Episode 147: Christopher Plummer

**KL:** Katie Linder

**CP:** Christopher Plummer

**KL:** You’re listening to “Research in Action”: episode one hundred and forty-seven.

[intro music]

# Segment 1:

**KL:** Welcome to “Research in Action,” a weekly podcast about topics and issues related to research in higher education featuring experts across a range of disciplines. I’m your host, Dr. Katie Linder, research director at Oregon State University Ecampus, a national leader in online education. Along with every episode, we post show notes with links to resources mentioned in the episode, a full transcript, and an instructor guide for incorporating the episode into your courses. Visit our website at ecampus.oregonstate.edu/podcast to find all of these resources.

On today’s episode, I'm joined by Dr. Christopher Plummer a professor at Michigan who created the sound programs at Michigan Technological University, which combined fundamental engineering and artistic course work with applied sound creation. He has long been a practicing sound designer with theater designs at Regional Theaters and in New York sound design for independent films and PBS specials in that work.

Christopher has been exploring the power of soundscapes through a National Endowment for the Arts funded project listening to Parks. This project takes images and ambi-sonic recordings of the national parks surrounding Lake Superior and creates a virtual Retreat where the park experiences are shared through an immersive installation using 11 speakers and six screens to transport the audience. New programs continue to be developed for this system. Most recently shell-shocked a virtual experience of World War I Warfare, as part of the copper countries remembrance of the 100-year anniversary of the armistice.

Thanks so much for joining me on the show today, Christopher.

**CP:** It's good to be here.

**KL:** So I'm really interested in your work in sound design and composition. I know that you currently engage in both. I'm wondering if you can share a little bit about what each entails because I'm assuming they are quite different things you have sound design and also music composition. So tell us a little bit more about your work.

**CP:** So sometimes they're very distinct and sometimes they're not. There's a lot of what we do as sound designers comes out of 20th century composition in terms of atonal music. So we're not using different chord structures or harmonics or leading tones, those sort of musical structures, to Compose our sound design, but we are thinking about sort of what the melody is and where the focus is and how to draw an audience into something and whether it slowly develops and brings us into this sort of expansive environment or if it's something that hits hard and jars us and so in terms of sound design and music that structural element and the Timbers that were with and the ways that we're trying to influence listeners and emotional state are all very similar between sound design and music. It's just that we have different tools. We're using Birdsong and a garbage truck outside or a really annoying air conditioner unit and a bunch of rattling dishes in the diner to create sort of this emotional response rather than an oboe or a kettle drum or something along those lines.

So there is this Continuum and often where I find I have the most fun playing is when I'm in that in-between area where it could be sound design or it could be music at its core. Is it in the world of the play what we often refer to is diegetic and non-diegetic sound? So diegetic sound are things that watching a movie that the people in the movie can hear and non-diegetic his stuff that the people in the movie can't hear. So, you know, the swelling strings when people kiss they can't really hear, only the audience can so that's non-diegetic but the beach and the waves in the background that's diegetic because the people kissing can hear those things. Those are part of the real world of the play of the show of the story. So that's the sort of how I break those down and then I do a lot of music stuff that's a little bit more out there.

Working with scientists and on thinking about auditory display and how we could instead of doing charts and graphs of data how we could maybe listen to it. So I've got a number of compositions that are based on annual flow rate from various rivers and you can sit down and in a minute and half you can listen to the year of changing flow and a river and actually going through that process and sort of looking at how do I, and especially if I'm converting it from electronic instruments to musical instrument. Sometimes if you just do a direct mapping of data to notes it becomes a range that's greater than an instrument can actually play and so you have to really start to think about how you're looking at that data, how you're interpreting it, how you're showing specific viewpoints on that data through your musical composition, which of course is something that doing even when we do a graph and sometimes we don't realize how much we're sort of interpreting and focusing the data and wanting somebody to read it in a certain way when we present data. But when you more sort of knowingly, artistically interpreting it out, the more you really understand that is happening, that sort of always happening with that sort of presentation.

**KL:** Christopher you have such disparate projects. There's a definitely a spectrum of things that you're working on. I'm wondering if you can talk about how you choose both kind of the creative projects that you work on and also the more research based projects that you work on. What is kind of leading you in these different Pathways as you choose new project?

**CP:** So there's two primary drivers, one is there are certain topics that I'm just super passionate about and really interested in and continue driving myself to come back to sort of recurring questions in my life. And then the other is, I’m an artist in an Engineering University and just generally throughout my life. I've been open to collaboration. I do a lot of work that's just, you know, in the studio making music, making sounds all by myself, but frequently a lot of those ideas of the germination of what I'm doing comes with my collaborations with other folks. So the auditory display we have another faculty member on campus who does a lot with cellphone auditory interfaces. So as you scroll through a list, how does it click and how does it tell you when you wear when can you hear it? Scrolling really fast when you slow down you hear a click for each item. How does that all work? What kind of Click do we have? Does that click make you feel happy? Does it make you feel angry and we create little 30-second sounds and a lot of those projects were different specifically because we sort of connected and we wanted to work together on these things and then I have another, Faculty member who teaches specific composition here and she got us hooked up with Bernie Krause, who does soundscape recordings, and a significant number of places that he's recorded don't exist anymore. They've been bulldozed. They've been clear-cut, they've been transformed into places that don't sound the same. So he's got this incredible library of sound locations that don't exist anymore and growing out of our collaborations with him, we applied for a National Endowment for the Arts Grant and went around and recorded the soundscapes of the national parks around Lake Superior and created this immersive interactive sound installation where you can go and you can have your daily Birdsong sort of vitamin infusion. And so that aspect of getting in there and getting to the sound and looking, not only how we could use soundscapes to influence people during the movie or doing during the news to heighten the fear that you have whatever enormous tragedies happening right now, or you know, the exciting pumping car chase but also thinking about how we can use sound for own our own health, our own moments to step back and relax, and breathe, and get natural sounds around us, get meditative sort of safe space that we can be in.

And so that's that connects into some of these collaborators that I've been fortunate to get to talk with and work with but it also connects into something that I'm really very interested in and that's just naturally how our sound environment does impact us emotionally and I come back to this again, and again, and again from various different Vantage points. So one of the things that has really intrigued me as sort of the Acoustics of sound and how as we walk into different spaces and the sound bounces around the space, how that impacts our emotional state, how it impacts our entire body, and I take my students around we have this cement block, Cinder wall, cinder block. And as students walk through this hallway, there's all these harsh Reflections and if you have a big class and they're being noisy. There's a lot of sound energy in the space and it's got a harsh Edge to it because they're really flat surfaces that the sound’s reflecting off of and there's not much absorption there. So the energy just builds, and builds, and builds to get more people in there talking and then we walk through these sound isolating doors into our band versatile room, which has a lot of diffusion in the space. It's got more volume, acoustical volume space, for the sound to dissipate in, it's got a warmer, comfortable sound and if you're paying attention as you move from one space to the other you can feel tension drain out of your whole body your realize that because of the acoustical environment you are in, you had this tension across your shoulders. You are holding your whole body. Just a little. More rigid and then as you moved into this different acoustic space you relax.

What's kind of awesome about Jonathan Dean's, who's one of the sound designers for Cirque, use this in the O show in Las Vegas and in that show, they created a really dead acoustic for the performance and the music sounded glorious and it was just exactly what they wanted and the whole show is being received. It went really well except the Clown's, two clowns came out and the audience watched the clowns and kind of what they decided was that even though they have thousands of people in the hall because the Acoustics were so dead and the lights were low, Everybody was sort of having a personal experience of the show as if they had headphones on and they couldn't hear any of the people around them. So they already had hundreds of speakers installed, so they added this virtual acoustic system and some microphones around the audience so it picks up the audience in a way that a more reverberant sort of Concert Hall might sound and then they can change this throughout the show. So for the acrobatics where they really want you to be quiet and focused and to really hear the music they maintained the dead acoustical space. For when the clowns come on, they turn up the reverberation in the hall. And so suddenly you can hear people sort of rustling in the chairs and moving around you and you can hear them reacting to the clowns and so the audience then laughs and interacts with the clowns, and it's a much more communal experience during that part of the show, and so that's, you know, Dr. Jonathan Dean's talked about that many years ago.

And since then I've been really interested in this ability to change the audience's interaction with performers. And how the natural acoustics of the space support performers or connect the audience and the performer distance them, you know, and sometimes it is that as the lights go down and the acoustics are a little bit dead you have a sense of Greater intimacy. It feels like the performer is closer to you and so making sure that you maintain that and, sometimes with doing electronic enhancement and putting a mic on the performer, you can make that even more intimate. So it sounds like you’re even closer to the thing. Whereas as you increase that reverberation you can get more of the audience interacting, you can get a fuller, rounder sort of tone out of singers. So I work a lot with live performance in terms of shaping those moments and in terms of how did the different voices blend, because if you have, you know, if you have a performer on stage it's going to be one thing. But if you have a choir you have something like that, you need to get them, you need to also think about this communal music-making experience that it's a group of voices working in concert and they need to sound like a group rather than a bunch of individuals and that also ties into how the sound bounces around the room and combines into this group sounds as opposed to an individual sound and then this also applies to classrooms.

So we had a preschool up here and they were, the teachers, were always having to tell the kids to quiet down and the kids got really overwhelmed when there were events where there are bunch of parents in the room and it was just a fairly stressful acoustical environment and by adding some absorption, warming up the sound, taking down some of those high frequency reflections the teacher didn’t really have to tell the kids to quiet down anymore. The kids are much more comfortable when it gets crowded in there and there's a bunch of stuff going on and that that sort of base level of emotion can be so strongly influenced by these just small changes in our environment. We did this as part of our Listening to parks and YAY project. I actually went out to the schools and we worked a bunch with students in terms of measuring different spaces and they were doing artwork that was then put up with our installation so that they were sort of artistically exploring sounds that they identify with home and sounds that were better calming to them, sounds would help them fall asleep or sounds that were scary or really trying to engage these Elementary age kids and identifying and thinking consciously about the sounds around them and what they do for them and how it might be important for them in terms of controlling their own behavior and understanding, you know, when they're stressed and how they can lower their own stress levels and calm themselves that taking control and understanding the sound around them could be a really important part of that process of self-control and self-agency and development.

**KL:** Christopher I can see what has led you to be. So passionate about both sound design and music composition. We're going to take a brief break when we come back. We're going to hear a little bit more from Christopher about the intersection of research and creative expression, back in a moment.

The research and action podcast is delivered to you by Oregon State University Ecampus. The University's top ranked online education provider. One of the greatest things about working for E-Campus is hearing the success stories of our online students like Orman Morton the third after being suddenly let go from a decade long stint working at a steel mill Orman turned to Oregon State Ecampus environmental Sciences program online as a Native American passionate about improving the land earning this degree changed his life for the better ultimately leading to his dream job in a field he's passionate about. Read more about Orman and his journey at Ecampus.OregonState.edu/Orman.

# Segment 2:

**KL:** Christopher it's really clear how much you kind of have this overlap between your creative work and some of the research work that you're doing on sound. I’m wondering if you can talk a little bit about how your creative work has impacted your research.

That's a really interesting question, so I teach right now at Michigan Technological University. So as an engineer. It is Michigan's engineering College focused on engineering, it started out as a Mining College and in part, that's incredibly empowering because I am as a sound artist, technology is such a key component to what I do and I love technology and I love the engineering behind it and diving into that and being really clear about the physics of sound and how things are processed and how I maintain a certain quality level that is so tied to the engineering of what I do, but it's also interesting because the students I'm working with all have tons of engineering courses that they're taking and they're embedded in an engineering environment. And so while it is, as an artist, there's certain folks that I get to work with on campus and collaborate with that I wouldn't maybe be able to do at other universities. There's also this sort of, I feel responsibility for myself to be not an engineer to make sure that I am drawing the students into experiences that they're not having in their engineering classes or that they're not exploring on the other side of campus and so, you know, I've always had this dichotomy or the struggle between my technology and my artistic self which are, you know, just tools right and everything actually ends up being in service to the creative to the you know, what is your goal? When is your goal going to impact people? You know, if you're creating some worker or if you're doing the research it's sort of to support doing creative works. It's going to have a greater impact or is going to, you know, affect people's lives in some way.

And so the goal isn't ever really the engineering of the technology. It's the human part so that’s sort of the core of what I do is always back to that human element and it's kind of funny because I do so much engineering stuff and my students are going off and largely hired because of their engineering expertise, but my actual undergraduate degree is in English literature. But that's sort of the pull I am in terms of the relationship between creative and Technical and where I see those sort of fusing together and it's in listening to Parks project that we've been working on recently that pull is sort of really manifest in that installation. You walk into this installation and the goal and I think it's been really pretty successful, was to transport you to these natural locations to give you this space that takes you out of your daily life and allows you to look at and listen to the natural world, and we've got six video screens and 11 speakers and over 10,000 watts of power amplifier power and two computers and we're going to be adding a third so that there's some interactivity to it. So there's all this technology but we constructed it out of solid Maple. We used a lot of Curves in terms of have speaker stands are and how the displays are hung. And there's as little of the technology visible as possible so that you are so even though there's a crazy amount of technology and it uses an unfortunate amount of electricity. You feel the natural would you hear the sounds the images of the Landscapes or the details on different lichens are drawing you into a space away from technology and that, but it's sort of, sometimes difficult for me in terms of the amount of technology I use to get people away from technology or to have this feeling of not being around technology. So it's a very powerful collaboration between my technology and artistic sides. And then yeah, the research is really, you know, finding those elements that help me connect to an audience in a little bit better. So I do I build loudspeakers as one of the things that I do and one of the things I'm continually, trying to improve there and refine my designs and is how the loudspeaker can disappear and if I'm using multiple loudspeakers, how can I get those to disappear? And so, you know as a designer working with folks that that especially from working with them on the creative project for the first time. They'll often ask me why you need so many speakers but we don't want the show to be that loud. I'm like, well we're using that many speakers so that we don't see the speakers so that we don't hear the speakers, but we hear sound that's part of the production were working on, and sometimes simplicity requires, well the appearance of simplicity requires an extraordinary amount of complexity and that sometimes simpler Solutions will actually sound more complex or less organic because there, they're too noticeable.

And so finding those ways to make sound transparent and visceral and connecting to an audience's is really important and it's and that's just this week after you called me is taking a new interesting turn that we've got a sleep study space here on campus that's recently been put together and the National Institute of Health is partnering with the Kennedy Center on funding Sound Health. And so looking at how Music and Sound are used in increasing health awareness and. And we're specifically starting to brainstorm the different ways that we might look at that in terms of sleep health and restoration and the sort of breaks what we need for our bodies to build memories or to maintain our cardiovascular health and that relation to hypertension and there's been a fair amount of research in terms of particularly, poor individuals exposed to you know airports or buses and Loud environments and how that maybe is in many cases correlated and they have a causal relationship to long-term health issues, and that the sound can be factored in some of those and having the opportunity now to maybe. Start looking in more detail about that and to quantify some of these things is pretty exciting.

**KL:** Christopher as you're talking about these different projects that you're working on. It seems like your research in some ways really overlaps with what we would consider kind of traditional modes of research but also departs from those traditional modes. Can you talk a little bit about that how you see your research being kind of more traditional but also because of these creative elements, is it kind of shifting another directions as well?

**CP:** Yeah, that is definitely sometimes it’s a tension. Sometimes it's pretty powerful, you know, as we define research here at our university. Our creative activities are making things in our department is a very important part of that but it's also as we look across the department I look at collaborating with people finding ways to quantify what we do and not just make things but then communicate the discoveries we've had in making things in ways that can help the can raise up our profession that can rise up. The rest of the people that we work with are that want to do similar things and having some good guidelines in terms of well, it worked in this one certain situation. But is that why I did it work there? And as we look at quantitative versus qualitative research and as we look at how do we quantify different things and how complicated is it to isolate certain factors particularly through looking at health research and is it, you know, here we've been able to correlate this but is there some other factor that we weren't paying attention to? It's actually the cause and not what we're doing. It becomes interesting and some things become very difficult. There's a hole in the high Fidelity listening environment there's this prestige and this value put on the purity of sound from Vinyl recordings and that records are so much better sounding than CDs or even high resolution audio and definitely compressed MP3s that you might find over the Internet or that you're getting from iTunes, Spotify those sorts of things. There's a fair number of folks that believe that there isn't so much that the sound is better but that the ritual of putting on a record and of having to turn the record of having to clean the records off of maintaining them of having them in your house and maybe displaying their covers which have significantly more space for artwork and the Nostalgia of this old technology. That that sort of the ritual aspects of listening to that music are more important than the qualitative difference in the in the sound quality. And so as we're looking at research and we're looking at does this sound better than that or does our studies in terms of sound and its impact on personal health to what extent is it? Is it the sound and to what extent is it? The fact that they that we had a participant sit and meditate for 20 minutes, you know that they are, you know, maybe they're listening to sound but really what's important is they took 20 minutes to focus, you know in a certain way and that the sound is if it was silent, that would be just as valuable.

And so that that separating out what is ritual. What is you know the impact of well, I went to a show and I paid for it and we got dressed up and had a nice dinner beforehand and then I love the show because I was having a great evening. You know and how can we look at the aspects of well, this was this moment here was done really well in that have this deep impact on the audience. And here's you know, why that was happening is interesting and sometimes it's really hard—really hard to quantify and put in a qualitative study but there are points where it becomes really important to do that particularly as we're looking at engineering, you know loudspeakers or sound systems and there are things that make the can make a big difference.

And one of the things that's sort of really interesting that aspect for sound for me is the sound is at its most powerful when you don't know and it's not noticed. Ben Burt, who is the sound designer for Star Wars made the comment that he spent months trying to get the right light saber sound and need to have meetings. And right now it's not quite right and that's not quite right and then and then they had a screening where he'd put in this new lightsaber sound who's really happy with it. It sounded really great and awesome. They watch through the clip and nobody commented on the lightsaber and he comments that that's when he realized that if nobody comments on the sound that means it was right. That means it was real, that means, you know, they just accepted it as well Of course, that's how a lightsaber sounds right even though there's no way to know what a lightsaber sounds like it has a sound that's going to feel right that's going to people are going to accept as, this was real and sound can make things, you know, if you turn the sound off and watch a fight scene. Most of them look really ridiculous, but you turn the sound on and suddenly it's exciting and it's visceral and they almost, you know, really hit each other. Whereas if you watch it with the sound off, you're like, whoa they didn't even get close to each other, but it creates reality in some ways. And that's fascinating to me and how we can shift that emotional connection to reality in particular.

**KL:** Christopher this has been a fascinating look into the work the creative projects you're working on and the research projects you're working on. I want to thank you so much for taking the time to come on the show and sharing about your work and experience. It's been so interesting.

**CP:** Well, thank you. Thanks for calling me. And you're welcome.

**KL:** Thanks also to our listeners for joining us for this week's episode of research and action. I'm Katie Linder and we'll be back next week with a new episode.

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# Bonus Clip:

**KL:** In this bonus clip for episode 147 of the research and action podcast. Dr. Christopher Plummer shares about the core principle that ties all of his work together take a listen.

Christopher, in all of this kind of broad researching work that you have, is there kind of a core fundamental principle or thread that kind of ties all of it together?

**CP:** Yeah, there is. The thing that's at the foundation of everything for me is that listening is a superpower, one of the first clips that I play for my first year students is this American Life clip where Ira Glass goes and talks to a number of researchers about bad apples and folks that destroy group productivity, and one of the things that they found in one of the studies was that One Bad Apple was really able to destroy the productivity of groups by like 60%. If they had a group that was resilient to the bad apples influence and in that group, there was one person who turned out to be the son of a diplomat, but he went around the table and just made sure that everybody had a moment to contribute and listen to them and that that aspect of making sure that everybody was listened to and that they were there at the table and engaged really helped to mitigate the negative influence of this one individual and I think there's so many places in our life where sort of just small bits of negativity can turn us astray from really positive work. And this stopping and listening is so important and it's as I've been engaged more and more with inclusivity and how to you know, I'm in a lot of groups that are almost all white male and coming in as an outsider to those and it may be, you know, an outsider in terms of racial or gender identity, but it could be an outsider just in terms of you're not from one of the three or four, you know, great schools and there's sort of this In Crowd and how do you get in there and when I'm in as or outside, you know, emphasizing that listening to everybody making sure everybody's at the table. Naturally comes out of what I do as a researcher and what I value and that even as I talked to other researchers and we look at data that we're getting that we need to approach it from an aspect of listening instead of wanting to tell have the data tell us something or say something, I'm going to do the study Tuesday X Y or Z, I'm going to collect this data and I am really interested in one of the things I'm really interested in is when I listen to different speakers. Some speakers have sort of disappear and they create an immersive sound field and other speakers. I really hear the speaker pushes the sound out front and it's still unclear to me as to what measurements really helped me define the differences between those speakers that give me that feeling.

And so I'm continuing to listen and to find the speakers that are on different points in this Continuum and measure them and try and see what I can find out there and try and listen to both the speakers the sound and listen to the data in a receptive way to say, well, I think it might be this or I think it might be that but what measurements are really showing me a difference here. What data is helping me out here and what does the data say in terms of how these should be different how I should perceive them and is there. Is my perception being clouded by something that's not sound related that is more that ritual aspect or well the speakers prettier and so I assume it sounds better right pay more for it and so I'm invested in making you know and that one sounding better, but this this aspect of taking a breath and sitting and listening and that ties into sometimes really just you know, taking a hike going out to the woods sitting and listening to an environment where you have found around you and 360° and it's a bird chirp here in a bird chirp there and a little whistle the Chipmunk over here, but it's that it's a natural Hi-Fi in a wide dynamic range environment where I can have that that time to listen and then I can also take that back and I can use that when I'm working with my students, when I'm working with my colleagues, when I'm working with a technical object, that listening is what it all comes back to and listening is really the most important thing that we can do in our lives.

**KL:** Thank you Christopher for sharing a little bit more about listening as a superpower.

**CP:** You're welcome.

**KL:** You've just heard a bonus clip from episode 147 of the research and action podcast with Dr. Christopher Plummer sharing about the core principle that ties all of his work together. Thanks for listening.