

Missing the Audience

Citation for published version (APA):

van de Werff, T., Smith, N., Rosu, S., & Peters, P. (2021). Missing the Audience: Online musicking in times of Covid-19. *Journal of Cultural Management and Cultural Policy*, 7(1), 137-150.
<https://doi.org/10.14361/zkmm-2021-0107>

Document status and date:

Published: 01/01/2021

DOI:

[10.14361/zkmm-2021-0107](https://doi.org/10.14361/zkmm-2021-0107)

Document Version:

Publisher's PDF, also known as Version of record

Document license:

Taverne

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/353722620>

Missing the Audience. Online Musicking in Times of COVID-19 / Missing the Audience. Online Musicking in Times of COVID-19

Article · July 2021

DOI: 10.14361/zkmm-2021-0107

CITATION

1

READS

35

4 authors, including:



Ties Van de Werff

Hogeschool Zuyd

13 PUBLICATIONS 24 CITATIONS

[SEE PROFILE](#)



Peter Peters

Maastricht University

18 PUBLICATIONS 246 CITATIONS

[SEE PROFILE](#)

1 **Missing the Audience**
2 **Online musicking in times of Covid-19**

4 Ties van de Werff, Neil Thomas Smith, Stefan Rosu & Peter Peters

7 **1. Introduction**

9 The outbreak of COVID-19 in 2020 has greatly impacted musicians and
10 orchestras. Classical music initiatives on social media in the first weeks of the
11 lockdown in many countries emphasized the power of music to bring people
12 together. While many orchestras had ample experience in producing and
13 distributing their concerts online, others now had to experiment with new ways
14 of performing online. The pandemic also made the questions of what music to
15 perform, how exactly to perform it and for whom it should be performed all the
16 more urgent. Since orchestras could no longer meet their audiences in the
17 concert hall, they had to consider how to connect to online listeners in
18 meaningful ways. This paper tells the story of a group of Dutch orchestral
19 musicians and (artistic) researchers, who found themselves isolated at home,
20 exploring digital tools to produce and distribute classical music, and struggling
21 to reconnect to an elusive online audience.

23 Classical music was by no means absent from the digital world prior to the
24 advent of widespread government-imposed lockdowns. Most notably, the
25 Berliner Philharmoniker's Digital Concert Hall has broadcast live performances
26 from the Berliner Philharmonie since 2008, as well as providing many of their
27 concerts to stream on demand. This can be seen as a development from the
28 orchestras creating their own record labels, such as LSO Live from the London
29 Symphony Orchestra (NEWTON 2017). There have also been a number of
30 ‘experiments’ with technology, most famously the YouTube Symphony
31 Orchestra with its dispersed members (SHZR EE TAN 2016), while composers
32 have introduced a broad range of electronics to symphonic music (e.g.,
33 MACHOVER 2006). Outside of the concert situation, many European
34 orchestras have developed additional content to enhance their social media
35 presences. An example is the Dutch orchestra philharmonie zuidnederland
36 (South Netherlands Philharmonic) whose orchestral musicians have for some
37 years provided online video introductions to its concert programs. The corona
38 lockdowns in many countries resulted in a new surge of online activity by
39 orchestras as well as the production of performances and educational material.

40 This was limited at first to musicians recording themselves in their homes, but
41 once restrictions were relaxed larger groups could come together, until
42 eventually small orchestral performances in partially-filled halls were possible
43 once again.

44

45 This paper focuses on orchestral activities during the first stage of the pandemic,
46 when musicians were locked down at home and public meetings indoors were
47 widely prohibited, in the Netherlands and in other countries. The content
48 produced during this stage varied in approach and particularly in scale
49 (PARSONS 2020; TILDEN 2020). Live performance and rehearsal was
50 endangered and quite possibly dangerous (MILLER 2020), with the Budapest
51 Festival Orchestra livestreaming their ‘Quarantine Soirees’ a rare exception. One
52 approach was to create an orchestral feel by editing the musicians’ homemade
53 videos together, resulting in the now familiar video matrix. An early example is
54 the Rotterdam Philharmonic Orchestra performing Beethoven’s ‘Ode to Joy’,
55 while the Oslo Philharmonic commissioned a new piece from composer Koka
56 Nikoladze for this set-up. This approach was also employed to share smaller
57 sections of the orchestra playing, usually light-hearted, arrangements. Orchestras
58 also shared performances by individual musicians – similar to the work of
59 freelance musicians (including some musical cohabiting couples) – from their
60 homes and gardens, primarily over social media and often with spoken
61 introductions from the players. Finally, the education departments of orchestras
62 also produced social media content. The Royal Scottish National Orchestra, for
63 example, produced various ‘challenges’ for children and adults to conduct at
64 home, such as making a DIY samba band, the results of which they were
65 encouraged to share online (TAYLOR 2020). This rapidly developing online
66 context is the background to the experiment conducted with five musicians of
67 the philharmonie zuidnederland.

68

69 This paper explores the challenges when orchestral musicians start
70 experimenting with new digital formats for performing classical music online
71 and engaging with online audiences. The aim of our emergent experiment was to
72 make explicit what is needed to perform classical music online, where the rituals
73 and routines of the concert hall are absent. What does it take to perform online,
74 without fellow-musicians or audiences physically present? Based on
75 documentation and fieldnotes made during online discussions (using
76 teleconferencing software), individual talks with musicians, and Whatsapp-
77 conversations, we present three lessons learnt from our journey into online
78 musicking. Following interventionist research methods and ethnographic

79 methods of participant-observation (cf BENSCHOP 2015; LEZAUN ET AL.
80 2016; ZUIDERENT-JERAK 2015), the researchers were part of the experiment:
81 they too were amateurs regarding the use of digital technologies for producing
82 and distributing classical music online. Documentation of the collaborative
83 research process was made by one researcher (Ties van de Werff), and edited
84 and corrected by the involved musicians-as-coresearchers.¹

85

86

87 **2. Prelude: an emerging experiment**

88

89 In February 2020, five classical musicians from the philharmonie zuidnederland
90 sit in a classroom at Maastricht University (Maastricht, the Netherlands).
91 Together with three researchers from the Maastricht Centre for the Innovation of
92 Classical Music (MCICM) they discuss their plans for an experimental
93 community-music project that is about to take place in the North West
94 neighbourhood of the city.² Starting from issues voiced by the inhabitants, the
95 musicians and the residents were about to embark on an artistic process of
96 composing, arranging and organising events that would explore how making
97 music together could provide new opportunities to share ideals, experiences and
98 stories in the neighbourhood.

99

100 Shortly before the start of the project in early April 2020, the Dutch government
101 issued measures against the outbreak of Covid-19. The subsequent lockdown
102 started in mid-March and continued until June that year.³ All social events were
103 cancelled and we could no longer meet people from the neighbourhood. The
104 musicians were not able to rehearse or perform with the orchestra and found
105 themselves at home without an audience. We tried to connect digitally with the

¹ Researchers participated in the experiment, and musicians became co-researchers. In this article, we use ‘we’ to reflect the collaborative work we did. When remarks are specific for either researchers or musicians, we will make that explicit.

² The Maastricht Centre for the Innovation of Classical Music (MCICM) is a collaboration between Maastricht University, philharmonie zuidnederland, and Zuyd University of Applied Sciences (Conservatorium and the Research Centre for Art, Autonomy and the Public Sphere). Online Musicking is one out of five experiments that the MCICM is conducting within the Artful Participation project, which is funded by the Dutch research foundations NWO and SIA.

³ The first lockdown in the Netherlands – which started at March 15 and lasted until June 1st 2020 - included the closing of schools, universities, concert halls, and other public venues.

106 communities of the North West neighbourhood, but many inhabitants were not
107 able to go online or had other, more urgent, concerns. Limited to online
108 communication and unable to reach our intended community, we decided to
109 move the experiment online and focus on what we could do with the limited
110 means we had. We decided to build a website that functioned as a kind of digital
111 rehearsal space, instead of using social media channels, in order to create a
112 secluded digital environment where musicians and researchers could freely
113 document their experiments with *online musicking*. Musicologist Christopher
114 Small introduced the concept ‘musicking’ to talk about music as an activity that
115 involves not only performing and listening, but also rehearsing, practising, and
116 evaluating (SMALL 1998). Previous studies of online musicking have focused
117 primarily on the role of music in identity creation and its symbolic circulation
118 through social media (VALVERDE 2019), the mediating role of social media
119 and digital technologies when teaching music online, or the skills needed for
120 creating pedagogical online music projects (CAYARI 2020; ROFE 2017). Here,
121 the focus is on the practical work of musicians in a digital, online environment.
122 The musicians and researchers were amateurs in online musicking: arranging,
123 rehearsing, performing, organising, producing, recording and editing classical
124 music performances online. ⁴Our attempts at online musicking raised topical
125 questions and challenges regarding balancing different performance qualities
126 online, the digital skills needed for producing a collaborative video, and
127 imagining an online audience. Eventually, these challenges hindered us in
128 fulfilling our ultimate goal of finding an actual online audience.

129

130

131 **3. Balancing different online performance qualities**

132

133 As mentioned above, the first weeks after the outbreak saw a host of classical
134 music initiatives on social media. The researchers documented these instances of
135 online musicking and discussed them with the musicians. Most were reluctant to
136 value these emergent home-made videos of classical musicians and orchestras
137 online. We found that many instances of classical music that emerged in social

⁴ The notion of ‘amateur’ here has a specific meaning. By positioning ourselves as amateurs, we created an equal level playing field where both musicians and researchers could contribute with their own skills, knowledges, and experiences. It also created an openness and a slowing down which allowed for reflexive learning in practice. See also Stenger’s notion of the idiot (STENGERS 2005).

138 media lacked acoustic quality, often featured children or families, and more
139 often than not didn't have a specific audience in mind.

140
141 Somewhat hesitant, the musicians started experimenting by creating individual
142 videos, ranging from reflecting on what it means to teach violin over Zoom,
143 through a podcast with inspiring stories about canonical musical works, to a
144 series of two-minute videos in which a violinist performs before various 'stand
145 ins' for her lost audience, such as a collection of drawings of people on the wall
146 in her apartment. When the musicians experimented with filming their own
147 performances, using their smartphones, they discovered that such home-made
148 online videos do have their own aesthetic qualities, such as intimacy, directness,
149 and authenticity. The musicians were imagining what an online audience could
150 appreciate in such videos. As one musician reflected: "Seeing a fellow-musician
151 playing violin in her own kitchen takes away some of the formality and stiffness,
152 it shows the human behind the musician." (Fieldnotes Ties van de Werff,
153 04/14/2020).

154
155 Some musicians, however, were hesitant to produce something of 'low' sound
156 quality, given the lack of professional recording equipment at home. What
157 would possible audiences or colleagues think? One violinist argued: "The
158 smartphone has become an important part of our lives while in lockdown. And if
159 we keep trying to get the best acoustic quality that is possible, then we are trying
160 to conceal that we don't have access to a concert hall right now. So if we really
161 would like to relate to the world in this moment, then we should use our
162 smartphones." (Fieldnotes Ties van de Werff, 04/01/2020). The musicians are
163 fighting against what Eve Klein identifies as the 'single aesthetic paradigm' of
164 classical music, the 'reproduction of a "concert hall"-like listening experience'
165 (2015: n.p.). The realisation that this was impossible shifted the focus of the
166 musicians from trying to improve the acoustic quality to looking at other
167 aesthetic criteria.

168
169 Other quality criteria emerged, such as the visual aesthetics of a movie clip, the
170 quality of the narrative structure or scenario, and performance quality in terms of
171 timbre and dynamics, which were often hard to capture with the limited
172 smartphone microphones. Instead of trying to retain a form of 'liveness'
173 (AUSLANDER 1999, see also HOLT 2010), a primary strategy in many online
174 classical music videos, musicians started to play with the particular aesthetic
175 criteria of the media used, its limitations and its opportunities. This balancing of
176 different aesthetic criteria is a vital feature of any experimental project in

177 classical music, especially when such projects entail a collaboration with other
178 (artistic) partners or media. When experimenting with different concert
179 situations, like a performance online, the question of what comes to count as a
180 good performance (and for whom), is not given or stable, but emerges
181 throughout the project. However, as we will see, the normative weight of
182 internalised acoustic and musical quality standards remained a concern
183 throughout the process, and after much debate appeared too difficult for some of
184 the orchestral musicians to overcome.

185

186

187 **4. Engaging in digital crafts**

188

189 This question of quality also presented itself through the technicalities involved
190 when engaging with digital recording. After individually experimenting with
191 different digital media we decided to try to create a collaborative music video, in
192 order to reach a specific audience: the digital audience of the philharmonie
193 zuidnederland. The musicians who volunteered for our experimental project
194 were not selected based on their instrumental specialism, resulting in the unusual
195 instrumentation of two percussionists, two violinists, and a horn player – while
196 one percussionist also played bass guitar. In the digital realm of course, these
197 instruments could be overdubbed (adding additional tracks in the recording),
198 multiplying violins, percussion or horns where desired. We first worked on a
199 waltz from Dmitri Shostakovich's Jazz Suite that could easily be arranged for
200 the instruments we had. Later, one composer in the group made arrangements of
201 selected songs (*Lieder*) by Franz Schubert: *Die Forelle*, *Erlkönig* and *Lachen*
202 *und Weinen*. As one musician had some experience with audio and video editing
203 software, we discussed the arrangements from the perspective of a producer,
204 balancing requirements for software editing with musical criteria, in order to
205 create a recording plan. To compensate for not being able to make music
206 together in a physical space, the musicians decided to play with a midi-track and
207 a click track in their earbuds (a digital metronome), so at least their tempo
208 should be easier to sync when the video was edited.

209

210 Rhythmic synchronisation and finding a good blend in intonation and dynamics
211 was challenging when not playing in the same room, however. Pizzicato
212 (plucked notes) proved difficult to record, though surprisingly the mics of the
213 smartphone were able to pick it up when the violins were muted. Recording the
214 marimba – the only polyphonic instrument in our group – was problematic: its
215 particular attack and timbre distorted the recording, and the percussionist had to

remove the resonators to mute its sound. All musicians struggled with the midi-file that acted as a guide track, as this violinist reflects: "I will not trust myself to follow the intonation of the midi-file because it takes all your basic thoughts of intonation away... there are so many things that happen naturally. It really helps if you hear the sound colours of the other instruments." (Fieldnotes Ties van de Werff, 05/29/2020). Or, as one percussionist argued: "The problem with us as professional musicians is that we adjust all the time. We always gradually fix our mistakes and our timing. (...) It has to do with precision, with being strict to yourself in terms of timing and intonation." (Fieldnotes Ties van de Werff, 07/03/2020). The experiment highlighted the value of skills essential to musicians' usual practice, and how these skills are cast asunder in a digital environment.

The odd instrumentation and the choice of repertoire made the musicians vulnerable in their recordings: where musicians in a symphony orchestra are part of a larger whole, there is much more visibility and thereby vulnerability when recording alone at home with a click track. The musicians now also became actors on the screen, as they tried to imagine how audiences would look at them in the video. This is in marked contrast to traditional performance practice, in which orchestral musicians tend to dress inconspicuously and limit their bodily movement, and is a consequence of the focus on the visual within internet culture (ALCORN 2014). The video exaggerates what is a visible but less explicit in a normal concert-situation: the facial expressions and the ways musicians look. Recording individual parts at home, and combining them into a collaborative music video using editing software, highlighted the digital skills needed to create a collaborative home-recording: from playing with click-track and tinkering with mics and home-acoustics, to increased screen awareness, editing, and delegating roles.

244

245

246 **5. Making it matter: imagining an audience online**

247

248 Throughout the experiment, the musicians and researchers tried to imagine an
249 online audience. We were assuming elusive, invisible and diffuse audiences that
250 manifest themselves on various online platforms (LITT 2012; LITT &
251 HARGITTAI 2016). Early in the online musicking project, the musicians did not
252 seem to worry too much about their amorphous audience because the initial goal
253 was to experiment and learn, but when they started to produce a video of a
254 collective performance, the question who would watch their video was back on

255 the table. Given the ‘top quality’ videos from orchestras with budget and
256 experience in pre-corona times, the question was what we could offer an
257 audience instead. As classical music audiences generally like to attend
258 rehearsals, we wondered whether we could show our online rehearsal: the
259 challenges of playing with click track, recording with a smartphone, alone at
260 home. We also discussed how we could make the audience of the video actually
261 *feel like an audience*, as they are probably sitting home alone too. How could we
262 provide musical content and create a musical atmosphere in audiences’ listening
263 situation at home?

264

265 In contrast to the concert hall routine, online listening practices do not come
266 with traditional norms or habits: you can watch and listen to a performance
267 video behind your laptop, on your smartphone, or while doing the dishes. This is
268 a marked contrast to traditional classical music performance habits, which
269 privilege ‘attentive listening’, with Prey arguing that ‘streaming platforms can
270 be said to build “inattentive listening” into their service’ (PREY 2019: n.p., see
271 also PREY 2017). Building an ‘attentive space’ at home may be seen as a
272 solution but interest in high-fidelity audio has never been mainstream
273 (O’CONNELL 1992). Different online platforms allow for different listening
274 practices, for example including live chat windows or other forms of valuation
275 such as the Facebook like button. If audiences are a constitutive part of online
276 musicking, the practical question then becomes how to incorporate their
277 listening practices? The musicians started with adding a simple instruction to
278 their video, asking their viewers to wear high-quality headphones. Later, they
279 discussed how they could make the viewers of the video feel part of an actual
280 audience by inviting them to respond to the videos with their own experiences
281 and stories about the lockdown. Because online audiences appear so elusive and
282 invisible, the question of who the audience is for a particular musical work not
283 only became an explicitly debated topic, it was also present through the entire
284 artistic process. It is also clear that the event of the concert and its facilitation of
285 audience-musician interaction is very different from the process – characteristic
286 of influencers on social media platforms – of developing and interacting with a
287 followership online and curating a persona (HOU 2018).

288

289 The question of repertoire – what music to perform now and why – also brought
290 up discussions about the societal relevance of classical music. While relevance is
291 often sought and being made through addressing different kinds of audiences, it
292 appears much harder to connect it to the content of musical works: to the canon
293 of repertoire of classical music. Strikingly, in the online experiment, musicians

294 explicitly asked the question of which works from the canon would be suitable
295 for home-isolated audiences in corona-times. The musicians chose songs of
296 Schubert to convey the different emotions that people can experience during a
297 Covid-19 lockdown. One musician recorded visual shots with her smartphone
298 camera, to connect the theme of the Schubert songs with different emotions
299 during lockdown. The intention was that the songs gained new meaning and
300 relevance when performed in times of crisis.

301
302 While imagining an audience while planning, recording and assessing
303 performances helps to make decisions, eventually the musicians were hesitant to
304 spread the finished video to specific audience groups. As one violinist worried:
305 “People expect a lot. They are used to seeing videos of high quality. You get so
306 used to hearing perfect things that it becomes more complicated to do something
307 more real.” (Fieldnotes Ties van de Werff, 07/10/2020). After discussing our
308 DIY-approach, and the vulnerability of improvising and experimenting, we
309 decided that we should share the video with colleagues in the orchestra as it
310 shows what it takes to perform online together as individual musicians, and to
311 “create something out of the normal” (Fieldnotes Ties van de Werff,
312 07/10/2020). These colleagues were a vital part of the audience that the
313 musicians imagined for their work and were a powerful control on the content
314 they wished to ‘release’ into the world. This mirrors the traditional concert
315 format in which the general audience is an amorphous formation beyond the
316 proscenium arch, while fellow musicians are proximate and able to voice
317 criticism. In the end, it proved too challenging to deviate from the high
318 expectations musicians have on the acoustic and sound quality of their
319 performance. Rather than a product for consumption, the video, and the
320 documentation of the process, became part of our emergent and experimental
321 learning process.

322
323 **6. The value of experimentation for cultural organisations**

324
325 The experiment *Online Musicking* showed the hidden work that goes into
326 creating a collaborative music video based on individual recordings: the
327 negotiation and balancing between different aesthetic criteria; the different ways
328 of coping with and complementing the lack of playing together in the recording
329 and editing process (in terms of articulation, synchronisation and intonation in
330 particular); the skills that are needed to perform in front of a camera and make it
331 into a collaborative whole. The experiment shows also how these skills are
332 likely to be unevenly distributed amongst members of an organization,

333 depending on their previous experience. Our attempts at online musicking raised
334 topical questions and challenges regarding performance qualities, audience
335 participation, and societal relevance. The balancing of musical criteria with
336 aesthetic criteria specific for online media, the curating of an online listening
337 space for audiences, and the question of societal relevance of classical music in a
338 societal crisis and online environment, are issues that are not easily overcome –
339 both on an individual and an institutional level. That we eventually did not reach
340 a specific wider audience (other than some colleagues of the musicians)
341 illustrates this.

342 The challenges the musicians encountered when trying to produce
343 classical music videos for online audiences fuel the institutional challenge of an
344 orchestra finding a meaningful digital strategy. The experiment shows how
345 difficult it is to shape a digital offer for online audiences when the skills and
346 abilities of those involved in the process are too closely tied to traditional
347 symphonic values. Due to Covid-19 and its lockdown restrictions, Online
348 Musicking was an improvised and emergent experiment. While the experiment
349 is not representative of the ways orchestras produce digital content (using
350 professional digital producers, camera teams, with ample resources), our journey
351 into online musicking does show which challenges musicians face on an
352 individual level when attempting to perform online and engage with an online
353 audience. Due to its emergent character, the experiment highlighted how both
354 musicians and researchers reflexively learn on the spot, while experimenting
355 with online musicking. The method of the experiment – an open, collaborative
356 process where something we hold dear is at stake – allows for such an increased
357 reflexivity among the participants. Connecting the musicians' experience and
358 emergent learning in experimenting with digital media to the distributed
359 expertise of staff within the orchestra as organisation, could be a fruitful next
360 step. A key question would then be how to bridge the gap between traditional
361 musical criteria of the musicians versus the aesthetic criteria of online media.
362 Presumably musical criteria have to be altered or extended in order to create that
363 new offer. In addition, if audiences are a constitutive part of the online musical
364 situation, how their listening practices can be incorporated in the production of
365 digital music content is a question that needs further research. Given that the
366 pandemic appears to have accelerated the digitisation of our world, this is reason
367 enough to keep investing in experimental research aimed at learning, within the
368 orchestra and other cultural institutions. At the same time, as an antidote to the
369 digital imperative, the value of performing *together* 'in real life' has been
370 thrown into stark relief.

371

372 Acknowledgements
 373
 374 We would like to thank all the participants in the experiment Online Musicking:
 375 Christina Buttner, Axel Dewulf, Roland van Mill, Claudia Moonen, Frank
 376 Nelissen and Jaap van Wershoven (all philharmonie zuidnederland); Ruth
 377 Benschop, Imogen Eve, and Karoly Galindo Molina (all MCICM), and students
 378 Léïa Bonjean, Sanne Lux and Margaux Zandona.

379

380

381

382 References

383

384 ALCORN, Stan (2014): Is This Thing On? In: Digg.com. Online:
 385 <https://web.archive.org/web/20170422230835/http://digg.com/originals/why-audio-never-goes-viral> [22/09/20]

387

388 AUSLANDER, Philip (1999): *Liveness: Performance in a Mediatized Culture*.
 389 London: Routledge.

390

391 BENSCHOP, Ruth (2015): *De eland is eigenwijs dier: Een*
 392 *gedachtenexperiment over praktijk en relevantie van artistiek onderzoek*
 393 (Maastricht: Lectoraat Autonomie en Openbaarheid in de Kunsten).

394

395 CAYARI, Christopher (2020): Popular practices for online musicking and
 396 performance: Developing creative dispositions for music education and the
 397 Internet. In: *Journal of Popular Music Education*, 2020.

398

399 HOLT, Fabian (2010): The economy of live music in the digital age. In:
 400 *European Journal Cultural Studies* 13/2, 243–261.

401

402 HOU, Mingyi (2018): Social media celebrity and the institutionalization of
 403 YouTube. In: *Convergence: The International Journal of Research into New*
 404 *Media Technologies* 25/3, 534–553.

405

406 KLEIN, Eve (2015): Performing Nostalgia on Record: How Virtual Orchestras
 407 and YouTube Ensembles Have Problematised Classical Music. In: *Journal on*
 408 *the Art of Record Production* 9.

409

- 410 LEZAUN, Javier, Noortje Marres, and Manuel Tironi (2016): Experiments in
411 participation - In: Felt, Fouché, Miller, Smith-Doerr, *The handbook of science*
412 and technology studies. Cambridge: MIT Press, 195.
- 413
- 414 LITT, Eden (2012): Knock, Knock. Who's There? The Imagined Audience. In:
415 *Journal of Broadcasting & Electronic Media* 56/3, 330–345.
- 416
- 417 LITT, Eden and Eszter Hargittai (2016): The Imagined Audience on Social
418 Network Sites, *Social Media and Society* 2/1, 1–12.
- 419
- 420 MACHOVER, Tod (2006): The Extended Orchestra. In: Joan Peyser (ed) *The*
421 *Orchestra: A Collection of 23 Essays on its Origins and Transformations*.
422 Wisconsin: Hal Leonard, 577–594.
- 423
- 424 MILLER, Shelly L. et al. (2020): Transmission of SARS-CoV-2 by inhalation of
425 respiratory aerosol in the Skagit Valley Chorale superspreading event. Submitted
426 to *Indoor Air*, online preview:
427 <https://scholar.colorado.edu/concern/articles/n583xw008>
- 428
- 429 NEWTON, Travis (2017): LSO Live: An Entrepreneurial Venture. In: *Artivate*
430 6/1, 33–45.
- 431
- 432 O'CONNELL, Joseph (1992): The Fine-Tuning of a Golden Ear: High-End
433 Audio and the Evolutionary Model of Technology. In: *Technology and Culture*
434 33/1, 1–37.
- 435
- 436 PARSONS, Chris (2020): Music and the internet in the age of COVID-19. In:
437 *Early Music*, online first. <<https://doi.org/10.1093/em/caaa045>> [22/09/20].
- 438
- 439 PREY, Robert (2017): Nothing personal: algorithmic individuation on music
440 streaming platforms. In: *Media, Culture & Society* 40/7, 1086–1100.
- 441
- 442 PREY, Robert (2019): Background by Design: Listening in the Age of
443 Streaming. In: *Naxos Musicology International* 1/1.
- 444
- 445 ROFE, Michael et al. (2017): Online Orchestra: Connecting remote communities
446 through music. In: *Journal of Music, Technology & Education* 10.2-3: 147-165.
- 447

- 448 SMALL, Christopher (1998): *Musicking: The Meanings of Performing and*
 449 *Listening*. Middletown, CT: Wesleyan University Press.
- 450
- 451 STENGERS, Isabelle (2005): The Cosmopolitan Proposal. In: Bruno Latour
 452 and Peter Weibel (eds), *Making Things Public: Atmospheres of Democracy*.
 453 Cambridge, MA: MIT Press, 994–1004
- 454
- 455 TAN, Shzr Ee (2016): Uploading to Carnegie Hall: The First YouTube
 456 Symphony Orchestra. In: Sheila Whiteley and Shara Rambarran (eds), *The*
 457 *Oxford Handbook of Music and Virutality*. Oxford, UK: Oxford University
 458 Press, 335–354.
- 459
- 460 TAYLOR, David (2020): In the race to go online, one orchestra stands out.
 461 Online: David Taylor website [https://david-taylor.org/blog/in-the-race-to-go-](https://david-taylor.org/blog/in-the-race-to-go-online-one-orchestra-stands-out)
 462 [online-one-orchestra-stands-out](https://david-taylor.org/blog/in-the-race-to-go-online-one-orchestra-stands-out) [22/09/20]
- 463
- 464 TILDEN, Imogen (2020): Bittersweet symphony: the best lockdown orchestras
 465 and choirs online. In: *The Guardian* 15/04/20.
- 466
- 467 VALVERDE, Raquel Campos (2019): Understanding musicking on social
 468 media: Music sharing, sociality and citizenship. PhD dissertation, London South
 469 Bank University. <http://orcid.org/ 0000-0003-3712-6152> [22/09/20].
- 470
- 471 ZUIDERENT-JERAK, Teun (2015): *Situated intervention: Sociological*
 472 *experiments in health care*. London: MIT Press.