IN SEARCH OF THE REACTABLE

SEBASTIÀ ROI
RICCARDO MICOLI

RICCARDO MICOLI: BORN IN 1989 IN MARTINA FRANCA, A CITY IN SOUTHERN ITALY, HE WAS RAISED AMONG OLIVE TREES, TOMATO PLANTS AND STRANGE STONE CONSTRUCTIONS KNOWN AS TRULLI.
HE STUDIED PAINTING AND DECORATION AT THE LICEO ARTISTICO STATALE ‘LISIPPO’.
HE HAS ORGANISED NUMEROUS GRAFFITI AND STREET ART EVENTS IN HIS HOME TOWN.
ONCE HE’D FINISHED HIS STUDIES, HE DECIDED TO GO ABROAD TO CONTINUE HIS ARTISTIC AND SELF-TAUGHT RESEARCH AND WORK ON SCREEN PRINTING, TATTOOS AND MURALS.
DESPITE HIS EARLY PASSION FOR COMICS, HE DID NOT START DRAWING SEQUENTIAL ART UNTIL HE GOT TO CATALONIA AND STARTED A COURSE ON COMICS AT PAU GARGALLO SCHOOL OF ART AND DESIGN IN BADALONA.

SCRIPT: SEBASTIÀ ROIG
ARTWORK: RICCARDO MICOLI
DESIGN AND LAYOUT: RICCARDO MICOLI I TONI BENAGES I GALLARD
WITH THE COLLABORATION OF: TONI BENAGES I GALLARD, ESCOLA PAU GARGALLO, SERGI JORDÀ, REACTABLE SYSTEMS S.L., XAVIER SERRA, MUSIC TECHNOLOGY GROUP, POMPEU FABRA UNIVERSITY.
EDITORIAL BOARD: FRANCESC SUBIRADA I CURÇÓ, IOLANDA FONT DE RUBINAT, OLGA ALAY, SALVADOR MATURANA, MARICEL SABALL I ELOI CARBONELL
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DIRECTORATE GENERAL FOR RESEARCH

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BARCELONA, SEPTEMBER 2017
Olympia Hall, Paris
25 June 2008

Bjork's voice is irresistible: the crowd screams, jumps and dances as if the world were about to end.

An amazing wind section surrounds the Icelandic singer.

The trumpets, trombones and tubas are not the only things filling the air with thrilling sound.

On the stage: there's also a mysterious, unknown and original instrument.

A circular table that looks like some sort of UFO!

Zang! Wellington! Zang!

Tweet! Raise your flag!

Each time the musician turns a block in the table, he creates unusual rhythms and sounds.
GUYS, DID YOU HEAR ME? I'VE FOUND IT!

EMMA STEWART-GRAY. SHE'S A YEAR BELOW
JOANA. SHE'D LIKE TO BE A SPECIALIST IN
IMMUNOLOGICAL SYSTEMS.

WHAT HAVE YOU FOUND?
AN ONLINE BOYFRIEND?

A BOYFRIEND, JUANITA? MAY
THE FORCE BE WITH YOU.

JOANA SAVILL. SHE'S IN HER LAST YEAR OF
SCHOOL. SHE WANTS TO BE AN UNCONVENTIONAL
SYSTEMS ENGINEER.

EMMA TINO
ZOMATES ON
THE RIGHT!

VÍCTOR ZAMBRANO. HE'S A YEAR BELOW JOANA.
HE WANTS TO WORK IN VIDEO GAME DESIGN.

WOULD YOU
STOP PLAYING AND LISTEN?

I WANT TO
TALK ABOUT SERIOUS
STUFF.

SURE, JOANA,
SURE.

SURE.

I'LL PUT IT ON
PAUSE. WHAT
HAVEN'T YOU GOT?
I thought about the theremin... it was invented by a Russian physicist, Lev Theremin, in 1921.

I wanted to do my research topic on a musical instrument.

It's like a box with two aerials. When you move your hands closer and further away from them, the aerials react to produce tonal variations.

Too right! You can hear the theremin in loads of sci-fi films, like The Day the Earth Stood Still.

I feel sorry for the theremin, but now I've found the reactable. And I won't stop until I know all about it.

It's sound, a bit like a violin, created ethereal atmospheres.

Too right!
WILL YOU HELP ME? I'M A BIT EMBARRASSED.

AND WHERE DO YOU WANT TO START?

THE ONE ON YOUTUBE IS CALLED BRIAN TAYLOR AND HE'S GOT A STUDIO IN MONTREAL.

NO IDEA... I COULDN'T FIND A MUSICIAN AND GET THEIR OPINION.

OH REALLY? WELL, AFTER YOU WENT ON ABOUT IT, I WROTE TO HIM AND IF YOU WANT, WE'S FREE NOW FOR YOU TO SKYRIDE HIM.

NO WAY... EMMA, YOU'RE THE BEST.

DON'T WORRY, YOU CAN COUNT ON ME!

AND ME.

GREAT IDEA! DROP HIM A LINE!

ARE YOU CRAZY OR WHAT? HE'LL IGNORE ME.

CLAP!
YOU SURE HE WASN'T JOKING?

I'M SO NERVOUS, I FEEL DIZZY...

RELAX, THESE PEOPLE ARE USUALLY PRETTY COOL...

GUYS... SO YOU'RE FROM BARCELONA AND YOU'RE INTERESTED IN THE REACTABLE, RIGHT?

YEAH, ABSOLUTELY!

THANKS FOR ANSWERING, MR TAYLOR.

WE'D LIKE TO KNOW... HOW DO YOU FEEL WHEN YOU PLAY SUCH A DIFFERENT INSTRUMENT?

LIKE SCOTTY FROM STAR TREK OR A SURFER.

WHEN YOU CATCH A WAVE TO BET HIGHER, YOU FIND IT HAS ITS OWN ENERGY AND MOVEMENT.

AND WITH THE REACTABLE... THE FIRST TIME YOU PLACE THE BLOCKS YOU NEVER KNOW WHAT SOUND OR TONE IT WILL MAKE, YOU REACT AND GIVE IT SHAPE.

IT'S NOT A PREDICTABLE INSTRUMENT: IT'S NOT LIKE A PIANO, WHERE YOU CAN REPEAT A CHORD AS OFTEN AS YOU WANT, BUT THAT'S WHAT'S SO AMAZING ABOUT IT.
Wow! And why... did you decide to play it?

By chance... in 2008, while we were mixing Björk's record Volta, we were sent a demo that was doing the rounds on YouTube.

And Björk said, it'd be fun to have one on tour.

When we started the 2009 tour, in Coachella, I'd only given it a go for an hour or so. Luckily the Reactable is very intuitive to use.

At first, I just played on the loud songs, to create chaos as if it were a noise machine.

But as the tour went on, we added it to more songs, and I got plenty of use out of its Sample Reproduction function.

I developed a way of playing 'desired constellation' with the Reactable and that became our duo in each show. It was beautiful.
That's lovely and this instrument... who invented it?

Some remixes in Silicon Valley? In Tsukuba? In Berlin!

No way!

From Barcelona? You don't say!

Really? Can you imagine us working on research like that in a few years? I don't know, a finding that transcends frontiers.

Hey! One moment... are you having us on?

No, no. It was created by Catalan scientists. Look it up...

Damon's right. It was dreamed up by researchers at Pompeu Fabra University (UPF).

Why not? I'd like to make a video game that lets us be more open, caring and creative.

Damon, it's been a pleasure talking, but I've got work to do, so I better get going. Good luck with your project. Bye!

Bye thanks for everything!
According to Wikipedia, this research group was headed by Dr. Sergei Jordi. Seems he's a computer, digital music and multimedia artist.

Wow... what a guy!

Geez! It's nearly eight!

I've got to go.

I'm off too tomorrow's Saturday and I've got a basketball game.

Let's go... on the way I'll explain an idea I've just had for a game.

Will your game include DNA or the molecular organisms that regulate it?

What are you on about? Who's going to be interested in that?

Hei! I'm crazy about genetics and science fiction. I can go on about it for hours.

Thanks for everything, guys. One thing... if I can find how to get hold of Sergei Jordi, will you come with me?

Not again! If we come, then prepare your questions a bit better! I don't want to seem ignorant.

Hai! Have a good weekend, Joana.
ON THE WAY OUT OF VILA DE GRÀCIA SECONDARY SCHOOL 31 OCTOBER 2016

HEY GANG! I'VE GOTTEN IN TOUCH WITH SERGI JORDÀ. HE'S WAITING FOR US IN HIS COMPANY'S OFFICES.

NO, IN HOW ARRIS TECHNOLOGY PARK. WE CAN TAKE PHOTOS.

COOL! GRAB A SANDWICH AND LET'S GO.

AND WHAT HAVE YOU FOUND OUT ABOUT HIM?

LOADS OF STUFF AS WELL AS BEING A UNIT TEACHER, HE'S ALSO PLAYED IN SOME WEIRD AND EXPERIMENTAL BANDS.

REALLY? LIKE HIS INVENTION.

YEP, BUT SERIOUSLY. THE REACTABLE HAS WON AWARDS ALL OVER THE WORLD! ROLLING STONE MAGAZINE CHOSE IT AS THEIR HOTTEST INSTRUMENT.

AT UNIVERSITY, I'D LOVE TO WORK ON A PROJECT AS DARING AS THIS...

DON'T WORRY! YOU'RE Bound TO FIND ORIGINAL RESEARCH GROUPS.

YES! YEAH, NOW WE'LL RESEARCH COOL STUFF TO IMPROVE PEOPLE'S LIVES, LIKE VERSION 4.5 OF THIS SANDWICH!

LOOK! THAT'S HIM.

Parc Tecnològic
Welcome.

I'm Sergi Jordà.

Pleased to meet you.

I'm Joanna.

And these are Emma and Victor.

Hello!

Let's go to the offices. That's where we investigate how to improve the Reactable.

Or prepare demos, talks and workshops...

We work here, but the first Reactable was made at the UdF.

The University let us develop it, thanks to a European Union Research Grant.

How come you didn't make more Reactables at the University?

And how's your relationship with the University now?

Very good. I'm a teacher at the UdF.

And what are you working on?

Because the University is not a factory, and we needed a place where we could produce and market it and reach as many people as possible.

The University is also part of the company. It's a shareholder and is on the board of directors.

We've made apps based on the Reactable to play it on pads, computers, mobiles and laptops.
Thanks... and the reactor, how did it come to you.

I suppose it was a mixture of two of my passions.

The first is music.

Every week I'd buy a prog rock record.

I got into it when I was 14.

I was mad about Van der Graaf Generator.

And as I was curious, and wanted to know how things worked, I made musical instruments.

And I carried on doing it when I grew up.

I'd take cassettes, parts of phones and make the weirdest stuff.

In 1975, I presented the Qwerty Castor to my students, a guitar with a computer keyboard.

I'd always wanted to make music... when I was 17, I bought a second-hand sax.

In 1981, with much formal music training, I was playing free jazz with Victor Muelas, Marcelly Antúnez, Claudio Zúñiga and Nirem Tesoro.
AND YOUR SECOND PASSION

Ah, that! I discovered it at university, in the physics department.

I went in 1979, and was doing well, but the subjects didn't grab me.

EVERYTHING CHANGED IN 1982, WHEN I TOOK "INTRODUCTION TO PROGRAMMING".

Wow! This is the future!

In the classroom, there was just one computer for all the students, we'd never seen one before, because they only appeared in films.

The class lasted two hours, but it changed my life.

I decided I wanted to learn how to programme then.
Wow... And how did you fit computers into the world of music?

An unusual and avant-garde record opened my eyes.

That record broke the mould in 1982.

While I was learning programming, Anderson was composing music with computers.

Sun's going down like a big bald head.

It was my dream, but I didn't know how to make it come true. Nor what to study to achieve it.

And what did you do?

Finish my degree, clearly.

I bought a Commodore Amiga, to make music by computer.

At the same time, I worked on programming Atari.

Then I went to live in Madrid and worked as a computer technician.

It was a bore, but I was getting paid and had free time.
I also studied a lot by myself.

In the library, they had six books on computer music.

I knew English would open the doors to ten, the Institut Nord-America.

I read them many times over. Every word.

And everything I discovered I put into practice in a band.

I carried on like this until July 1981. When I heard an extraordinary piece of news.

I went there like a shot and they gave me a grant.

We were called Clonics and we made experimental music.

No way they've opened a computer science and electronic music lab in the Reina Sofia Centre?

And how was it?

In 1993, they sent me to another, in Montreal.

This turns out to be an important conference.

Why?

In 1990, they paid for my ticket to go to a congress.

At the International Computer Music Conference, in Glasgow.
Because, by chance, it was then I met a genius: Xavier Serra, who had a doctorate from Stanford, in the United States.

I've been offered the directorship of the Phonos Foundation in Barcelona! Yes, to boost research in music, with computers and new technologies. Wouldn't you like to be part of it?

Great! We'll do great things!

Thanks to Xavier's offer, I returned to Barcelona. Phonos was based in the Midi Foundation.

We have to produce a synthetic voice that still sounds like the natural intonations of the human voice. What do you think?

Complicated, but possible...

We worked with next, the first computers designed to synthesize sound and music.
At that time, I was working with the artist Marcelli Antúnez. First of all, on the installation Joan, l’home de Carn.

At EPIZOO, thanks to an exoskeleton, spectators could manipulate Antúnez’s body as if he were a character from a video game.

My program detected sounds near the glass case of the android, analyzed them, and activated the figure in different ways.

I also worked with La Fura dels Baus, in 1997.

Finally, in AKAAMA, my program collected information on the actor’s exoskeleton, projected videos, and controlled musical outputs.

Thanks to that program, a thousand net surfers were able to create short pieces of experimental music.

I produced an online creation program for the opera Faust 3.0.

Fifty of these pieces were included in the performance.
WHAT GREAT EXPERIMENTS!

YOU'VE BEEN RIGHT AT THE HEART OF SO MANY STORIES!

YES, AND THEY'VE ALL OPENED NEW PATHS FOR ME.

DO THOSE PATHS LEAD TO THE REALM?

PARTY, BECAUSE THEY HELPED PREPARE ME.

AND HOW DID YOU EVENTUALLY ARRIVE?

THE END OF THE JOURNEY WAS DIFFICULT.

THANKS TO THE UNIVERSITY, IN 1999, THE UFU OPENED THE FACULTY OF COMPUTER ENGINEERING.

ITS FOUNDER INCLUDED XAVIER SIERRA AND I JOINED AS A LECTURER.

I COMBINED TEACHING WITH RESEARCH AT THE SAME TIME, I PREPARED MY DOCTORAL THESIS.
WOW! HARD WORK.

YES, BUT I ENJOYED DOING IT.

AND I HAD SOME GOOD, HIGHLY MOTIVATED STUDENTS.

HEY! LIKE US!

IN 2005, I HAD AN IMPORTANT MEETING WITH XAVIER SERRA.

THE REACTABLE PROJECT CAME OUT OF THAT MEETING.

IN 2006, WE'LL BE ORGANIZING THE INTERNATIONAL COMPUTER MUSIC CONFERENCE IN BARCELONA.

AMONG OTHER THINGS, WE'D LIKE TO PRESENT ONE OF YOUR PROJECTS AND MAKE IT POWERFUL.

THANKS... LET ME MULL IT OVER FOR A FEW DAYS.

COME ON! GET SOME DOCTORAL STUDENTS INVOLVED AND GET THE MACHINE RUNNING...
When I had a clear idea about the product, I set up a team with three doctoral students: Gunter Rieder, Martin Makuta, and Marcus Almgren.

You don't need to be a genius to do research.

You just need to invest a lot of time and passion.

They were amazing, each one in their own field.

I explained what we'd be making to the rest of the team: an electronic instrument that would become a landmark in musical synthesizers.

It would be as rich and open as a traditional instrument.

But playing it would be easier and more fun.

And you could use it without knowing anything about music.

We wanted to achieve all of this and with modern technology, we could.

But you'd never stop learning how to play it.
How long were you working on it?

A good couple of years.

You see, the European Union funded another of our research projects, which wasn't so much fun.

The same team was working on that, and when we had a bit of free time, well, we spent it on the Reactables.

It was a close one, but we completed it by the time of the conference and we opened with Teleson, a piece created by Chris Brown for two Reactables.

While Chris and Winter were playing in Barcelona, Marcos and Martin did so from Austria. Everyone was amazed.

And to prove that all those hours of sacrifice were not in vain, well, that was fantastic!

But couldn't you have done all this from home?

Without the support of the universities, god! Having a lot of people doing research is very expensive.

Yes?

Wow...
ALL THREE OF US WOULD REALLY LOVE TO END UP DOING RESEARCH.

WHAT'S THE BEST THING WE COULD DO?

THE BEST? FIND A TOPIC THAT MOTIVATES AND EXCITES YOU.

IF YOU LIKE THE TOPIC, YOU'RE ALWAYS GOING TO ENJOY IT. EVEN IF YOU HAVE TO PUT IN LOTS OF HARD WORK.

AND IF THE TOPIC WAS...

THE TOPIC CAN BE WHATEVER YOU WANT.

THERE'S RESEARCH INTO THOUSANDS OF TOPICS AT UNIVERSITY. IF YOU THINK IT'S IMPORTANT, THAT'S ALL THAT MATTERS.

A STRATEGY VIDEO GAME IN REAL TIME?

AND WHAT DRIVES A RESEARCHER TO SET UP A COMPANY?

THE NEED TO SEE HOW THEIR RESEARCH CAN BE APPLIED TO REAL LIFE, PUT IT INTO PRACTICE TO MAKE IT USEFUL FOR PEOPLE.

IF YOU ARE IN THIS SITUATION, YOU HAVE TO WORK WITH A COMPANY TO MAKE IT POSSIBLE.
As a good researcher, it is important to have a well-defined research question.

It's hard to transfer knowledge to a company. Everything you're first and everything you're second is running difficult.

You need to find a company to transfer your knowledge and have it built on.

What if you don't find one?

You want to work for a company? Even if you can't work in that sector, you can also work with other companies in the sector or develop them.

Don't stop working! Your work is most likely to be a success.
GOSH, GUYS! IT'S NINE ALREADY!

ALREADY! THE EVENING'S JUST FLOWN BY!

WOW, WE BETTER RUN...

I HOPE I HAVEN'T BORED YOU

AND THAT YOU MIGHT FIND SOME OF IT USEFUL.

DEFINITELY! IT WAS GREAT.

IT WAS REALLY INTERESTING.

AND CLEARED UP A LOT OF THINGS.

IT'S BEEN A PLEASURE, GUYS.

YOU KNOW WHERE I AM IF YOU NEED ANYTHING...

THANKS FOR EVERYTHING, SERGI!

I'LL SEND YOU A FEW PHOTOS.

BYE, AND GOOD LUCK WITH THE REACTOR.
You said I'll get an A for your work, right? You've got enough information to fill a library.

You're right, you're always complaining about the YouTube video editing programs.

Now I want to find a good topic for research, something that motivates me. Hey! What about audiovisual media?

If you like it, go for it! I'll work on vaccines, viruses. Be afraid, be very afraid!

Poor viruses! What have they done to you? Without them there'd be no Plague Inc. or Resident Evil.

Hey, Emah! Maybe you could be a consultant for my video game company. What do you think?