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On Composing *5,000 Miles*

JOE SFERRA¹

Introduction

This article is my account of composing my first piece for telematic performance, a quartet called *5,000 Miles*.² The piece was commissioned by the ACCAD Sonic Arts Ensemble, directed by Marc Ainger, Ann Stimson, and Federico Cámara Halac. I performed the piece with the ensemble on two performances in November 2020: a performance for the NowNetArts Conference, and a second performance titled “Into the Multiverse” for the Wexner Center for the Arts at Ohio State University.³ I outline how I approached writing a specifically telematic piece, then present an analysis.

The ensemble used Zoom to communicate over video. In initial rehearsals, the quartet joined together on one Zoom call. For audio, we used Pure Data patches of Miller Puckette’s multi-user version of Quacktrip, Netty McNetface. We first improvised as a group using this tech setup to get a feeling for the average latency and for each other as musicians. After a few sessions of freely playing together, I began generating ideas for the group.

Other writers on telematic music thoughtfully discuss technology and its role in their collaborative processes. I will instead concentrate on the notated music and the sonic result. This account contributes to Rebekah Wilson and Andrew McMillan’s call to become “less un-together” by “generating and sharing documentation on remote collaboration efforts” and making work that is “latency native.”⁴

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² There was no processing other than reverb, panning, and compression. The sonic result is still very much “acoustic.” The title is a tribute to the distance between the performers of our group.

³ The video of the piece from the second performance can be viewed online. See “5,000 Miles,” Vimeo video, accessed December 9, 2020, <https://vimeo.com/489133813/78da08f921>.

⁴ Rebekah Wilson and Andrew McMillan, “Being Together—or, Being Less Un-together—with Networked Music,” *Journal of Network Music and Arts* 1, no. 1 (2019): 11, <https://commons.library.stonybrook.edu/jonma/vol1/iss1/6>.

Initial Decisions

Every compositional setting features some kind of difficulty about it that one either has to “write around” or embrace as part of the piece’s aesthetic.⁵ For telematic music, a main difficulty is latency. Even with low-latency audio software, there will be inevitable lag between performers or a slowing-down in attempts to stay together.⁶ I wanted to compose something that didn’t succeed *despite* latency, but rather succeeded *because* of it. Gareth Dylan Smith et al. reference Chris Chafe’s statement at the Audio Engineering Society (AES) 43rd International Conference that “latency can be ignored, tolerated, or exploited.”⁷ I thought distinctly about trying to write a piece that exploited and embraced latency beyond just loosely sequencing the musical events.

To begin composing the piece, I wanted to study music that deals with latency. While musicians account for latency in many formats, e.g., synchronizing instruments that take longer to sound, responding to a conductor’s downbeat, etc., I wanted to find music that addressed the issue in the pitches and rhythms themselves. I focused on precedents from 20th-century concert music that dealt with de-synchronization, an inevitable result of latency. In Bunita Marcus’s *Two Pianos and Violin*, the two pianists rely on the same metronomic pulse throughout the piece, but through metric differences in the parts, sound unsynchronized.⁸ Another piece that explores desynchronization is Louis Andriessen’s *Hout*, a quartet that is a strict canon: the four instruments play the exact same line of music, but are staggered a sixteenth note apart from each other throughout the piece. Instead of sounding messy, the music sounds like a melody with a digital delay.⁹

I realized that the canon technique would be a good way to experiment with latency. Like *Hout*, I chose an instrumentation from our ensemble where every instrument overlapped in their ranges: clarinet, alto flute, electric piano, and vibraphone.¹⁰ Instead of having the performers enter strictly, e.g. “one sixteenth note later,” I could have them enter loosely, in this case about two or three seconds after each other. The working title of the piece, aptly, was *Fuzzy Canon*. By adapting

⁵ The opening section of Julia Wolfe’s piece *Dark Full Ride* features four performers each playing a hi-hat. The difficulty with this choice of instrumentation is that the four hi-hats will all sound similar. The “write around” solution for this would be to make the four parts very different in order for the listener to keep them straight. The “embrace” solution, which she chose, is to have the parts be very similar and strictly control the small changes that define each part.

⁶ For more on issues with low-latency collaborations, see Gareth Dylan Smith et al., “Low-latency Networked Music Collaborations: Does ‘Good Enough’ Do Enough Good?” *Journal of Network Music and Arts* 2, no. 1 (2020): 1–22, <https://commons.library.stonybrook.edu/jonma/vol2/iss1/5>.

⁷ Gareth Dylan Smith et al., “Low-latency Networked Music Collaborations: Does ‘Good Enough’ Do Enough Good?” 9.

⁸ Bunita Marcus, “Two Pianos and Violin,” Scores, Bunita Marcus, accessed November 11, 2020, <http://www.bunitamarcus.com/scores2.html>.

⁹ Boosey & Hawkes, “Louis Andriessen: Hout (Wood),” accessed November 17, 2021, <https://www.boosey.com/cr/music/Louis-Andriessen-Hout/824>.

¹⁰ Special thanks to Marc Ainger, Jim Croson, Stephen Jones, Scott Deal, and Ann Stimson for agreeing to be part of the rehearsals and performances of this piece. I performed the clarinet part.

the premise of *Hout*, a piece that deals with de-synchronization, I had a solid premise on which to base a telematic piece.

Pitches and Rhythms

With the canon premise decided, I started thinking about pitches and rhythms. One solution for writing a canon is to constantly change the musical material so that the original line acts in harmony with the subsequent entrances. This technique is prevalent in canons of the common practice era, and has echoes in artists who make music live with looping pedals.¹¹ I decided against trying to coordinate multiple musical layers in harmony, but several sections feature an alternation between two musical ideas that are separated in character and range. Figure 1 shows m. 17, which displays two kinds of musical ideas. The slurred, smooth, and quiet major second figure contrasts with the loud and disjunct gesture that leaps up a twelfth from the G below the staff to the D in the staff. The sonic result of these two figures alternating in the part is a loose, unsynchronized passage that still features these two gestures in harmony with each other.



Figure 1: M. 17 alternates between two kinds of figures, the soft major second in sixteenth notes, and the loud leap in eighths and quarters. The canonic entrances of the group mean that these two kinds of figures are heard simultaneously in harmony, while not with any strict predetermined rhythmic relationship. All figures by author.

I continued to think about how to make this piece “latency native.” Even if I told the performers to stagger entrances and avoid synchronizing, maybe our chamber music training would kick in and we would synchronize anyway. I wanted to compose “latency” into the piece to avoid this issue. One solution was to omit time signatures and bar lines. Without these signposts in the notated music, I could encourage us to be rhythmically adrift and avoid unnecessary accents. Another part of my solution was to base the music on small motivic cells—short combinations of pitches and rhythms—that I then subjected to additive and subtractive rhythmic processes. Figure 2 shows m. 2: the opening motive of octave B’s occurs ten times in this measure, but only six times are they

¹¹ Briana Marela’s “Surrender” resembles the entrances of common practice canons. See Briana Marela, “Briana Marela: Surrender (Live on KEXP),” KEXP, YouTube video, accessed November 9, 2020, <https://www.youtube.com/watch?v=Bw1mVxke3m0>.

from earlier in the piece and ending up with specific sounds I wanted versus the sounds that would strictly follow the rules I had set up. Instead of returning to B Dorian, this section is in B Aeolian, or the natural minor scale. The end of m. 21 through m. 23 comprises a fourth, small chromatic section: the only three pitches are E, F-natural, and F-sharp. The piece closes with all the performers playing the beginning axis-pitch, F-natural.

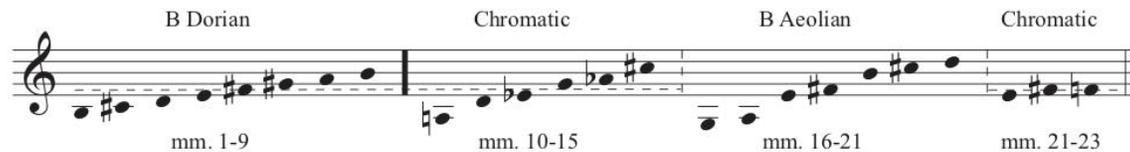


Figure 3: This figure outlines the pitch material in the piece. The horizontal dotted line is on the axis of symmetry, F-natural, that is notably absent in the third section. The bar lines delineate the sections. The first is solid because the ensemble pauses together there, while the others are dotted to indicate that while listening, these sections overlap with and blend into each other.

Some of the most compelling moments in the piece are at the intersections between these pitch fields. While we decided as a group to add in a pause at the end of the Dorian section, the other sections have significant overlap with each other. While some of these sounds are hard for me to think about abstractly, they ended up being some of my favorite moments of the piece.

In addition to the pause at the end of m. 9, several other decisions about the piece only emerged during the rehearsal process. While I had proposed waiting as long as five seconds between the initial canonic entrances, we decided to shorten the entrance time to about two or three seconds, and then to just “enter after the previous person.” In rehearsals, we experimented with different orderings for the entrances and concluded that clarinet, alto flute, vibraphone, and electric piano would work best for our group. By loading the wind instruments with their slower attacks at the beginning, we could obscure whether the piece was actually a canon at the outset, only for the later entrances to confirm the premise. We also decided to dramatically speed up after m. 9 and introduce changes to the articulations that I hadn’t initially notated. I am grateful to the members of the ensemble for their suggestions because their work made *5,000 Miles* a much better piece than I could make on my own.

Conclusion

As we rehearsed and eventually performed *5,000 Miles*, I couldn’t help but feel strange. I had never performed telematically before, and the decisions I made about the piece to embrace latency had an unintended result: I felt like I had to put on blinders to play. Making art that was “latency

native” was harder than I thought. I ended up struggling to block out the other players so I wouldn’t synchronize with them. When players asked me what I thought of their specific performances or how a certain run went, I often had to be honest and say that I didn’t exactly know. I am grateful to Marc Ainger for coordinating rehearsals and being an extra set of ears. Listening to our rehearsal and performance recordings, I was thrilled with the result, but it was hard to hear and feel the same way while we were doing it.

As we approached the performances, our rehearsal process began to get more complicated. A central goal of these performances was to offer a contrast to the “grid-ified” works of art produced by teleconferencing software, particularly during the surge of these videos during the Covid-19 pandemic. So, by the time of our dress rehearsals, our ensemble was making seven Zoom calls into seven individual computers run by our engineer Steve Cohen at the Wexner Center, who then re-configured our videos using vMix. We could each see the final vMix result in our Zoom windows, but the latency had compounded to the point that the video was unusable for any sudden, in-the-moment cues. So, we turned to Slack to communicate more efficiently. We were also pushing Netty McNetface to its limit, with a musician on every available channel. Trying to keep all this software open and keep my ears open like I am used to was a lot to handle, and sometimes I felt overwhelmed. I try my best to think about this feeling not as a sign that I have done something wrong, but rather that in this new context, I have an opportunity to grow and improve as a composer and performer.

In some ways, *5,000 Miles* is a continuation of ideas I have explored in previous work, and in other ways it is a departure. Several of my works in the past few years have involved axes of symmetry and a deliberate “under-notation” of figures to encourage the performers to provide personally expressive phrasing. While sketching work in the past few years, I have written without time signatures in order to untether myself from my usual metric patterns. Then, when I have pitches and rhythms I like, I retroactively portion the notes into time signatures that make sense. This is the first time I have dispensed with the time signatures entirely in the finished piece. I have also used additive and subtractive rhythmic processes on musical gestures before, but never with the intended effect being a desynchronization between the parts.

5,000 Miles also represents a departure for me in several respects. While I often compose in short score and arrange the results for the ensemble in mind, this is my first piece that still is basically in open instrumentation at the end. Any quartet that shares a perfect twelfth in every instruments’ range could play this piece, either at pitch or with transposition. The canon procedure is also new to me. While I have used some canonic imitation before, this is the first time I have written an entire piece organized around this principle.

Most notably, the level of ambiguity in the sonic result is a personal musical departure. Each run-through and performance, by virtue of the performers’ decisions, the amount of latency at the time, and the premise of the piece itself, was slightly different. I have never accounted for this much deviation between performances of my music before, but I admit it was liberating. My

experience of composing this piece felt like a larger exercise in “letting go,” or accepting ambiguity in one’s own work. While I could meticulously control pitches, dynamics, and rhythmic values, I was still surrendering a considerable amount of the “music” to the latency and the musicality of myself and the players. This compositional process mirrored my life in 2020, where I had to allow ambiguity to enter and control my life over the course of the pandemic.

I anticipate that I will write more telematic music in the future. I am optimistic that musicians like me who came to telematic music in the wake of Covid-19 will embrace it and keep making it, and I am glad to be part of this wave. I am excited to continue working with the Sonic Arts Ensemble and hopefully to make music with other interested people in the future. I am looking forward to exploring other compositional techniques to embrace latency in my music and to work with my friends and colleagues in exploring them.

As mentioned in the introduction, it is my intent with this account of composing *5,000 Miles* to respond to Rebekah Wilson and Andrew McMillan’s call to foster telematic music by “generating and sharing documentation on remote collaboration efforts” and writing music that is “latency native.”¹³ This piece features only a few possible solutions for accounting for latency; I look forward to hearing other ones and exploring some more of my own in the future.¹⁴ Indeed, I hope my account of composing this piece encourages others to make art for this vibrant medium.

¹³ Wilson and McMillan, “Being Together,” 11.

¹⁴ Sarah Weaver outlines several of the techniques featured in this article in her article from the previous volume of this journal. In many ways, this article is a deeper exploration of a few of the techniques she outlines, including “heterophony ... stagger ... time compression [and] time expansion.” See Sarah Weaver, “Synchrony: Music of Sarah Weaver and Collaborations (2006-2019),” *Journal of Network Music and Arts* 2, no. 1 (2020): 1-44, <https://commons.library.stonybrook.edu/jonma/vol2/iss1/6>.

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