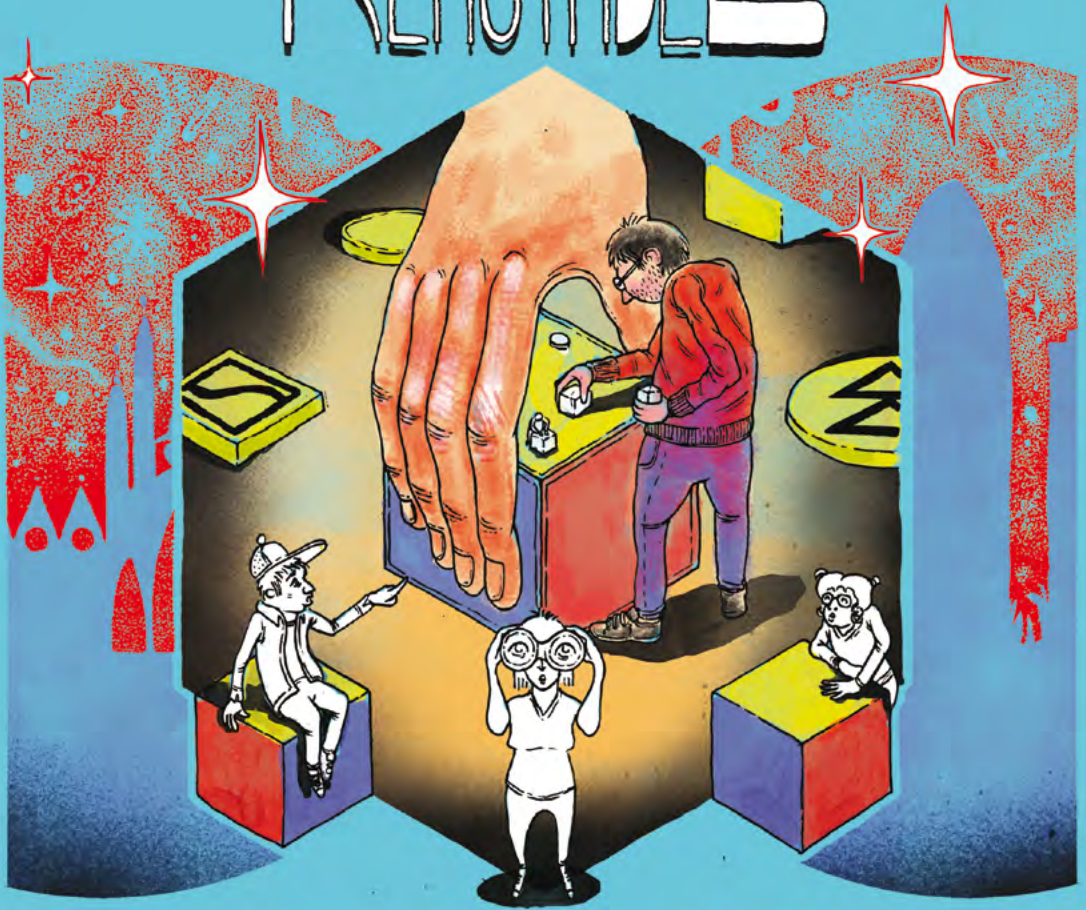


Recer  
còmics  
n°1

# IN SEARCH OF THE REACTABLE



RESEARCH IS CARRIED OUT IN UNIVERSITIES AND RESEARCH CENTRES BUT ALSO IN OTHER FIELDS. EVERY DAY WE COME ACROSS APPLICATIONS THAT HAVE RESULTED FROM IDEAS THAT CAME ABOUT IN THE COURSE OF RESEARCH AND MATERIALISED IN PRODUCTS AND SERVICES IN EVERYDAY USE. THIS COLLECTION OF COMICS PRESENTS EXAMPLES OF SPIN-OFFS, KNOWLEDGE TRANSFER PROJECTS, PATENT EXPLOITATION, ETC., WITHIN ANYONE'S REACH.

<http://www.universitatsirecerca.gencat.cat/rececomics>



SEBASTIÀ ROIG (FIGUERES, 1965) IS A HUGE FAN OF COMICS AND HE'S CRAZY ABOUT RICCARDO MICCOLI'S CARTOONS. HE WROTE THE SERIES HORA ZERO AND THE ALBUM LES EXTRAORDINÀRIES AVENTURES DE FRANCESC PUJOLS, ILLUSTRATED BY TONI BENAGES I GALLARD, AND THE ONE-OFF DR. PORTLLIGAT, ILLUSTRATED BY DAVID AYÉN.



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 CURCÓ, IOLANDA FONT DE RUBINAT, OLGA ALAY, SALVADOR MATURANA, MARICEL SABALL I ELOI CARBONELL

TRANSLATION AND PROOFREADING: T&S, TRADUCCIONS I TRACTAMENT DE LA DOCUMENTACIÓ, S.L.

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GOVERNMENT OF CATALONIA  
MINISTRY OF ECONOMY AND KNOWLEDGE  
SECRETARIAT FOR UNIVERSITIES AND RESEARCH  
DIRECTORATE GENERAL FOR RESEARCH



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BARCELONA, SEPTEMBER 2017

OLYMPIA HALL, PARIS.  
25 JUNE 2008.

Generalitat  
de Catalunya  
Departament  
d'Empresa  
i Coneixement  
Secretaria  
d'Universitats  
i Recerca

RECERCÒMICS  
COLLECTION

IN SEARCH OF THE  
REACTABLE

ART:  
RICCARDO NICOLI

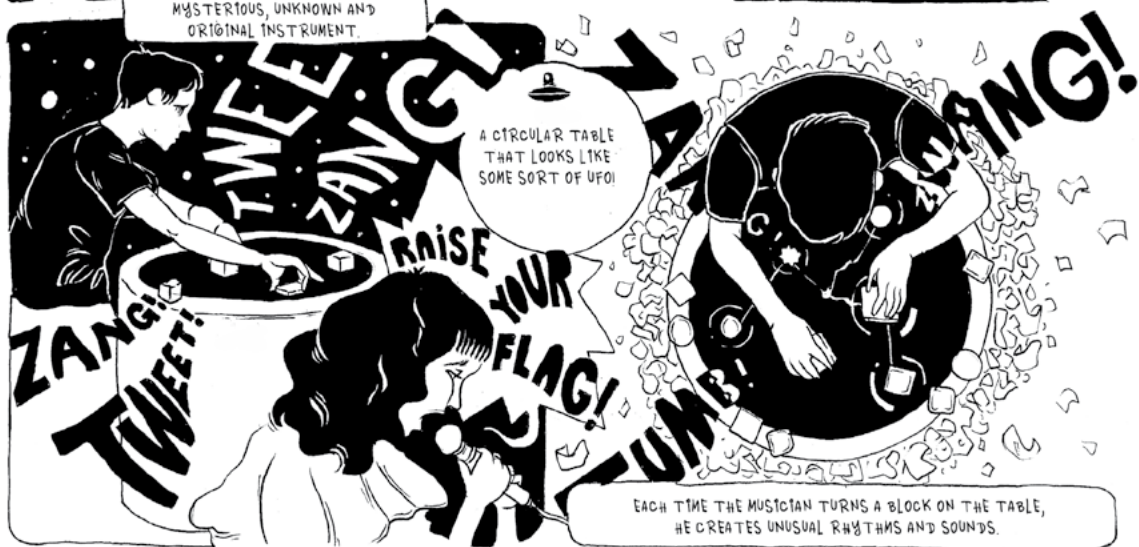
SCRIPT:  
SEBASTIÀ ROTG



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.

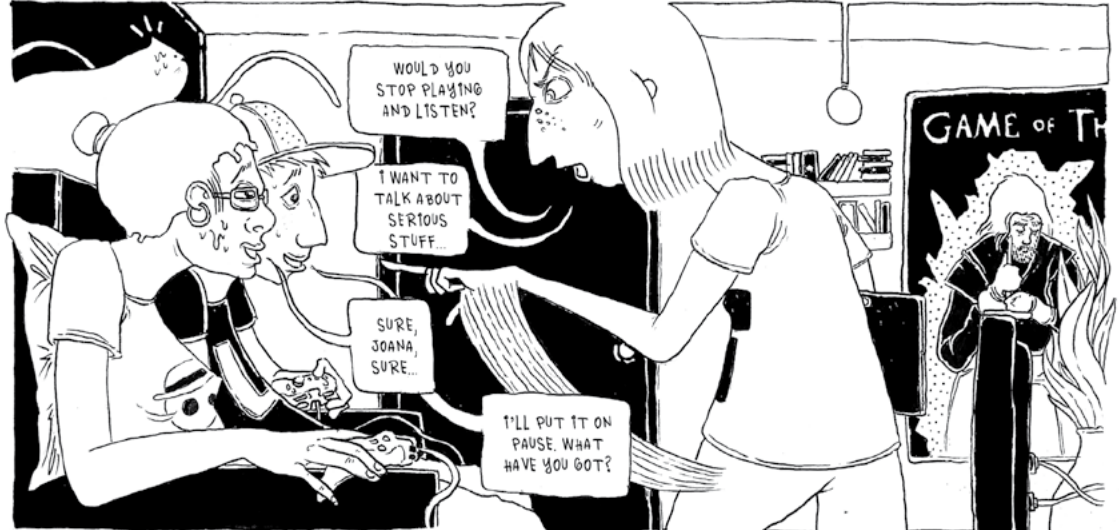




JOANA SAVALL. SHE'S IN HER LAST YEAR OF SCHOOL. SHE WANTS TO BE AN AUDIOVISUAL SYSTEMS ENGINEER.

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

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





YOU SEE THIS ROUND TABLE?

I'VE JUST MADE IT MY RESEARCH PROJECT.



HA, HA, HA! IT LOOKS LIKE CHEWBACCA'S CHESS BOARD.

IT'S AN INSTRUMENT, YOU BIG NERD! IT'S CALLED A REACTABLE

REACTABLE? LET ME GOOGLE IT



I WANTED TO DO MY RESEARCH TOPIC ON A MUSICAL INSTRUMENT.



I'D THOUGHT ABOUT THE THEREMIN...IT WAS INVENTED BY A RUSSIAN PHYSICIST, LEV THERMIN, IN 1919.

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.

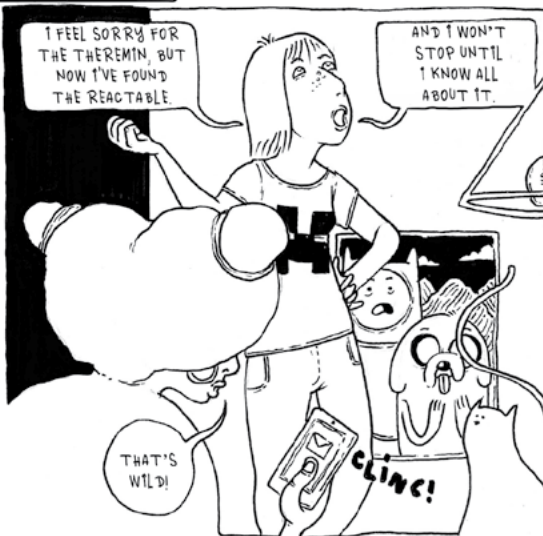


WOW! THAT'S TOTALLY SPACEY!

TOO RIGHT! YOU CAN HEAR THE THEREMIN IN LOADS OF SCI-FI FILMS, LIKE THE DAY THE EARTH STOOD STILL.



ITS SOUND, A BIT LIKE A VIOLIN, CREATED ETHEREAL ATMOSPHERES...



I FEEL SORRY FOR THE THEREMIN, BUT NOW I'VE FOUND THE REACTABLE.

AND I WON'T STOP UNTIL I KNOW ALL ABOUT IT.

THAT'S WILD!

CLING!







WOW! AND WHY... DID YOU DECIDE TO PLAY IT?

BY CHANCE... IN 2006, WHILE WE WERE MIXING BJORK'S RECORD VOLTA, WE WERE SENT A DEMO THAT WAS DOING THE ROUNDS ON YOUTUBE.



AND BJORK SAID, 'IT'D BE FUN TO HAVE ONE ON TOUR'.



I THOUGHT, YES, IT WOULD BE COOL, AND THEN I FORGOT ALL ABOUT IT.

THREE MONTHS LATER... I WAS PLAYING IT LIVE!

WHEN WE STARTED THE 2007 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.



HOW AM I GOING...

I DEVELOPED A WAY OF PLAYING 'DESTRED CONSTELLATION' WITH THE REACTABLE, AND THAT BECAME OUR DUO IN EACH SET. IT WAS BEAUTIFUL.





THAT'S LOVELY!  
AND THIS  
INSTRUMENT...  
WHO INVENTED  
IT?

SOME GENTUSES IN  
SILICON VALLEY?  
IN TSUKUBA?  
IN BERLIN?



I WAS TOLD  
YOU'RE  
FROM  
BARCELONA,  
RIGHT?

WELL IT COMES  
FROM THERE.  
FROM YOUR  
CITY.



NO WAY!



FROM  
BARCELONA?  
YOU DON'T SAY!



HEY! ONE  
MOMENT...  
ARE YOU  
HAVING US  
ON?

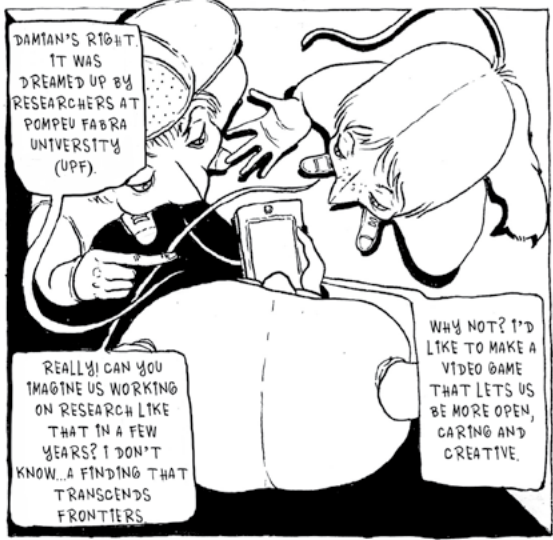


NO, NO IT WAS CREATED BY  
CATALAN SCIENTISTS.  
LOOK IT UP...



GUYS, 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!



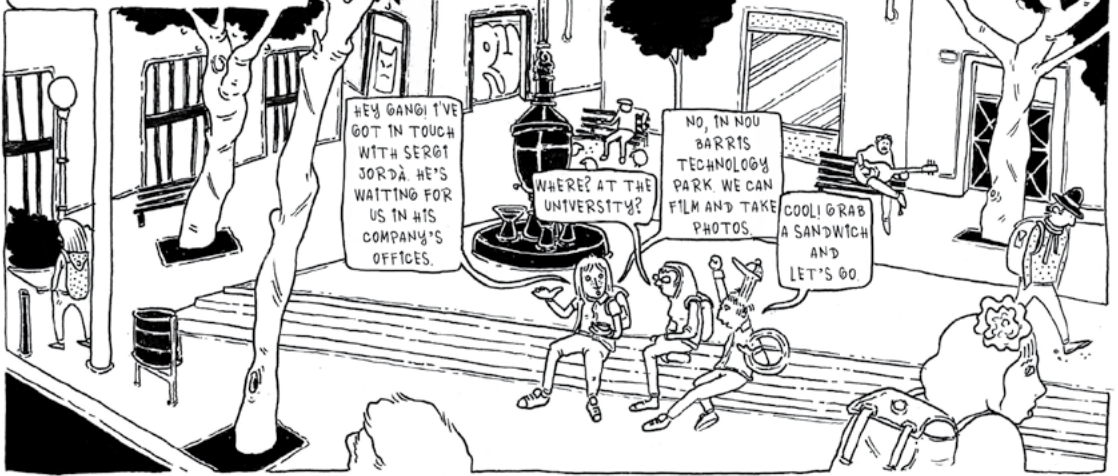
DAMIAN'S RIGHT.  
IT WAS  
DREAMED UP BY  
RESEARCHERS AT  
POMPEU FABRA  
UNIVERSITY  
(UPF).

REALLY! CAN YOU  
IMAGINE US WORKING  
ON RESEARCH LIKE  
THAT IN A FEW  
YEARS? I DON'T  
KNOW... A FINDING THAT  
TRANSCENDS  
FRONTIERS

WHY NOT? I'D  
LIKE TO MAKE A  
VIDEO GAME  
THAT LETS US  
BE MORE OPEN,  
CARING AND  
CREATIVE.



ON THE WAY OUT OF VILA DE GRÁCIA  
SECONDARY SCHOOL 31 OCTOBER 2016



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

WHERE? AT THE  
UNIVERSITY?

NO, IN NOU  
BARRIS  
TECHNOLOGY  
PARK WE CAN  
FILM AND 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

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

AMAZING!

RRRRRRRRRR

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

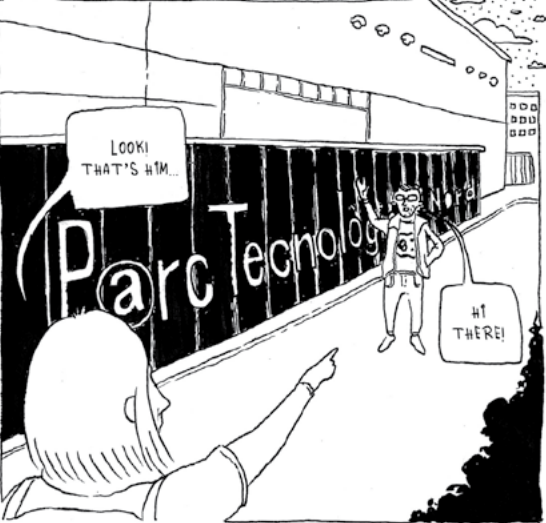
YES! YUM, YUM!  
WE'LL RESEARCH  
COOL STUFF TO  
IMPROVE  
PEOPLE'S LIVES,  
LIKE VERSION 4.0  
OF THIS  
SANDWICH!

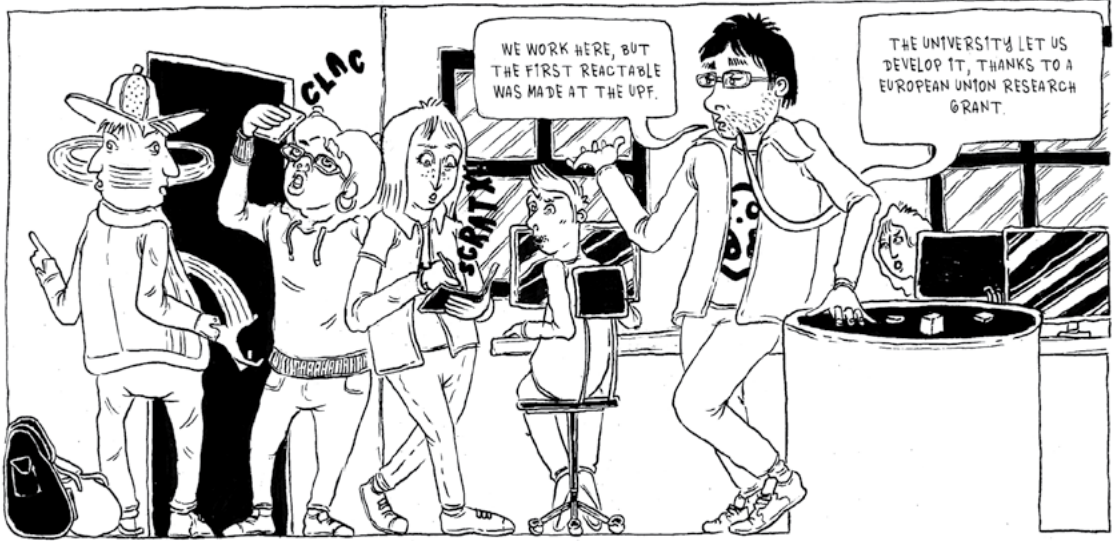


LOOK!  
THAT'S HIM...

Parc Technology

HI  
THERE!







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 ALWAYS WANTED TO MAKE MUSIC... WHEN I WAS 17, I BOUGHT A SECOND-HAND SAX.



# BOING BOOMITY BOING

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.

WHY?

I DECIDED I WANTED TO LEARN HOW TO PROGRAMME THEM.

COMMODORE VIC20

POWER

AGITAP

APICLASH!



WOW... AND HOW DID YOU FIT COMPUTERS INTO THE WORLD OF MUSIC?



AN UNUSUAL AND AVANT-GARDE RECORD OPENED MY EYES.



BIG SCIENCE, BY LAURIE ANDERSON.

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?

FINTSH MY DEGREE, CLEARLY...

THEN I WENT TO LIVE IN MADRID AND WORKED AS A COMPUTER TECHNICIAN.

I BOUGHT A COMMODORE AMIGA, TO MAKE MUSIC BY COMPUTER.



AT THE SAME TIME, I WORKED ON PROGRAMMING ATMS.



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 1989, 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

IN 1990 THEY PAID FOR MY TICKET TO GO TO A CONGRESS.



AT THE INTERNATIONAL COMPUTER MUSIC CONFERENCE, IN GLASGOW.

IN 1991, THEY SENT ME TO ANOTHER IN MONTREAL.

THIS TURNED OUT TO BE AN IMPORTANT CONFERENCE.

WHY?



BECAUSE, BY CHANCE, IT WAS THERE I MET A GENIUS: XAVIER SERRA, WHO HAD A DOCTORATE FROM STANFORD, IN THE UNITED STATES.



I DON'T KNOW WHAT TO SAY.

YOU MUST BE ONLY THE SECOND CATALAN ON THE PLANET INTERESTED IN COMPUTER MUSIC.

YOU THINK? THERE MUST BE MORE OF US.

AND WHAT ARE YOU WORKING ON NOW?



UNTIL A SHORT TIME AGO I WAS IN CALIFORNIA, AT A YAMAHA RESEARCH CENTRE, BUT I'VE DECIDED TO MOVE BACK TO CATALUNYA.



I'VE BEEN OFFERED THE DIRECTORSHIP OF THE PHONOS FOUNDATION.

IN BARCELONA?

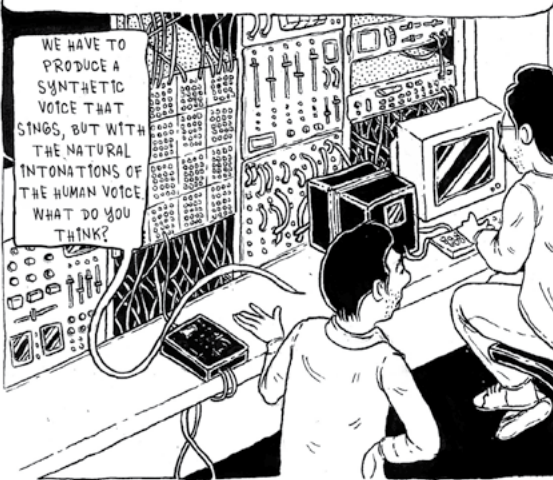
YES. TO BOOST RESEARCH IN MUSIC, WITH COMPUTERS AND NEW TECHNOLOGIES... WOULD YOU LIKE TO BE PART OF IT?



ABSOLUTELY!

© GREAT! WE'LL DO © GREAT THINGS!

THANKS TO XAVIER'S OFFER, I RETURNED TO BARCELONA. PHONOS WAS BASED IN THE MIRÓ FOUNDATION.

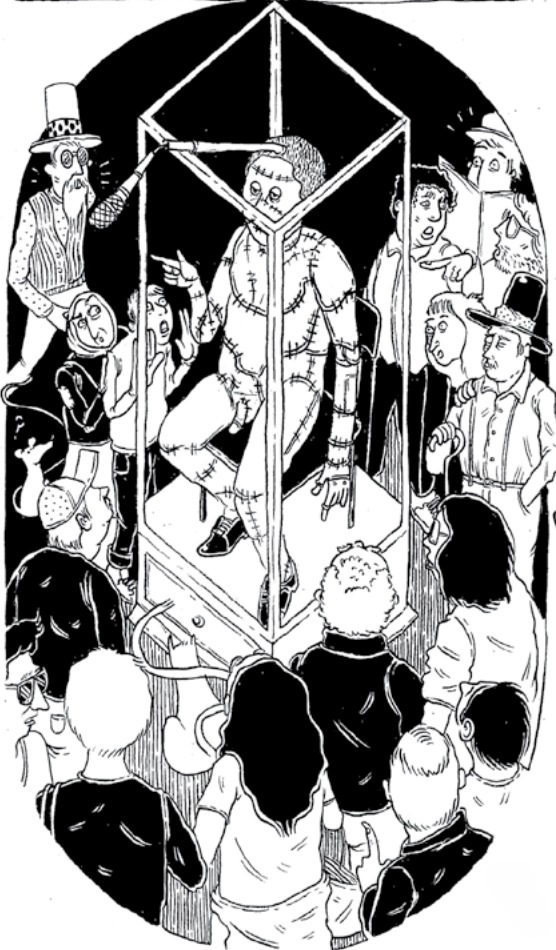


WE HAVE TO PRODUCE A SYNTHETIC VOICE THAT SINGS, BUT WITH THE NATURAL INTONATIONS OF THE HUMAN VOICE. WHAT DO YOU THINK?

COMPLICATED, BUT POSSIBLE...

WE WORKED WITH NEXT, THE FIRST COMPUTERS DESIGNED TO SYNTHESISE SOUND AND MUSIC.

AT THAT TIME, I WAS WORKING WITH THE ARTIST MARCELLÍ ANTÚNEZ. FIRST OF ALL, ON THE INSTALLATION JOAN, L'HOMME DE CARN.



MY PROGRAM DETECTED SOUNDS NEAR THE GLASS CASE OF THE ANDROID, ANALYSED THEM AND ACTIVATED THE FIGURE IN DIFFERENT WAYS.

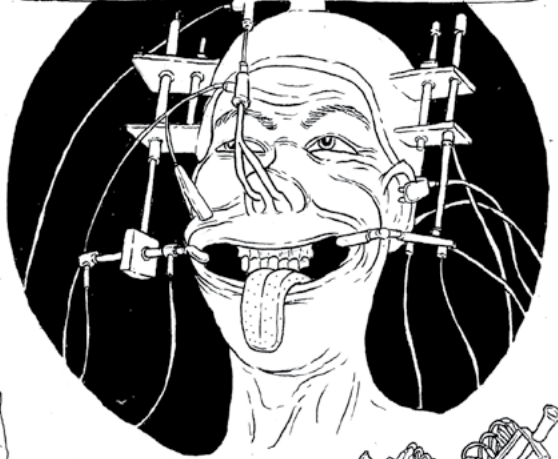
I ALSO WORKED WITH LA FURA DELS BAUS, IN 1997.

# F@ust



I PRODUCED AN ONLINE CREATION PROGRAM FOR THE OPERA FAUST 3.0.

AT EP1200, THANKS TO AN EXOSKELETON, SPECTATORS COULD MANIPULATE ANTÚNEZ'S BODY AS IF HE WERE A CHARACTER FROM A VIDEO GAME.



FINALLY, IN AFÀSIA, MY PROGRAM COLLECTED INFORMATION ON THE ACTOR'S EXOSKELETON, PROJECTED VIDEOS AND CONTROLLED MUSICAL ROBOTS.

THANKS TO THAT PROGRAM, A THOUSAND NET SURFERS WERE ABLE TO CREATE SHORT PIECES OF EXPERIMENTAL MUSIC.

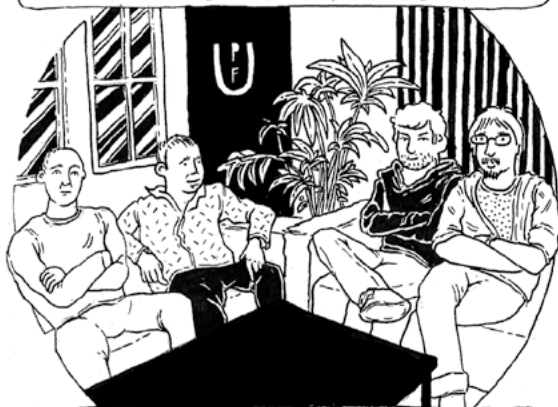


FIFTY OF THESE PIECES WERE INCLUDED IN THE PERFORMANCE.





WHEN I HAD A CLEAR IDEA ABOUT THE PROJECT, I SET UP A TEAM WITH THREE DOCTORAL STUDENTS: GÜNTER GEIGER, MARTIN KALTENBRUNNER AND MARCOS ALONSO



THEY WERE AMAZING, EACH ONE IN THEIR OWN FIELD.

YOU DON'T NEED TO BE A GENIUS TO DO RESEARCH.

YOU JUST NEED TO INVEST A LOT OF TIME AND PASSION.



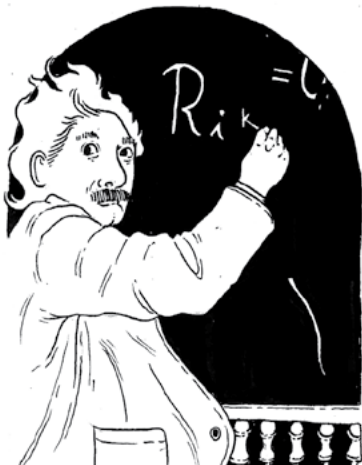
I EXPLAINED WHAT WE'D BE MAKING TO THE REST OF THE TEAM: AN ELECTRONIC INSTRUMENT THAT WOULD BECOME A LANDMARK IN MUSICAL SYNTHESIZERS



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.

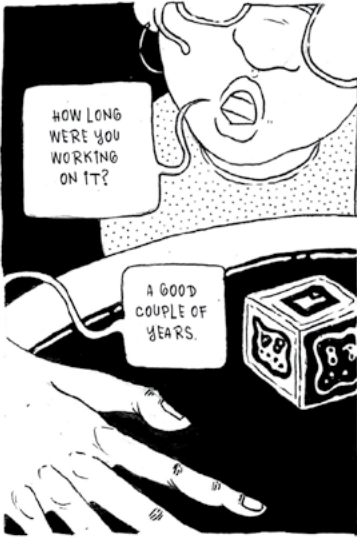


BUT YOU'D NEVER STOP LEARNING HOW TO PLAY IT.

WE WANTED TO ACHIEVE ALL OF THIS

AND WITH MODERN TECHNOLOGY, WE COULD.





HOW LONG WERE YOU WORKING ON IT?

A GOOD COUPLE OF YEARS.

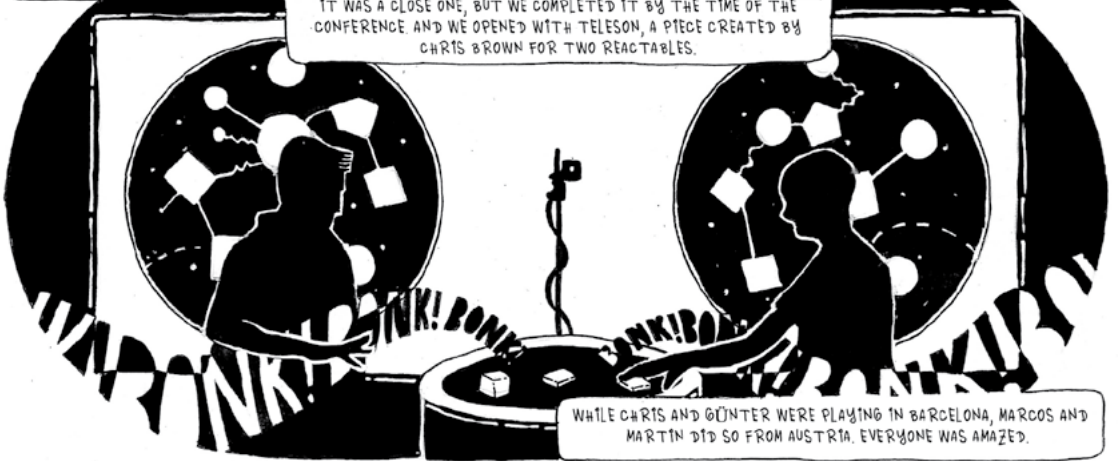


YOU SEE, THE EUROPEAN UNION FUNDED ANOTHER OF OUR RESEARCH PROJECTS, WHICH WASN'T SO MUCH FUN



THE SAME TEAM WAS WORKING ON THAT. AND WHEN WE HAD A BIT OF FREE TIME, WELL, WE SPENT IT ON THE REACTABLE!

SPANISH SOCIETY OF AUTHORS AND PUBLISHERS, BARCELONA. 4 SEPTEMBER 2005



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 GÜNTER 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 FANTASTICI



BUT COULDN'T YOU HAVE DONE ALL THIS FROM HOME?

ALONE?



WITHOUT THE SUPPORT OF THE UNIVERSITY? GOSH! HAVING A LOT OF PEOPLE DOING RESEARCH IS VERY EXPENSIVE

WOW...





YOU HAVE TO FIND A COMPANY, TO TRANSFER YOUR KNOWLEDGE AND HAVE IT DEVELOPED.



WHAT IF YOU DON'T FIND ONE?

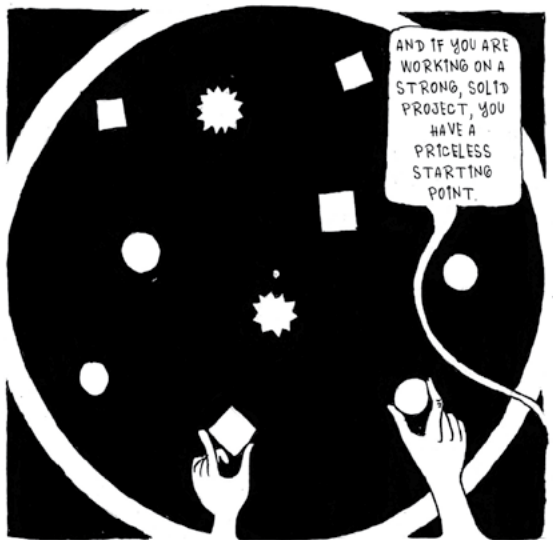


YOU CAN DO WHAT WE DID AND START ONE WITH THE UNIVERSITY'S SUPPORT, WE CREATED A SPIN-OFF, TO MARKET THE RESULTS OF OUR RESEARCH.



AND IS RUNNING A COMPANY DIFFICULT?

IT'S HARD, LIKE EVERYTHING ELSE, BUT IT'S WORTH IT.



AND IF YOU ARE WORKING ON A STRONG, SOLID PROJECT, YOU HAVE A PRICELESS STARTING POINT.



AND DOES A GOOD RESEARCHER ALSO MAKE A GOOD ENTREPRENEUR?

NOT ALWAYS. YOU HAVE TO BE WELL ADVISED.



BUT IF YOU'RE PASSIONATE ABOUT YOUR WORK, IT'S MORE LIKELY TO BE A SUCCESS.

YOU DON'T HAVE TO START A COMPANY. IF YOU DON'T LIKE THE IDEA, YOU CAN ALSO WORK WITH OTHER COMPANIES IN THE SECTOR, OR ADVISE THEM.



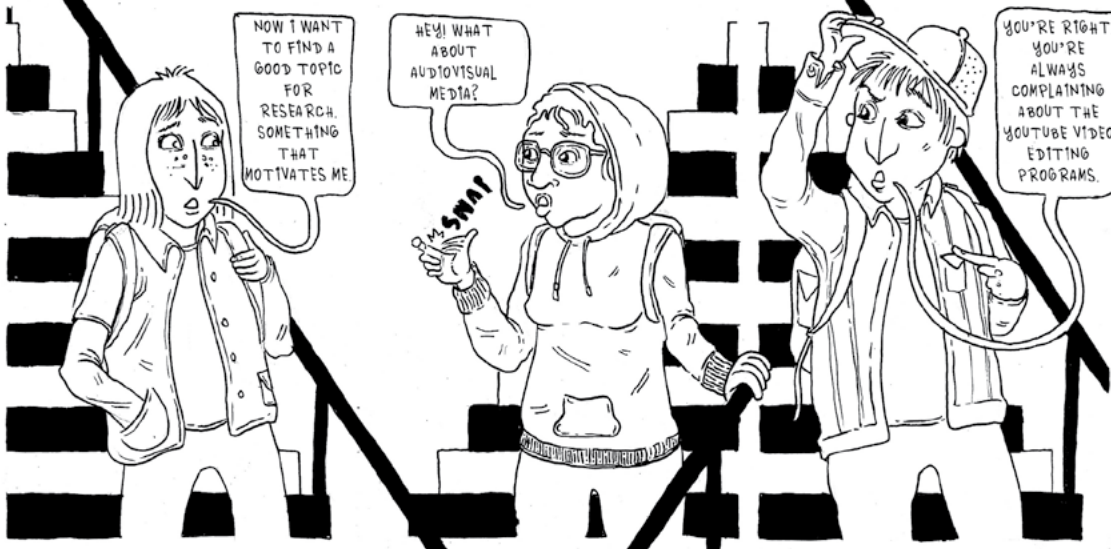




JOANA, IF YOU DON'T GET AN A FOR YOUR WORK, I'LL KILL YOU!

YOU SAID IT! YOU'VE GOT ENOUGH INFORMATION TO FILL A LIBRARY.

OH, I'M NOT THAT WORRIED ABOUT THE PROJECT ANY MORE...



NOW I WANT TO FIND A GOOD TOPIC FOR RESEARCH. SOMETHING THAT MOTIVATES ME

HEY! WHAT ABOUT AUDIOVISUAL MEDIA?

YOU'RE RIGHT. YOU'RE ALWAYS COMPLAINING ABOUT THE YOUTUBE VIDEO EDITING PROGRAMS.



YOU THINK? YEAH, THAT MIGHT BE GOOD.

IF YOU LIKE IT, GO FOR IT! I'LL WORK ON VACCINES. VIRUSES, BE AFRATD, BE VERY AFRATD!

POOR VIRUSES! WHAT HAVE THEY DONE TO YOU? WITHOUT THEM THERE'D BE NO PLAGUE INC. OR RESIDENT EVIL

HEY, EMMA! MAYBE YOU COULD BE A CONSULTANT FOR MY VIDEO GAME COMPANY. WHAT DO YOU RECKON?

THE END