(UK)

**Composer
and Researcher**

Robert Laidlow

AI innovation and orchestras

When you join an orchestra with its audience, you get a micro-society. This micro-society has a long history as a site for innovation and experimentation … Continuing this tradition today, with AI, I see the orchestra as a valuable dress rehearsal for society at large.

An orchestra is a computer. Its constituent parts (musicians) follow lines of code (musical notation), communicated through a symbolic language that can take years to learn. The conductor, like the central processing unit, directs the flow of information (though isn't necessarily in charge). Watching a hundred people perform in absolute synchronisation with each other is about the closest you might get to seeing the precise and perfect streams of numbers that power your laptop. Both are inspiring human creations.

An orchestra is also a museum of technologies. Remember that once someone invented the modern piano, added valves to a horn and designed the violin you see on stage.

It seems a natural fit, to me, to introduce experimental new technology like AI instruments, improvising machines and listening algorithms to the orchestra. This is especially true for groups like radio orchestras – of which we have five phenomenally good ones in the UK – which were set up a hundred years ago to take advantage of new technology. There's also an element of hacking involved in my work – I like the idea of repurposing technology that may replace musicians, to instead add it to our toolboxes, making us more resilient.

Of course, an orchestra is only a machine in a metaphorical sense. This group is composed of actual people with diverse skills, outlooks, interests and ideas, united by their love of music. When you join an orchestra with its audience, you

get a micro-society. This micro-society has a long history as a site for innovation and experimentation, beginning with integrating early tape parts, like those found in Varese's Déserts, and continuing through work done with composers at institutions such as the Westdeutscher Rundfunk and Milan Electronic Music Studio.

Continuing this tradition today, with AI I see the orchestra as a valuable dress rehearsal for society at large. How will people react to it? What will they find useful, creatively stimulating? What do they actually want out of new technology, and how can we design it in future to accommodate that?

(1) Stacco, Embedded AI instrument used in *TECHNO-UTOPIA*, ©Intelligent Instruments Lab
(2) Sound Vessels, 2025, Robert Laidlow, Vessels: Federico Visi, Cello: Cosima Gerhardt, Elec.: Alberto de Campo, Images from Performance using pouring liquid to control AI sound models, Universität der Künste Berlin, ©Nikolaus Brade
(3) Silicon, 2022, Robert Laidlow, Image of performance with BBC Philharmonic at the premiere, ©Megan Walker

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These are the questions key to my upcoming project *TECHNO-UTOPIA,* commissioned by the BBC Philharmonic and the Berlin Radio Symphony Orchestra. It explores memory, magic, ruthless algorithms and what makes music more than just data. The piece's soloist performs on the piano, synthesisers and brand new embedded-AI instruments developed with my collaborators across Europe. AI here is not doing anything as tedious as generating end-to-end pieces of music, but rather acting as a tool for creative exploration and expression. It allows musicians to create sounds we've never heard before.

TECHNO-UTOPIA is also local. The AI instruments used in it are trained only on recordings that the orchestra owns and have shared with me for this project. It's an audible rejection of the corporate notion we often hear that AI simply can't function without scraping every piece of music online, whether the creator wants you to or not. Importantly, this AI locality helps lend the project a sense of place. The technology is responding to that specific orchestra,

interacting with that society. I find that much more interesting than a sonic sum of averages from the internet. With projects like *TECHNO-UTOPIA*, I believe musicians can actively influence how technologies might be imagined, by showing what is possible. Rather than passively commenting from the sidelines, we can be loud about the future we want to see.

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Bio

Robert Laidlow's 'gigantically imaginative' (BBC Radio 3) music discovers new forms of creative expression through colliding advanced technology, scientific collaboration and live performance. His genre-defying orchestral music includes Silicon for orchestra and artificial intelligence (BBC Philharmonic), Exoplanets, made in collaboration with James Webb Space Telescope astrophysicists (London Philharmonic and Basel Interfinity Festival) and *TECHNO-UTOPIA* (BBC Radio 3 and Berlin Radio Symphony Orchestra), which sees the orchestra embedded with newly developed expressive AI instruments. He is a Fellow in Composition at Jesus College, Oxford University, a governor of the Royal Conservatoire of Scotland and an Associate of the Royal Northern College of Music.