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On Composing *5,000 Miles*

JOE SFERRA

**Introduction**

This article is my account of composing my first piece for telematic performance, a quartet called *5,000 Miles*. The piece was commissioned by the ACCAD Sonic Arts Ensemble, directed by Marc Ainger, Ann Stimson, and Federico Câmara 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. 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.”

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1 Crane School of Music, State University of New York at Potsdam, jdsferra@gmail.com
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.
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. 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. 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.” 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. 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.

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. 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

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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.
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.](image)

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\(^{11}\) 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.
in the original “short-long” rhythm. In the other four instances, one of the two notes is either lengthened or shortened. This way, even if a performer had the impulse to synchronize with the others, they wouldn’t be playing the same thing. This piece embraces latency by featuring it in the notes themselves.

Figure 2: In m. 2, the short-long octave leap occurs ten times, but in the four bracketed instances, one of the notes is shortened or lengthened. This rhythmic process discourages synchronization between the performers and helps create a sonic result that is “latency native.”

In addition to keeping the number of figures at any one time low and subjecting them to additive and subtractive rhythmic processes, I made large sections of the musical line articulate only a small number of pitches in a limited range. That way, regardless of the actual rhythms and figures happening, we would all sound like we belonged together. As we began experimenting with my sketches, we realized that the sonic result of this technique was less like a single musical line with a delay, and more like a pitch field. A pitch field is a limited and fixed set of pitches that govern a section of a musical work. Instead of changing pitches to move a field-based piece along, one excites the selected pitches with different timbres and rhythms.12

Analysis

5,000 Miles moves through four pitch fields over the course of the piece. The first section, mm. 1–9, uses the pitches of the B Dorian mode as the pitch field. I gravitated towards using the Dorian mode because it is symmetrical, meaning that every note can be understood to radiate out from a central pitch (in this case, an unheard F-natural). In mm. 10–15, I continued using the F-axis, but reduced the number of pitches and spread them out. The six pitches in this section listed from lowest to highest are A, D, E-flat, G, A-flat, and C-sharp. This collection of pitches more resembles a chromatic hexachord found in 20th-century atonal music instead of a “scale,” and the result was disorienting in a way I thought suited this section. In the third section, mm. 17–21, I loosen my own rules: while the pitches center on the unheard F-natural from the beginning, their placement isn’t strictly measured from the center. This is a result of me improvising with my own materials

12 The composer Kaija Saariaho frequently employs pitch fields in her music, and her orchestra piece Du Cristal is a stunning example: Kaija Saariaho, “Du cristal,” Various Artists – Topic, You Tube video, accessed November 7, 2020, https://www.youtube.com/watch?v=zz5H6x4yT5E.
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.

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 per-
formances 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 over-
whelmed. 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 sym-
metry and a deliberate “under-notation” of figures to encourage the performers to provide per-
sonally 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 proce-
dure 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.” 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. Indeed, I hope my account of composing this piece encourages others to make art for this vibrant medium.

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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.
Works Cited


