

Realizing Lucier and Stockhausen: Case studies in electroacoustic performance practice

Christopher Burns

Center for Computer Research in Music and Acoustics (CCRMA), Stanford University
email: cburns@ccrma.stanford.edu

Abstract

The author's realizations of Alvin Lucier's "I am sitting in a room" and Karlheinz Stockhausen's Mikrophonie I are considered as case studies in the realization of live electroacoustic music. The new realizations, while faithful to the works' scores, differed from the composers' traditions of performance. Lucier's piece was realized in real-time, a new set of implements and playing techniques were developed for Stockhausen's, and analog electronics were reproduced in software for both works. The author suggests that realization requires a practical approach, balancing textual fidelity, musical effectiveness, and pragmatism.

1 Introduction

There are a number of reasons to create new realizations of electroacoustic works. First and foremost are the reasons for performing any interesting piece of music: performance creates the opportunity to share the work with new audiences, and encourages close study of the music by the performers. This engagement is especially important for indeterminate or otherwise flexible works which require the performer to make decisions traditionally considered "compositional." Additionally, many electroacoustic works will require rescue from technological obsolescence. New realizations, using new technologies, can extend the performing lifespan of a piece with complex technical requirements, and make it available to more musicians. (Miller Puckette's recent realizations of works by Philip Manoury and Kaija Saariaho are an example). Finally, the process of realization admits the possibility of an evolving performance tradition for a particular work, with new solutions and interpretations enriching the music's sense of possibility.

This paper will consider two recent realizations by the author as case studies in the creation of new performing versions of electroacoustic music. Although very different works, Alvin Lucier's *"I am sitting in a room"* and Karlheinz Stockhausen's *Mikrophonie I* present related challenges in realization. Both works have relatively open, flexible scores which encourage variation. They also have well-established performing traditions, centered on the composer, which have downplayed the flexibility offered by the scores. In realizing the works anew, it was possible to

recover some of the alternatives possible in Lucier and Stockhausen's works. In both cases, the relationship of the new realizations to the existing traditions of performance arose as a series of small decisions about musical details.

2 Lucier in real-time

Alvin Lucier's *"I am sitting in a room"* (1969) is an electroacoustic classic. The work, which questions the distinctions between speech and music, is conceptually rich, sonically beautiful, and is achieved with an extraordinary economy of means. Although traditionally presented as a work for fixed media (a recording played in concert, a commercially available compact disc for private listening), *"I am sitting in a room"* requires realization prior to performance. The score is a short text which provides instructions for making a version of the piece, either for fixed media or real-time performance.

The score begins: "choose a room the musical qualities of which you would like to evoke" (Lucier 1995). A given text – "or any other text of any length" – is then read and recorded in that room; the recording is played back through a loudspeaker, and the playback itself recorded; and the cycle of playback and recording is continued "through many generations. All the generations spliced together in chronological order make a tape composition the length of which is determined by the length of the original statement and the number of generations recorded."

As the text is repeated over and over into the room, the acoustic properties of the room assert themselves. Echoes elongate and smear the speech, and the resonances of the room enhance some of the frequencies present, while eliminating others. Gradually, the speech is transformed into music: the text becomes a complex weave of pitches, based upon the intersections of the recorded voice and the resonant frequencies of the room.

If the score initially seems vague ("any other text of any length," "through many generations"), by the end, Lucier is explicitly licensing experiment with his basic process: "Make versions in which one recorded statement is recycled through many rooms. Make versions using one or more speakers of different languages in different rooms. Make versions in which, for each generation, the microphone is moved to different parts of the room or rooms. Make versions that can be performed in real time." Lucier's work

invites realization in part because of this opportunity to experiment: different rooms, different texts, and different recording techniques all produce changes in the resulting tape or real-time performance.

In spite of the potential for variation, the performing tradition of the work has concentrated on a small number of recordings made by Lucier, which follow without alteration the basic plan (and text) given in the score. In an interview with Douglas Simon, Lucier acknowledged this tension between the score and his own inclinations in performance: “Well, the piece is subject to many versions; I heard of a twenty-four hour one made in a chapel in Oberlin, Ohio.... But I must admit that I prefer the monophonic [tape] version; it more clearly reveals the features of the processes that I find fascinating” (Lucier 1995).

Nevertheless, I am inclined towards possibilities for “*I am sitting in a room*” beyond the existing recorded versions. Variations expand the range of interpretation for the work, and enhance our ability to return to and engage with the music, to understand it from new perspectives. In particular, “versions that can be performed in real time” tend to increase our sense of wonder at the piece; can this room, full of people sitting still and listening, have such an extraordinary musical effect? The performance space is activated and energized by the sonic process.

This activation continues throughout a live realization of the work. A recording like Lucier’s can be made in relative acoustic isolation, so that the germinal reading of the text is the only sound to interact with the room and the recording media. In concert such isolation is not possible – a performance will inevitably involve extraneous noises (from the audience, from the hall, from the environment) of some sort. These noises may initially present themselves as distractions. But if they are captured by the recording equipment, they too will be incorporated into the process, and add their signature to the resulting music. The audience and the environment are part of the continuous process of transformation. As Lucier noted about his work *Outlines of Persons and Things*: “isn’t it what we want, to put the audience in a situation which they know they can interrupt or change? If part of the piece is that you have live microphones, and the audience is aware... isn’t that a kind of tension you might want in a performance?” (Lucier 1995)

With these thoughts in mind, I undertook to make a live realization of Lucier’s work in October 2000. I chose to implement the piece using Miller Puckette’s Pd software, running on a Linux workstation. The audio processing required is simple, as befits Lucier’s elegant conception: the room acoustics do the musical work. The core of the realization is a stereo delay line long enough to store an entire iteration of the spoken text (up to 60 seconds, in my readings). Audio goes into the computer from two live microphones in the performance space, and the same signal is repeated to two loudspeakers 60 seconds later.

Rehearsals suggested some additional signal processing stages in the software to help reduce the risks inherent in live performance. The principal challenge for a real-time realization has to do with balance. If the speech, amplified

beyond its original loudness, increases in volume at each iteration, undesirable distortion and clipping will eventually result. Conversely, if the speech is under-amplified and decreases in volume with each repetition, the piece may fade out prematurely. A soft limiting stage at the input to the delay line helps minimize the threat of clipping, and makes any clipping which occurs less objectionable. As the threat of overload is reduced, more headroom is available to prevent decaying amplitude. Attentive manual volume control remains necessary throughout a performance – not least because an empty hall at soundcheck will prove a very different acoustic environment than the same room filled with listeners. Additionally, lowpass and DC-blocking filters before the audio output help to prevent the buildup of strident high-frequency resonances and electronic artifacts.

The realization was not only a matter of implementing the electronics and balancing them in the performance space. Another issue to consider was duration, and the appropriate way to end the piece at the point that duration was reached. Unsure of how quickly the process would unfold when the intended performance space was filled with an audience, I opted not to fix the duration in advance. In the event, the transformation was rapid, and I elected to end the first performance at less than thirty minutes. (Without a counter, it becomes difficult to keep track of the iterations, as the text decays in intelligibility and evolves into continuous sound – there were approximately twenty-five repetitions). Given the difficulty of perceiving where one iteration ended and the next began, I chose the easiest available option for concluding the performance: slowly fading down the microphone inputs. The piece ended in a fadeout 60 seconds later.

Finally, Lucier’s score offers the choice of “any... text of any length.” In practice, I found it difficult to move away from Lucier’s original text. The given text concisely describes the process of transformation even as it undergoes that transformation; its self-reflexive nature has always been an important part of my interest in “*I am sitting in a room*”. And so I chose to use Lucier’s text, with a slight variation. The score offers: “I am sitting in a room different from the one you are in now.” The new realization begins: “I am sitting in a room – the same room you are in now.”

At the first performance, the new realization offered a communal listening experience; generated a palpable activation of the room and the environment; and produced “surprises” in the form of inevitable unintended noises, which knitted themselves into the fabric of the music. It was an opportunity to hear “*I am sitting in a room*” with fresh ears.

3 A pragmatic *Mikrophonie I*

While the Lucier realization was underway I also organized the rehearsals for a more complex realization: Karlheinz Stockhausen’s *Mikrophonie I*. In *Mikrophonie I* two percussionists play a large tam-tam with a variety of implements. Another pair of players use hand-held microphones to amplify subtle details and noises, inflecting

the sound through quick (and precisely scored) motions. The last two performers apply resonant bandpass filters to the microphone outputs and distribute the resulting sounds to a quadraphonic speaker system. No single player can assume complete authority over a particular sound event; the trios of percussionist, microphonist, electronics operator (and often the complete sextet) have to work together to produce each individual sound.

From the beginning it was clear that our ensemble would not be able to offer a strict reproduction of Stockhausen's realization, also known as the Brussels version. To begin with, we had no access to one of the small number of authorized "Stockhausen Mikrophonie I" tam-tams manufactured by Paiste. If we wanted to perform the piece, we would be obligated to use the smaller and more conventional instrument available to us. Deciding to go ahead, we could only make our own musical decisions about the work, in accordance with the score and our own intuitions.

As with the Lucier realization, the implementation of the electronics was relatively straightforward; most of our creative contributions were confined to small tweaks and alterations. Our version of *Mikrophonie I* uses the Max/MSP environment running on a Macintosh computer to realize the bandpass filtering, volume, and panning controls required. Stockhausen does not provide precise filter specifications in his score, and so we tested multiple filter designs in rehearsal, eventually choosing the steepest. Additionally, Stockhausen's analog bandpass filters could only change boundary frequencies in discrete steps. This characteristic "stepping" sound seemed like a crucial feature to carry into the new version of the work, and so I developed filter controls which would replicate the fixed frequencies and discrete changes described in the score.

The electronics operators' parts are quite demanding, with many quick changes occurring simultaneously in multiple parameters. Fortunately, the software environment enabled some ergonomic optimizations of the controls. For instance, the score usually notates overall volume precisely while leaving panning to be improvised by the operator. Where Stockhausen's original setup used two separate volume controls (front and rear), it seems preferable to have a single volume control, with a second control for panning between the front and rear loudspeakers. The revised layout divorces the volume control from the independently scored parameter of front/rear distribution.

With four simultaneously changing electronics parameters (filter high frequency bound, filter low frequency bound, volume, and panning) for each of two players, a hardware fader surface proved an indispensable part of the setup. The hardware faders offered a conventional, intuitive, and effective interface, and enabled the players to keep up with the continuous stream of adjustments required by the score. For all their benefits, the faders did impose one ergonomic disadvantage. Since the faders moved freely, the filter high frequency bound could be moved below the low bound, an impossible situation for the filters. Inside the software, the problem was easily dealt

with. Reducing the high bound would automatically reduce the low bound if necessary, while the low bound was not allowed to increase beyond the high bound. However, this precedence rule couldn't be imposed upon the (non-motorized) faders themselves. A photo of Stockhausen's analog filters, included in the published score, suggests a superior solution: two faders in a single groove. Unfortunately, no commercially available MIDI fader boxes duplicate this design, and custom-built hardware was beyond the scope of our project.

Other aspects of the realization produced more far-reaching changes. One important decision to make was the ordering of the score: a series of unbound pages to be ordered by the performers in accordance with an abstract scheme provided by the composer. Fortunately, the score includes the fully worked-out ordering of the Brussels version as an example of this daunting system. We opted to adopt the form of the Brussels version rather than to create our own ordering. This was a major time-saving step, but more importantly, it gave us a context in which to make, and in many cases revisit and remake, musical decisions at finer levels of detail. Adhering to Stockhausen's realization of the form made it possible to think carefully and independently about the individual moments – where our solutions often diverged considerably from the composer's.

Many of those solutions involved the implements used to strike, rub, scrape, and otherwise excite the tam-tam. The score uses graphic notations and a variety of adjectives to describe the sounds, but Stockhausen rarely specifies particular implements and actions – an extremely pragmatic compositional decision when working with an instrument as variable as the tam-tam. As a result, the implements chosen have a crucial influence on the range of playing technique, and on the performer's view of the score. The influence is mutual: our developing view of the score also changed the implements we preferred.

Throughout our rehearsal period, we were continuously expanding our arsenal, buying, borrowing, and building as we needed new tools. After translating the score's instructions and descriptions from German into English, we began working from the percussion cabinet: playing the tam-tam with a variety of mallets and beaters, not to mention the odd guero and cowbell. A second stage of work began when we rehearsed as a full sextet: amplification changed the sound world entirely, and our early solutions now seemed crude and undifferentiated. Most of the mallets went back into the cabinet, and we fanned out to hardware and kitchen stores in search of new, more highly characterized sounds. (Stockhausen's recording of the Brussels version, and the photos of his percussion setup included in the score, were additional inspirations at this point. In particular, group listenings to the recording provided the rallying cry, "more scraping!")

A third stage began when we committed to the Brussels version, and began to develop a more integrated view of the work. The ordering of the moments in time suggested ways of creating connections and contrasts between different musical elements, and we sought to use instrumentation to

emphasize those relationships. The sheer logistics of performance also contributed to our developing realization: on several occasions Stockhausen calls for a plethora of different sounds without providing time for implement changes, and so we were forced to plan carefully and maximize the possibilities of whatever tools were in hand.

It's difficult to reconstruct this evolution in full detail, especially for implements which made only brief appearances in rehearsal: what was the cowbell for? However, our notes on the score do provide some evidence. For the *Geräusch* (Noise) moment, we began by scraping yarn vibraphone mallets against the flat of the tam-tam. The dynamic was piano, as specified in the score, and the timbre seemed distinctive in the context of the other sounds and textures in our palette. Under amplification, however, the sound seemed flat and characterless; scraping disposable plastic cups against the side of the tam-tam proved more articulate and more variable.

The moment titled *Trillernnd Knallend* (Trilling/tinkling, banging/clanging) underwent a similar change. We first sounded the trills by rolling plastic-tip drumsticks against the surface of the tam-tam, with the flat of the stick providing banging. Once we committed to the Brussels version, we knew that the *Berstend (Krachend)* (Bursting (crashing)) moment would take place simultaneously. *Berstend (Krachend)* required rapid repeated strokes from a large, soft beater, in a long crescendo; as a result, the tam-tam was in continuous motion. Small objects like table knives or keys held against the edge of the tam-tam would naturally "trill" with a distinct and eloquent sound as the tam-tam moved. The sometimes unpredictable motion of the instrument between the two percussionists proved an advantage in this case.

By the time of performance, we had three large tables full of implements for use. Some of the strikers and scrapers not already mentioned included a motorized massage device, pvc pipes, wadded-up newspaper, a dog toy, a length of chain, wine glasses, sandpaper, rubber balls, an ice scoop, and a pair of tea strainers. There were also some timpani mallets and tam-tam beaters, but this was not your ordinary percussion setup.

It was also distinctly different from Stockhausen's setup (at least as we understood the Brussels version from the recording, and the photos included in the score). In many ways, our realization proved to be the "chamber version" of the work: not only did we use a smaller tam-tam, we also rehearsed and performed in relatively small spaces (including an art gallery and a storefront). Live microphones with a loud instrument in a small room are a tricky proposition; feedback is never far away. With these practical constraints in mind, we traded drama for detail, preferring subtle textures to bold theatrical gestures. *Mikrophonie I* is a work rich in details, and we tried to emphasize the variety and subtlety which Stockhausen achieves using a single, and traditionally quite limited, instrument. Despite our use of the Brussels form, and the relatively faithful recreation of the electronics, our version comes across as a very different interpretation of the work.

4 Conclusions

Despite the considerable distance between the new realizations of these two works and the performing traditions established by their composers, there is little possibility of confusing realization with composition. The practical and musical decisions involved were made in the framework created by the composers. This is precisely the interest of making realizations – the process is an opportunity to engage with another composer's thought.

The parallels with the recent trend towards the historically informed performance of early music, and the debate over the limits of "authenticity," are striking. The situation is not identical – we have more information about the performing traditions of contemporary music, are likely to encounter scores with very different blends of fixed and free or unspecified elements, and potentially have access to the composers themselves. Nevertheless, I would join those scholars of early performance practice who suggest that performing traditions be considered as an informative context, but not as a final arbiter.

My experience with "*I am sitting in a room*" and *Mikrophonie I* suggests that the interpretive aspects of a realization are not established in a single moment but are rather the product of a series of small decisions and practical solutions – as is the case with most musical performances. Every question must be met with an appropriate balance of textual fidelity, musical effectiveness, and pragmatism.

We are accustomed to discussing music in idealized terms, rather than concentrating on the role of logistics in performance. But the composers also acknowledge that practical issues impinged upon their realizations. Lucier chose to make his version of "*I am sitting in a room*" on tape despite his preference for live performance: "The necessity of making it work right [transition very gradually from speech to music] meant that I had to make it on tape. If I had performed it live it would have been a different piece" (Lucier 1995). And Stockhausen rejected his initial, detailed approach to scoring, opening his working process to practical experiment: "That's how we did it: ...trying out a lot of material on the tam-tam and deciding which would be the best. In many cases we found better solutions by working together than the original suggestions I made..." (Stockhausen 1989). Realizations are tempered by realism.

5 Acknowledgements

Thanks to Ching-Wen Chao, Christopher Jones, Damián Keller, Randal Leistikow, and Juan Reyes for their collaboration in the realization and performance of *Mikrophonie I*.

References

- Lucier, A. 1995. *Reflections / Reflexionen*. Köln: MusikTexte.
- Stockhausen, K. 1974. *Mikrophonie I*. London: Universal Edition.
- Stockhausen, K. 1989. *Stockhausen on Music*. London: Marion Boyars.