pickups

Reed Organ

Mechanism with spring

Bass with damper

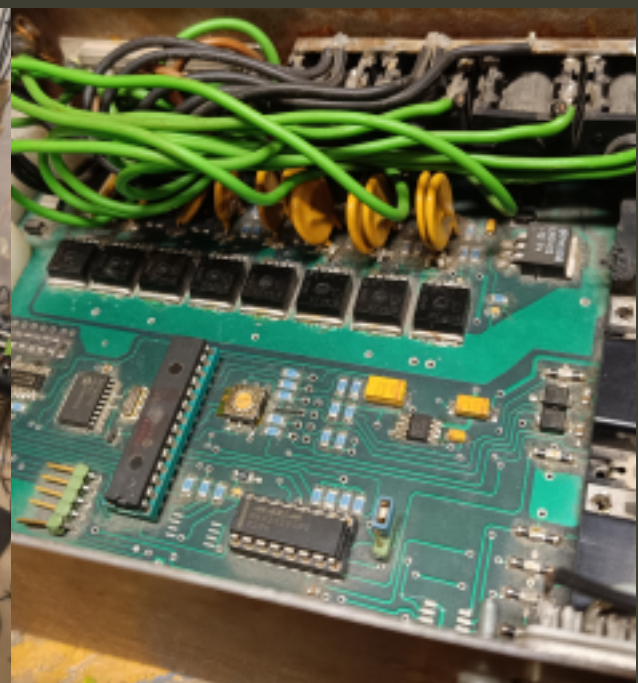


Tuning mechanism

Bruze - ambient instrument

Clarinet Buffet Crampon RC

Bass



dulcimer mechanism

Coil

Hurdy-gurdy

Power electronics



## JAN CARDELL

I've created the orchestra, the soundscape and the compositional tools. I guided, arranged or adapted my friends ideas and music to the limitations and possibilities of the instruments. We sat together and tested out the compositions together in my studio. The percussion control is built to perform live, and it takes a while to get the hang of it. I've kept it that way. I chose to reach out to friends and co-artists that I relate to in different ways, both personal and professional. All but Martin live and work in Malmö.



## ANDI ALMQVIST vocals

Psykakut

After hearing and above all seeing the monster that is The Mechanical Orchestra built by genius artist/mad scientist Jan Cardell, I knew I had to write a new song for this project. The keyword "insanity" came to mind as the machinery started to hiss, grind, pound and squeak. I felt as if I was trapped in an elevator going down to the lowest circle of hell. "Psykakut" came to me very fast and I remember perfecting the lyrics right up until the last minute before recording, manically inspired by the strangeness of it all.



## MARIA STÅLHAMMAR electric violins and cello

Mist, Sage, Kliv

During the initial phase of the project, Jan and I explored a number of different composition methods. We travelled the path of compromise between tone, duration and temperament. We tried different setups and arrangements and from the material three songs were chosen: Mist: when the fairy dance gives way to the rise of the sun. Sage: a tribute to the powerful demonism of menopause. Kliv: the caravan passes the oasis as the dates ferment in the sun, through chaos or mirage – we move on.



## MARTIN MOLIN, WINTERGATAN vibraphone

Mistral

I'm 18 years old, in a forest on Sweden's renowned music festival Hultsfredsfestivalen. It's a summer's midnight and I can still sense the sun below the horizon in between the trees. I see something moving on the ground, it looks like mechanical insects. Someone is pressing a control box and suddenly the insects come to life, and I hear Mechanical Music for the first time. A thousand horses couldn't pull me from the spot. Three hours later I found out I'd been spellbound by Jan Cardells Rytmobile. The direction of my life was changed.



## FRIDA ÅSTRAND vocals

Sensitive Dreamers

My name is Frida, I'm a musician from Malmö, born 1977 in Karlskrona. When Jan told me about his project, and asked me if I wanted to take part in it, I was immediately interested. I visited his studio and recorded some test vocals, then he sent me some files to sing and write lyrics to – "Sensitive Dreamers" is about how difficult it is to live as a night owl in a world ruled by morning people.



## L. T. FISK organ and vocals

Siktas Klart

L. T. Fisk is an ongoing singing-project since 1996. It is a determination that songs and singing is an important part of life that must not stop – it is a path, a calling, and an obsession. It is the spirit. Nowadays the songs are mostly sung to the harmonium or the piano. These instruments are played in a rudimentary way, sometimes with the help of effect pedals. Five documentations of songs that must be sung has been made over the years. Siktas klart was especially written for the Orchestra – it is a song for my partner shortly before we got married.



## VED featuring JENNY WILSON vocals

The Embrace of the Oarfish (Mechanical Orchestra Version)

When asked to do this collaboration we were thrilled, having been fans of Jan Cardell's sonic sculptures for more than twenty years. We decided we wanted to try out an arrangement of a Ved tune that would make sense even when keeping just the essential rhythmic core, entirely played by the machines, with no musical overdubs whatsoever – and also one that featured vocals. We asked our dear friend Jenny Wilson to do her own version of the song, and she came up with this wonderful interpretation, giving new life to this beautiful deep sea creature foreboding the apocalypse.



## HELEN PARTRIDGE vocals

Cadavre

Jan asked me to collaborate and do a recitation song with him, using text from my poetry book 'Tankegångar' (collaboration with J Blomqvist) as lyrics. I chose something dark, sinister, and we mucked around with that in his studio. I wanted something bolero inspired, and he started with bass and drums, and then we took it in a fun direction. I'm also his girlfriend, so he didn't have much choice. Nille brought out his old Neumann microphone and told me not to be nervous. Yeah. Right.

## NILLE PERNED PRODUCER

## MARIA STÅLHAMMAR CO-COMPOSER & FACILITATOR

Nille: In the late nineties Jan helped Maria build an electric violin, and that was the start of a long friendship. The instrument had intricately forged and hand-wound microphones, much in the style of Jan's typical artwork. Maria and Jan teamed up for a couple of festivals with the original mechanical orchestra, with some great jam sessions and amazing interplay. Jan continued to grow his mechanical orchestra with different instruments and functions, and Maria kept tabs on it from afar. The visual experience may be something out of this world, but the soundscape of the orchestra was what really excited and enthralled me. So at one point we started talking about documenting the whole shebang.

Maria: When we got to Malmö, I introduced Nille to Jan with the words "there may be a little bit more to this project than just documentation ...". This was the first time Nille came face to face with this universe of more or less interconnected orchestra members framed in a steampunk aesthetic. Thus, a new chapter began – to transform such a visual world into only sound.

Nille: I got really enthusiastic! Should we make a vinyl record? Two? Before we could go ahead and show the world, we needed to consolidate our two perspectives, art and sound, to get a solid auditory experience. Where do the strings sound the best? How do we reach musical harmony? Are the materials optimal? Should the engineering be adjusted? How do we avoid interfering with the visual aesthetics? We kind of quickly agreed that a baroque tuning made the orchestra sound most enchanting. The adventure began.

Maria: Silence is one of the most important elements in music. What we hear in between needs to be given mutual conditions. To achieve clarity between the workshop walls, we needed not only clear intervals, but also overall harmonic guidance. Programmed attenuations between the controlled pulses and the ability to distinguish timbre from transients and achieve the right pitch were essential. Sometimes an orchestra member was subjected to the welding flame, sometimes to adjustment in programming. Bridges were adjusted, pickups were moved, all in all a meeting between two worlds – the precise predisposition of the studio techniques to match the rustic body of the orchestra.

Nille: The acoustics in the workshop room needed to be controlled to provide each orchestra member with their rightful tone and balance in the composition work. Over time more and more of my studio equipment moved into Jan's workshop, which then in turn turned into a makeshift music studio. In parallel with adjusting the sculptures, Jan re-programmed his entire intricate system to

enable new ways of composing and had the orchestra tuned to treat the modal scales. Throughout the winter, Jan and Maria found musical nodes to develop from. Fragments emerged into compositions and were joined together. Guest musicians were invited to compose and the double album began to take shape.

Maria: The round cannon tower in Landskrona's Citadel and its reverberation gave the orchestra a natural sound, and a lot of the mechanical orchestras recordings took place there. Guest musicians contributed further, selection of material for mixing approached and another winter passed. In the spring of 2023, there were close to forty songs recorded and the delicate adjustment and selection process began to answer, "How is this best presented?" and "Should everything be included?". During the ongoing work, a musical maturation had taken place within the orchestra and you now got the selected works in your hands, ready to rasp your pick-up. Enjoy!





## JAN CARDELL PROGRAMMING

The systems with which I've controlled the mechanical sculptures have of course varied over the years, for technical reasons but also to reinvent myself. In the beginning I was happy to only play composed pieces of music but then I developed an interest in finding different ways one could interact with the sculptures and the programs. The current control system is built on Raspberry Pi's, and written in C++. Together with that I have a couple of control panels where I can improvise and play my orchestra live.

During the making of this record I redeveloped and evolved the composition program to better include and consider the different characteristics of the instruments/sculptures. I've gone through several programming languages over the years, e.g. Basic, Pascal, Assembler, Java, Spin, Python, C++, Kotlin among others. Went from Windows to Linux. A lot of my time has been spent programming. As with many other things, I like to develop my programs from scratch.

The orchestra is controlled by two Raspberry Pi panels, and connected with a local Wi-Fi. The main panel controls the musical structure, and the side panel handles tone sequences and percussion patterns. The control mechanisms for each sculpture have always been basically the same, which means I can use and connect old sculptures to new control devices relatively easy. The orchestra continues to grow and it is now possible to connect up to nearly four hundred coils, where one instrument/sculpture holds between one and twenty-four different coils. One for each tone or action.

## TOMAS NILSSON ELECTRONICS

I met Jan before the first Science Fair in Gothenburg. My friend Claes asked me to work with an artist on how to build electromechanical interactivity into his sculpture. This is usually kind of tricky, especially if you have to work with a PC (we're talking late nineties). This intrigued me, and we met up at his studio at Konststepidemin. I exchanged his relay board with my own design that used power transistors. That worked well enough, but there was still a PC included in the controlling.

Jan wanted to create a series of smaller mechanical sculptures and needed the control unit to take less space than a full on computer. It felt like a natural next step. I made a design using a microprocessor and six power transistors, and during a few weeks in the summer we etched circuit cards and soldered all the components in place. Jan learned how to program the microprocessors and created programs for composing sound sequences in musical terms. The compositions could then be downloaded into the control unit, and voila!

This concept worked really well, and we continued to develop custom made electronics in different sizes for sculptures that tended to become larger and more musically complex. We created electronic circuit cards to control percussion instruments, hammered dulcimer and a one-string electric bass. Next step in the development was to get some interactivity going. We wanted to get the sculptures to react to the audience, their movements or other external stimuli. We started using more advanced processors, in step with tech developing them. The programming also got more complex, and we struggled many times to handle hardware and software quirks and bugs. But as they got more stabilized, the sculptures' electro-mechanic steering got more and more reliable. The sculptures we made at the beginning of this century are still working without any other maintenance than oil.

We worked together with many projects, e.g. an exhibition at Skulpturens hus in Stockholm, for K-tree that was placed outside Malmö University, and with Papyra, placed in the library in Alexandria.

I used to get involved when Jan played at festivals, such as Hultsfred and Norberg, as well as with his sculptures in Scotland and Bryssel, where the K-tree made a guest appearance at the European councils inner yard (to some bureaucrats' dismay and others' joy).

The wish for more interactivity – you always have to step up – got us started on Raspberry Pi, which is a small, cheap and capable computer. However it still had the same stability problem that the PC's had. So in one way we were back to having to resolve both reliability and stability issues.

Working with Jan has been really rewarding and exciting. We have formed not only a partnership, but we are also close friends. Working so close to an artist such as Jan has also led me into related work with other artists, institutions and museums.



# JAN CARDELL MECHANICAL ORCHESTRA

with friends



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