
SIDEBAND RECORDS
PROXIMITY, DISTANCE
PATRICIA ALESSANDRINI
MARCO FUSI

Feedback is an invention of the age of electronic amplification. It arises from the sound of resonant frequencies being amplified and then passed back into the resonator, only to be further amplified, and so on, in a loop of rapidly increasing volume. The actual sound of the feedback depends on numerous factors, including the input sound itself (the sound that triggers the feedback in the first place, whether that is the electrical hum of an amplifier or the sound of an instrument), the direction of the sound, and the acoustic properties of the resonating chamber itself. Feedback when it occurs between a microphone and an amplifier—that ear-piercing screech that is the clichéd opening of every amateur after-dinner speech—is the bane of musicians' lives, and sound engineers go to great lengths to minimise its possibility. But it is also a great resource, as pioneered by early blues and rock guitarists such as Willie Johnson, Johnny Watson, and Link Wray, and later used extensively by artists such as Jimi Hendrix, the Grateful Dead, Lou Reed, and My Bloody Valentine.

Part of the attraction for musicians—besides the sheer thrill a cascade of howling feedback can convey—is the sense of wrestling with something that is almost alive. Feedback emerges out of a chaotic interaction of soundwaves, so its behavior cannot be completely predicted. It is like an alternative AI, an "acoustic intelligence," that is often the most a musician can hope for—as Eliane Radigue did in her early works by gently teasing microphone feedback that she would capture and manipulate as tape loops, and as Robert Fripp did by measuring ideal distances from his amplifier when recording guitar feedback for David Bowie's *Heroes*—is to create some system of containment and control. Patricia Alessandrini has for many years used surface transducers (small speakers that can be used to acoustically excite whatever they are attached to) to hybridize the sounds of her music with the material properties of the instruments that are playing it, whether those be standard string instruments or large metal plates. Over time, this has led her to investigate feedback itself, as a way of connecting even more directly to those material properties. For the recordings collected here, she and Marco Fusi have experimented over several years with feedback improvisations that combine the sounds of acoustic instruments—specifically, a violin and a viola d'amore—with forms of digital sound processing. As they explain in their technical notes, this has led them also to consider movement, the resonant frequencies of performance spaces, and the spatialization of sound itself as inputs into and control factors of the feedback system.

Paradoxically, those additional controls added complexity and unpredictability to their feedback systems rather than reduced them. As they note, feedback is "unwieldy": It rarely behaves quite as one expects. If not carefully handled, it can quickly reach damaging levels, for both equipment and ears. The music they produce, then, is the result of a continuous and audible practice of letting go and reining in, of careful tending through listening. There are certainly moments—toward the end of Track 3, for example—when sheer force of sound is permitted and encouraged. And there is no sense anywhere in this recording that feedback is something to be "tamed" or brought into obedient line; where feedback is necessarily pruned back, this is done to further induce, rather than tamp down its expressive energy. Yet this is nevertheless a music of soft power, created through acts of correspondence and persuasion: a genuine collaboration between musicians and machines.

This collaboration began in 2019, when Marco was invited to Stanford University—where Patricia was teaching from 2018 to 2024—to perform a concert of student works. We agreed from the start that we wanted to find a process in which we could have a joint exploration of sound and create an immersive experience for the audience. We discussed various scenarios, such as performance on an electric or augmented instrument, but in the end, as Patricia already had experience with feedback, and Marco with improvisation, we decided to combine these practices as a feedback improvisation duo, using various resonant bodies to bring the electronics into the same physical world as the instruments on which Marco performs. Given the particular resonant qualities of the viola d'amore, we decided to use this instrument in combination with the violin, with the viola d'amore functioning mainly as a passive resonant body.

Feedback offers an ideal medium for listening and reacting to one another. In technical terms, a feedback loop is created by taking the amplified sound of a resonating body and feeding it back into the same body. In our own feedback practice, the amplified sound is most often coupled with instrumental input from either the violin or viola d'amore, and both the live sound performed by Marco and the amplified sound of the resonant body are processed in the digital domain. To closely link the input and output with the resonating bodies, surface transducers—special speakers which attach directly to surfaces—are used, as well as contact microphones and other methods of close-miking. Marco is able to shape the feedback in various ways: by either physically exciting the resonant body, or by playing on the violin or viola d'amore, while Patricia uses digital processing to shape the feedback, with each performer reacting to the other in real time.

In the case of our first feedback improvisation, in March 2018 in The Stage of Stanford's Center for Computer Research in Music and Acoustics (CCRMA), we had a very particular set of circumstances: As the wooden floor of The Stage was being renovated, Patricia was able to use the floor itself as a resonating body, embedding transducers and contact microphones directly into it. This resonance felt by the audience throughout the hall through the floor was set into dialogue with the localized resonance of the viola d'amore; this duality created a rich physical space for Marco to explore. The challenge was how to recreate this duality in future performances, in a manner that was no longer entirely site-specific: While feedback is generally affected by the resonant properties of a space, we wanted to have some form of control and repeatability, in order to begin to construct a shared musical vocabulary. We therefore decided to create a portable feedback system for our next performance in December 2019, hosted by CREATIE, a group for artistic research at the Royal Conservatoire of Antwerp. Working with her long-time collaborator Konstantin Leonenko, Patricia designed and built the FeedBox, a wooden box with two transducers screwed directly into it with contact mics placed within it, just as they had been screwed directly into and placed underneath the floor of the CCRMA Stage. The FeedBox is designed to be portable: It is just small enough to fit inside of a carry-on suitcase, and it can be easily assembled and dissassembled; as it is produced using a laser-cutter, it is also easily reproducible.

Photo credit Winnie Huang

The FeedBox offered Marco a new tactility, becoming an instrument in itself. This is evident on several tracks on the CD: for instance, in the openings of the first and last tracks, respectively, where the feedback is elicited by Marco stroking or striking the FeedBox. In terms of the physical space of the improvisation, there were now two points for Marco to move between when playing the violin: He could either approach the FeedBox, even placing the violin directly on it, or he could approach the viola d'amore, which was, like the FeedBox, equipped with transducers and microphones to create its own self-contained feedback system, while suspended about a meter off the floor in order to facilitate Marco's contact with it. Although it was also possible to electronically inject the sound of Marco's violin into either feedback system, we favored physical proximity as a means of feeding sound into these systems in order for Marco to have the maximum control and agency; furthermore, Marco's physical movements while playing the violin gave an intentionality to the form of the improvisations, articulating either the FeedBox or the suspended viola d'amore as a focal point.

The physical space of these improvisations gave us a further idea: to use spatialized audio to further excite the feedback systems, by using a specialized soundfield approach called Wave Field Synthesis (WFS). We were given the opportunity to explore this spatialization technique during an extended residency at the Experimental Media and Performing Arts Center (EMPAC) at the Rensselaer Polytechnic Institute in June 2022, dedicated both to our feedback improvisation practice and to the development of a new version of Luigi Nono's *La lontananza nostalgica utopica futura* for violin and electronics employing WFS.

After a pause of two years due to the COVID-19 pandemic, experimentation with the WFS system at EMPAC allowed us to breathe new life into our improvisation practice: While Marco already had the means to relate space and form in the improvisation, Patricia was now able to articulate space formally in a similar manner, by having a spatialized form of sound re-injected into the feedback systems using the very precise virtual source placement available with EMPAC's WFS system. While Marco could "light up" the Feedbox or the suspended viola d'amore with the direct sound of his violin, Patricia could do the same by precisely directing a sound source through the WFS system towards one or the other, and could also add further width, depth, and movement to the sound overall using this system, to re-create the immersive experience of our first improvisation in the CCRMA Stage. A new version of the improvisation, entitled Proximity, distance, was presented as a prelude to our performance of La lontananza nostalgica utopica futura in the Time:Spans festival in August 2022 in collaboration with EMPAC, who supplied their own state-of-the-art WFS system for the concert.

Marco's return to Stanford in April 2024 provided the perfect opportunity to record material for the CD using a similar setup to that of EMPAC, including a WFS system constructed in collaboration with their team, in particular with Lead Audio Engineer Todd Vos. We worked in three stages: We performed a version of Proximity, distance in the Bing Concert Hall Studio on 20 April, then spent some time deciding what material should be on the CD and how it should be articulated over time, before finally spending a single day in the CCRMA Stage rehearsing, improvising, and recording.

The recording was followed by a period of listening back and selecting takes and sections, but listening was also a large part of the improvisation process itself. Of course, listening is always important in improvisation, especially in the dynamic of a duo. In addition, feedback is often particularly unwieldy, thus requiring particular attention and care in listening and reacting quickly. Furthermore, by relying so heavily on the interrelation of physical properties and systems, such as the ambient resonance of the space, the resonant qualities of the FeedBox and the viola d'amore, and the modulation of systems by Marco's physical proximity to them and the WFS spatialization, we introduced a great deal of complexity with varying degrees of predictability and unpredictability that kept us constantly on our toes. Concentrated listening was thus required to identify what room for sonic manipulation the feedback systems allowed us at any given time, while in other moments sounds needed to be generated anew, to feed new material into the feedback loop. At times, therefore, the listening had to disengage us from the now, to look ahead in order to imagine and trigger a potential future soundscape. The result is a composite listening experience, a performance of listening, where performers may decide when to be active/reactive/yielding/relentless, and how to thus shape and direct the sonic results.