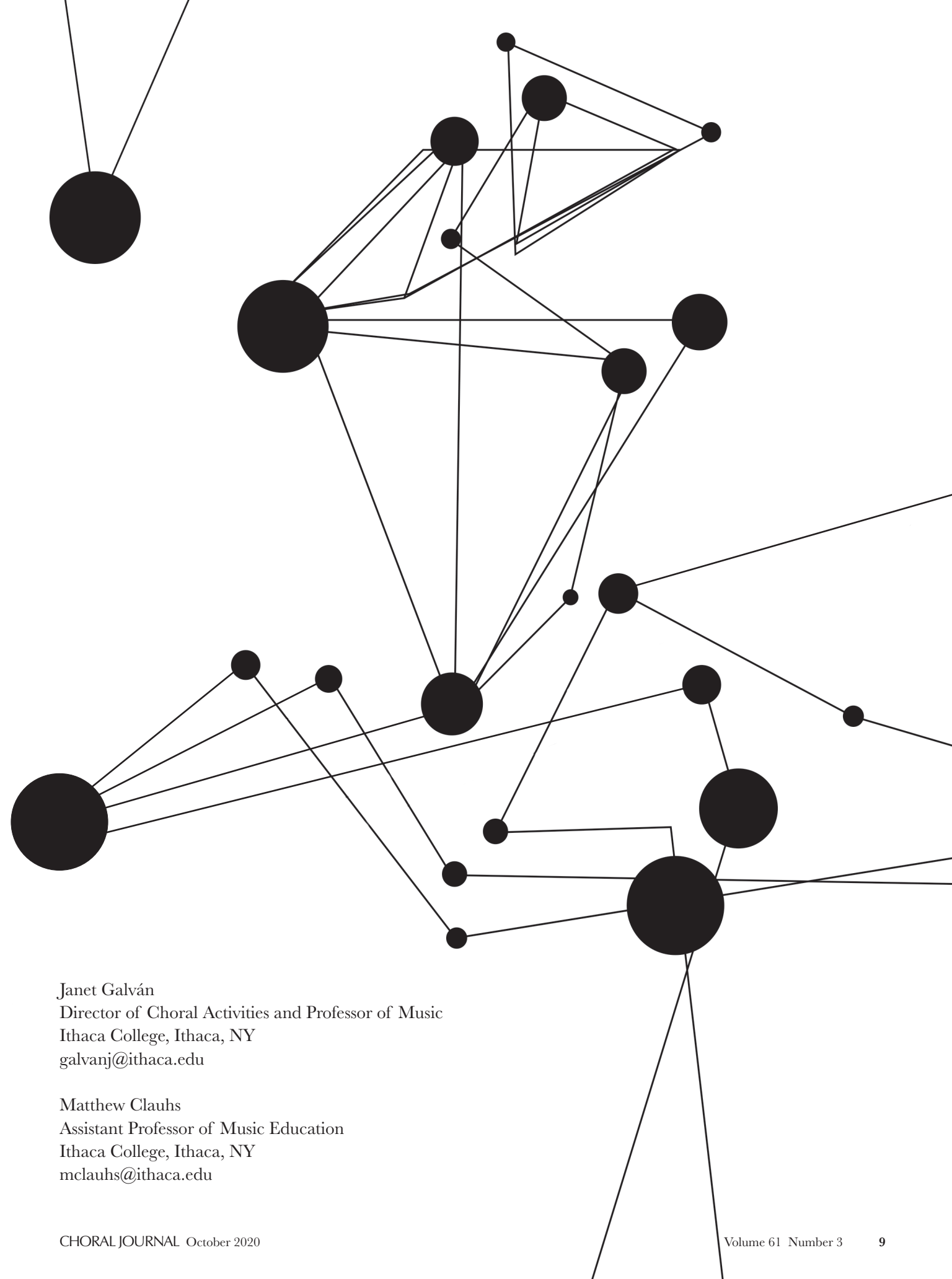
THE VIRTUAL CHOIR AS COLLABORATION

JANET GALVÁN
MATTHEW CLAUHS

The outbreak of novel coronavirus COVID-19 led to a global pandemic in the spring of 2020. At the time when this article was written, the virus had infected fifteen million people around the world and caused over 619,000 deaths.[1] In the United States, schools and universities closed their campuses to slow the spread of the virus and minimize the loss of life. As a result of school closures, music educators were faced with a daunting task of adapting their classes and ensembles for remote instruction, using video conferencing tools to deliver synchronous (at the same time) content and online learning management systems such as Google Classroom and Blackboard for asynchronous (not at the same time) teaching and learning.

We (the authors) responded to this challenge by planning and implementing a collaborative virtual choir project. It was important to us that the project be focused on process and the acquisition of skills, knowledge, and experience, rather than the production of a single video. As the director of choral activities at our institution, I (first author), wanted to keep our singers connected to their choral community and also provide them with a performance opportunity. Prior research demonstrates the vast benefits of group singing for community mental health,[2] especially in response to adverse life events[3] such as a global pandemic. Keeping communal singing alive (no matter what format) seemed important for the well-being of the students. Additionally, there is evidence of higher perceptions of social presence in virtual choirs when compared to live formats.[4] After having conversations with the second author, a music education professor who taught a music technology class in the spring semester, we determined a virtual choir would be mutually beneficial for both the choir and technology class. The virtual choir would also be a model for future collaborations between our music performance and music education departments.



Janet Galván
Director of Choral Activities and Professor of Music
Ithaca College, Ithaca, NY
galvanj@ithaca.edu

Matthew Clauhs
Assistant Professor of Music Education
Ithaca College, Ithaca, NY
mclauhs@ithaca.edu

Background on Virtual Choirs and Digital Collaborations

Music education scholar Christopher Cayari defined a virtual vocal ensemble as "a video containing multiple audio-visual tracks layered together through a technique called multitracking. In this performance practice, a virtual vocal ensemble creator records and combines multiple tracks to make a choir of clones or works with others in collaborative or collective ways."[5] Eric Whitacre created a virtual choir to perform "Lux Aurumque" in 2009, and this choir now includes more than 20,000 singers from 124 countries.[6]

Many forms of virtual choirs exist outside of school music programs, and products of these choirs are shared through social media platforms and YouTube. Viral YouTube videos featuring clones of performer/arranger/producer Jacob Collier singing in split-screen frames have tens of millions of views. Collier and other YouTube artists have inspired many amateur and professional vocalists to produce their own a cappella arrangements at home, recording themselves in layers to create a virtual vocal ensemble. Relatively low-cost apps, such as Acapella, make it easy for individuals to record themselves or collaborate with small groups of others to create and share virtual ensemble videos. Many scholars believe these modern recording technologies have caused a surge in amateur music-making practices.[7]

Although virtual choirs may be less common in K-12 school programs and university-level settings than they are on YouTube, scholars and music educators have examined how these practices from contemporary culture may be applied in classroom contexts. Brian Franco, a high school music teacher in upstate New York, has been creating what he calls "9 Square Videos" with his music students for several years. Franco teaches high school students how to record and edit audio and video tracks into a virtual ensemble of nine video frames on a single screen.[8] Christopher Cayari's dissertation research examined how three types of virtual vocal ensembles: *collective* (videos of more than one performer compiled by an audio-video editor), *collaborative* (multiple individuals interact with each other at various stages of production), and *one-person* (featuring one individual recorded multiple times in layers), could be applied to music education practices to "expand conceptions of ensemble, performance, and medium."[9] Among many findings, Cayari reported that music educators can help students learn skills for lifelong music making beyond the classroom through participation in a virtual choir, noting that a collaborative model that involves students in the song selection and editing process allows for the greatest amount of interaction and sense of ownership.

Collaborative virtual choirs allow for asynchronous (not at the same time) and distant partnerships, which is particularly useful when in-person music-making experiences are not possible due to geographical barriers or remote learning. Scholar Janice Waldron recommended that online communities transcend both time and space,[10] an approach that allows for flexibility and unlimited partners for collaboration. Others have noted how these partnerships empower students and help them find pathways to continue creating and performing music for life.[11] This research on virtual ensembles and digital collaborations informed the model that we propose in this article. Here, we present a collaborative virtual choir project that engaged college students from distinct yet complementary music classes, facilitated by the director of choral activities and a music technology instructor (authors). The model could be adapted to meet the needs of a variety of vocal ensembles and music technology classes at a range of educational levels. While we were fortunate to have a class with goals in line with editing a virtual choir, schools who do not have this setup could partner with another program or involve the singers in the editing process. In fact, the singers in our two projects began doing some editing when they added their audio tracks.

Partnership

Choir Members

Two ensembles were involved in this project, and both groups had approximately forty-eight members. The first was the Ithaca College Choir, and the second was the Ithaca College Treble Chorale. During the week before remote instruction began, I (first author) sent a questionnaire asking which composition the singers would most like to record to present as a virtual performance. The work toward the virtual choir performance was the required part of the ensemble instruction. Because of lim-

itation of access for some students and heavy demands from other courses, only one rehearsal a week was held for each student. Because I wanted to take the time to explore topics and experiences that we do not have time to do during what was at that time considered "normal" ensemble experiences, I also offered a wide variety of workshops suggested by students from both ensembles. There were sessions presented by guest clinicians as well as sessions that I presented, and the subjects included body mapping, professional choral singing, the changing voice, the history and repertoire of women's choruses, rehearsal techniques, cultural appropriation, Michael Bussewitz-Quarm's ideas about her composition, and continuing vocal and musical growth during the time of COVID-19. Students could choose to go to as few or as many as they wanted, and all sessions were open to both ensembles. Guiding principles for all online instruction were community, creativity, compassion, and collaboration.

Sound Engineers

Eleven sophomore undergraduate students taking a music education course on audio recording and music production served as sound engineers for this project. The class met every Friday for seven weeks online via zoom while the campus was closed. The specific course section was titled *Music Production and Sound Recording Pedagogy* and was part of a larger class titled *Contemporary Ensembles in the Public Schools,* required of all sophomore music education students at the college. The broad goal of the course was to examine emerging ensembles and pedagogies in contemporary music education. Any group of students could assist in the sound engineering part of the project. Many students are eager to learn how to create and edit audio projects. While we had a class devoted to this, we feel confident that ensembles and schools at all levels would have students interested in this work. It might even lead to the creation of a course for a public school similar to our contemporary ensembles course.

Facilitators

We (the authors) served as facilitators on this project, bringing complementary skill sets as the director of choral activities and a music technology instructor. Together, we established a timeline that would work for the music technology class and choral ensembles and developed instructions for each group of students. We shared a broader vision of the work, knowing well how each class was engaging in the collaboration, identifying challenges and brainstorming solutions together along the way. We met in real time with our respective classes providing reports on the progress of the collaboration and feedback on how students could continue to refine their work. As facilitators, we communicated through email, text messages, phone calls, and zoom conference calls, depending on the urgency and nature of the issue. We shared recordings, updates, and agreed on necessary adjustments to the project. At times, we reached out to individual students to redo a portion of their recording.

Process

The preparation for the two ensembles was quite different in format because of the choice of repertoire. The Treble Chorale chose to sing a composition that is a signature piece for the ensemble, "Blessing" by Katie Moran Bart. Typically, the members of the ensemble surround the seniors on their last day of rehearsal and sing it with them. When performed in concert, alumni are invited to join the group on stage. The composition is mostly homophonic and is primarily in unison and two parts. Because of this, the rehearsals were always synchronous and with the entire ensemble.

The choir chose to do a virtual performance premiere of "The World, This Wall, and Me" by Michael Bussewitz-Quarm, which was initially scheduled for a world premiere in a live performance at the end of March 2020. The choir was in the midst of rehearsing at the beginning of spring break. There was still one section that needed much more work. This composition had many parts, including three solos, and was rhythmically complex with several tempo changes. I (first author) rehearsed the choir in synchronous sectional zoom rehearsals to prepare for the recording.

During rehearsals, students sang as the conductor played their parts or the accompaniment, and all singers had their microphones muted while they sang. The group would sing small sections and then take time for questions or clarifications. I would answer verbally or with a vocal demonstration. Before moving on to the

next section, I would check on the singers' comfort level with the part of the composition just rehearsed. Occasionally, one person would demonstrate an idea of pronunciation, articulation, or phrasing. Specific vowel formation was also addressed. Students chanted text with microphones on so that vowels could be unified. Also, as a regular part of each rehearsal, the group members spent time giving a brief statement of how things were going as people signed on. Each rehearsal had a dedicated time for anyone to discuss news or concerns. On the rare occasion that someone did not show up, I would check in with them to ask if they were okay. The ensemble members worked to keep the feeling of community and support going in spite of being in different places.

Recording

We (the authors) emailed written directions and an online video tutorial to choir members, detailing instructions to contribute an audio recording using Soundtrap, a cloud-based digital audio workstation (DAW) that was available for free while schools were closed. A DAW is a tool that allows users to record, edit, and mix audio. Any DAW (e.g., Pro Tools, Logic, GarageBand, Audacity, Mixcraft) could have worked for this project, but we chose Soundtrap because it was free to students, accessible on any device, and fairly easy to use. We assigned students to individual Soundtrap projects specific to their voice part (e.g., soprano, alto, tenor, bass). This allowed them to hear other members of their section as each student contributed their part. For one of our virtual choir projects, the Soundtrap session included a piano accompaniment; for another, the session included a reference track of the composer playing all of the voice parts together on the piano, emphasizing an individual voice part by playing the part stronger or singing the part out loud.

The instructions demonstrated how to add a track to the project and adjust the level of the microphone to avoid clipping (when the signal is too loud and distorts the sound quality). We encouraged students to practice their part several times and record as many takes as necessary to get it right. Students could also redo specific parts of the composition without recording an entire take. We instructed students to listen to their recording along with the tracks other students had previously recorded, striving for balance, intonation, phrasing, and similar attacks and releases that one would expect in a live ensemble setting. Students used headphones so the background track(s) would not be audible in their individual recording.

In the second phase of the project, choir members recorded a video of themselves singing along to a reference track posted at Flipgrid.com. Flipgrid is a quick and effective way to gather videos using whatever devices are available to students. Much like Soundtrap, Flipgrid was free to our students and easily accessible. It works with the built-in camera and microphone on any internet-enabled device, such as a desktop, laptop, phone, tablet, or Chromebook. We instructed students to record an entire take without using headphones so we could properly line up the videos with the audio recording. Students chose the location for the video and the clothes they wore to emphasize these recordings were made in their individual homes with their own personal technologies.

Editing

I (second author) first demonstrated basic principles of audio engineering including editing the length of recordings, adjusting entrances and releases, volume automation, EQ, and reverb, using Soundtrap during synchronous class sessions with music education students over zoom. After collecting audio recordings from members of the choir, we workshopped them together in class, starting out as a full group and then separating into Zoom breakout rooms to edit individual voice parts (e.g., soprano, alto, tenor, bass) in smaller groups. I would cycle through the breakout rooms, listen to the current project, and make recommendations to the team of sound engineers for improvement. By the end of each individual class session, the small groups of sound engineers (organized by voice part) would plan how they would continue their editing outside of class. Groups often divided up the number of tracks, so that each engineer was responsible for editing the same number of individual student recordings. After the sound engineers completed the editing for each individual voice part, the first author listened to the parts individually and collectively to make note of additional edits. Once the soprano part was complete, we mixed the altos into

the sopranos, the tenors into the treble voices, and the basses into the whole choir, ensuring that all voice parts were as unified as possible. Then each individual voice part was imported into a new project (Figure 1) to make final adjustments to the dynamics and balance of the ensemble.

After the audio recording was complete, the sound engineers downloaded video recordings of the choir members from Flipgrid.com and organized them into online shared-folders by voice part. I then imported these video files into Final Cut Pro to create a video that would accompany the final audio recording. Final Cut Pro is a relatively expensive software program and is only compatible with MacOS; therefore, we did not require sound engineer students to purchase and use this software. Instead, I demonstrated some of the video editing principles briefly during our final class sessions so that the class would have a fundamental understanding of this process. The video editing process involved resizing and cropping each choir member's video and then placing them on a premade grid, all of which were imported into the video editing software (Final Cut Pro). I created four separate video panels that could be arranged altogether on the screen or stacked upon one another to create a scrolling wall of voices. This was particularly useful for the longer composition, as visual effects complemented the text and further engaged the viewer throughout the seven-minute long performance (Figure 2 on page 14).

The Result

When the project began, I (first author) told the choir members that the purpose of the project was to learn and that I would be happy if the final recording was at a level of 50 percent of what they normally do. The goal was to keep the pressure low because of the circumstances that everyone was in. The entire experience was process-based. I viewed this venture into the world of virtual choirs as an expansion of choral music, not a replacement of live performances. I also wanted to take the time online to learn and explore ideas, topics, and activities that we do not have time for in our (then) normal year of meeting in person. This will not be the last time singers will need to record themselves or be in a project in which singers are participating online.

Despite the focus on process, the final product was touching and beautiful. In the recording of "Blessing," the singers were placed on the screen with the seniors in the middle and all their colleagues surrounding them

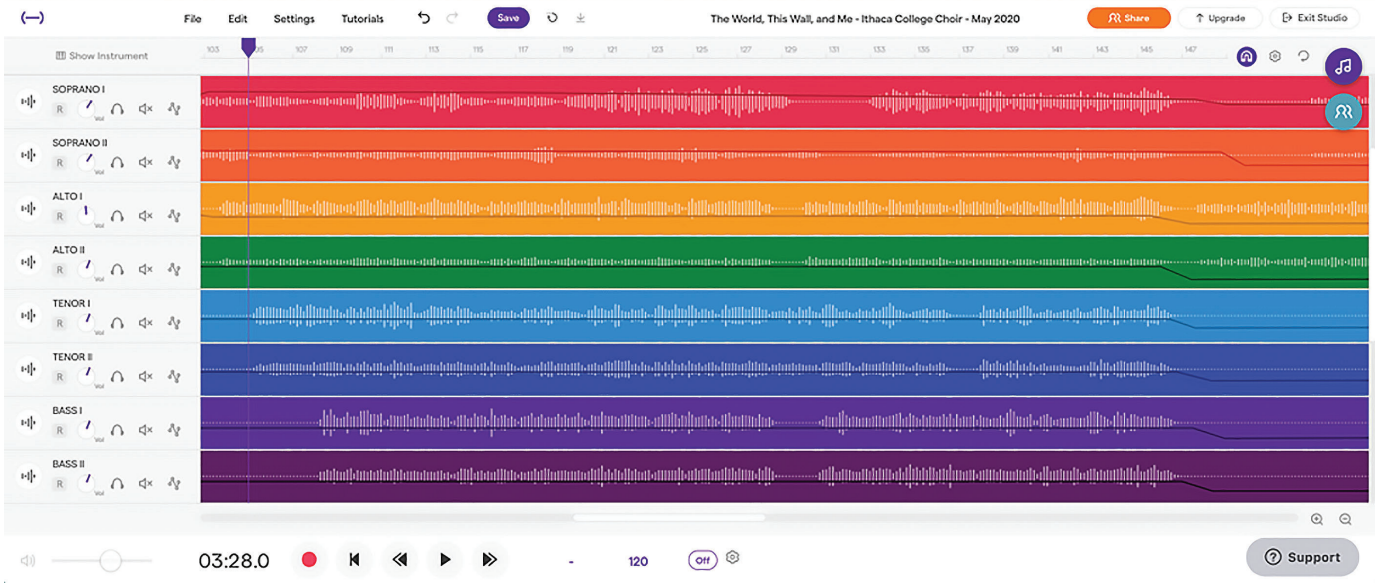


Figure 1

just as they would have been in the final live rehearsal of the year. At the end of that video, we added a slide with the words, "Until we meet again." For "The World, This Wall, and Me," the second author created visual panels of choir members with transitions and special effects to fit the texture, form, and rhythm of the composition. Rather than just placing the videos on our website, we created a concert atmosphere and released the two videos and a video of Michael Bussewitz-Quarm discussing her composition. On the day of the release, the Ithaca College technical team began the virtual concert with a live introduction from my (first author's) living room that transitioned to a countdown to the video release (Figures 3 and 4).

Figure 2

Figure 3

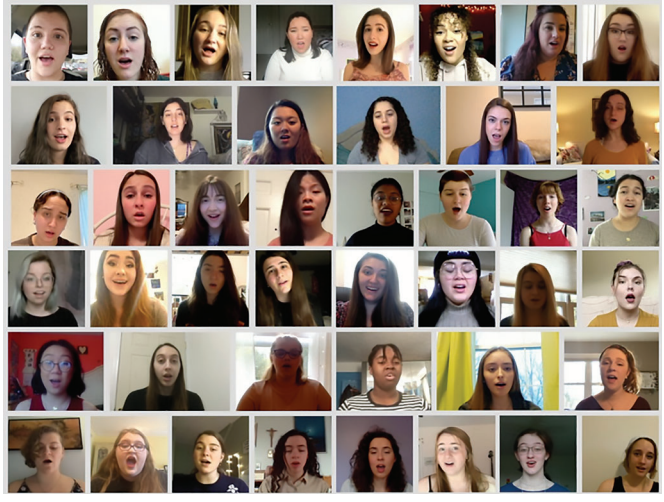


Figure 4

Discussion

Members of both ensembles expressed appreciation for being able to work collaboratively with fellow singers again and to have the opportunity to take part in a performance. One student commented on the hidden blessing of being able to rehearse in sectionals to continue to feel a strong bond with singers in his section. Students also noted the importance of having a performance goal. The Choir members loved being able to premiere Bussewitz-Quarm's composition because the message of the composition was so meaningful to them. The singers acknowledged that it was difficult at first to sing alone in their rooms without hearing people around them and feeling the presence of others. They also struggled with getting everything together with the other singers. Some admitted being in low spirits about the entire COVID-19 situation and were unmotivated to prepare the recordings. One singer commented, "Once I was actually singing and could hear other sopranos on the website it was exciting to be with people again." This is one of the advantages of using Soundtrap: singers can hear their section when they add their recording.

Another student commented on how interesting it was to have to be so reliant on her own self-assessment. She felt that it made her take on the role of both teacher and student, and she appreciated that opportunity. Another student commented that "nothing can replace the physical feeling, act, and sonority of performing in a choir, though this experience still captured the beloved collaborative essence of doing so." She went on to say that it reminded her that her ensemble friends were ready and willing to support her. She stated, "We are so lucky to have the means to allow us to collaborate and be together even when we cannot be in the same place" and that "we are quite resilient." They also loved the final product. One person compared being in a virtual concert to being an actor at the premiere of a movie because they had not seen the final product before the virtual concert. Another said that the result of our collaborative effort was inspiring, and it was emotional to listen to the beautiful music they made and to watch everyone singing from their hearts. "Not only did we collaborate as a full ensemble, but we even worked with a class of music editors to make it happen. Being able to function symbiotically in this way to achieve one unanimous goal was really beautiful."

Many of the students serving as sound engineers for this project shared that this experience provided them with a hands-on application of skills they learned in other music technology classes. The project led to a deeper understanding of sound recording and music production techniques and demonstrated a model for how these could function in a school music program. A student in *Music Production and Sound Recording Pedagogy* reflected on her experience at the conclusion of the semester:

> I spent a lot of time trying to make each entrance and word line up in my assigned voice part. With the detailed instruction and inspiration, my colleagues and I were able to complete a wonderful world premiere of "This Wall, The World, and Me." Adding a music production course in a school music program would benefit students, showing them how creative and free you can be by composing original works or mixing virtual ensembles.

Challenges

Several technical challenges arose throughout the course of the project. Many students reported the sound of their voice was delayed in their headphones, making it difficult to record. This is often the result of digital audio latency, the time it takes for a sound to be processed by the computer and sent back through the headphones (or speakers). Latency is a common problem in all sound recording projects, but especially those using cloud-based digital audio workstations with added elements of internet bandwidth and speed. Some students were able to minimize latency by closing other windows and applications, restarting their computer, using wired (not Bluetooth) headphones, switching to a different device (e.g., from laptop to tablet or vice versa), or freezing existing tracks in the project—the last solution is a special feature of Soundtrap, which frees up CPU processing power. If this troubleshooting was unsuccessful, students had to record their voice without monitoring (hearing one's own voice in their

headphones).

The quality of the recordings was highly variable, depending on the equipment that students were able to access at home. It was not reasonable to expect students to have–or for the school to supply–expensive USB microphones that would be ideal for recording audio. Most students used the built-in microphone on their devices, and unfortunately some student recordings were unusable because of excessive noise in the recording; at times it was almost impossible to hear the student's voice. Similarly, students in the audio recording and music production class could not be expected to have expensive video editing software, so that part of the project was primarily edited by the instructor (second author). There are lower-cost applications, such as Acapella, that allow for multiple frames of video and audio, but might not accommodate larger choirs.

Some of these challenges could be mitigated by offering more choices of digital audio workstations or inviting students to upload their audio file into a project or shared folder. If students recorded using an offline DAW, or even a sound recording app on their phone (e.g., voice memo), there would be minimal issues with latency, but they would lose the ability to hear the voices of other contributing students. Another alternative is to forgo the digital audio workstation altogether and simply record a video using the camera app, or other video recording application, on a phone, tablet, or computer. In Eric Whitacre's virtual choirs, participants were instructed to create a video along with a reference recording (playing in headphones) led by a conductor. This may be the simplest approach if audio editing is not an essential, or desired, part of the project. We chose to focus on the sound recording aspect of this project as an opportunity to teach audio engineering, but that goal may not be shared by others. Some school programs might wish to have a single audio/video editor compile the media into a virtual ensemble in what Cayari calls a *collective* virtual ensemble, similar to Eric Whitacre's virtual choir. However, Cayari expressed that students may feel less ownership of a collective virtual ensemble that does not include student input or interaction with the elements of production.[12]

We also learned that simpler, shorter compositions require far less editing than longer and more complex pieces. Homophonic pieces with a limited number of voice parts and a quick performance time may be most appropriate for a virtual choir, especially if the editor(s) have limited experience creating them. Whitacre considered the power of simplicity—and engaging the greatest number of participants—when planning for his own virtual choir 5, pondering, "What could it be if we made the music simple enough and hooked as many people as possible?"[13]

Implications for a (Post) COVID-19 Era of Choral Music Education

The project we described in this article was completed in the spring of 2020, at the peak of the COVID-19 pandemic. At the time of writing this article, there is uncertainty regarding the 2020-2021 academic year and how policies and regulations might affect choirs and other school music programs in the future. We believe that nothing can replace the experience of making music together at the same time in one shared space, and we are hopeful to return to that process as soon as possible. However, there are many positives that we took away from this virtual choir project that will influence the ways we teach and create music far into the future, long after the COVID-19 pandemic is over.

As a choral conductor, listening to the individual recordings of students singing alone without the support of singers around them revealed specific individual vocal and musical challenges. Having this more detailed information about the individual students is important in allowing one to develop ways to address the specific needs of each student. The spring was our first experience with Soundtrap. This summer my colleague, Sean Linfors and I team-taught the summer chorus. We used a portion of rehearsals for singers to be in their Soundtrap section at the same time and listen together, using the chat function to suggest improvements. We visited each section to assist and answer questions. We also listened more frequently to what had been recorded and used that information to address warmups and rehearsal plans for the following rehearsal. Additionally, we used the Soundtrap time in rehearsal to coach singers one-on-one. This allowed us to take care of sound issues that would normally be addressed with the

entire group in live rehearsals.

While we do not expect virtual choirs to replace choirs meeting together in one place, they could be an expansion of choral music. The purpose of this article is not to compare virtual choirs to live rehearsal or performance. We want to offer a possible replacement for live performances when they cannot happen and suggest that virtual choirs, when approached in a collaborative, process-driven way, can have very positive outcomes.

> **Members of the choir expressed appreciation for being able to work collaboratively with fellow singers again and to have the opportunity to take part in a performance.**

The response to the video was astoundingly positive. Seeing our students performing together after being apart for such a long time made faculty and community members respond with gratitude and great emotion. People who are not choral music fans tuned in just because of the "cool factor" of technology. After they saw the video, they were just as moved by the musical performances as by the technology. Doing this type of project alongside live performances could possibly attract students to the music program who might not otherwise be interested. This experience also demonstrates how music students can learn valuable skills for sound recording and editing as well as taking more agency for their sound and musical accuracy. These concepts will almost certainly become more relevant for both music teachers and performers as programs at all levels leverage technology to facilitate group music making locally and from distant geographical locations. Using cloud-based digital audio workstations, music educators can engage their own K-12 classrooms in projects with artists around the world, developing partnerships with composers, performers, and producers everywhere. Now more than ever, artists can create and share their music globally through online technologies, such as the ones described in this article. As Cayari stated, "Applying the practices of virtual vocal ensembles to music education is one way the profession can expand instructional practices to be inclusive of modern technologies, media, and society."[14]

In David Pogue's Facebook live interview with Eric Whitacre on CBS's "Sunday Morning," Whitacre discussed both positive and negative results of virtual choirs. He said that he had received letters from teachers who were concerned that school administrators might decide that virtual choirs should replace in-person choruses. He commented on the television broadcast that "a virtual choir is this gorgeous, delicate, ephemeral art work. And what's beautiful about it is that it will exist for all time, but singing together in a room—taking that first breath together and then singing together—nothing beats that, and nothing ever will."[15] While we agree with this statement, we believe that virtual choirs can expand the choral art, provide new ways of working with individual students, provide opportunities for students to function at the highest level of Bloom's taxonomy, and keep students engaged in singing so that they do not lose interest in ensemble musical collaborations with choruses. With engagement through virtual choir activity, there can be an impetus to move forward when we emerge from the pandemic.

The COVID-19 pandemic taught us that things beyond our control can have a powerful impact on our choral music programs. But through this project we learned that it is possible to continue making music together in groups when social distancing measures are in effect. We also learned more about the power of collaboration and the importance of supporting one another. A collaborative virtual choir project can be mutually beneficial to students aspiring to learn audio/video editing skills and students wanting to create music together with a community. Indubitably, technology will evolve to provide more synchronous and asynchronous opportunities for choral music students to create, practice, perform, collaborate, record, and share music in online spaces. Choral musicians might embrace these technologies and look with hope toward the future of stretching the boundaries of choral music and involving even more people in community singing. CJ

NOTES

[1] World Health Organization, Coronavirus disease (COVID-19) *Situation Report– 185* (Geneva: World Health Organization, July 23, 2020).

[2] Stephen Clift and Ian Morrison, "Group singing fosters mental health and wellbeing: findings from the East Kent 'singing for health' network project." *Mental Health and Social Inclusion* 15, no. 2 (2011): 88–97. https://doi.org/10.1108/20428301111140930.

[3] Genevieve Von Lob, Paul Camic, and Stephen Clift, "The use of singing in a group as a response to adverse life events." *International Journal of Mental Health Promotion* 12, no. 3 (2010): 45-53.

[4] Daisy Fancourt and Andrew Steptoe, "Present in Body or Just in Mind: Differences in Social Presence and Emotion Regulation in Live vs. Virtual Singing Experiences," *Frontiers in Psychology,* April 10, 2019.

[5] Christopher Cayari, "Virtual Vocal Ensembles and the Mediation of Performance on YouTube" (PhD diss., University of Illinois at Urbana-Champaign, 2016), ii.

[6] "Sing Gently," Eric Whitacre's Virtual Choir, accessed July 20, 2020. ericwhitacre.com/music-catalog/sing-gently.

[7] Mark Katz, "The Amateur in the Age of Mechanical Music," in *The Oxford Handbook of Sound Studies,* ed. T. Pinch & K. Bijsterveld (Oxford, UK: Oxford University Press, 2012), 459-479.

[8] Matthew Clauhs, Brian Franco, and Radio Cremata, "Mixing It Up: Sound Recording and Music Production in School Music Programs," *Music Educators Journal* 106, no. 1 (2019): 55-63. https://doi.org/10.1177/0027432119856085

[9] Cayari, "Virtual Vocal Ensembles," 4-5.

[10] Janice Waldron, "Exploring a Virtual Music Community of Practice: Informal Music Learning on the Internet," *Journal of Music, Technology & Education* 2, no. 2-3 (2009): 97-112.

[11] Radio Cremata and Bryan Powell, "Online Music Collaboration Project: Digitally Mediated, Deterritorialized Music Education," *International Journal of Music Education* 35, no. 2 (2017): 302-315.

[12] Cayari, "Virtual Vocal Ensembles," 5.

[13] Tom Wine, "Searching for an Icon: Eric Whitacre on Composing & Conducting." *Choral Journal* 58, no. 2 (2017): 44-58.

[14] Cayari, "Virtual Vocal Ensembles," 370.

[15] Sunday Morning. Central Broadcasting System (CBS). July 19, 2020.