TECHNOCULTURE

Ferociously interactive media

Episode 23

Full transcript

Guest: Margaret Schedel [Margaret]
Host: Federica Bressan [Federica]

[Federica]: Welcome to a new episode of Technoculture. I'm your host, Federica Bressan, and today my guest is Margaret Schedel, a composer and cellist specializing in the creation and performance of ferociously interactive media. Margaret is Associate Professor of Music at Stony Brook University in New York, and she is affiliated to the departments of Art and Theater, Math and Statistics, Biomedical Informatics, Computer Science, and to the Institute for Advanced Computational Science, Tech and Society. Welcome, Margaret.

[Margaret]: Thank you.

[Federica]: Everything you do is first and foremost about music. How do you define yourself, though? How do you feel at heart: a musician, an artist, a researcher, or an educator?

[Margaret]: I guess my first word I would say is 'musician', and then everything spirals off from there.

[Federica]: It's always been music.

[Margaret]: It's always been music, yeah. I had small motor control problems as a kid, so I had a doctor who said, 'Try piano lessons instead of physical therapy,' and I just loved piano, and then I moved to cello, and then I moved to computer music and composition, and it's just the thing that makes me the happiest in the world.

[Federica]: Many of us who start out with an acoustic instrument first at some point en-

counter technology, a type of technology that we can learn to use and incorporate in our music-making. When did that encounter happen for you? How did it happen?

[Margaret]: Yeah, so my dad was a computer programmer, and he found this thing called a MIDI interface, so for Christmas one year, I got a MIDI interface and a little keyboard so that I could connect a piano keyboard to the family computer. So I've had Finale since 1988 and there was later, about two years later there was a sign up in my high school about using Finale at this summer workshop at Oberlin College, and my mom's whole family is from Ohio. I thought I wanted to go to Oberlin for my schooling because they had like a liberal arts college and a conservatory in one, and so I went to the summer program because I was like, 'I don't know everything there is to know yet,' and we didn't do Finale at all, but we did sampling, and I used some analog tape machines, and I wrote my first piece, which was a piece for cello and tape. And that experience was so formative, I went back the next year, and then when I was applying for colleges, I wanted to go to a place that had a computer music program specifically.

[Federica]: And you knew it was love for life?

[Margaret]: I did. I was just like, 'This is it. This is so. . . I can do. . . ' Like I was just like, 'I can do anything.' When I moved from piano to cello, it was like, 'Ooh, I can change the sound after it has started.' Anybody that knows me well knows that I, like, speak in sound effects, and so it was like, 'Oh, I can do more things with cello, how cool, like I can do with voice.' And then discovering electronics, I was like, 'Whoa, I can really do things now,' and I got very excited.

[Federica]: As someone who is trained as a musician with acoustic instruments, but also someone who is knowledgeable about the new technologies, do you think that these two ways of making music that we have require some fundamentally different approach just because of how the instruments work? I'm talking about the practice, the type of practice, and the number of years it takes to master a technique, and, not last, also the physical engagement with your instrument. I can think of the cello. You almost embrace your instrument, whereas we think of computers as more disembodied.

[Margaret]: Yeah. I mean, I think. . . I love the interdisciplinary aspect of computer music, but I think you need to have people that are musicians and people that are computer scientists to create the disciplines so that you can have these interdisciplinary people like me. So I get a kick out of programming computers, like because you have an idea, and then you have to make it work, right? And music isn't like that. You know, counterpoint somewhat is, has rules, and you have to follow them, and you have to sort of figure out the solution, but the other side of just sort of the creativity and what can I think of and bring to life without sort of having to be correct is the thing that I like about blending the two aspects.

[Federica]: Since the keyboard you plugged into your dad's computer, technology has evolved significantly. Along the years, have you been someone who's chased the last thing, like with excitement for novelty, or have you been more following your own interests and not necessarily chasing what was just the last thing out there?

[Margaret]: Every time I get a new computer, I'm like, 'Cool, this is the computer that I will, you know, never need to upgrade,' and then I, you know, it's operating at 99

[Federica]: Oh, no, I don't think so. They really push us to the next things mostly by making six-months-old technology unusable. But still, the keywords that define your work today were not prominent then, so how has your relationship been, also, as a creative artist, with the changing technology?

[Margaret]: So yeah, so, as I said, my first piece was for cello and tape. I felt very constrained by having to play perfectly with the fixed media, and when I was in college, the first version of Max came out, and it was only MIDI at that point, but suddenly I was like, 'Oh, wait. Now the performer can really have control over pacing,' which was the thing that, the final thing that was sort of frustrating. I'm like, 'I can make any sound, but it's fixed; it can't be fluid and controlled by performer or by an audience. Right? If I want to do an installation.' And I don't know if I would have been able to learn Max as easily as I did because when I first started with it, it was like 40 objects, and then Eric Lyon came out with this way to do audio with his, with this like extender set, and then NATO came out with a way to do video with this extender set, and then Cycling '74 finally came out with MSP and then Jitter. And so I've just sort of built on a very solid foundation, but at the time, that foundation was so limited, and I think right now, it's so easy. There's so many possibilities, and the kids see all the things that you can do, and they want to get there immediately, and I think that there is something to be said for sort of growing up when we did about this transition from the analog to the digital world. I have students that literally type into the search field of Google 'YouTube' to get to the YouTube page rather than typing the URL, and I'm like, 'In my day, we didn't even have a GUI,' but I think that [it turns out 00:08:45] because we didn't grow up with it, or it was new and we saw this transition to things being becoming easier to use, (a) it was easier because there wasn't as much, and (b) it was harder because it wasn't someone else trying to make it easy for you yet. Right? It sort of came later, this sort of layer of consumer level. So it's been exciting, and now I've become the person that doesn't want things to upgrade. I'm like, 'Oh, God, there's Max 8. No. . . '

[Federica]: This is a very interesting question, whether having been around longer gives you a better understanding of the current technologies. I think a case can be made for and against this. Maybe kids who see the state of the art as their starting point will have a different type of imagination, it will stretch farther than ours. On the other hand, just say that you think you

understand some things better because you understand the building blocks of the sophisticated things we have today, so it's not better or worse, maybe it's just different?

[Margaret]: They're different, yeah.

[Federica]: Though, the story of my dad comes to mind. If you let me for a moment, I'll say it because I think that he's representative of an entire generation. He's always been very good at building things, like with electronics, radios, all of that stuff. I've always said that our home looked like MacGyver's home if MacGyver was a hoarder, so he had his fun and I had my fun too, and that all stopped basically with the last generation of devices, so these iPads and the smartphones. Why? Because you cannot open them up and look inside and understand how they work by doing that.

[Margaret]: Yeah.

[Federica]: Everything is too small scale, so basically the devices come as one piece. You can't take them apart. You learn nothing. You just lose a lot of money if you take them apart because it's hard to put them together. So the fun is over, and I think it's not a small shift, that of being relegated to the role of user when you were used to being a maker. Even if you're a creative user, it's still different. So I think that he represents an entire generation of people for whom it's fair to say that the knowledge they acquired became useless, because up to a certain point, he could have assembled the state-of-the-art computer and then not anymore, so he stopped having fun. He was quite disheartened about it because it's like toys to play, so, you know, he is a case of somebody with lots of knowledge that is not applicable, it's not operational on these new devices.

[Margaret]: Yeah, and I think that's why sort of these new SparkFun Arduino, those little magnet ones, little bits, like things that people can tinker with that are still digital... Like you can't build the Arduino board, and take that apart but like putting your own sensors and programming your own thing and, like, using your hands I think is becoming more popular because of that feeling like it's a black box and we don't really know how it works. And so you're not going to be able to build the whole thing from scratch, but like, have you seen that series of the guy that, like, builds things from scratch? Like he built a toaster, but he had to like smelt the ore himself? So like even if we think about a radio, if your dad had tried to build that, like he's dropped in the woods with nothing, if he had tried to build a radio, he wouldn't have known how to, you know, extract copper from the earth and purify it.

[Federica]: Don't challenge my dad. You don't know what he can do. I'm MacGyver's daughter I'm having a podcast on technology, for crying out loud. This must come from somewhere. [laughs] But I get your point. Okay. I get your point. Moving on, your research is

concerned with the sustainability of technology in art. Can you explain what you mean by sustainability in this context?

[Margaret]: Yeah, so what I mean by sustainability is that we have these pieces, and then, you know, it when... Like for the macOS example, when we went over to macOS 10 from 9, it was a fundamental shift in the way that the computer worked, and there are pieces of mine that were written for the system in OS 9 that will still run on a computer that can run OS 9, but those computers aren't going to run forever, and I don't really feel like porting them into OS 10. And, I mean, maybe a hundred years from now, someone will be like, 'I really like that Schedel character's music. I'm going to try to port this thing,' but I can't count on that. And what I think of is how to make it easier for the people in the future to even study the music from the past. So we have recordings, but recordings — particularly of my music — don't capture all the aspects of the pieces. Right? So they are created to be interactive, so there are many paths, many possibilities, and a recording is just one instantiation of that. So if you only study one or two recordings, you're not fully understanding the piece, so can I create a notation that shows what I think is important, that allows somebody to recreate it using my ideas, but maybe the technology that is current?

[Federica]: Okay, so your concept of sustainability in this context is very practical, like it's nothing philosophical.

[Margaret]: No. No, no, no, no. It's not philosophical and it's not environmental, either. I mean, a lot — right? — when we think sustainability, a lot of people think the environment, and while there is an environmental cost and definitely a privilege, an economic privilege, that comes with being able to write this kind of music, that's not what I'm talking about, and I've sort of started to think about saying re-performance or studiability. Yeah, it's a problematic word, I agree.

[Federica]: You teach several courses at Stony Brook University, and one of these is Introduction to Art and Technology. What kind of world is this of art and technology that you introduce your students to, and also what you mean by technology here? What technology are we talking about?

[Margaret]: Sure. So this is a course that I inherited. It was already running at Stony Brook when I started there, and they were like, 'And now you're going to be the music teacher of this.' I'm like, 'Okay,' so it was a team-taught course, and the idea was to expose students to a bit of programming, a bit of visual art using a computer, and a bit of sound using the computer. The most recent iteration, I do the first five weeks, we do Processing, which is the open source language (it's kind of like Java) that comes out of MIT, but it's very much focused on visual output. Then we do five weeks on computer visuals, so we use either Photoshop or GIMP and

really talk about, you know, pixels, and, 'What are the filters? And, you know, these filters are actually, someone programmed these, much like you programmed in Processing.' Right? And then we move on to sound, which in this case we're using Logic at the school and then REAPER as the open source version of sound, and we do MIDI and audio recording, and then their final project is to program something in Processing that has both a visual and a sonic component.

[Federica]: You just mentioned some software by name: Logic, Processing.

[Margaret]: Yup.

[Federica]: It's pretty fair, I think, to say that you could look your students in the eye and say, 'Guys, in 10 years' time, this software will be different, dramatically different, or maybe not supported anymore, not existing.' So since going to university is not about learning how to use a piece of software and push the buttons, etc., what kind of skills do you transmit to your students so that, you know, they will be able to keep learning the new technology and keep up to date?

[Margaret]: Yeah, so I created this massive open online course for this class, and I made it very clear... I did research, and the best way is shorter videos, but even before I was going to these super short videos I was like, 'I'm going to teach the philosophy, and the aesthetics, and the, like, terminology in a separate set of videos than I will for the programs so that if I need to upgrade the program side, that's cool. If someone wants to use my lectures and create a new thing that says, "Oh, she talked about reverb. This is how you do reverb in Cubase."' So I definitely say I don't care what program you use to do this stuff. I have students that use FL Studio Pro, which used to be FruityLoops. I'm like, 'I don't care what software you use. Just show me that you have understood the concepts that I have explained to you in class and use whatever software that you want. If you don't feel comfortable exploring other software, that's great. We've given you a bunch of tools directly for this class, but if you want to use something that you're already familiar with, that's cool too.' So I definitely separate the aesthetics, the terminology, from the program, 'Go to the file menu and do this.'

[Federica]: Yeah, exactly. The students that complete this program that your course is in, are they all artists, or they have the skills also to work in other roles in creative processes or larger productions, for example?

[Margaret]: Yeah, so that class is a really interesting one. We had a lot of students from journalism, from computer science, from art, from music, so it's a very... It's an introductory class that a lot of other departments then use as a springboard for a more focused computation or digital program in the department itself.

[Federica]: 'Interaction' is a keyword associated to your work. I'm interested in interactive art, so I'd like to ask you how you conceptualize interaction, what it means in the framework of your installations, of your compositions, how important it is for you to involve, to actively engage the audience.

[Margaret]: Yeah, so there's two levels here, so there's like engaging the audience in interactivity, which you can do through installations. There's also engaging the performer with the computer as interactivity. So with the performer, I have been sort of creating almost playgrounds for them, I think, of them. I've been creating environments where there's no timeline. Right? If you pick up an instrument, there isn't a timeline. The piece, the written notation, there's a timeline there, but for me, these sort of 'push a pedal and the whole environment changes' hurts my brain a little bit. I don't know. We haven't talked about this yet, but I have sort of this motion sound synesthesia, so sound makes me feel motion, and so if something is going along and it has an internal logic and then you press a pedal and it changes, a lot of times the way that it changes just feels very abrupt to me, and it makes my brain hurt. And so what I've been trying to do is create environments where what the performer does can change the environment completely, but if you think of playing an instrument, you can stop a note from ringing by doing something physical and changing it, and maybe that's not a natural process, it's an interrupted process, but those rules remain consistent throughout your interaction with that instrument. So I've been playing more with creating consistent but rich environments that performers can really explore and understand the parameters of and then feel in control of through their performance.

[Federica]: I introduced you at the beginning of this episode by saying that you specialize in the creation and performance of ferociously interactive media. Is this an adjective that you chose for yourself, or maybe it comes from some critic that called your work that?

[Margaret]: This came from Gregory Taylor, who made that comment once, and I was just like, 'Can I use that as my tagline? Because I love that,' and I've used it ever since.

[Federica]: Can you explain it?

[Margaret]: Yeah, so I, again, like that environment that I was just talking about where the performer really has a lot of control over the computer, so they actually need to be then listening to what the computer does. Right? You can't just sort of blindly play your part and expect the computer to just do its thing. Like, I really want it to be multi-dimensional that the performer they're listening, if it's a group, they're listening to each other and they're listening to the result back from the computer and constantly sort of playing at what can change the environment.

[Federica]: Why don't we listen to an excerpt from one of your works? Can you tell us

something about the music we are about to listen to?

[Margaret]: So the parameters that I'm looking for can be really simple. So in this piece that I wrote for Esther Lamneck, it's just the length of her rests that controls the processing, so she plays clarinet and tárogató. This piece, the recording is for tárogató, and basically there are these frequency-shifted harmonies that the computer is going to play (and there are, I believe, 14 of them), and if she has a short breath, the harmonies make sense, they progress as a tonal, tonal rules of counterpoint or harmony, functional harmony. The frequency shifter uses functional harmony rules, and it sounds very consistent, and if she takes a very long breath, it moves further along that chord sequence, and then it might sound more dissonant, so she can at any point choose to change the harmonization that the computer is creating by breathing or taking a rest and has the choice of whether the next chord is going to be consonant, or somewhat dissonant, or really dissonant by how long her breath is.

[Federica]: So let's listen to this excerpt. The total duration is 2 minutes and 37 seconds.

[music]

[Federica]: I never find it self-evident that artists will allow the music that was meant to be part of a larger system, of a live improvised performance, be listened without this context, or even an entire piece with its evolution, to be just reduced to an excerpt. So first of all, I thank you so much for sharing this music with us, and what is your position with regard to this?

[Margaret]: Yeah, I've never had my pieces out of their environment. Yeah. That's funny. I'm like, 'I have no problem with that!' I'm like, 'But I've never done it. Do I have a problem with it? Probably.' [laughs]

[Federica]: What about excerpts?

[Margaret]: Yeah, excerpts are, I'm trying to become better at being okay and being like, 'Okay, well that's an excerpt. It's not the piece.' I'm releasing a CD of all my work, and I haven't had that many pieces on CD because I have a real problem with recording. I don't really listen to music for pleasure that is recorded. I find it as a study aid. I go to a lot of concerts. I love live, the whole experience of the concert, or the installation, or the gallery, and I find it invaluable to be able to study these works sort of offline. But to me, that's not the artwork, and I've had a real issue with putting my work on CD, but last year, I had three pieces out, and I think I get bigger and better opportunities by following that traditional path of putting things on CDs. So I have... Parma Records was like, 'We would like to do a whole CD of your work,' and I wanted to vomit, but I said, 'Yes,' and I'm doing it, but I'm not happy.

[Federica]: Although, rationally, you understand that this helps the circulation of your work.

[Margaret]: Yeah, yeah, yeah. It's rationally overcoming my... I know that I'm being irrational, but it's just this feeling that I have that it's like, 'That is not... That's not the music.' I was just visiting my mom recently, and we were reminiscing, and when we got a VCR at the house for the first time, I wanted to see The NeverEnding Story because I'd been at summer camp or something when it had come out, so I hadn't gotten a chance to see it in the theatre, and so I was like, 'I never got to see NeverEnding Story,' and it was my favorite book as a kid (well, one of my favorite books). I've like read it a million times. I love it so much, still. I still read it when I'm sick in bed. I literally threw a fit and had, like, made them turn it off because I was like, 'This is not The NeverEnding Story,' and that's sort of what I feel like with these recordings of my pieces. I'm like, 'That's not it. You shouldn't be able to play it the same way twice because that's not how I think of it,' and by pushing 'play' on that thing, it's the same way. And I think that's why I knew I was a composer and not a performer, because I would always try to do different things as a performer, and my teachers would be like, 'Why are you changing things?' But I didn't know that, like, people still wrote music, and I didn't know that women wrote music. Like it was like clearly people, like music has, it was, I... Yeah. I'm an odd, I was an odd kid, didn't understand things a lot of times, so I didn't understand that people still wrote music. I wasn't allowed to listen to rock music, and I thought that that was the only music that was still being composed. Right? I knew that new music was coming out, but I thought it was like all four minutes and for guitars, and I was like, 'I don't want to do that.' So yeah, being at Oberlin really taught me like, 'Oh, hey, people are still writing music that I'd be interested in writing.' And then I went to Goucher College, and there was a composition class, and so I took it because I like... I'm like, 'I guess I am composing computer music,' because I was writing pieces, but I never had taken formal composition. [an Echo Dot starts speaking] Oh, sorry. My Amazon Dot is going off. Computer, stop.

[Federica]: Can I keep this in the interview, please?

[Margaret]: Do. Please do.
[Federica]: Speak of technology, right?

[Margaret]: So yeah, we have... We live in an old house, and it does not have very many light switches, so we use the Dots to control things and believed in the more egalitarian 'computer' to use as a start word than we did calling it Alexa.

[Federica]: Okay. You were telling us about being in college.

[Margaret]: So, yes. Goucher College, took a composition class, and finally sort of... That was where I started thinking of myself as a composer, but it took a while for me to even, calling myself a composer. And if you notice in my bio, I say I'm a creator, and I'm much more

comfortable with that.

[Federica]: Did you have to... Or not 'have to'. Did you go through the training that any composer has to take, like counterpoint, fugues, or for people who are interested in the electronic stuff, there is like a short, not shortcut, but just a different path, maybe shorter in the tradition to get there?

[Margaret]: Yeah, so I... My piano teacher, the one that I started with, you know... I don't know whether... I should ask my mom whether she researched this or what, but like the piano teacher, my very first piano teacher, had studied with Nadia Boulanger and absolutely subscribed to her way of teaching kids, which included teaching theory from a very young age, so I not only took piano lessons. I took theory with all of her students, so all the piano students had to go once a week and take theory, because she's like, 'This is integral to you being a well-rounded musician.' So I had theory all the way through. I went to Juilliard Prep and did music theory and counterpoint there. I went to Temple University, also had a preparatory program where I did chamber music and orchestra and more music theory. So I always had music theory, and I always had lessons in piano and cello, but I never had lessons in composition. I did that Summer Institute at Oberlin where they were like, 'You're making things,' and I'm like, 'Cool, I'm making things.' And then it wasn't... I think it was sophomore year at Goucher College I was like, 'I'm going to take this composition class,' because I was a computer music, cello... [an Echo Dot starts speaking] Computer, stop. And computer music, cello, and music theory, major... Like I was this triple music major, but the music, the theory major had music theory and composition, and I was like, 'I guess I should do a composition class.' And for a long time, I called myself a sound artist and not a composer, because to me a composer was something very different than what I was doing. So yeah, composition, recordings are sort of problematic areas just for my damaged soul.

[Federica]: How important are these labels? Are you now not a sound artist by the definition of that, or you don't just like to call yourself that? So is it more about what labels mean and we all agree on what they are, or how people choose to self-identify?

[Margaret]: Yeah, I think I was calling myself a sound artist so that people who liked harmony and, like, a rhythm you could dance to wouldn't get angry when they came to my concerts. I've been sort of studying what sound art means, and I have a definition, and I'll send it to you, but basically now I think that if you have a piece where you're expecting the audience to stay in one place for the duration of the piece, that that's kind of not sound art to me. So definitely something on a stage with an audience with a proscenium and they just sit there, I don't think that should be called sound art, but I used to call it sound art.

[Federica]: So it has to be dynamic and interactive.

[Margaret]: Yeah, I think it's more the... Sound art to me doesn't even have to make sound. It can reference sonic culture, so yeah, I've evolved.

[Federica]: You were talking about going to concerts. First of all, I think I should congratulate you on the stamina. I know you're very energetic, but from the tone of voice in which you said, 'I go to concerts,' I assumed you go to many concerts. That takes time. They're in evenings. So how's that?

[Margaret]: Well, it's my job, so at Stony Brook, we have 200-some performance students, and I'm the academic advisor, so each of them has six recitals, so I have to go to these. One of them is a lecture recital, but they're still playing music, and then there's the contemporary chamber ensemble. The composers have three concerts per semester, the Baroque, the orchestra, so yeah, I go to a lot of concerts, mostly at Stony Brook, but I am going to a concert tonight in New York City, but it's one of my students.

[Federica]: You live in the New York area, and certainly there, there is no shortage of concerts and things to do.

[Margaret]: [laughs] Yeah.

[Federica]: Traveling in the United States, I found that New York is really unique. It's like a place on its own, and it's fabulous. Would you say that also artistically, it is a place on its own, or the United States even, you know, as big as they are, they are homogeneous in the artistic scene, and also your works have been performed within the United States and abroad — did you find that there is a different approach to this type of art, or the spirit, so to speak, in the community is the same?

[Margaret]: Yeah, no, I mean, even New York City itself, in the 1970s there was uptown music and downtown music, and now there's definitely like Manhattan music, and Brooklyn music, and Queens music, and then there's the people that can't afford New York anymore and moved to like Philadelphia or Pittsburgh. So it's an interesting scene. I think it's not so much geographical. I mean, even the uptown, downtown, like, wasn't really geographical, but it was just a way of explaining sort of the difference between the people that were doing high modernism and the people that were like, 'Hey, rock is a thing we could integrate into what we're doing.'

[Federica]: What about outside the United States? Your music has been played abroad too. Is there a place outside the United States where you found a different spirit, a different approach, and said, 'Oh, this is new,' like, 'I like the environment here and the vibe, and it's

different than what I know'?

[Margaret]: Yeah, my... The international performances have mostly been part of international conferences, and so you don't really get a flavor of the local audience as much because it's just international people who have come. I will say like I particularly love computer music conferences. [an Echo Dot starts speaking] Oh, my God. Computer, stop. Computer, stop! I like the music tech conferences. I feel like that's my tribe, and they're sort of like the people that have been demeaned by the main music people. I mean, it's stopping now, I think, but definitely when I was growing up, it was like, 'Ooh, that's what you're going to do stuff with a machine? Why? Ew.' And then we would get together at these international conferences and just be like, 'Let's just be nice to each other because people are mean to us,' so it was very supportive, and I appreciated that because I got kicked around by some acoustic music people.

[Federica]: That's interesting. First of all, you are trained as a classical musician, you studied cello.

[Margaret]: I am.

[Federica]: And secondly, I know that there are people who wouldn't concede the title of musician to someone who does not play a traditional instrument, but that wouldn't be you, right?

[Margaret]: Yeah, not at all, and in fact, I created a class at Stony Brook called Sound Design where I did not want to have to have people know how to read music in order to take this class, and I really had to fight to get this labeled as a music course. They were like, 'What are you doing?' I mean, particularly at a state institution where we are having students from underprivileged backgrounds that didn't have the opportunity to have a music department or music program in their school, but they are musical, a lot of them were playing in bands, and I'm just teaching them more about sound. And it's funny, because I've noticed that the people with just a tiny bit of, you know, 'I took two years of flute,' will end up with much less successful pieces because they're trying to think in that sort of mindset of what they learned about how classical music works versus the students that really don't know anything and just start thinking about sound. So I think people have a natural understanding of sound if they have hearing. There is a part of our brain that intuitively understands how sound and size of space or size of objects correlate, and our language is very ocular-centric. Right? We imagine things. Right? Image. We spend a lot of time teaching people colors, but we don't teach people terms for sound, but if you can key into that intuitive understanding and give a vocabulary, suddenly they can start utilizing that area of their brain that they haven't before, and it's really rewarding.

[Federica]: I have one last question for you, Margaret, and it's a one-million-dollar question. You're affiliated to different departments and institutes, so you work with both art and science. You're very multidisciplinary. The question is, how does science inform your art, if it does?

[Margaret]: So I love science. I love, like particularly like neuroscience. I'm fascinated by it, but music was always the thing that, like, lights up my brain, and so I was always like... I mean, my parents were very supportive of music, but they were like, 'But you're good at computers and science, so don't let that go because it's going to be hard to find a job as a musician.'

[Federica]: Of course.

[Margaret]: This is what they do, and, I mean, to their credit, they weren't like, 'Just give up now.' They were like, 'Hey, that's cool. We encourage you, but have a backup plan just in case.' And that's what I do with my composition students too. I'm like, 'Okay, you know, that would be great if you can get a job as a tenure track composer, and then you get tenure and then you're set, and, I mean, I very much appreciate the life that I'm able to lead because of that, but it's very rare and it's becoming rarer.' So for me, I always had sort of the computer science and the science side of my brain going, and I love the fact that I can collaborate with all different people and sort of bring my expertise about sound and interactivity into their world. So I learn... It's so cool because, like, I learn what they think is important in order for me to then be able to sonify it. I've learned about addiction. I've learned about a lot of computer vision algorithms, trying to make corollaries in the auditory world, and I, like most people who are into computer science, I'm on the autistic spectrum, and I have trouble with small talk, and this is a real way to get to know people and what they're...

[Federica]: Some people have podcasts. [laughs]

[Margaret]: [laughs] Some of them. Exactly, and it's like this is a way... Like it fulfills the sort of human interaction need that we have, but in a really, like, way that makes me happy instead of a way that makes me angry. So yeah.

[Federica]: Thank you so much for your time, Margaret. I adore your personality. You're a complete delight.

[Margaret]: [laughs] You as well, and I hope that we can work together in the future. [coughs] Fulbright Committee, look at us working together already.

[Federica]: Yeah, let's do that. Thank you so much for being on Technoculture.

[Margaret]: Aw, thanks. [laughs] Bye!

[Federica]: Thank you for listening to Technoculture. Check out more episodes at technoculture-podcast.com, or visit our Facebook page @technoculturepodcast and our Twitter account, hashtag Technoculturepodcast.