VIRTUAL CHOIR: REHEARSAL METHODOLOGY

CORO VIRTUAL: METODOLOGIA DE ENSAIO

CORO VIRTUAL: METODOLOGÍA DE PRACTICA

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ABSTRACT*:* During the 2020-2021 period of the COVID-19 pandemic, it has become commonplace to produce virtual choirs in mosaic video format. Although it is possible to obtain similar recording results to those of an in-presence choir, the virtual choir format presents challenges for developing a rehearsal process. This essay proposes a virtual rehearsal methodology that approximates the benefits of a presence rehearsal, listing different approaches to overcome the absence of the natural sound reference of a face-to-face rehearsal process. The application of this methodology and results achieved with the UNESP Chamber Choir, Campus São Paulo, during the 2021 school year are also presented.

KEYWORDS: Virtual choir. Rehearsal methodology. Music and technology.

RESUMO*: Durante o período de pandemia da COVID-19 em 2020 e 2021 se tornou comum a produção de corais virtuais em formato de vídeos em mosaico. Enquanto é possível obter resultados de gravação similares aos de um coro presencial, o formato de coro virtual apresenta desafios para o desenvolvimento de um processo de ensaio. Este artigo propõe uma metodologia de ensaio virtual que se aproxime dos benefícios de um ensaio presencial, elencando diferentes abordagens para suprir a ausência de referência sonora natural em um processo de ensaio presencial. São também apresentadas a aplicação desta metodologia e resultados alcançados com o Coro de Câmara da UNESP, Campus São Paulo, durante o ano letivo de 2021.*

PALAVRAS-CHAVE*: Coro virtual. Metodologia de ensaio. Música e tecnologia.*

RESUMEN*: Durante el período de pandemia de COVID-19 en 2020 y 2021, la producción de corales virtuales en formato de video mosaico se ha vuelto común. Si bien es posible obtener resultados finales de grabación similares a los de un coro presencial, el formato de coro virtual presenta desafíos para el desarrollo de un proceso de practica. Este artículo propone una metodología de practica virtual que acercarse de los beneficios de una practica presencial, enumerando diferentes enfoques para superar la ausencia de referencia de sonido natural en un proceso de ensayo presencial. También se presenta la aplicación de esta metodología y los resultados alcanzados con el Coro de Cámara de la UNESP, Campus São Paulo, durante el año académico 2021.*

PALABRAS CLAVE*: Coro virtual. Metodoloía de practica. Musica y tecnologia.*

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Introduction

One of the main areas of human activity affected by the COVID-19 pandemic was and continues to be music performance (COOPER, 2020). Numerous musical groups were prevented from continuing their activities in person. The alternative found to keep musical groups active during this period was using technologies for virtual meetings and producing music videos in a mosaic format. Choirs of different purposes and age groups especially adopted this approach. The process used by each choir varied. Numerous tutorials were released explaining how to produce a virtual video choir in a mosaic format. However, the following basic process was mostly used: 1. Virtual video conference meeting, 2. Rehearsal kit containing piano/vocal base with a metronome, 3. Audio recording and editing, and 4. Video recording and editing.

Chorus conductors and their singers quickly discovered in practice a fundamental difference between the face-to-face singing process and the virtual one. In the in-person format, choral singing is a group activity, in the virtual choir, the singing is individual. This point was a challenge for many singers I work with (FRANCESE *et al.,* 2021). In in-person choral singing, singers commonly make conscious and unconscious adjustments to the musical context created around them. This natural process affects timbre, pitch, diction, and other aspects of vocal and musical learning (DEMOREST, 2001, p. 105). In the virtual choir, each singer, in a way, exposes his voice without being able to count on the benefit of stimuli and references from the group to adjust his vocal performance. The question consequently arose about what virtual approaches could mitigate this significant difference between the virtual choir and the in-person choir process (DAFFERN *et al.,* 2021).

This paper presents a virtual rehearsal approach and three ways to offer a vocal reference for the virtual rehearsal and performance process. The proposed virtual rehearsal approach and the three different ways of offering vocal reference were used with the Chamber Choir of UNESP, Campus São Paulo, during the 2021 school year. Observations are made on the virtual rehearsal process and audio and video production results.

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Virtual essay: challenges and possibilities

On April 28, 2021, I participated of a videoconference entitled "Rethinking the Choral Rehearsal" with conductor and choral educator James Jordan from Westminster Choir College, Rider University (USA). This experienced choral singing professional addressed in this video conference the challenges encountered in using real-time video streaming platforms, such as Zoom and Google Meet, for synchronous choir rehearsals. The technical issue of audio and video transmission latency[1] makes it impossible for two or more people using these platforms in different locations to sing synchronously.

One of the solutions found for virtual rehearsals by Westminster Choir College choirs was the use of Soundjack. Soundjack (www.soundjack.eu) is a real-time communication system software that reduces the latency problem to very tolerable levels, thus allowing people in different locations to participate in a choir rehearsal by singing simultaneously with other users (CARÔT, 2008). Although Soundjack is free, each user must have a good-quality audio interface, microphone, and high-speed internet. Just an excellent simple audio interface can cost around R$ 2.000,00. Of course, this is not a viable solution for the Brazilian economic reality, especially for the singers I have been working for.

The other solution proposed by conductor James Jordan was using rehearsal kits recorded by professional singers. The idea is to provide the singer with a complete vocal reference that shows proper pitch, diction, vocal emission, and expressive aspects for each song. In addition, he also proposed that short passages of the songs should be rehearsed, allowing the singers to record and send their audio and that the conductor should assemble all the audios so that it would be possible to listen to the result during the same rehearsal, thus simulating what normally happens in a live choral rehearsal.

One of the Leading and best voice rehearsal kit services is offered by professional kit services is offered by professional singer Matthew Curtis[2]. Matthew created the rehearsal kit servisse called Choral Tracks[3] in 2012. The Choral Tracks has hundreds, if not thousands, of titles, all recorded by Matthew Curtis, artistic director and tenor of the professional vocal group Chanticleer. In addition to the available in the catalog, it is possible to request custom

[1] "Latency" means the delay in transmitting sound and image data over the internet. The technical challenge of latency makes it impossible for different people in different places and using other equipment and different internet speeds to sing in real time synchronously using videoconferencing platforms.
[2] Available at: www.matthewcurtis.com. Access: 10 Jan. 2022.
[3] Available at: www.choraltracks.com. Access: 10 Jan. 2022.

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preparation of any desired song. Choral Tracks is a paid service. However, some reherseal kits are available for free on Matthew Curtis'Youtube channel.

Professional voice rehearsal kit

The music selected in this approach for the UNESP Chamber Choir was A Boy and a Girl by Eric Whitacre (WHITACRE, 2004). This composition dates from 2002 but was only published in 2004. A Boy and a Girl present an eight-voice division and a harmonically rich sonority, with extended chords and clusters[4], typical of the composer.

The rehearsal kit recorded and sung by Matthew Curtis was used. The package for the singers included a recording of each voice, a complete recording of all voices, and a piano base recording with a metronome click. Eight virtual rehearsals were conducted before the final audio and video recording. We adopted the following virtual rehearsal pattern: 1. Individual study of given piece excerpts, 2. Individual audio recording, 3. Sending audio to the conductor, 4. Assembling and aligning the audios of all singers on a Digital Audio Workstation (DAW), 5. Sharing the assembled audio with the singers, and 6. Discussion in a synchronous videoconference about positive aspects and aspects that still needed improvement.

This virtual choir rehearsal approach, like any other virtual rehearsal approach, requires a degree of adaptation on the part of the singers. Singers must be aware that this approach attempts to simulate the natural benefits of face-to-face rehearsal. Once singers understand the virtual rehearsal process they are participating in as part of the gradual construction of a musical performance, just as it happens in face-to-face rehearsals, participation in this virtual rehearsal becomes more meaningful, enjoyable, and motivated.

We determined short passages of the music for learning in the first rehearsals. This allowed for quick feedback to the singers so that they could get a sound result of what they were rehearsing. For example, within the time of a two-hour rehearsal, it was possible to offer explanations and expectations about the piece of music determined for that particular rehearsal, to allow time for the singers to study the short piece, record their audios of this piece, and send them to the conductor. In return, the conductor received the audios and assembled all the singers' audios in a DAW, in this case, the Reaper software was used and could share the result with the choir within two hours. The Soundcloud[5] platform was used to facilitate the sharing of the audio tracks. The conductor assembled áudios of the tutti the way the áudios were sent,

[4] A group of adjacent notes that sound simultaneously.
[5] Online audio distribution platform.

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without reverb[6], tuning or compression treatment[7], for example, assembling audios separated by suit. This allowed the singers and conductor to hear the whole and, in a more specific way and with less sonic complexity, each singer's performance within the context of their suit. Audios of the tutti were also assembled with the addition of reverb, which contributed to a sound environment closer to the reality of a room suitable for choir performances. Finally, after listening carefully to these audios, a brief discussion was proposed regarding points that had improved in relation to the previous virtual rehearsal and points that still deserved more attention.

As the rehearsals went by, longer song passages started to be worked on. It brought the need for the recording and sending of the audios by each singer to occur in the interval between one rehearsal and another, simply because of the greater work required to assemble the audio. Assembling longer audio excerpts in the DAW presented increased complexity, requiring some editing of each audio, especially about rhythmic synchronization. Some singers reacted to the base reference for the recording by singing exactly on top of the click[8], others reacted a little after the click, and still, a few anticipated the click. Also, at times it was helpful to edit the audio more specifically, changing pitch and adding other effects. This allowed the singers to hear a quality reference using their voice, resulting in a rapid growth towards the desired performance, thus avoiding the need for extensive audio editing in the final recording process of A Boy and a Girl.

During this process, we gradually removed the reference to the rehearsal kit with Matthew Curtis's voice until we left only the voices of the singers of the UNESP Chamber Choir. This was very important, especially in the process of timbre[9] within each suit, besides encouraging greater uniformity in other aspects, such as diction and interpretation, especially in dynamics.

The result was very satisfactory, reaching a performance level close to what would be possible in a face-to-face process, for example, the video of A Boy and a Girl with the UNESP Chamber Choir can be seen at this link: https://www.youtube.com/watch?v=ArjgH1qVw_c.

[6] Reverb is an effect added to recordings to reproduce the natural reverberation of different musical performance environments.
[7] The main function of the compression effect is to control volumes, making them uniform and audible and contributing to a sense of ensemble between the various voices recorded.
[8] Marking the tempos on the metronome.
[9] Timbragem is the homogenization of the singers' sound, involving issues of vocal emission, articulation, vowel color, volume, and expressiveness.

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Rehearsal kit with choir's own voices

But what do you do when your chosen music doesn't have a rehearsal kit recorded with professional voices? You can commission Matthew Curtis to record a rehearsal kit if you have the budget. But in most situations, we don't work with budgets wealthy enough for this kind of investment.

The second song chosen for the UNESP Chamber Choir was Rosa, by Pixinguinha (1897-1973), in Marcos Leite's vocal arrangement (LEITE, 1998). This sophisticated arrangement, which explores the melodic and harmonic richness of the original composition, did not have a rehearsal kit recorded with professional voices, at least not to our knowledge. The solution found was to produce our rehearsal kit with voice reference, taking advantage of the UNESP Chamber Choir's own singers for this task. We selected singers considered leaders of the ensemble with vocal characteristics flexible enough to sing this music with the desired vocal lightness and agility. The proposal was to produce a rehearsal kit with voices singing as much as possible of the desired interpretation in terms of pitch, diction, vocal emission, articulation, and dynamics. Therefore, it was necessary to edit and treat the audio of each singer who recorded the rehearsal kit..

Once the rehearsal kit with voice was ready, it was possible to start the virtual rehearsal work by following the same sequence as previously used: 1. Individual study of specific passages of the piece, 2. Individual audio recording, 3. Sending the audio to the conductor, 4. Assembling and aligning the audios of all singers in a DAW, 5. Sharing the assembled audio with the singers, and 6. Discussion in a synchronous videoconference about positive aspects and aspects that still needed improvement. It is worth mentioning that in Pixinguinha's song, we did from the beginning longer passages, in contrast to what was done in the music A Boy and a Girl.

Right in the first discussion session, the question was raised about the adequate vocal production for this Brazilian piece, especially considering the intrinsic characteristics of the UNESP Chamber Choir. The question raised was, how should an academic, erudite choir sing a song originating from a popular tradition? Doubts arose, for example, about vocal emission and vibrato use because there were divergences in the vocal rehearsal kit. We believe that a choir needs sufficient flexibility to interpret different musical styles, and this flexibility is a requirement even considering only strictly classical repertoire (LECK; JORDAN, 2020; BOLOS, 2010; GARRETSON, 1993; ROBINSON, 1976). This questioning would be less relevant in a face-to-face rehearsal, where various adjustments would happen in real-time.

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However, in a virtual rehearsal, questions like this one become more relevant. The singer must understand most of the expected musical and vocal parameters before starting the first contact with learning the music. The UNESP Chamber Choir is an academic choir, and in this context, the discussion on vocal style was of great educational value.

In the voice rehearsal kits recorded by Matthew Curtis, all voices are sung by himself. This allows for an enviable unity in vocal production and all musical aspects of the piece. This is one of the key differentiators of the Choral Tracks rehearsal kit service, produced by Mathew Curtis.

The preparation of our vocal rehearsal kit for the song Rosa was done by different people singing each voice, in isolation, without the benefit of a previous discussion about vocal emission. Thus, although everyone sang very well, there was a divergence in vocal emission. We have drawn from this experience an important lesson for future production of vocal rehearsal kits: the need to have an orientation meeting with all the singers who will participate in the recording of the rehearsal kit to have maximum uniformity in all vocal and musical aspects.

Regardless of this small deviation from focus, the rehearsal process went on a crescendo that allowed us to quickly remove the reference of the kit with voice and leave the voices of the choir itself as reference. It is worth noting that Rosa has a very rich and complex melodic construction, and, in this sense, the kit with voice was handy for the choir to gain time in learning this song.

Similarly to what was done with the song A Boy and a Girl, at each virtual rehearsal, audios were put together with and without the addition of reverb, of all and also of each suit. In this aspect, the use of technology is a great asset. At first, it can be daunting for the singer and the suit to hear themselves in each recording. Each singer's perception of their own voice while hearing him or herself singing live is often different from what is perceived in a recording. But once this scare of exposure has passed, the evaluative feedback offered by the recording is of great value in enabling us to understand what each one is doing in their musical performance, both in positive aspects and in what still needs improvement.

We consider that the final version of the audio used for the production of the video of the song Rosa[10] demonstrates that the UNESP Chamber Choir achieved a vocal and musical production appropriate for an academic and erudite choir.

[10] The result is available at: https://www.youtube.com/watch?v=5OWMPfa-TwA. Access: 10 Jan. 2022.

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Full engraving reference

We decided on a third way to offer a good voice reference as support for virtual rehearsals, especially considering the high learning level of the UNESP Chamber Choir. Without a voice kit, we used a complete recording of the music Mirabile mysterium by Jacob Handl (1550-1591) as a reference for our virtual rehearsals. We selected the recording made by the Stile Antico choir on the album A Wondrous Mystery: Renaissance Choral Music for Christmas from the Harmonia Mundi label (HMU 807575), released in 2015. In the specific case of this music, the most important thing is a reference to balance and homogeneity of the voices, as well as a smoother vocal emission, i.e., with minimal vibrato, to allow clarity in the lines of the delicate chromatic counterpoint. Therefore, it was necessary to insert a reference click for the singers; perhaps this was the most challenging technical aspect.

Rehearsal time is an equation that considers the music's difficulty and the singers' ability. Mirabile mysterium was the music that the UNESP Chamber Choir learned more quickly, in only four rehearsals, despite having been rehearsed and prepared at the end of the year 2021, a period of accumulated academic tasks and professional commitments of the student-singers. We understand that the style of the music Mirabile mysterium was the most familiar of the three pieces prepared virtually by the UNESP Chamber Choir in 2021. This certainly contributed to an accelerated learning process. The virtual rehearsal routine followed what was previously described. In the discussion sessions, questions of pronunciation and diction were especially corrected. In this process, it was possible to quickly substitute the reference of the Stile Antico chorus recording for the voices of the UNESP Chamber Choir's singers, and thus, an interpretative identity of its own was established.

One of the aspects observed that was difficult to perform that of long phrases. The live performance of Mirabile mysterium in an architectural space adequate for the style, with the presence of good reverberation, allows the singer to take short breaths without interrupting the melodic line. However, this is not possible in virtual work, with individual recordings usually made in environments with little reverberation. Each singer needed to work in a very focused way to do the long phrases, especially the phrases at the beginning of this song, without breathing and maintaining an excellent vocal emission. In this way, the technology helped to encourage the singers to develop the ability to sing long phrases. Probably in a live situation, this would not occur because it would be possible to hide breaths in the middle of phrases, as well as alternate breathing within each suit.

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Mosaic video production allows glimpses of visual creativity. Mirabile mysterium speaks of the mystery of the incarnation of Jesus Christ in human form. Even using simple video editing, it was possible to use backgrounds that added an interesting visual sensory dimension to this performance of Mirabile mysterium[11].

Final considerations

The reality imposed on all the choirs during the peak period of the COVID-19 pandemic forced them to do virtual work in order to stay active. While it is possible to distribute rehearsal kits and ask each singer to record their voice and give it back to the conductor to undergo deep editing, it is also possible to develop a virtual rehearsal process that maintains the benefits of a face-to-face rehearsal. Finally, we propose a way to rehearse virtually based on recorded voice references and discuss the application of this approach using three different ways to obtain this voice reference.

Virtual choir work is a studio recording with multiple takes of the same music. This differs considerably from face-to-face work, in which acoustic and affective elements shape the performance and its reception by the audience. Individual recording exposes each singer to a reality about their voice, and many need more preparation to face this reality. We often find our voice very strange when we listen to a recording. It is of utmost importance that the conductor tries to build a safe virtual environment so that no singer feels unintentionally exposed to the rest of the group. Once this bridge is built, the benefits offered by technology in the virtual rehearsal process are very positive. Conductors and singers can hear recorded references of the step-by-step construction of a performance. This allows the evaluation and discussion of numerous aspects, such as pitch, diction, timbre, expressiveness, and vocal emission. Even if, due to the peculiar characteristics of a choir, it is not beneficial or possible to open a discussion to all singers, the recordings generated in each virtual rehearsal are rich material for the conductor to get to know their voices individually, evaluate the partial result and outline strategies for the next virtual rehearsal.

The three pieces selected for virtual rehearsals with the UNESP Chamber Choir were all of a high degree of difficulty. With the establishment of a constructive virtual rehearsal process, it was possible to perform these three pieces. Instead, the virtual rehearsal methodology adopted was determinant in the success achieved in producing mosaic videos of the three pieces.

[11] Check out the vocal and visual results in this video, available at: https://www.youtube.com/watch?v=qdfuJ-Xq6L0&t=23s. Access: 10 Jan. 2022.

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