



OPENING THE CODE, EXPANDING THE STAGE



Autonomy, community and craftsmanship
in the open source ecosystem



Open Source AVATAR Tool
Photo credits: Open Culture Tech

CREDITS

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Acknowledgements

Open Culture Tech is an initiative by Thunderboom, developed in close collaboration with the Netherlands Institute for Sound & Vision, AlxDesign and our close partners.

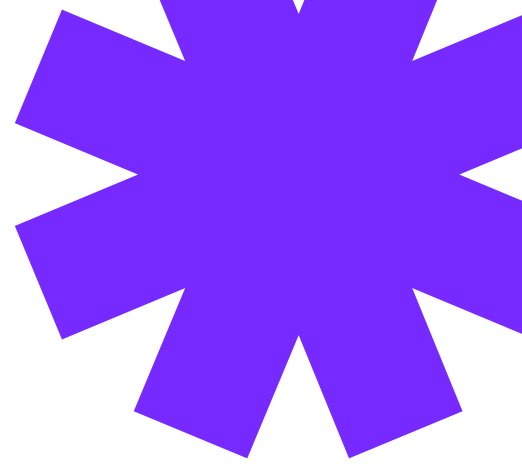


The initiative is made possible with support from Cultuurloket DigitALL.



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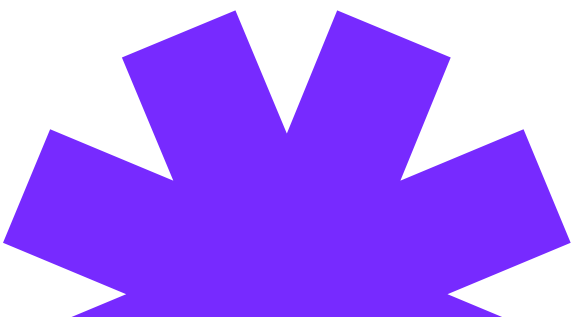
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INTRODUCTION

A smart ring that influences music in real-time, an AI band member on stage alongside the lead musician, or an augmented reality layer added to a live electronic music show: a wide variety of innovative technologies are increasingly used by artists in their music practices. However, a significant barrier remains: often, creative tools and technologies are heavily gatekept by expensive, proprietary software.

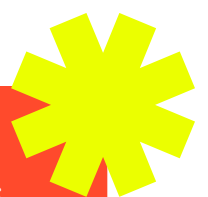
This leads to a growing divide between established artists who have access to new technology, and artists who do not. When access to technology is not equally distributed, many talented artists risk being left behind, which limits the growth of the music ecosystem as a whole.

The need for fair alternatives, such as open source tools, good practices and publicly available knowledge therefore is high.

So, what unfolds when you invite artists working across different musical, visual, and technological traditions to experiment with open source technology in their shows?

OPEN CULTURE TECH

Open Culture Tech (OCT) is a collaborative initiative that makes the latest, fair and easy-to-use technology more accessible to artists. Through residencies, tech toolkits, and capacity building workshops, Open Culture Tech strives to make music technology more open, inclusive, and artist-driven. so that innovation in music is something everyone can benefit from.

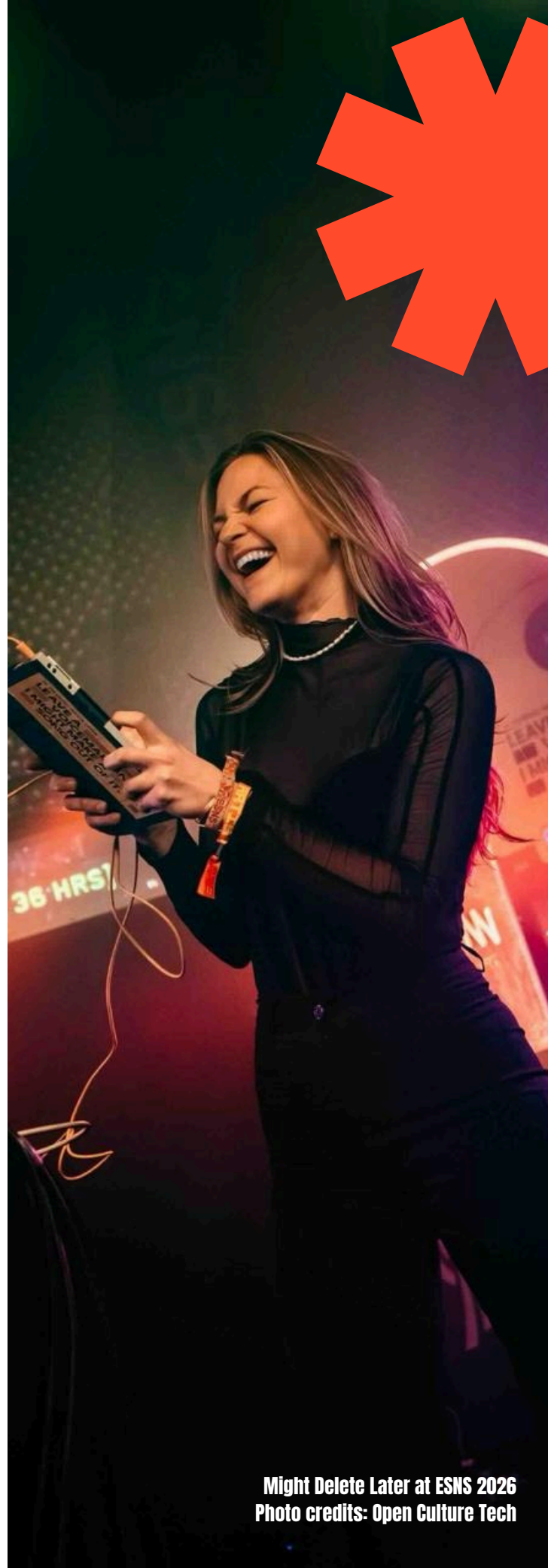


This report aims to show that these experiments go beyond the individual performances, offering a practical roadmap for artists who are curious about open source technology but unsure where to begin. To understand the impact of the project and to uncover how their stories can provide a blueprint for others, we sat down with eight artists who participated in one of the Open Culture Tech residencies: Rafaele Andrade, Jan van Casteren a.k.a. Jan Modaal, Jeroen Ermens, Mark IJzerman, Bas Mastboom a.k.a. BASJE, Mathilde Nobel, and artist duo Den Ree and Niki Scheijen.

Together, they represent a remarkably diverse group: from electronic music performers, to a classically schooled cello musician, from a punk poet to an interdisciplinary artist weaving ecology throughout his works and installations.

What unites these eight artists, is their curiosity and willingness to explore tools that are new to them and to make them an integral part of the story they want to tell.

Their stories, as diverse as they are, reveal a common thread: these tech tools are not just gimmicks, they are a core element of artistic expression, redefining the relationship between the performer, the audience and the technology itself.



Might Delete Later at ESNS 2026
Photo credits: Open Culture Tech

LISTENING TO THE ARTISTS

We conducted individual qualitative interviews with a selection of eight artists. We prepared a series of questions that were used in each interview to ensure comparable results. The interviews spanned topics including respondents' professional engagement with technology, their experimentation with open source tools, and their perspectives on the future role of technology in artistic presentations. For a full overview of the interview questions, see [annex 1](#).

This report introduces the eight artists, their work and how they have incorporated open source tools into their practice and performances. Subsequently, we explore the role technology plays in their creative process, followed by perspectives on open source and how expectations regarding live shows have evolved.

We close with insights and strategies to guide fellow artists in their open source journeys. Throughout, themes of craftsmanship, community, identity and ideology emerge as central to how these artists relate to open source.



OPEN SOURCE

Open source means far more than simply making software code available to the public. To be considered truly open source, a license must comply with a strict set of criteria established by the Open Source Initiative (OSI).¹ For instance, it must guarantee free redistribution without royalties, grant users the right to modify the code and distribute derived works, and maintain universal fairness by never discriminating against any person or field of endeavor. Furthermore, true open source licenses ensure independence and neutrality, meaning they cannot restrict other bundled software or be tied to a specific technology. For the full list of these criteria, you can consult the website of the Open Source Initiative: <https://opensource.org/osd>.

By upholding these principles, open source software fosters trust through transparency and accelerates innovation by enabling widespread collaboration. This open ecosystem inherently enhances security, allowing public code reviews to catch vulnerabilities early, while simultaneously driving efficiency and reducing costs by promoting code reuse and eliminating vendor dependency.²

On the Open Culture Tech website, more information can be found about the specific open source tools that were created in context of this project.

WEBSITE



MEET THE ARTISTS



¹ <https://opensource.org/osd>

² <https://www.digitaleoverheid.nl/overzicht-van-alle-onderwerpen/open-source/beleid/>

A photograph of Rafaele Andrade, a Brazilian-born composer and performer, seated and playing her self-built electroacoustic instrument, the 'Knurl'. She is wearing an orange jacket and is focused on her performance. The instrument is a large, white, 16-stringed device that resembles a cello but with a more complex, multi-layered body. It is illuminated with blue light. In the background, a laptop and some electronic equipment are visible on a stand.

RAFAELE ANDRADE

Rafaele Andrade is a Brazilian-born composer, instrument maker, and performer who has been based in the Netherlands for the past eight years. With a broad academic background including degrees in composition, conducting, and Sonology, she is the creator of the 'Knurl', a self-built electroacoustic instrument that merges cello, electronic music, and creative coding. Driven by a desire to dissolve the traditional boundaries between composing and performing, she 3D-printed the 16-string instrument herself using bio-degradable recycled materials. The Knurl features a built-in micro-controller that enables wireless connections, allowing her to live-hack systems and seamlessly blend acoustic cello tones with synthesizers and live looping.

Her work blends improvisation, self-made technologies, and interdisciplinary performance to explore topics around cultural identity, audience engagement, and social impact in a globalised world.

For Rafaele, inventing her own technology is more than a practical choice; it is a search for artistic autonomy that forces her to question her identity and creative boundaries. She values this iterative process and methodology just as much as the final product.

For Open Culture Tech, she joined forces with design studio Superposition to explore the emotional and physiological connection between performers and audiences in a project titled 'Improvising You'. They built a live show that transforms biofeedback from the audience into real-time sound and light.

By placing biological sensors on the hands and heads of audience members to measure heartbeats and brainwaves, the project challenges traditional roles in live music, making the public's involuntary responses central to the performance. This approach stems from her drive to transform traditionally passive audiences into actively engaged participants.



JEROEN ERMENS

Jeroen Ermens is a versatile keyboard player, organist, bandleader and teacher. As a 27-year-old musician with a Master of Music from Tilburg, he is one of the few in the Netherlands to specialize fully in the Hammond organ. It's an instrument he praises for its heavy stage presence, unique character and charming imperfections.

Jeroen seamlessly bridges traditional jazz, blues, and gospel roots of the Hammond with the modern digital age by integrating electronic music, backing tracks and automated light setups into his performances.

For Open Culture Tech, he collaborated with design agency Bureau Moeilijke Dingen to build a musical AI counterpart to bring onto the stage, resulting in a show called 'Signal Interference'.

This open source "call and response" application listens to his live playing and improvises alongside him. Crucially, Jeroen trained the AI exclusively on many hours of his own recorded solos. This approach ensures the dataset remains completely "clean," avoiding the intellectual property theft often associated with commercial AI and protecting his unique stylistic identity from being lost.

The project has evolved into a full-evening theater experience where Jeroen independently manages automated, AI-assisted visuals and lighting (such as projecting the Hammond's blueprints) synchronized with his playing. The ultimate goal is to keep the core musical expression human and rooted in tradition, while leveraging technology to single-handedly create an immersive and visually captivating experience that would normally require a large crew.

A photograph of Mark IJzerman, a man with glasses and a striped shirt, working on a circuit board. He is illuminated by a warm light source, possibly a lamp, which creates a strong glow on his hands and the board. In the background, a laptop screen is visible, displaying some data or code. The overall scene is dark, emphasizing the light from the work area.

MARK IJZERMAN

Mark IJzerman is a 38-year-old interdisciplinary artist and composer working across ecology, sound, and technology. With a background in music technology from the HKU, where he also taught for ten years, his installations and audiovisual performances draw on fieldwork and collaboration with biologists and ecologists, often incorporating living organisms, custom-built hardware, and self-written software. His work frequently explores the climate crisis and the friction between humanity and technology. Actively stepping away from "tech optimism," Mark explores concepts like "permacomputing," focusing on low-tech, sustainable computing, data privacy, and alternative energy sources.

For the first iteration of the Open Culture Tech project, titled *Despite Disturbed Waters*, Mark explored the archives of the Netherlands Institute for Sound & Vision (Beeld & Geluid).

He utilized open source software WAIVE originally developed by the design studio Superposition, who openly shared their methodology and code with him. The software allowed Mark to take low-resolution archive videos, specifically historical footage detailing water pollution in the Eindhoven region, and separate them into distinct 3D depth layers based on light and dark tones.

Rather than using modern AI to digitally enhance or sharpen the heavily pixelated images, Mark chose to lean into the limitations and graininess of the original material as a deliberate, aesthetic choice. By placing this layered footage into a 3D environment viewed by the audience through traditional green-and-magenta 3D glasses, he created a retro-futuristic experience that critically reflects on both ecological issues and the forgotten, older technologies of the past.



Jan Modaal (the alter-ego of 32-year-old Utrecht-based artist Jan van Casteren) writes punk ‘smartlappen’, his lyrics revealing a deep love for the Dutch language. Interestingly, alongside his musical and analog punk roots, Jan has an academic background in Artificial Intelligence and linguistics and has previously worked in software development. This unique blend of raw performance art and digital literacy drives him to continuously experiment with new technologies on stage.

During his Open Culture Tech residency in 2024, Jan explored the potential of 3D avatars as a form of live interaction on stage, animating body doubles using a live camera feed. This culminated in an interactive live concert titled ‘Choose Your Character.’

With the help of Thunderboom, Jan hacked the open source [avatar tool](#) to create a custom character-selection projection featuring a digital gallery of avatars, all sharing the last name “Modaal”.

During the performance, the audience was challenged to vote for which digital avatar they wanted to see perform next. Meanwhile, Jan was hidden behind the projection, wearing a camera helmet that motion-captured his facial expressions and body movements in real-time. As the digital avatar performed on the projection, the real Jan was live-animating it while simultaneously singing and triggering beats and synthesizers.



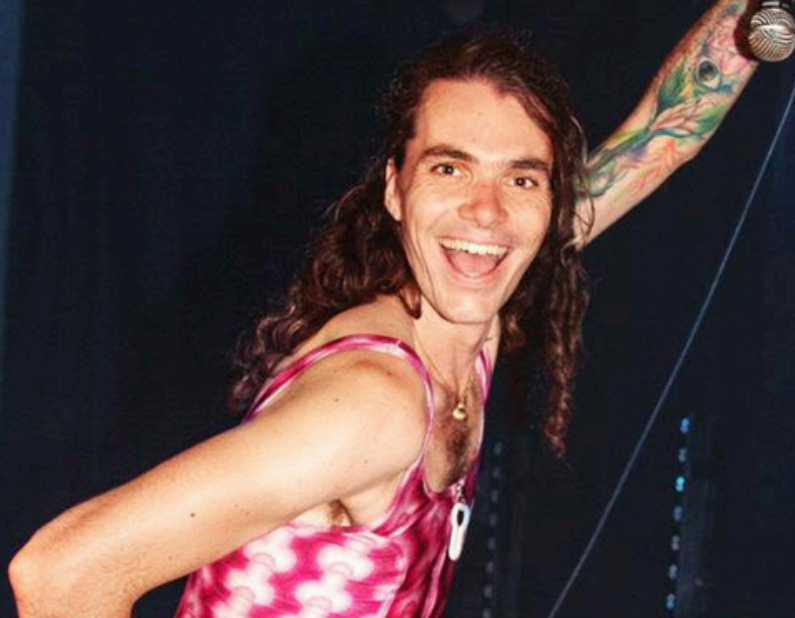
MATHILDE NOBEL

Mathilde Nobel is a 29-year-old multidisciplinary artist based in Rotterdam, known for merging ethereal sound, visuals, and performance into immersive experiences. With a background in fine arts from Sint Joost School of Art & Design in Breda, she creates personal, abstract music that explores the friction between delicate ambient soundscapes, heavy beats, and noise, always combining sound with visuals. She has received critical acclaim for her releases on nous'klaer audio, and performed at major festivals such as Rewire Festival and Dekmantel.

A defining feature of her work is the fragile, unpolished vulnerability of her voice; she consciously avoids pitch correction like autotune to keep the raw, human element central to her electronic compositions.

She also continuously bridges the gap between the digital and the traditional, actively singing in and composing sheet music for a classical choir.

For Open Culture Tech, Mathilde teamed up with artist and tech pioneer Chagall to investigate how she can shape visuals and music using her body, creating a performance where the boundaries between sound, visuals, and movement dissolve. Working with a MiMu Glove (a smart ring), alongside software like Ableton and Resolume (a VJ software), she built a complex system where her physical hand gestures seamlessly manipulate both her vocals and the visuals. This allows her to live-trigger elements on a large LED screen, treating it as an immersive, moving "digital painting".



BASJE

Bas Mastboom, artist name BASJE, is a 34-year-old multidisciplinary artist whose work exists at the dynamic intersection of cabaret, comedy, drag, and dramatic music theater. Their hybrid performances are known for autobiographical elements, sharp self-deprecation, and a fascination with pop culture. Alongside their theatrical background, BASJE also holds a degree in architecture and engineering.

For Open Culture Tech, BASJE is developing a new interactive theater performance currently titled Pop GPT. Using an open source avatar tool, they are creating a digital, "perfected" 3D version of themselves to serve as an equal co-star on stage. The narrative draws a parallel between the increasing polarization in society and the disappearance of "polyphony" (multiple voices/groups) in modern pop music. In an ironic twist, BASJE aims to become a solo pop star who brings back this polyphony by forming a duo act with their own AI clone.

However, their project is also a critical investigation into the ethics and biases of modern technology. While working with the open source avatar software, BASJE discovered that the tool strictly enforces conservative male and female gender binaries, making it nearly impossible to create a non-binary avatar or seamlessly put a male body in a swimsuit. Because BASJE identifies as gender non-conforming, this technological limitation has become a personal and central theme in their upcoming show.

True to their theatrical roots, BASJE centers audience agency in their performance. Rather than presenting a static show, they allow the audience to vote on the narrative's outcome. They will be deciding whether their relationship with their AI counterpart ends in harmony, or if they are destroyed by the pressure of their flawless digital self.



NIKI SCHEIJEN & DEN REE

Niki Scheijen (29) is a media artist, creative coder and VJ based in Rotterdam. She graduated from the Royal Academy of Art in The Hague, where she studied Interactive Media Design. Driven by a curiosity about the systems and technologies that shape our everyday lives, Niki approaches her work with an investigative mindset.

Her practice explores themes ranging from human-machine relationships and online activism to data, feminism and obsolete media technologies, transforming these subjects into compelling interactive artworks. Using a multidisciplinary approach, Niki's skills span electronics, 3D modeling, web development and live coding. She draws inspiration from internet culture, nature, and the creative potential found in technological imperfection

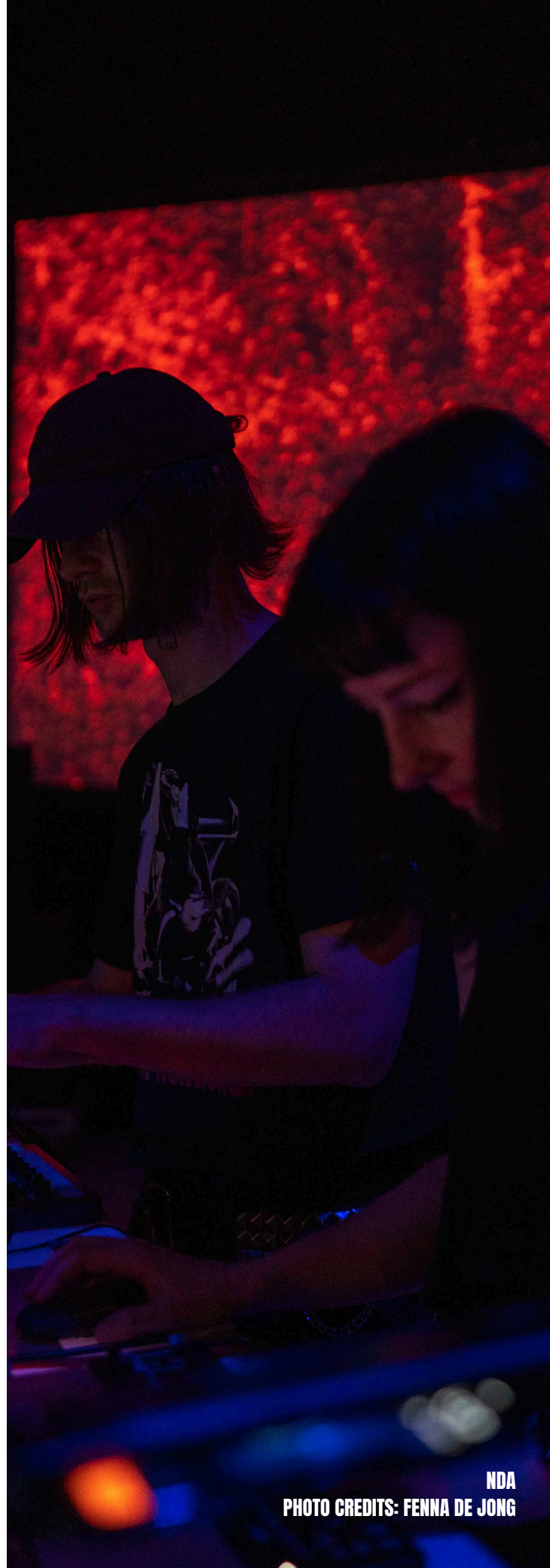
Dzianis Rusakovich (34), who performs under the name "Den Ree", originally hails from Belarus and brings a contrasting yet complementary background to the duo. With extensive previous experience as a software developer, he shifted gears to become a self-taught electronic musician, picking up the piano seven years ago before fully discovering his medium in live coding.

As a former "tech bro," Den Ree deliberately moved away from expensive, corporate software to advocate for open source alternatives, proving that artists do not need the latest commercial tools to create unique, high-level electronic music.



Den and Niki met in 2025 at a monthly meetup for live coders at V2 in Rotterdam. Recognizing an instant creative connection, they combined their disciplines under their duo name NDA, to create live interconnected audio-visual performances. They are both very active in the live coding rave scene (also known as "algoraves"), where they write code in real-time to generate music and visuals. Unlike traditional DJ sets, their music and visuals directly communicate with each other; a change in the audio instantly triggers a change in the visuals, and vice versa.

For their Open Culture Tech residency, Den and Niki are working together on an augmented reality (AR) storytelling layer, [the AR Synth](#), to complement their show. Using an open source AR tool, they allow audience members to easily scan a code with their smartphones, without needing to download any apps, to reveal hidden digital layers of videos and images in the physical space. The audience can use their phones to uncover the hidden ecological story behind their devices, learning about how phone technology relies on minerals mined from the earth.



NDA
PHOTO CREDITS: FENNA DE JONG

TECHNOLOGY AS ARTISTIC PRACTICE

The developed tools that the interviewed artists experimented with during their residencies primarily aimed to enhance the live performance experience. However, often the artists incorporate all kinds of technology, both open source as well as proprietary tools, into their practice.

Clearly emerging from the interviews is the notion that genre or discipline do not play a decisive factor in either the presence or absence of tech tools: technology has increasingly become an integral part of the artistic process. The interviewed artists showcase a diverse and innovative range of tools and practices that go beyond mere gimmicks. From the conversations, we extracted themes, outlined below, that become evident when these artists integrate tech into their creative practice, their works, their shows and their process.

When tech meets tradition

In our conversations we noticed that the respondents, irrespective of their artistic background, relate the distinction of analogue versus digital, old versus new technology, in one way or another. They play with these binaries and like to cross the line between sometimes strict divisions between different types of artistic expression.

In the electronic music scene, as one would perhaps expect, technology is an integral part of the craft.



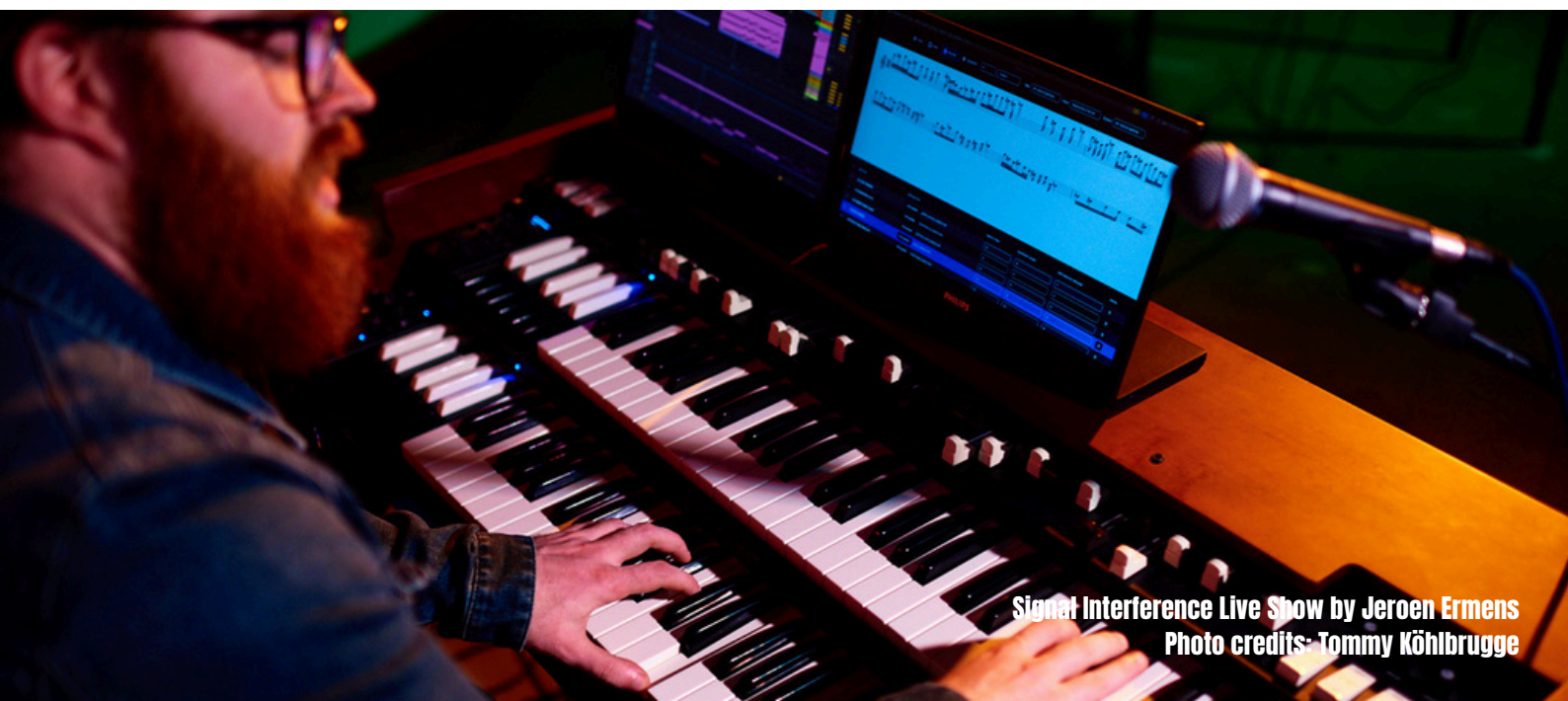
However, more classically schooled artists such as Jeroen Ermens and Rafaela Andrade prove that also the more traditional or analogue musical field can profit from a technological layer. These artists encounter more pushback as respective audiences (and fellow artists) are less used to a more interactive set-up. Rafaela actively challenges the more traditional set-up, where the audience takes on a passive role, by actively communicating with her audience and seeing this as an integral part of the performance.

As for Rafaela, the Open Culture Tech residency is not the first endeavour into tech for Hammond organist Jeroen. He has always been intrigued by the idea of merging the Hammond tradition with electronic music and synchronizing his shows with visuals and lighting for a more immersive experience. For his residency he went a step further by building a custom AI model that improvises alongside him. This way of working is not always applauded in the Hammond tradition. Jeroen finds himself connected to two different worlds:

“

So I work a lot within the Hammond tradition. And everyone there has an opinion like, "Why are you doing this? You shouldn't want to do that [...]" they apply [tech] as little as possible themselves. And on the other hand, I'm at the office, where they make a lot more electronic music. It's used a lot there. Actually, no song is written there anymore without using those tools.

- JEROEN ERMENS



Signal Interference Live Show by Jeroen Ermens
Photo credits: Tommy Köhlbrugge



Similarly, many of Jan Modaal's fellow punk artists want to stay far away from incorporating technology into their shows. And although Jan is keen to experiment with tech, he is not a big fan of laptops on stage. He advocates radical transparency by projecting his laptop screen into the space, realtime:

By opening up the technological process in real-time, he turns the use of software into a powerful artistic statement, aiming to demystify the technology and maintain a genuine, visible connection with his audience.

“

I find laptops on stage annoying and not very fun, because I just want to see what people are doing. And I see that more and more: that backing tracks and things like that are being used. And that you have a band, for example, with a guitarist and a bassist, but also a laptop. And I hope we go back to a time when you can see what everyone is doing. And that you can see where things are coming from. Because that is just really fun and an important part of the experience. And that is also what I try to do in my own experiments. So screen, plug in a double cable, and just watch along. I would really like it if that mentality became a bit more widespread. Letting people watch along and taking them along in your process.

- JAN MODAAL

On the other side of the spectrum, Mathilde Nobel, whose interdisciplinary work starts from a laptop and is rooted in the world of electronic music and visuals, has joined a choir and is learning about sheet music. She likes the idea of playing with the idea of time traveling, making the analogue more 'new' and the digital more 'old'. The contrast between her classical choir, where rules and structure are paramount, and her experimental and technological approach made her hesitant at first to combine these worlds.

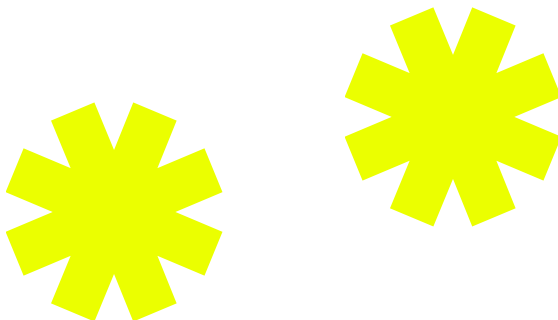
After receiving reassurance, Mathilde was inspired to combine sheet music and electronic music in her next album. In her residency she is experimenting with integrating tech in an invisible way by using her own body to control music and visuals, using wearables (a Mimu glove in this case) as tools. This has opened new pathways for Mathilde that she would like to extend in the future.

In Mathilde's ideal world, the wearables are practically invisible, so that humanity and emotion are allowed to take center stage.

“

I would like to explore even more about how I can achieve that. So that eventually I only need my body to perform. What I have always said, also in developing this show, is that I don't want technology to take center stage, but that it must be a part of the world I want to create. To me, it is not interesting when it is solely about technology; rather, it is interesting that it can be a support for the rest: for the visuals, for the music, for setting up that entire world. [...] So I would say that I hope technology can develop in a way that serves as a strong support for pure emotion and, specifically, human encounters.

- MATHILDE NOBEL





Despite Disturbed Waters Live Show by Mark IJzerman
Photo credits: Patrick Spruytenburg

Mark IJzerman, whose work evolves around ecology and tech, similarly considers technology as a tool to create an inherently immersive world rather than something that needs to be made explicit. He draws the comparison with a feature film where the audience does not see the set, the behind the scenes. In his collaboration with Open Culture Tech,

Mark used low resolution archival footage from the Netherlands Institute of Sound & Vision and used open source code to separate these materials into 3D layers, actively using the "graininess" and limitations of the footage to create a retro-futuristic, ecologically themed visual experience. Experimentation with 'old technology', such as 3D glasses and discarded old television screens, runs throughout his work.



Layered storytelling & audience involvement

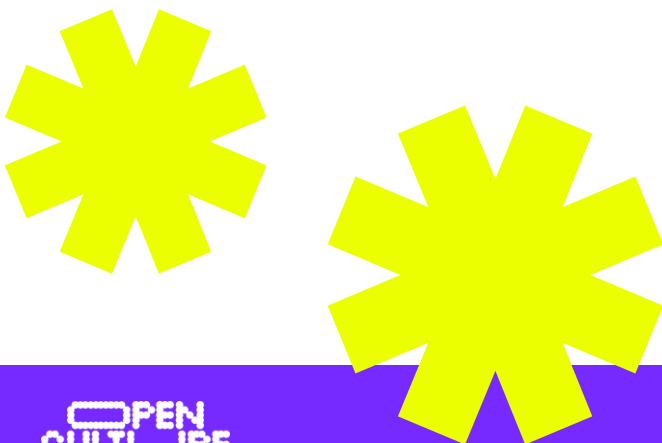
For most of the interviewed artists (open source) technology is not only utilised for visual or musical effect, but as a medium to tell stories and break the barrier between the performer and the audience. The respondents all have their unique approach to this, but the common thread is that they incorporate tech in such a way that the connection with the audience is intensified and tools are used to explore how they can strengthen the story they want to tell.

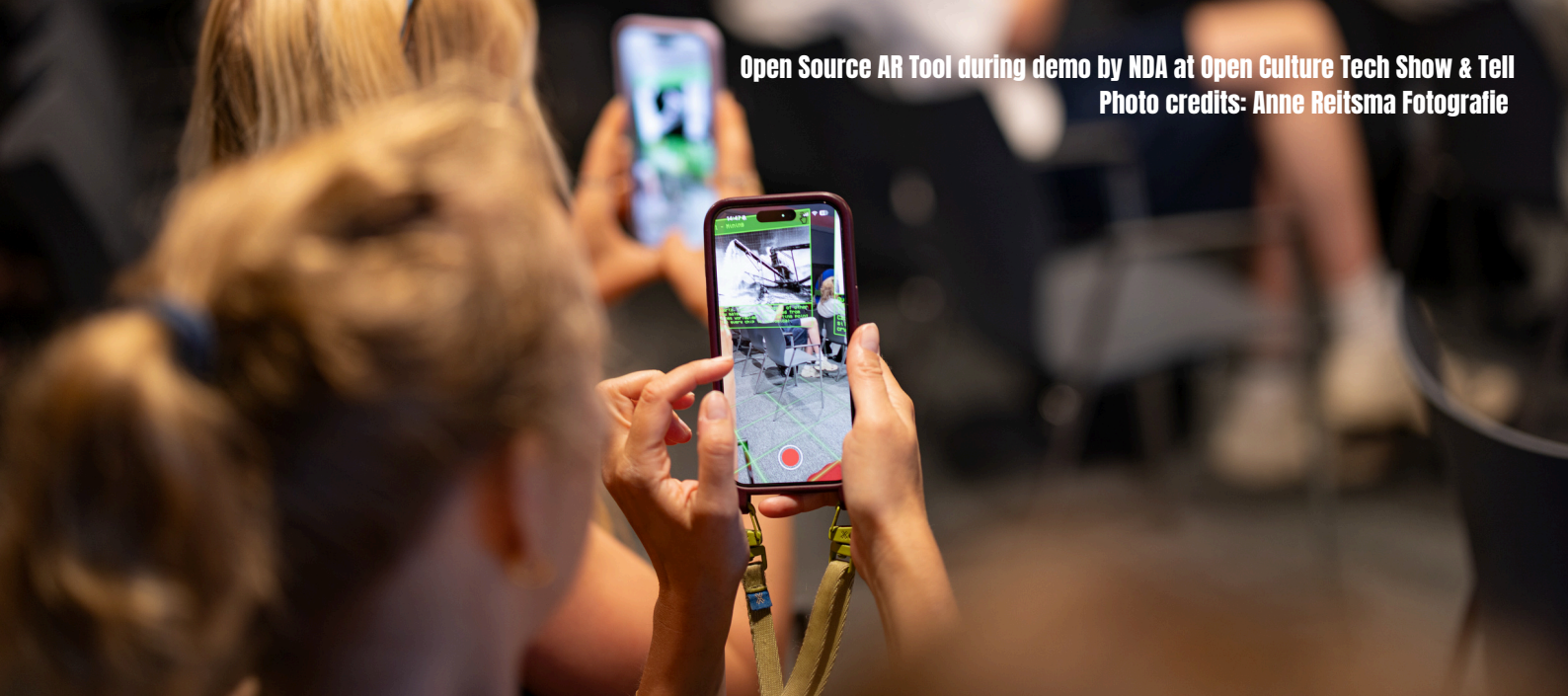
In their theater show POP GPT that is currently in development, Bas Mastboom, from hereon out named by their artist name BASJE, for instance integrates audience participation by giving the audience members agency over the narrative's outcome. Using the Avatar tool, developed in the first iteration of Open Culture Tech, they created a 'perfected' digital version of themselves that serves as a costar.

They let the audience vote on the fate of their relationship with the AI: the audience decides whether the story ends romantically and harmoniously, or if it ends in tragedy where BASJE is destroyed by their own perfectionist digital self. By forcing the audience to make this choice, BASJE's overarching goal is to make them realize that humanity must actively retain control over the development of AI.

With Choose you Character Jan Modaal in his show similarly added a game-like interaction, which actively invited participation from the public. He projected a selection of characters whilst he was hidden behind the projection. The audience was challenged to yell and bid against each other to choose which character they want to see perform next.

A more subtle way of incorporating the audience becomes visible in the practice of Den Ree & Niki Scheijen. They employ an experimental approach to connect with their audience and sync sound and vision in several ways by shifting their focus from simply building up sound and visuals to actively telling a story.





They project the actual code generating their music and visuals onto the wall, also known as live coding, allowing the audience to decipher the connection between the text, sound and visuals. On top of that, as part of the Open Culture Tech residency, they use an AR synth tool to add an extra layer of storytelling to their Club performances.

“

[...]the Open Culture Tech tool that we use, which is the AR synth augmented reality. This is a way that we can actually have something that you don't need any physical things for and still add new layers on top of something you're already doing.

- NIKI SCHEIJEN

Audiences can scan a code with their smartphones to uncover visual layers that tell the ecological story behind their devices, such as showing the mines where the minerals for phone technology are extracted. However, to ensure the audience is not just staring at their screens instead of dancing, they structure their performance in "chapters". They provide visual cues to let the audience know exactly when a new part of the story is available to explore on their phones.

As such, they actively use technology in a way that guides the audience through in their performance and includes them into the experience. The technology is not just used as a visual effect, but as a storytelling device to spread awareness about the hidden costs of modern technology.

OPEN SOURCE PERSPECTIVES

“

Often if you work with tools that are given to you, like certain [proprietary] music software or a specific music tool, a mixer, an interface, you get to know where the fader is or certain other buttons and you work around that. Those are your boundaries. But when you create your own mixer, your own software, you go so much deeper and you start to wonder if you need that specific button per se [...] a lot of times this question is very related to your artistic positioning. You know, what are you searching for? So yeah, it gives you a lot of freedom, a lot of strong positioning, autonomy, identity, but it also makes things more complicated.

- RAFAELE ANDRADE

A notable insight that emerged from the interviews is that open source software represents something far beyond an accessible and affordable alternative to commercial tools. For the interviewees, it is an ideological stance based on artistic identity, political values, and how creative communities choose to exist with each other.

Rafaele Andrade, for example, notes that building your own software gives unparalleled artistic autonomy to define your own boundaries. According to her, it forces you to ask deeper questions about what you actually need to develop and present your work and define your own artistic identity.



Improvising You Live Show by Rafaele Andrade
Photo credits: Flo Verhulst



This sense of control extends into ethics. Jeroen Ermens values that his AI is exclusively trained on his own data, keeping what he calls “the data bundle clean and healthy” and avoiding the intellectual theft common in commercial AI. A commercial AI tool might provide better output, but gives little transparency on what kind of training data is used.

Mark agrees that this is an important reason to prefer open source: “(...) that your data is not sold, so that you do not contribute to even more inequality”. Moreover, choosing a commercial AI tool means that artists risk losing their style characteristics, according to Jeroen. Mark raises a related concern, emphasizing the risk of losing the human connection and contributing to even more AI slop being created:

“

This is indeed a problem, because it is the same with all AI tools. On the one hand, you are once again giving away your creative ideas to big tech giants, and on the other hand, you are contributing to the slopification of the internet. Nothing new is being added; there is no exchange between people. It is once again about human-machine contact and algorithms that can then be used for whatever purposes, instead of us seeking each other out [...] and exchanging ideas. But I fall into that trap myself, too.

- MARK IJZERMAN



BASJE performing
Photo credits: Lau Zautsen

Another risk is that commercial platforms can change their terms at any moment, leaving users stranded. Open source puts that power back in the hand of the creator and protects user data from being sold by big tech companies.

BASJE also makes their choice for open source explicitly political. They connect their preference for open source software to a broader anti-capitalist perspective, positioning it as a necessary counterweight to corporate monopolies in the technological landscape:

“

I am quite anti-capitalist [...] And certainly with what you see now, with AI and all the secrets. And I still work with Chat GPT and I think, no, this is our money, our info. And if that is being used for bad things, that just shouldn't happen. So why open source? I personally believe in it very much. Show it, make it transparent, make it accessible to everyone.

- BASJE

Another motivation that emerged is the collaborative spirit inherent to the open source ecosystem. Den and Niki highlight that open source creators are driven by passion rather than profit, making the community highly welcoming and transparent.

Especially in the traditionally male dominated tech space, the effort to be inclusive does not go unnoticed. Niki observes that people who might feel less at home in tech spaces are welcomed:

“

I really appreciate that there is a conscious effort in the open source communities to give space to people who usually maybe feel a bit less comfortable in these spaces and [are] actively trying to encourage people also without experience to join.

- NIKI SCHEIJEN

Other artists support this perspective: although Mathilde was less aware of the specific focus on open source within the project, she emphasizes that the community around the software, helping each other troubleshoot and share tools, is just as valuable as the software itself.

Mark describes the experience of collaborating with Superposition, one of the project's tech partners, as a “breath of fresh air”, precisely because that kind of open sharing is far from universal.



Q&A with Tech Partners during Open Culture Tech Show & Tell
Photo credits: Anne Reltsma Fotografie



Jeroen Ermens performing
Photo credits: Tommy Köhlbrugge

The idea of paying it forward to others resonates with many interviewees. For instance, Jeroen is excited by the fact that his contribution to the tool will now also make it easier for others to work with it. He especially thinks that it will be very useful in the electronic music scene.

Finally, open source offers a route around the normative constraints baked into commercial AI and provides more inclusive options to explore.

BASJE discovered that many commercial tools default rigid gender binaries and the flexibility of open source code opens the possibility at least of building systems that properly represent non-binary and queer identities.

Overall, the interviews paint a clear picture: choosing open source, for these artists, is less a technical decision and more of a values statement about how creative work should be made and shared.

“

I think that [open source] is a good thing, because then everyone has access to it. That is often the whole point. Look, if I hadn't done this residency, this would never have happened. And now others can [build on it] as well. Because I am sure the tool can be deployed even more easily in the synthetic realm and electronic music. It actually fits much better there as a tradition. That is why this combination was really cool. And I do think it will be used in that way.

- JEROEN ERMENS

Shifting expectations

The interviewees observe a clear shift in audience expectations, noting that modern crowds are moving away from passive observation towards active participation, while simultaneously becoming more critical of how technology is used. Rafaele, coming from a classical background where audiences are traditionally passive, notes that expectations are definitively changing, with crowds now wanting to be included in immersive experiences.

It is a shift that prompted her to use biological sensors to let the audience's bodies steer the performance. Mathilde similarly observes that her visually and technologically rich shows command more concentration, with audiences far more immersed in the music than in traditional settings. BASJE takes this further by building their theater shows around the expectation of agency, giving audiences the power to vote on the storyline and ultimate fate of their AI avatar.

Alongside this desire for participation, audiences are also more critical of how technology is applied. Jeroen notes that art audiences increasingly expect technology to serve as a deliberate, conscious tool rather than a blind algorithmic process. Jeroen anticipates that younger, more IT-literate crowds will begin asking

pointed questions about how AI models are trained and why specific outputs are chosen. Mark points to a broader societal turn away from the tech optimism of the 2010s, with audiences now acutely aware of data privacy concerns and big tech monopolies, gravitating toward work that critically examines ecology and technological friction. Jan aptly captures this shift:

“

I think the most important sentiment is that the incredible intellectual theft taking place now is simply something that people are genuinely worried about.

- JAN MODAAL

Finally, artists using open source tools are quietly reshaping what audiences expect from a performance altogether. Den & Niki find that live coding, openly sharing screens and writing code in real time, initially surprises audiences, but quickly generates curiosity and reframes the idea of perfection entirely: when the code breaks and the music stops, audiences don't boo, they cheer, fostering a rare atmosphere of shared understanding and communal experience.

Barriers, challenges and how to overcome them

As set out above, the benefits of open source are undeniable and go way beyond tools being free of charge. However, despite the advantages, the development and implementation of open source tools can impose barriers and challenges. For example, open source tooling can lack the stability, standardisation and efficiency of commercial products. As a result of this, all of the interviewees admit that they still use proprietary software and platforms such as Ableton, Resolume, Touch Designer and Lightkey, but also ChatGPT, Adobe, Google, Apple and Microsoft tools. Throughout the interviews, artists point to several aspects of open source that can be arduous.

In Rafaele's case, biological sensors can be unstable live, requiring a dedicated tech crew, to which she currently does not have permanent access. Making different software programs communicate requires immense technical discipline and can be frustrating, Mathilde points out. Mark admits that commercial tools are often faster and more efficient, making open source a choice that often requires sacrificing convenience. Exactly because open source tools are often created by one person, and is a labour of love, there is a lack of standardisation.



Mathilde Nobel
Photo credits: Aryan Hamyani

Precisely for this reason, Jan actually still uses a lot of commercial software, to ensure consistent quality and operability of the technology. Another barrier that is mentioned is findability: it is not always easy to locate these open source solutions as they are often scattered around the web. “The only way I can think about open source is within the jungle that it is.”, Mark remarks. Lastly, availability appears to be a challenge: sometimes there simply is not a sufficient open source alternative available.

However, despite the barriers and the lure of proprietary tools, the respondents advocate and stimulate the use of open source where possible. For artists who need some encouragement the interviewees offer some strategies to overcome the barriers.

Naturally, having a software background or being tech savvy in other ways will help you in implementing open source technologies.

However, being curious and willing to invest time are far more important. In short: the mindset matters more than the skill. Jeroen states:

“

I think people just always need to be open to those kinds of things. Try it first, see what comes of it. And if it doesn't work out, then you know that too.

- JEROEN ERMENS



Jeroen Ermens

Photo credits: Tommy Köhlbrugge

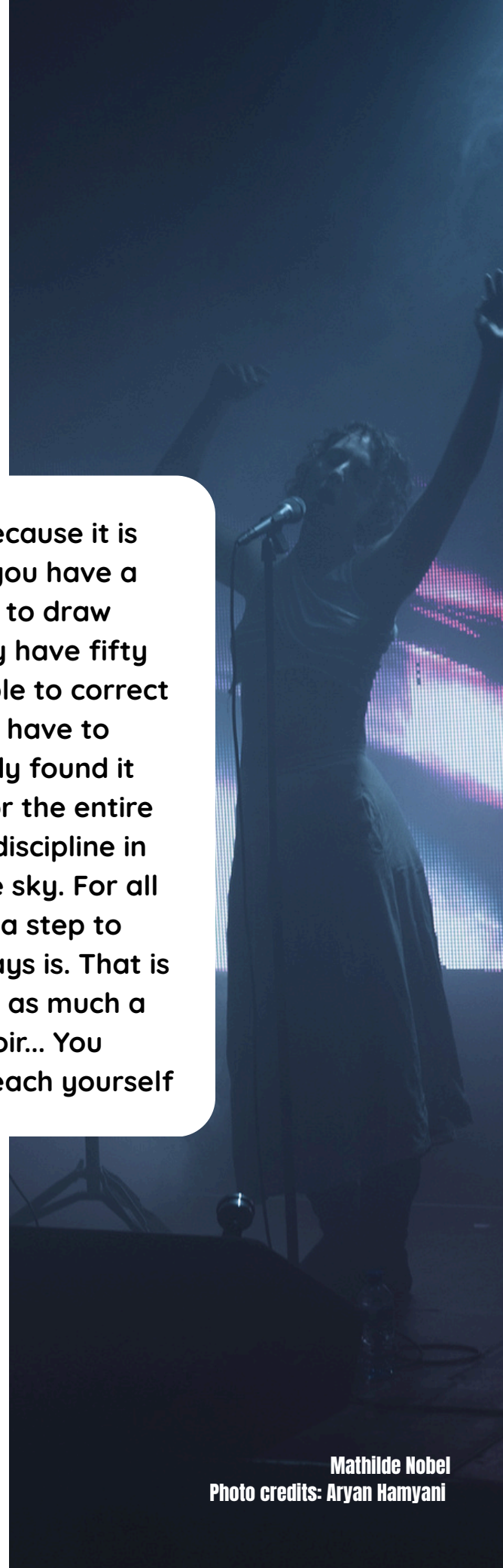
Learning software requires the exact same discipline and willpower as studying a traditional acoustic instrument. It is a craft that requires patience and a willingness to troubleshoot, Mathilde states that the perseverance pays off:

“

It has given me a lot to persevere, because it is the same with a creative process. If you have a blank canvas, you have to persevere to draw that first line. But even if you already have fifty lines, you have to persevere to be able to correct yourself and make it better, and you have to persevere to finish it. So yes, I actually found it very inspiring for my own process, for the entire creative process. Because you need discipline in that too. It doesn't just fall out of the sky. For all the media you use, you have to take a step to become technical. It is a craft, it always is. That is also the case on a laptop; that is just as much a craft as what I have to sing in the choir... You have to be disciplined, you have to teach yourself the craft.

- MATHILDE NOBEL

Jeroen also admits that it took quite a bit of time and work to train the open source tool in order for it to produce something resembling music. He had to feed it with hours of his Hammond organ solo's. The tool doesn't work perfectly, you do not know what it will come up with during a show. The more you invest into it, the more it will improve.



Mathilde Nobel
Photo credits: Aryan Hamyani

Den notes that open source tools do not need to be the absolute latest or most polished tech on the market; their unique constraints can actually incite more creativity and lead to more unique outcomes. Mark's work using archival footage also underlines this, the graininess of the visual becomes an important element of the work:

“

I definitely think that graininess has created an aesthetic that is very much in line with my own work, where I specifically do not go for the hyperrealistic rendering of things you encounter in the real world, but rather for the more painterly abstraction.

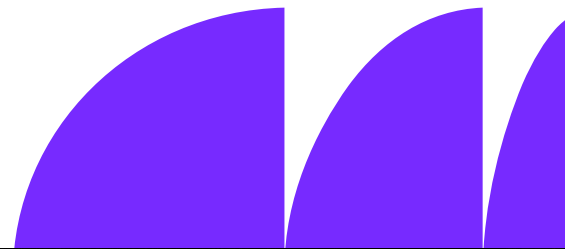
- MARK IJZERMAN

In addition, Rafaele emphasizes that you do not need to be a hardcore programmer to start. You simply need curiosity, patience and the right mindset. She advises not to dive too deep into complex code all at once, but to iterate slowly and let the technology shape your artistic questions gradually:

“

I would recommend to do step by step, not go super deep in one go, but try to go iterative... try to get into these questions because that's what will shape [...] what you stand for.

- RAFAELE ANDRADE



Improvising You Live Show by Rafaele Andrade
Photo credits: Flo Verhulst

And finally, Den & Niki encourage artists to benefit from the welcoming ecosystem the open source community provides. They want to reassure artists that they won't be alone. As mentioned earlier, the duo stresses that the open source

community makes a conscious effort to be inclusive and to actively encourage beginners to try it out. Niki actively wants to encourage artists from more traditional fields to explore open source opportunities:

“

I think, honestly, especially, artists who work in traditional non-digital mediums, I would really like to invite them to actually do this. Because I think there is no artist whatsoever, even if you do theater or you make paintings, you still need to probably update your website. You probably still have social media to run. You still have photos and videos to edit. You can never escape from these digital things. Unfortunately, as most artists would rather spend their time just making their art. So yeah, I think actually for these people not so involved in the digital area, it is the most interesting to actually check this out and see what the possibilities are.

- NIKI SCHEIJEN



THE FUTURE IS OPEN

Although working with open source tools comes with real challenges, each of the artists describes it as a meaningful and valuable part of their artistic practice. The openness of the code, giving them nearly unlimited artistic possibilities whilst not having to give away control to private companies, is invaluable to them.

The inclusive ecosystem is something that they value immensely as well. They all aspire to continue to experiment with technology, both proprietary as well as open source, in their craft. For them, a future with open source tools is a given, and as concluded before, the question of sharing knowledge runs through many of their ambitions.

What then are the future aspirations regarding the integration of technology in their work of this eclectic group of artists? Across the group, a shared drive emerges to push further into uncharted territory, both technically and artistically. Both Jan and BASJE are interested in using AI to compose music. Jan even dreams of creating a complete AI music album. Rather than using commercial one-click generators, he wants to experiment with different algorithms, generate lyrics from data, and write his own Code, making the technology

itself a core part of the artistic concept. BASJE is also interested in using open source code to challenge gender biases, advocating for the development of inclusive, gender-neutral tools.

Several other artists are also working toward greater independence from proprietary systems. Den is building a fully Linux-based “cyberdeck”, a portable standalone computer that frees him entirely from Big Tech constraints. Niki hopes to build her own open source tools to solve the niche workflow problems she encounters, sharing her work transparently so other artists can benefit. Similarly, Jeroen plans to release his backing tracks as open templates and wants to bring his work into schools through masterclasses and workshops. His goal is to keep his music strictly human and letting technology handle everything surrounding it: lighting, visuals, mixing, mastering and promotion.



Open Source AR Tool
Photo credits: Thunderboom

Mark takes this ambition into an environmental direction, pursuing a server powered solely by tidal and wave energy, fitting within the so-called “permacomputing” tradition. Alongside this, Mark continues developing his open source 3D visual project for cinemas using vintage hardware, and is shifting toward local AI models that run directly on his computer.

Others are focused on expanding what the body and human expression can do in performance. Mathilde wants to move beyond her smart ring setup to use her entire body as an instrument by exploring a full body tracking system and motion capture without a specialized suit.

By doing so, she hopes to make the technology itself “disappear,” ensuring it serves purely as a supportive tool for raw human emotion and connection with her audience. In addition, she wants to merge classical sheet music with electronics in her next album.

Meanwhile, Rafaele wishes to make her biological sensor work more stable for stage by building a proper production structure with a dedicated technical crew, so she can perform without carrying all the technical risk alone. On top of that, she plans to learn Unreal Engine to compose games, animations and virtual reality.

CONCLUSIONS AND KEY TAKE-AWAYS

Bringing artists and performers into contact with open source tools does more than generate technical experiments: it results in a wide range of deeply personal performances in which technology shifts from a generic product into an intimate extension of artistic craft, identity, and conviction.

The conducted interviews clearly show that using open source tools is not just about saving money on software, but rather is an artistic choice that offers creative autonomy, redefines audience interaction, and fosters an inclusive, supportive community. Open source technology, when implemented well, can be a personal extension of an artist's craft. There is not one way of implementing the tools, the beauty lies in the open

nature of the tools which allows creative minds to explore how far they can go with them.

These artists prove that using technology can improve immersion, stimulate audience engagement and deepen your artistic identity. The most important conclusion is probably that they encourage fellow artists who are still hesitant, to explore the possibilities open source offers.



For all artists and other curious the respondents provide the following key takeaways and strategies for incorporating open source tools into your creative practice:



Keep a curious and open mindset. It will challenge you to define your artistic practice even deeper, whatever you end up doing or not doing, as long as you keep an open mind.



Be patient and take it step-by-step. You do not have to dive deep all at once, but rather approach it as an iterative process that takes time and patience.



Treat a technological tool as a new craft to learn. In that sense it is no different than learning how to paint, sing, or play a guitar.



Embrace constraints and imperfections. Sometimes, an imperfect tool is exactly what you need. Often beauty lies in imperfection and constraints.



Rely on the community. Many open source tools are born out of a labour of love and the supportive ecosystem is built around sharing. Do not hesitate to ask for guidance and pay your gathered knowledge and tools forward.

MORE INFO

For more about this project, please find the project website at <https://www.openculturetech.com/>.

Check out the Open Culture Tech toolkit for more information on how to start with the tools used by the interviewees and more.

TOOLKIT



Introduction

- Please introduce yourself (basic info: name, age, what kind of artist/musician, background)
- Describe your musical practice and the role technology plays in your creative process?
- What is your history with tech tools in your practice?

On the tools

- Which open source tools have you been experimenting with?
- Could you describe how they work?
- What was the reasoning behind going for an open source solution instead of a proprietary tool? (what is the added value besides cost)
- How does the 'open' nature of the code or hardware change how you interact with the tool?
- Has the usage of tools changed your artistic practice? (e.g. do you find yourself making other creative choices?). And if yes/no, why and how has it (not) changed your artistic practice?
- Can you walk me through hurdles you faced during implementation?
- Did you feel any barriers towards using open source tools? If so, which?
- Did the tool have the result you wanted/expected? If yes/no, why?

On the audience & show

- How does using the tools change your stage presence or performance/presentation?
- Is the audience aware that you are using the tools? Why (not)?
- Do you think audience expectations are shifting? If so, how? (authenticity, transparency, etc.)

The industry & future

- Where do you see the use of (open source) technology in the music industry going in the future? How will/could it affect live music?
- What is the biggest thing lacking in the open source ecosystem at the moment?
- Would you encourage other musicians to use/experiment with open source technology? Why?
- Do you have conversations with fellow musicians regarding the use of tools? What is the overall sentiment?
- Which implementations with these tech tools would you like to see?
- To what extent do you contribute back to these open source projects (sharing, coding etc.)?
- Will you structurally implement it into your shows? If yes, how? If not, why?
- What are your own future ambitions regarding (open source) tech?
- Are the venues where you perform able to adapt to your tech requirements?

