ANALYTIC FRAMEWORKS FOR MUSIC LIVESTREAMING:

LIVENESS, JOINT ATTENTION, AND THE DYNAMICS OF PARTICIPATION

By

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Analytic Frameworks for Music Livestreaming:

Liveness, Joint Attention, and the Dynamics of Participation

Abstract

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This dissertation examines the social contexts for music livestreams, in order to lay the groundwork for future studies of both livestreaming as a whole and individual case studies. No frameworks currently exist for analyzing music livestreams. Although the technologies of livestreaming have been evolving over the past few decades, there have been no organized or successful attempts to standardize the ways we understand and study this fast-growing medium for music performance. Chapter 1 provides basic definitions of livestreaming, and then emphasizes the framework of liveness, arguing that although livestreaming technologies developed relatively recently, the practice of transmitting and receiving live music has been developing since the late-nineteenth century. I examine livestreaming as a continuation of broadcast media wrapped up with conceptions of liveness that have been constantly transforming over the long twentieth century. Chapter 2 connects livestreaming with the social media platforms that have emerged in the past two decades. I also position livestreaming within discussions and anxieties surrounding attention and distraction in the context of digital media. In Chapter 3 the discussion of attention extends into the realm of joint attention, and the ways livestreaming engages our attentive capacities in groups to facilitate specific modalities of participation—observational, reactive, and generative. Finally, the conclusion pulls

these frameworks together to demonstrate their use in an analysis of music livestreaming during the COVID-19 pandemic, including the patterns of behavior and audience engagement, conceptions of liveness during the pandemic, and the effects of these factors on the social aspects of live music.

INTRODUCTION

Three events shaped the direction of this project. The first occurred on June 24, 1993, when an impromptu garage band called Severe Tire Damage performed at the Xerox PARC research center in Palo Alto, California. They were far from famous—all the members were local employees, working either for Xerox PARC or nearby technology developers—and to this day the band has not become a household name. Nonetheless, the concert carries historical weight as the first to be transmitted live over the Internet.[1] Although it was likely not viewed by more than a lone, unidentified researcher in Australia, it sparked new directions for transmitting and receiving live music; the Internet became the next major carrier of live media, a critical development for a fast-growing digital culture. This was not the first long-distance transmission of live music, however. Concerts and studio broadcasts were commonplace for television viewers by the mid-twentieth century and radio listeners by the 1920s, and live opera transmissions were available to Parisian théâtrophone listeners as early as 1890. Yet this pop-up concert in 1993 marked a sea change in the growing possibilities of the Internet and the transformation of live music.

The second event took place just after 11:00 PM EST on the morning of November 21, 2019. As I lay in bed, scrolling through YouTube, I came across an in-progress livestream by the English band Coldplay, where they were performing music from their latest album *Everyday Life*. The concert took place among the remains of the

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[1] Available evidence does not suggest any earlier examples. Yves Lepage, et al., "Musical Events," *MBONE: Multicasting Tomorrow's Internet*, 1998, accessed September 12, 2020, https://www.savetz.com/mbone/ch6_4.html.

Amman Citadel in Jordan, but there was no audience in sight. Instead, the live chat field was teeming with comments from hundreds of thousands of users around the world, all viewing the performance synchronously. I had viewed livestreamed performances before this, but what seemed remarkable was the fact that I, lying in bed in Cleveland, Ohio, with nothing but a smartphone, was suddenly thrust into a massive shared experience that connected me with so many others around the globe, all observing and reacting to the same event at the same time. These were not static comments dropped below an existing YouTube video; this was a live occurrence, in the sense that it was unfolding in real time, but also in a dynamic, organic sense—indeed, the event felt "alive." Karsten Stueber, philosopher of psychology and social science, writes that empathy is a key component of socialization and group experiences. He posits that one of the conditions of establishing meaningful relationships with other individuals is "…to recognize each other's emotions, beliefs, desires, and values…to allow us to attempt to accomplish much more thorough integration into the social realm." However, he continues with the caveat that there exists "an irreducible egocentric element, which is also responsible for the possibility of our being moved by our encounter with others."[2] Despite taking place over virtual connections, the balance between empathy and ego within this livestreamed concert was striking; as an audience member, having access to the minds of fellow viewers, even at a basic level, provoked a powerful repositioning of myself in the world—fundamentally, I was a part of something big.

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[2] Karsten Stueber, "Social Cognition and the Allure of the Second-Person Perspective: In Defense of Empathy and Simulation," *Joint Attention: New Developments in Psychology, Philosophy of Mind, and Social Neuroscience,* ed. Axel Seemann (Cambridge, MA: The MIT Press, 2011), 284.

The third event, on October 22, 2020, activated similar patterns of connection between audience members, as the opera company White Snake Projects premiered their virtual opera, *Alice in the Pandemic*, via livestream. However, this performance differed significantly from the Coldplay concert in 2019. Cerise Lim Jacobs, the writer and producer of the opera, made empathy and connection a deliberate and central component of the performance, allowing audience members to become part of the overall experience and converse with each other, and even ask questions of the performers and technicians afterward. She conceived *Alice in the Pandemic* as a response to the COVID-19 pandemic and stay-at-home orders of 2020, in order to comment on the widespread unmooring of our personal and social lives, widespread concerns for public health, and the relationship between mothers and daughters in the midst of it all.[3] Empathic connection thus stands out as an intrinsic and vital component of this opera, despite taking place entirely virtually, including the set of the opera, a three-dimensional cityscape with uncanny and surrealist features. Through the interactions within the chat field of the livestream, audience members shared deeply emotional responses to the performance, connecting with one another while simultaneously dealing with their own subjective states.

Over the course of this dissertation, I explore what these three events (among other similar ones) have in common. Fundamentally they are all musical performances of some sort. However, they are also livestreams, and in this project I consider the ways livestreaming in particular as a social practice might be studied. There are several aspects

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[3] Cerise Lim Jacobs, "*Alice in the Pandemic*: The Inspiration," White Snake Projects, https://www.whitesnakeprojects.org/productions/alice-in-the-pandemic-a-virtual-opera-fall-2020/. Accessed October 23, 2020.

at play in any livestreamed music event: the music, the performance itself, the

transmission to the audience, the network technologies involved in the transmission, and

audience engagement, to name only a few. Yet in spite of the growing popularity of

livestreaming, standardized parameters for studying livestreams do not yet exist. This

dissertation therefore builds off existing frameworks in other fields to establish some

standards and demonstrate how they can be applied. Ultimately, the goal of this project is

to demonstrate that music livestreaming is a social practice that has thoroughly ingrained

itself within contemporary western culture by following in the footsteps of previous

broadcast media while also harnessing the power of sociability and interactivity—the

patterns of behavior that organize our social lives. Each of these angles contribute

substantially to the social contexts of livestreaming, informing the ways audiences

engage with the streams themselves, the performers, and each other.

Livestreaming: Definitions and Parameters

Before this project can proceed, though, we must define the parameters of

livestreaming itself. A rudimentary and widely applicable definition of livestreaming

comes from Cloudflare, a company that specializes in virtual network services: "Live

streaming is the delivery of video or audio data to an audience over the Internet as the

data is created."[4] The word itself comes from "streaming," a method of transmitting and

receiving data where a user plays pre-recorded audio or video over the Internet, and the

originating server delivers the data bit by bit; transmitting in this way means that users do

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[4] Cloudflare, "What is live streaming?" *Cloudflare*, https://www.cloudflare.com/learning/video/what-is-live-streaming/. Accessed July 15, 2022.
Some sources refer to livestreaming as "live streaming," but there is no difference in meaning. Throughout this project, I write the term as a single word, "livestreaming."

not have to download an entire file to their device before watching or listening to it.

Livestreaming, by extension, is when the recording and transmission happen in real time:

the data is recorded and sent almost simultaneously. Typically, livestreams occur as

broadcasts from one source or server to many recipients at once. Because

videoconferences also occur in real time (e.g., Skype, Zoom, and FaceTime), they are

often confused with livestreams; however, whereas livestreams operate on one-to-many

networking protocols, videoconferencing platforms employ "real-time communication"

protocols. In other words, livestream transmissions typically originate from a single

server and travel across a network to other users, while videoconferences allow for multi-

directional communications between individuals and a central server.[5] While definitions

are necessary, though, this project is about more than identifying what livestreaming is;

rather, it is about what livestreaming means. It is about the social contexts of

livestreaming, and how audiences engage with both the performers and each other, a

discussion that begins with a consideration of liveness and how it has transformed over

the past several decades in the context of broadcast media.

Liveness, Attention, and Sociability through Music Performance

Well before the Severe Tire Damage performance in 1993, physical attendance

had stopped defining liveness. Liveness had instead come to refer to the positioning of

the audience in relation to a recorded, and therefore mediated, performance. According to

Philip Auslander, liveness is an inherently mediatized comportment toward performance

and reception.[6] It is not simply a foil to recorded media, whereby "live" is a synonym for

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[5] Ibid.
[6] Philip Auslander, *Liveness: Performance in a Mediatized Culture* (London: Routledge, 2008), 36.

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"real," but rather a blend of performance choices and receptive patterns. Mediatization—

not simply mediation, but mediation via the technologies and configurations of mass

media—in the midst of liveness ultimately becomes a reflection of our worldview.

Norbert Bolz and Willem van Reijen argue that "we often perceive reality through the

mediation of machines (microscope, telescope, television). These frameworks…perform

our perception of [the world]."[7] New Media theorists Jay David Bolter and Richard

Grusin would agree; writing at the turn of the twenty-first century, they observe how

cultural products often attempt to immerse consumers to the point of obscuring or

ignoring the frame of technology or medium, creating a situation of immediacy that

inherently informs perceptions of the world. In essence, then, the different manifestations

of live music transmissions have led audiences continually to alter their worldview

according to new technologies and behaviors, alongside the developments of virtual

networks of communication and socialization, and changing patterns of music

consumption. The twenty-first-century practice of music livestreaming via the Internet in

particular has paralleled the establishment of streaming platforms and social networks

like YouTube, Facebook, and Twitch, eventually converging with them to present

another viable option for music engagement and consumption.

Though a critical aspect to music cultures of all sorts, social engagement itself is

an outgrowth of attentive processes, particularly that of joint attention. Attention as a

broad concept has been treated from several different perspectives, depending on the

source. For example, in the nineteenth century, psychologist William James considered

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[7] Norbert Bolz and Willem van Reijen, *Walter Benjamin*, trans. Laimdota Mazzarins (Atlantic Highlands, NJ: Humanities Press, 1996), 71.

attention to be a fundamental function of our perceptual processes that everyone

implicitly understands:

> Every one knows what attention is. It is the taking possession by the mind, in
> clear and vivid form, of one out of what seem several simultaneously possible
> objects or trains of thought. Focalization, concentration, of consciousness are of
> its essence. It implies withdrawal from some things in order to deal effectively
> with others, and is a condition which has a real opposite in the confused, dazed,
> scatterbrained state which in French is called *distraction*, and *Zerstreutheit* in
> German.[8]

Others writing on attention from contrasting perspectives have understood it in slightly

different ways. In a 1942 letter, Simone Weil considered attention to be a signification of

generosity, care, and love: "Attention is the rarest and purest form of generosity. It is

given to very few minds to notice that things and beings exist."[9] Still others, like Thomas

Davenport and John Beck, view attention as an economic resource, a commodity in

limited supply saddled with high demand.[10] Other authors like Tim Wu and Matthew

Crawford are of similar minds, seeing attention through the lens of a capitalist

framework.[11] In particular, Crawford notes of our modern culture that "capitalism has

gotten hip to the fact that for all our talk of an information economy, what we really have

is an attentional economy, if the term "economy" applies to what is scarce and therefore

valuable."[12]

The broad framework of attention studies informs the application of joint (or

social) attention to livestreaming and manifestations of liveness in chapters 2 and 3 of

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[8] William James, *The Principles of Psychology* (New York: Holt, 1890), 1:403-404.
[9] Simone Weil, quoted in Simone Pétrement, *Simone Weil: A Life*, trans. Raymond Rosenthal (New York: Pantheon Books, 1976), 462.
[10] Thomas H. Davenport and John C. Beck, *The Attention Economy: Understanding the New Currency of Business* (Boston, MA: Harvard Business School Press, 2001).
[11] Tim Wu, *The Attention Merchants: The Epic Scramble to Get Inside Our Heads* (New York: Alfred A. Knopf, 2016).
[12] Matthew Crawford, *The World Beyond Your Head: On Becoming an Individual in the Age of Distraction* (New York: Farrar, Straus and Giroux, 2015).

this project, which in turn opens up possibilities for participation and social engagement on individual and group levels. Generally speaking, joint attention refers to the coordination of attention between individuals, often toward a common object of focus. The connective power of joint attention has been studied at length, notably by psychologists and cognitive scientists including Michael Tomasello, one of the early psychologists to examine joint attention from the perspective of cognitive development. Tomasello writes about joint attention as a vital and foundational social mechanism that informs early childhood cognition, demonstrating how socialized attentive processes are an essential component of our interactions, perceptions of the world, and participation in society.[13] Writing together on the layered nature that joint attention manifests in mediated or mediatized contexts, Francis Steen and Mark Turner highlight the layers of awareness and implicit, nonverbal communications that occur, all of which stem from the entrained processes of socialization, joint attention, and communication that develop from childhood.[14] The deep entrainment of joint attention in social life makes it an essential component of shared musical experiences, and a critical framework for understanding the experience of livestreams, as Chapter 3 will demonstrate.

Both joint attention and shared mediatized experiences inform the ways people engage and participate in livestream performances. On a more fundamental level, however, these considerations factor heavily into the perception of liveness and where livestreaming fits into it. While liveness often pertains to the perception of an event as

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[13] Michael Tomasello, "Joint Attention as Social Cognition," in *Joint Attention: Its Origins and Role in Development*, Philip J. Dunham and Chris Moore, eds. (Hillsdale, NJ: Lawrence Erlbaum Associates Inc., 1995), 103-130.
[14] Francis Steen and Mark Turner, "Multimodal Construction Grammar," in *Language and the Creative Mind*, ed. Michael Borkent, et al. (Stanford: CSLI Publications, 2013), 257-58.

literally "live" or real-time, it also has to do with the available possibilities for social engagement. Indeed, liveness and sociability are inextricable. Even at its most basic, sociability indicates a group impulse toward connectedness and communication, which are natural components to shared, "live" experiences. Tomasello and Sebastian Kirschner have written about sociability from the perspective of cognitive development, making the case that musical engagements in social settings promote sociability in young children. They demonstrate that joint music making (importantly, in real-time, in-person settings) encourages cooperative behaviors, emotional intelligence, and empathetic capacities.[15] From an early age, sociability is unmistakably tied to liveness; for young children developing the capacity for prosocial behaviors, in-person experiences are critical to acquiring those skills. As it happens, music serves as an effective means to that end, showing that sociability, liveness, and music are entwined. At first glance, then, livestreaming seems to remove the seemingly critical in-person component; in part, this project will explore how performers work around that perceived limitation—and whether or not they succeed.

Inasmuch as music making is a primarily auditory activity, it is also a tactile one. The physicality that a musician activates while playing an instrument, the powerful speakers that make audiences' chests vibrate, the visceral impulses that accompany the experience of an emotionally charged performance—these artefacts of musical experience are unquestionably corporeal, but are also easily transferrable in virtual settings. Personal stereo systems, earbuds, white noise machines, high-definition video, and personal laptops, tablets, and smartphones are among some of the immersive

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[15] Sebastian Kirschner and Michael Tomasello, "Joint music making promotes prosocial behavior in 4-year-old children," in *Evolution and Human Behavior* 31, no. 5 (2010), 354-364.

technologies that have the potential to make the physicality of music palpable to remote audiences. The Metropolitan Opera demonstrates one approach toward harnessing the power of technology to immerse audiences in their performances; the *Live in HD* opera events—where live operas are broadcast from the Metropolitan Opera house to remote audiences in movie theaters across the globe—deploy state-of-the-art audio capturing systems and high-definition cameras strategically placed around the stage to deliver absorbing opera experiences to viewers. However, the enhancements offered by this technology do not necessarily equate to an in-person experience at the opera house.[16] When viewing operas in the actual space, audience members may in fact sit much further from the stage, their view obscured and the sonic qualities changed by their placement relative to the hall's acoustics. In a technologically-enhanced broadcast, viewers receive high-resolution close-ups of the performers and expertly-mixed audio tracks. In addition, audiences of a broadcasted opera (or any other similarly mediated event) are at least somewhat more free to engage in conversations, offer verbal commentary, leave and re-enter the viewing space, or any number of forms of "participatory spectatorship," as Steichen puts it.[17] Although the experience is perhaps incredibly immersive, it limits the audience's perception of a true in-person experience. The same is true of concerts in any genre; the experience of being there in person often differs dramatically from viewing the same event remotely. To varying degrees, these technologies offer "sonic self-control," as media scholar Mack Hagood suggests; they allow users to (re)configure their auditory and haptic worlds by fine-tuning their technological interface to satisfy personal tastes.[18]

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[16] James Steichen, "HD Opera: A Love/Hate Story," *The Opera Quarterly* 27, no. 4 (Autumn 2011), 444-45.
[17] Ibid., 455.
[18] Mack Hagood, *Hush: Media and Sonic Self-Control* (Durham: Duke University Press, 2019), 178-180.

Livestreaming occupies the same category of what Hagood calls "orphic media," allowing users, viewers, or participants to engage with media independently of others.[19]

What is not so easily transferrable, however, is the physical immediacy of being in a performance space with others: the rubbing of elbows, the smell of sweat or alcohol or pyrotechnics, the many possible audiovisual vantage points of the venue, even the tedium of ingress and egress before or after the performance. While the technologies of sonic self-control may enable greater flexibility of engagement with some aspects of a performance, they may severely delimit other aspects of the same. Cultural historian Rebecca Tuhus-Dubrow has written on the rise in popularity of the Walkman, an iconic example of personal stereo and sonic self-control in the late twentieth century. As the technology of mobile personal stereos became increasingly popular, so too did a widespread moral concern that, by tuning out the world and creating personal sonic spaces, individuals were becoming increasingly antisocial.[20] With the development of personal listening technologies and the dawn of livestreaming in the twenty-first century, all these concerns surrounding liveness and the sociability involved with attending musical performances have inevitably been invoked, often implicitly, by both performers and audiences. Over the past couple decades, producers and performers of livestreams have attempted to mitigate some of these differences, but in so doing have created other forms of detachment. In the course of exploring frameworks for analyzing music livestreams, this project will also investigate the different approaches to sociability and liveness that performers and audiences adopt in various cases.

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[19] Ibid., 3.
[20] Rebecca Tuhus-Dubrow, *Personal Stereo* (New York: Bloomsbury, 2017), 54-59, 62-71.

Ultimately, these questions boil down to the ways audiences attend to live performances. Whether the performance is attended in-person or via livestream affects the manner and degrees of attention, in turn informing the ways audiences participate in the performance and engage with each other. Both the enhancements and limitations offered by livestreaming technologies contribute distinct qualities to the modes of attention, engagement, and "participatory spectatorship" between audience members, performers, the technology in play, and the livestream itself. Each of the following chapters will break down those qualities from various perspectives ranging between cultural and technological history, attention studies, performance, and participation.

Chapter Overview

As there are several factors to livestreaming as a whole—historical precedents, technological infrastructures, musical idiosyncrasies, and social interactions, among others—the methodological approach to this project is also varied, growing out of a diverse range of disciplines including historiography, sociology, new media studies, performance studies, cognitive science, and attention studies. As such, in each chapter I utilize case studies to approach different aspects of livestreaming in those areas. Within the context of broadcasting throughout the long twentieth century (i.e., the 1890s through the 2010s), the frameworks of liveness and performance balance between history and novelty.

Chapter 1 provides an overview of the history of broadcast media, with a selective focus toward placing livestreaming along a spectrum of successive technological developments including telephony, radio, and television. The conceptual undercurrent of

the chapter is the idea that although the technologies of livestreaming are new as of the past couple decades, the practice of transmitting and receiving live music is not; in fact, the very idea of "liveness" itself is a concept that has existed since these technologies first surfaced, and has continually transformed over the long twentieth century. In this way Chapter 1 treats liveness as a historiographic subject that could only be truly recognized and understood in retrospect. The examples provided in Chapter 1 are therefore not intended to present a comprehensive history of broadcast media, but rather a selective overview that examines the ways broadcast media have informed conceptions of liveness and contributed to the eventual advent of livestreaming over the internet. In the course of this overview it also becomes apparent that the development of broadcasting and the concept of liveness are also strongly tied to music; indeed, the invention and cultural integration of livestreaming (in addition to previously developed broadcast technologies) owes much to the perpetual effort to bring live music of all sorts to remote audiences. Classical music broadcasts—from the Paris Opéra over telephone lines to the NBC Symphony Orchestra's televised programs, as well as radio broadcasts of the Metropolitan Opera and Hamburg's NDR Elbphilharmonie Orchester—featured alongside watershed popular music events, including The Beatles' debut performance on *The Ed Sullivan Show* in 1964 and Elvis Presley's 1968 comeback concert on NBC. Such events framed liveness (and eventually, livestreaming itself) as a chiefly music-driven phenomenon.

In Chapter 2 I discuss the interactivity of social media networks, and position livestreaming as an outgrowth of social platforms as well as broadcast media in general. Following the dramatic shifts in liveness explored in Chapter 1, social networking tools

allow for immediate, direct interactions between audience members of a livestream, creating a heightened sense of live sociability within an otherwise cold, distanced medium. The purpose of Chapter 2 is to unpack the contemporary relationship between culture and social technologies, a link that significantly hinges on the concept and practice of liveness. The implications of that connection cut across the ways we interact with each other and perceive the world around us; as such, the chapter examines how livestreaming in the midst of social media platforms rearranges our attentive processes— a critical idea that, in turn, informs joint attention and the modes of participation in group settings (even virtual ones). These considerations bring up questions of perceived connectedness and intimacy through mediatization, in addition to issues of ethics. These questions anticipate Chapter 3, at which point this study segues into the applications of attention and sociability within livestreams. Building on top of the processes of attention, joint attention (as described above) becomes a driving force for the ways audiences participate in livestreams within social media platforms. I propose three modalities of participation—observational participation, reactive participation, and generative participation—which all grow out of the contexts of joint attention. Individual case studies across these three modalities demonstrate their use in livestreaming studies, while also unpacking the case studies at hand and setting the stage for future work concerning the social contexts of livestreaming.

Although the historical contexts covered in Chapter 1 touch on patterns of livestreaming in classical music, the frameworks and case studies of Chapters 2 and 3 primarily focus on popular music cultures. Considering the overarching position of this project as a study of "music" livestreaming, a brief explanation is called for. As the

upcoming chapters will demonstrate, the social groups that have formed around music

livestreams most intensely and holistically—that is, those networks that have

demonstrated the most nuanced and committed social formations around livestreams as

complete sociocultural events (rather than simply virtual concerts)—have done so

predominantly in the contexts of popular music. This is not to say that social groups

surrounding classical music have not embraced the practices and effects of livestreaming.

In fact, there are some examples of classical music livestreaming that will be considered,

albeit briefly, throughout this project. However, popular music cultures have more readily

taken advantage of the technical capabilities of livestreaming media and co-opted their

social potential in ways both substantial and far-reaching, effectively altering the terrain

of liveness throughout those social networks. This is the case for popular music in a more

definitive way than in the context of classical music, which has largely encompassed

livestreaming as a matter of convenience, rather than one of significant cultural

definition.

The project concludes with an analysis of livestreaming during the COVID-19

pandemic incorporating the above frameworks. With this discussion, the project returns

to questions of sociability and empathy, considering the ethical consequences of the

massive cultural shift to livestreaming that occurred in 2020. The social factors of

livestreaming are strongly tied to its economic effects within the music industry, but also

across individual creators and audience groups. The varied factors discussed in the

conclusion lead to issues of accessibility, the creation of new genres, and questions about

what livestreaming actually means: is it a sufficient substitute for in-person performance?

Is it truly "live"? Is it compensatory in some form, providing a possible solution to

something that has been lost? By demonstrating the value and applications of the frameworks here, the goal is to establish an approach to analyzing livestreaming that can feed additional studies of its ethical and economic implications, its developments and transformations as we venture further into the twenty-first century, and further inquiries into what livestreaming means within music cultures and across globalized networks.

Yet in light of all this, we must start our analysis at the beginning of the story. Livestreaming as a technologically and socially distinct practice has become a significant, even critical component of the music industry since the 1990s, largely thanks to a major cultural shift toward Internet-based media and concurrent innovations in communications and network technology. But as suggested previously, underneath the hardware, software, and language, the basic practice of transmitting live music over long distances is as old as recording technology itself. At their core, livestreams have much in common with early broadcast media such as telephones, radio, and television, yet livestreaming in 2020 does very different cultural work from radio in 1931 or live television in 1964, for example. During the widespread isolation brought on by the COVID-19 pandemic, performers had to rethink their available avenues for reaching audiences, while in turn audiences clamoring for interpersonal interaction turned to live media as a primary replacement.[21] Yet in order for that replacement to be possible, livestreaming already had to be in place as a viable option, and even before that, broadcast media set vital precedents throughout the twentieth century, all of which will be explored as we proceed with Chapter 1.

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[21] This extends beyond livestreaming, of course, to such formats as video conferencing, watch parties, and online gaming, to name a few. The relationship between livestreaming and the COVID-19 pandemic will be explored further in the Conclusion.

CHAPTER 1
New Sensations: Broadcast Media and Changing Conceptions of Liveness, 1881-2019

<u>Telephony</u>

An 1889 volume of the London trade publication *The Electrical Engineer* printed an entry on a recent Parisian invention, the théâtrophone:

> Paris ever seeks new sensations, and a telephone by which one can have *soupçons* of theatrical declamation for half a franc is the latest thing to catch their ears and their centimes. This instrument is to be called the theatrophone [sic], and is shortly to be placed on the Paris Boulevards. Anyone, on the payment of the modest sum of [fifty centimes], can be put into communication with a certain theatre and listen to the performance for five minutes.[1]

The writer's use of the word "sensations" to describe the impetus behind this new invention is completely appropriate, taking into account the binaural, stereophonic headphone receivers and the purely personalized, intimate nature of the listening experience. Yet, not only does the théâtrophone amplify one's sense of hearing to capture a live performance from the Comédie-Française or the Opéra, it also fundamentally changes the listener's sense and experience of live music. Before the théâtrophone's invention by Clément Ader in 1881, experiencing live music required physical presence. "Liveness," if such a concept were to cross anyone's mind at the time, would have taken for granted that the performer and audience occupied the same space. Auslander claims that, in the context of later decades, such a conception would create a false binary between "live" and "recorded" music, thereby denying the capability of live music to reach dispersed listeners.[2]

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[1] "The Theatrophone," *The Electrical Engineer* (August 30, 1889), 161.
[2] Auslander, 3, 15.

Since the introduction of the théâtrophone (and telephony in general), live music transmissions have taken on a variety of forms, all of which shared the same basic principle of using technology to simultaneously record, send, and receive sonic information across otherwise prohibitive distances. Live music transmissions restructured the performer-audience relationship, lifting the requisite assumption that both had to occupy the same space to hear live music.

The Compagnie du Théâtrophone was soon joined by other related telephony services, often called telephone newspapers: services that provided audible entertainment to patrons via telephone lines. Telefon Hírmondó, established in 1893 in Budapest, was the next major endeavor to transmit entertainment to local subscribers; in the United States, Tellevent began transmitting within Detroit in 1907, followed by Tel-Musici in Delaware by 1908, and the Telephone Herald in Portland, Oregon, and Newark, New Jersey, by 1909.[3] The companies transmitted a range of media, covering news, plays, and music, but the transmissions themselves varied considerably depending on the service. For example, the Tel-Musici company supplied phonograph recordings over the telephone, with selections requested by the caller.[4] The théâtrophone, by contrast, primarily supplied live music being performed at the moment.

At the turn of the twentieth century, the very notion of liveness had to face scrutiny for the first time, on two separate fronts. On one hand was the matter of physical presence, and on the other, the matter of recorded sound. Considering that until 1881

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[3] These are only a small sampling of the many companies established between 1890 and 1920 across North America and Europe. After the 1890s, most of them were modelled after either the Compagnie du Théâtrophone or Telefon Hírmondó. Other similar companies around the world included London's Electrophone, Tellevent in Detroit (U.S.), and Italy's Fonogiornale and Araldo Telefonico. Most of these companies dissolved or were absorbed by the mid-1920s as a result of radio's increasing popularity.
[4] "Distributing Music Over Telephone Lines," *Telephony* (December 18, 1909), 699.

nobody had heard live music in the absence of a performer, telephone newspapers

completely altered the possibilities for experiencing music either at home or in public

establishments. The other, more contentious area of scrutiny was that of transmitting

recorded sound. Even though the théâtrophone sends music to listeners via telephone

lines in real time, the source machine must still somehow capture the sound itself in order

to transmit it, and because of the nascence and limited capabilities of recording

technology at the time, sound quality was scarcely representative of the music as heard

in-person. For some, this did not interfere greatly with the overall experience; Victor

Hugo evidently enjoyed the théâtrophone, recalling "We put on our ears two earmuffs

that tied in with the walls, and we hear the performance of the Opera, we change our

earmuffs and we hear the Théâtre-Français, Coquelin, etc. We change again and we hear

the Opéra-Comique. The children were delighted and so was I."[5] Conversely, Marcel

Proust expressed disappointment in feeling distant from the musical experience due to

poor audio quality, writing that he rarely used his théâtrophone and that with it, one could

only hear music "very badly."[6] Nonetheless, he was not opposed to the practice of live

music transmission, and even appreciated the ability to listen in focused isolation. Pierre

Véron, however, did not; writing in *Le Monde illustré* in 1889, he criticized the

théâtrophone as torturous, causing listeners to sequester themselves in the dark, somber

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[5] "On se met aux oreilles deux couvre-oreilles qui correspondent avec le mur, et l'on entend la représentation de l'Opéra, on change de couvre-oreilles et l'on entend le Théâtre-Français, Coquelin, etc. On change encore et l'on entend l'Opéra-Comique. Les enfants étaient charmés et moi aussi." Victor Hugo, *Choses vues* (Paris: Ollendorff, 1913), 239.

[6] Marcel Proust, *À un ami, correspondance de Marcel Proust avec Georges de Lauris* (Paris: Amiot-Dumont, 1948), 234.
See also Melissa Van Drie, "Hearing through the théâtrophone: Sonically constructed spaces and embodied listening in late nineteenth-century French theatre," *SoundEffects* 5, no. 1 (2015), 86-7.

isolation of a private room rather than taking part in the lively socialization offered by the theatre.[7]

While none of these writers believed telephone transmissions could replace live performances, inventions like the théâtrophone planted the idea of alternative avenues for live music. For the first time, the question of "liveness" had been posed (without naming it). Whether delightful, off-putting, or torturous, this new medium indeed engendered sensations in listeners. Melissa Van Drie suggests that through the théâtrophone, listeners enter sonically constructed spaces, embodying the musical experience differently than if they were to listen in person. It encouraged new modalities of hearing and listening— indeed forming a basis for early "mediatized listening,"—that, over the following decades, shaped listening practices and the development of twentieth-century ears attuned to recorded music.[8]

Despite Proust's misgivings toward the théâtrophone due to its audio fidelity, the problem persisted. Van Drie's claim that the mediatized nature of théâtrophone transmissions contributed to the development of listening practices extends well into the century, perhaps because improvements in audio fidelity result in greater aural sensitivity to recordings. Mark Katz writes about this as recently as 2010, stating that the "sonic aura" of a recording—the ever-present qualities that characterize much recorded music, especially in the pre-digital period—is largely comprised of constant low levels of ambient noise, what he calls a by-product of imperfect recording technology and techniques.[9] In 2011, James Steichen wrote on the problems of audiovisual fidelity in the

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[7] Van Drie, 82.
[8] Ibid., 74, 81-3.
[9] Mark Katz, *Capturing Sound: How Technology has Changed Music* (Berkeley: University of California Press, 2010), 149.

Metropolitan Opera's *Live in HD* satellite broadcasts to movie theaters, in which the

remarkably high audio fidelity and visual detail actually misrepresent the in-person

experience of attending an opera performance. To be fair, Steichen admits that the *Live in*

HD broadcasts are simply following in the social positioning in the same ways opera

culture has always done: by adapting to satisfy new social and economic contexts. "If

Monteverdi, the father of opera, could do it, why shouldn't we? Opera is simply changing

in the same way that it did when it was first transplanted from the exclusive court to the

public sphere."[10] However, among the problems of branding and promotional strategy,

the culture of viewing opera in a movie theater (likening the experience to an installment

of *Mystery Science Theater 3000*), and the status of the broadcasts as a niche product, he

identifies the glaring issue of fidelity. Regarding a live broadcast of *Carmen*: "A

collective groan emerged from everyone…as the camera lingered a bit too long and bit

too up close on a chorus member's bare leg, in effect taking over a third of the screen for

what seemed an eternity."[11] Steichen argues that these kinds of issues seem to

misrepresent the experience of attending an opera in an actual opera house; yet, he

ultimately (if begrudgingly) concedes that "more opera is more opera," and that the lack

of fidelity may even be the point.[12]

  The slate of complications that come with fidelity (low or high) notwithstanding,

Katz argues that today's listeners and music consumers will often cast fidelity aside in

favor of convenience, identifying a "post-fidelity age" across the past several decades.[13]

This has not always been the case, however, and I would argue that in the first decades of

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[10] James Steichen, "HD Opera: A Love/Hate Story," in *The Opera Quarterly* 27, no. 4 (Autumn 2011), 452.
[11] Ibid., 455.
[12] Ibid., 453.
[13] Katz, 217.

recording and transmission technology, fidelity was of paramount concern. The théâtrophone, as well as the London counterpart Electrophone, featured two channel telephony, providing listeners with one receiver for each ear. This prototype of stereophonic sound demonstrates an early attempt to reflect the actual experience of sitting in an opera house, with its dynamic acoustic properties and spatially-determined sound qualities. For someone like Proust, who likely had no trouble attending a music performance, the convenience of telephony was not enough to offset the frustration of its low fidelity.

In the first decades of live music transmission, roughly 1890 to 1920, many considered telephonic music transmission a novelty. An American trade publication, *Electrical Review*, published a column on the théâtrophone in 1890 praising it as "a good advertisement for the telephone companies," and a means to "familiarize the public with the use of the instrument [the telephone]."[14] Because telephony was not yet considered a particularly practical direction in music transmission, there were no heated debates about its viability as a source of live music, and no crises about the meaning of liveness. Yet attitudes and comportments toward liveness were noticeably changing at the time, even if such discussions were not explicitly taking place; while the absence of any contention does indicate a lack of faith in the technology itself, it also suggests a general acceptance of new and expanded limits for liveness. Additionally, it should be noted that these inventions, conceived in the nineteenth century, do belong to the same family of technologies as those implemented for livestreaming in the twenty-first century. The replacement of telephone lines by fiber optics and Wi-Fi should not obfuscate the

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[14] "Wanted, A Theatrophone," *Electrical Review* (July 5, 1890), 4.

similarities in processes, functions, and experiences initiated at the end of the nineteenth century. As the decades pressed on, however, new technologies and media established new means of experiencing live music, and raised new questions about its meaning.

Radio

Although many point to the KDKA broadcast of the Harding-Cox presidential election results from Pittsburgh on November 2, 1920 as the start of radio broadcasting in the United States (probably due to the wide appeal of its content), experiments in public radio broadcasting began as early as the turn of the twentieth century. Canadian inventor Reginald Fessenden, working at an experimental station in Brant Rock, Massachusetts, made what is considered the first radio broadcast of voice and music on December 24, 1906.[15] That same year, Fessenden established the first two-way trans-Atlantic wireless telegraph connection. There are over five hundred patents in Fessenden's name, many of which were developed for industries including navigation, engineering, and communications, and used similar types of signaling mechanisms that began to usher in the growth of wireless technologies. Fessenden, whose pioneering work in radio technology propelled broadcast media into the twentieth century, made instantaneous, wireless, long-distance broadcasting a reality. The théâtrophone and other telephonic systems operated primarily within local or regional boundaries, as did early manifestations of radio broadcasting; even today, FM radio is known for its superior sound quality, but smaller range compared to AM radio. However, Fessenden's

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[15] State Archives of North Carolina, "Fessenden, Reginald A., Papers, PC.1140," *State Archives of North Carolina*, https://axaem.archives.ncdcr.gov/findingaids/PC_1140_Fessenden__Reginald_A___.html, accessed June 5, 2022.

experiments in broadcasting and long-distance communications opened the door for

further development.

American inventor Lee de Forest, known colloquially during his lifetime as the

"Father of Radio," was among the first pioneers of broadcasting to consider specifically

how music could fit into the broadcasting agenda of radio technology. Reflecting on his

initial experiments within his personal writings, he recalled,

> …[It] should be convincingly evident that from the beginning of my wireless
> telephone work I had clearly in mind its great usefulness as a means for
> broadcasting news and music entirely in addition to the use of the wireless
> telephone as a means of two way communication by voice. From the beginning, a
> great lover of opera and fine music, I was intent on developing means and
> methods for broadcast distribution of these elements of culture to widely scattered
> audiences.[16]

As it happens, de Forest was likely the first to broadcast music via radio waves to

telephone lines, when in January of 1910 he transmitted a Metropolitan Opera

performance using a makeshift antenna on the roof of the Metropolitan Opera House to

transmit Giacomo Puccini's *Tosca*, Pietro Mascagni's *Cavalleria Rusticana*, and Ruggero

Leoncavallo's *Pagliacci* to listeners in Newark, New Jersey. Although the sound quality

was poor and very few people heard the broadcast, it was the first intentional effort, from

someone whose mission it was to deliver music to distanced listeners, to distribute those

"elements of culture" to them. The Metropolitan Opera would resume broadcasts in 1931,

when the technology had improved significantly; as with telephonic media, fidelity was

of great concern early on.

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[16] Quoted in Mike Adams, *Lee de Forest: King of Radio, Television, and Film* (New York: Copernicus Books, 2012), 108.

Other institutions and stations began implementing the new technology in the meantime, and radio reached something of a "golden age" in the 1920s. The medium of radio had become ubiquitous enough to account for several popular genres of programming—talk shows, news, sports commentary, serials, plays, comedy, and music. The 1930s and '40s saw the formation of radio orchestras, established specifically for that context. London's BBC Symphony Orchestra was founded in 1930, with Arturo Toscanini among its first conductors. The NBC Symphony Orchestra, established in 1937 by David Sarnoff and Toscanini, came out of Sarnoff's frustrations over the perceived failure of radio to adequately deliver music to potential audiences.[17]

In 1945, the Nordwestdeutscher Runkfunk Symphony Orchestra—later known as the NDR Elbphilharmonie Orchester—was established in Hamburg during the aftermath of World War II by British occupation authorities. Following the collapse of Germany in May of that year, the British took control of Radio Hamburg, the only station that survived the destruction, and set out to create an orchestra that could rival the BBC Symphony Orchestra, flying in the face of Goebbels' claims of superior German culture.[18] Hans Schmidt-Isserstedt was tasked with locating and assembling musicians, and then serving as the orchestra's first conductor. Assembling the orchestra in post-war Germany was a difficult task, considering the country was beset with social-political chaos and economic turmoil.[19] Yet, Schmidt-Isserstedt completed his task, and their first concert took place in November 1945. This example demonstrates with compelling

[17] Tom Lewis, "'A Godlike Presence': The Impact of Radio on the 1920s and 1930s," *Organization of American Historians Magazine of History* Vol. 6 No. 4, Communication in History: The Key to Understanding (Spring 1992), 31.
[18] Joseph E. Potts, "European Radio Orchestras: Western Germany," *The Musical Times* Vol. 96, No. 1351 (September 1955), 473.
[19] Ibid.

clarity that even in the face of crisis, and with few options for attending musical performances in-person, the means to share experiences in real time will emerge nevertheless. This pattern is seen again in the twenty-first century, as live music broadcasting becomes a tool for coping with crisis.

<u>Television</u>

By the mid-twentieth century, "liveness" had already been understood and experienced, even if implicitly, without the need for a shared physical space for performers and their audiences. Through the use of telephonic and radio broadcasts, people had been sharing live experiences for several decades. With the rising popularity of television, however, audiences could now *see* the same events in real time, once again expanding the idea of what it meant to experience something "live." Before television, one could hear events simultaneously, but there was no way for audiences to view events at the same time as others without occupying the same space. As the 1950s carried on and television began to gain on radio's popularity as a broadcasting medium, it became clear that the sense of sight was vital (even if not strictly necessary) to the idea of liveness.

However, television has had an odd relationship with music itself: although the sense of simultaneity through both audio and visual components was a remarkable leap forward in the expansion of liveness, music had little to do with it. Simon Frith notes that while television had an impact on music, particularly through the mediation of rock music in the 1950s through the 1980s, the reverse was not necessarily so; music had a negligible impact on the development of television content and formats.[20] His argument

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[20] Simon Frith, "Look! Hear! The uneasy relationship of music and television," *Popular Music* 21, no. 3 (October 2002), 277-78.

is by no means misguided, considering the influence that programs like *American Bandstand* or the *MTV* channel on the reception of musical artists, the kinds of music they released, and the music in which fans became invested. However, it could not match the symbiotic relationship music shared with radio, a medium that vitally shaped music cultures of the 1920s through the 1950s—in large part due to the ways radio redefined liveness.[21] Frith's argument continues with the fact that the medium of television is generally not driven by sound, but by sight; it is a "picture-driven" format. Even when music crept further into the foreground on various occasions—such as the Live Aid event of 1985 or Elvis Prelsey's comeback concert in 1968—the visual component, being able to see these events, was the primary attraction.[22] Even MTV owes much of its appeal to the fact that music could be accompanied by visuals. In her pioneering study of music videos, Carol Vernallis describes the relationship of music and image as being a complex interchange, where both play an equally important role—music and image work off of each other to deliver all the aesthetic nuances of a music video.[23]

Yet through his notion of music's negligible impact on television aesthetics and culture, Frith does not give due credit to the ways music cultures have impacted television. For example, consider the February 9, 1964 broadcast of *The Ed Sullivan Show* featuring The Beatles in their United States debut which attracted a viewership of 73 million, or the February 12, 2023 NFL Super Bowl LVII halftime show featuring pop singer Rihanna, which drew over 118 million views in the United States.[24] In cases like

[21] Ibid., 279.
[22] Ibid., 280.
[23] Carol Vernallis, *Experiencing Music Video: Aesthetics and Cultural Context* (New York: Columbia University Press, 2004), 179.
[24] Richard Harrington, "The Birth of Beatlemania," *The Washington Post*, February 9, 1989, accessed February 15, 2023.

these—events that draw in crowds on a massive scale, during which it is implicitly understood by viewers that they are watching concurrently with millions of other individuals—it becomes apparent that through music, television has the ability to draw the attention of substantial groups of people simultaneously.

The veritable explosion of television's popularity in the mid-twentieth century, as well as its continued primacy within popular culture over the following decades, has prompted discussions concerning the place and significance of television within society, particularly through its power to present shared cultural moments in real time, over great distances. Philip Auslander asserts that television, not film, is the dominant cultural medium; it is an environment of its own, and "an intrinsic and determining element of our cultural formation."[25] In fact, television may well have surpassed radio—in terms of technological advancement as well as its commercial popularity—earlier than the 1950s, were it not for the TV industry ramping down production with the increasing tensions of World War II.[26] More than other forms of media—primarily radio and cinema—television offered a perceived immediacy and intimacy that was unsurpassed.[27] This is a reasonable notion, but an incomplete one. I would add that the immediacy and intimacy offered by television are remarkable because, for the entire history of the medium, they have always been shared. In cases like The Beatles' performance or Rihanna's halftime show, viewers are implicitly aware that they are sharing the moment with others. This was true of radio to an extent, of course, but television brought that sense to the

See also Christina Gough, "Number of viewers of the Super Bowl halftime show in the United States from 2012 to 2023," *Statista*, February 21, 2023, https://www.statista.com/statistics/1132847/super-bowl-halftime-show-viewers/, accessed March 6, 2023.

[25] Auslander, 2.

[26] Ibid., 14.

[27] Ibid.

foreground with the addition of visual spectacle. The undercurrent of mutual awareness, called joint attention, is the guiding framework of Chapter 3, but it is important to note here because with the rise of television's popularity in the 1950s, liveness no longer referred merely to a mediatized event that could be experienced at a distance, but also something that was shared with others viewing the same thing.[28]

Livestreaming

In 1993, the Internet as we know it was still gestating, and the mechanisms of virtual networks were still taking shape. In Palo Alto, California, developers were toying with the possibilities of one such mechanism, called a *multicast backbone*, or MBone. In order to fully understand the importance of this routing system for the history of livestreaming, we will first consider its technical properties. As its name implies, MBone was a virtual backbone, or networking infrastructure, developed in 1992, which supported multicasting over the Internet. Backbones provide connections and pathways within and across networks, so that information can travel between endpoints—a skeleton of sorts, connecting parts to a whole. Multicasting allowed for simultaneous one-to-many transmissions, opening pathways from one source to multiple destinations. When a sender distributes a packet of information to multiple destinations via the MBone, instead of sending individual, identical packets, a single packet leaves the source and ends up at all destinations at once. Other users in the network can also send information back, either

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[28] Francis Steen and Mark Turner, "Multimodal Construction Grammar," in *Language and the Creative Mind*, ed. Michael Borkent, Barbara Dancygier, and Jennifer Hinnell (Stanford: CSLI Publications, 2013), 258.

to the sender, or to everyone else.[29] In theory, this process allows for a more efficient transfer of information than previously developed methods, with the MBone acting as an overlay network, creating specific connections from one source to many endpoints over the Internet.[30]

Unlike broadcasting, multicast transmissions reach only specified destinations.[31] While the difference might seem negligible and multicasting might appear to be a more specific variety of broadcasting, in terms of function these systems are quite different. In the early- to mid-1990s, MBone provided the infrastructure for a dedicated network of users who could communicate instantaneously as well as efficiently, by using a smaller network or more specified transmission spectrum. Whereas broadcast systems transmit information to all receivers in a network, multicasting involves distributing data only to specific destinations. Although the systems discussed earlier in this chapter—telephony, radio, and television—did not make use of Internet or networking systems, this distinction still holds up. The elective nature of the Tel-Musici subscription service, for instance, functions more like a multicast network than public radio, which broadcasts data to all available receivers in the covered area. Over the course of its development, television has crossed these boundaries more freely, with some stations or programs distributing signals more selectively in the form of paid channels, such as HBO or

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[29] Yves Lepage, et al., "Multicasting on the Internet," *MBONE: Multicasting Tomorrow's Internet* (Hoboken, NJ: John Wiley & Sons, 1996). https://www.savetz.com/mbone/ch1_4.html.

[30] Stephen L. Casner, et al., "Making the MBone Real," May 10, 1995, accessed September 30, 2020, https://web.archive.org/web/20160413110456/http://www.isoc.org/inet95/proceedings/PAPER/227/html/paper.html#CH2.

[31] Although there exists a technical distinction between broadcasting and multicasting specifically in the field of networking, the term "broadcasting" also has a separate meaning in the field of communications, where it refers to any practice of transmitting information to a wide and dispersed audience simultaneously. Throughout this project, I attempt to be as clear as possible about which set of meanings apply in a given situation.

Showtime. Depending on the platform carrying a given livestream, it can function in either a broadcast or multicast capacity. For example, livestreams on YouTube tend to be publicly available to anyone with an Internet connection, whereas those taking place over Facebook or Instagram tend only to be accessible to users with an active account on that platform and are "following" or "friends with" the host.

On June 24, 1993, the developers at the Xerox PARC research center in Palo Alto were discussing potential applications of the MBone when the band Severe Tire Damage was performing elsewhere in the facility. They decided to transmit the performance over the MBone as both an experiment and a demonstration of the MBone's capabilities for long-distance communication and distribution of multimedia information. According to the accounts of those involved, the transmission was received by at least one end-user in Australia.[32] In 1994, the Rolling Stones performed a stadium concert in Dallas, which was also multicast on the MBone, but to a much greater (unspecified) number of receivers.[33] By this point, the MBone had proven its ability to transmit live music, but even these events had not fully demonstrated its capabilities as a communications and networking backbone; the true extent of the MBone's capacity as a backbone would come through in other, nonmusical endeavors, such as through audiovisual conferencing and cooperative virtual art experiments like the Poietic Generator, a cooperative game in which users contributed in real time to the creation of a virtual mosaic.[34] As noted previously, one of the advantages of multicasting is its efficient communication functions

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[32] Yves Lepage, et al., "Musical Events," *MBONE: Multicasting Tomorrow's Internet* (Hoboken, NJ: John Wiley & Sons, 1996). https://www.savetz.com/mbone/ch6_4.html.
[33] Ibid.
[34] Elisa Giaccardi, "Mediators in visual interaction: An analysis of the 'Poietic Generator' and 'Open Studio'," *Journal of Visual Languages & Computing* 17, no. 5 (October 2006), 398-429.

across a lean network infrastructure. In other words, the MBone's developers intended that it would serve as an interactive platform.

Sociologist Erving Goffman writes on interaction rituals in terms of the layered procedures, words, acts, and gestures available to individuals when they engage in social exchanges with each other.[35] This is most easily achieved in the immediate presence of other individuals, where those exchanges can occur through an organic flow of words, facial expressions, touch, and other actions. However, in the context of mediated engagements, interaction can still occur in profound ways. Through the mediation of music, for instance, Thomas Turino and Christopher Small would describe interaction as a set of relationships, a participatory process through which individuals in a group setting act and react with each other, toward the end of creating a musical experience.[36] Timothy Dowd and William Roy describe interaction through music as an inherent aspect of social life that contributes to the construction of identities; in turn, identities are the foundation for social life.[37]

The previous broadcasting methods of telephony, radio, and television involve varying degrees of interactivity, such as the ability of telephone newspaper subscribers to request specific music, and the ability to call in to a radio station. These are not trivial features; the idea that a listener could affect the outcome of a musical experience in real time over great distances is an ability one should not take for granted in the context of the

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[35] Erving Goffman, *Interaction Ritual: Essays on Face-to-Face Behavior* (New York: Pantheon, 1967), 114.

[36] Thomas Turino, *Music as Social Life: The Politics of Participation* (Chicago: University of Chicago Press, 2008), 29.
Christopher Small, *Musicking: The Meanings of Performing and Listening* (Middletown: Wesleyan University Press, 1998), 8.

[37] Timothy J. Dowd and William G. Roy, "What Is Sociological About Music?" *Annual Review of Sociology* 36 (2010), 187-189.

early twentieth century. However, it was not until the early 1990s that a more comprehensive and consequential form of interactivity developed. Because the Internet is essentially an information and communications tool, its very design is based on principles of networking and reciprocity. The Internet is indeed live in the sense of instantaneous transmission of data and communications; even after the MBone faded in the midst of more efficient networking infrastructures and the rise of Web 2.0, interactivity remained a defining characteristic of Internet-based cultures—perhaps to an even greater degree than before.[38] Social media websites like Myspace and Facebook emphasized user-generated content in ongoing virtual communities (as opposed to temporary, dedicated information-sharing networks); file sharing websites like Limewire and Napster normalized the practice of digital music downloads[39]; YouTube became a standard for streaming media, through which a user could temporarily access media stored on external servers while it is being transmitted (as opposed to downloads, which can only be accessed after a file has finished transmitting). All of these platforms, whether through their emphasis on user-generated content, interpersonal communications, or public messages (e.g., YouTube comments), place interactivity at the forefront of their operations.

The implementation and emphasis on user interactions across these platforms has enlivened their digital spaces, allowing for the creation of virtual communities that often engage, share, and transact with each other in real time. Andrew Hugill has theorized

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[38] In a dissertation on viral media, Paula Harper goes as far as to compare interactivity on the Internet to the communicability of viruses. Paula Harper, "Unmute This: Circulation, Sociality, and Sound in Viral Media," PhD diss., (Columbia University, 2019), 14-16.

[39] Music downloading practices extend beyond the scope of this project. Although I will return to this to some degree in later chapters, for now it should suffice to acknowledge that commercial music downloading became commonplace by 1999, with the release of David Bowie's album *hours…*, Public Enemy's *There's a Poison Goin' On*, and the popular usage of Napster and Limewire.

about the connections between Internet music and social networks, focusing on the real-time exchanges between geographically-dispersed agents and the notion that listener interactivity affects the algorithms that both dictate a platform's music listings and shape future exchanges.[40] Paula Harper has pointedly compared contemporary Internet communities to living organisms in her dissertation on viral media: Web 2.0 platforms (e.g., Facebook, Reddit, Instagram, Twitter) cultivate communities—living, thriving, virtual ecosystems that operate in much the same way as their in-person counterparts, only removed from physical space—which can (and do) become "infected" by viral agents, such as "Bus Uncle" (2006) or "Gangnam Style" (2012).[41] Viral media would not be so sensational if it were not for the instantaneous nature of Internet transmission; these objects indeed act like contagions, spreading from one user to the next—or to many—in almost no time at all. These platforms clearly evidence a degree of liveness. Recalling Auslander, liveness need not involve physicality, but can instead rely on either a subject-object positioning that reflects or reproduces live experiences, or simply on the perception of real-time occurrences—even if artificial, as in the case of viral media. Auslander makes it clear that whatever the situation, media modulate liveness, and live experiences are almost always mediatized in some form.[42]

In the contexts of livestreaming, the mechanisms of social networks and streaming media converge, and the broadcasting media of previous decades are reincarnated. In October 2009, YouTube livestreamed its first concert, headlined by the band U2 as part of their U2 360° Tour, which nearly ten million viewers streamed in

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[40] Andrew Hugill, "Internet Music: An Introduction," *Contemporary Music Review* 24, no. 6 (2005): 429-437.
[41] Harper, "Unmute This," 36-7, 40.
[42] Auslander, 183.

addition to the audience who attended the concert in-person. By contrast, in November 2019 Coldplay livestreamed a two-part concert from Amman, Jordan, on YouTube featuring music from their album *Everyday Life*, to a completely virtual audience—there was no arena crowd. Yet this event was not considered any less "live" than U2's concert ten years prior. The live chat window—YouTube's virtual standing room—hosted a constant feed of overwhelmingly enthusiastic comments; if the concert felt less live by any consideration, it was not a primary concern for viewers. From the band's perspective, the decision to hold a virtual concert represented an effort on their part to encourage more sustainable, carbon-neutral tours and concerts. In an interview, lead singer Chris Martin stated that the band, like other contemporary musicians, strives to eventually hold solar-powered concerts without any single-use plastic materials.[43] That desire forced the band to seek alternative means of performance. The result of these efforts—a live concert whose audience is completely dispersed—inherently changes the performance context but retains liveness through its mediatization. Livestreaming affords each listener a more intimate and unique sonic experience, while simultaneously maintaining the interactive liveness of an arena-scale concert by way of YouTube's live chat feature. Despite the artificiality signaled by heightened audiovisual fidelity, the concert's mediatized format afforded an immediate, accessible, personal, and—most importantly—live experience for its viewers.

Whether through a pair of nineteenth-century stereophonic headphones, in front of the family radio or television set, or on YouTube, live music has left behind the need

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[43] Laura Snapes, "Coldplay pause touring until they can offer 'environmentally beneficial' concerts," in *The Guardian*, November 21, 2019, https://www.theguardian.com/music/2019/nov/21/coldplay-pause-touring-everyday-life-carbon-neutral-concerts, accessed February 2, 2020.

for physical audiences. While live, in-person music still comprises the majority of performances, technological innovation and shifting cultural sensibilities have obviated shared performance spaces. As a musician for the Paris Opéra performed at the Palais Garnier, one could listen in for a few minutes from a local café. As Coldplay performed to an empty outdoor arena in Jordan, millions of fans stared intently at LCD screens. In the course of a century, the entire concept of live music has shifted; where it once assumed both a co-spatial and co-temporal positioning, it now only requires the latter. Liveness is now intertwined with media, and mediatization, to a great extent, contextualizes liveness. This chapter has traced some of the major developments in live music transmissions and the ways they have restructured audiences' conceptions of liveness. The following chapters will examine livestreaming more closely, and will continue to develop a framework for understanding both its functions and effects.

CHAPTER 2
Distraction via Interaction: Social Media as a Foundation for Livestreaming

The first chapter traced two parallel histories, exploring both the development of broadcast media before the emergence of Internet livestreaming, and the changing conceptions of "live music" in the twentieth century. This chapter begins with a diversion from that narrative—a distraction, if you will—in order to tell a different, yet related story. Almost as soon as livestreaming began to plant roots in an exponentially materializing Internet culture in the early 2000s, so too did "social media," a broad, often vague category of digital platforms which enable peer-to-peer communications. Technically speaking, social media built upon the backbone infrastructure and IP protocols discussed in the previous chapter, capitalizing on their capabilities for far-reaching, specifiable, but also omnidirectional information exchange as a means for facilitating social networking and the formation of Internet-based communities. It is from this premise that this chapter's story begins, because the instantaneous networking mechanisms of social media were well suited to convey a new phase of broadcast media—one which specifically relies on the format and capabilities of digital networking technologies.

Despite the new, exciting possibilities for the formation of Internet-based communities offered by social media, an array of cultural critics, journalists, and academics across the social sciences were quick to problematize the saturation of virtual networking platforms, and many still take issue with their ubiquity. For example, Maggie Jackson warns in her 2018 volume *Distracted: Reclaiming Our Focus in a World of Lost Attention* (the revised edition of her 2008 book *Distracted: The Erosion of Attention and*

the Coming Dark Age) that an increasingly technological, digitized world fragments and eats away at our abilities to engage with the environments, individuals, and groups around us. Writing on the absorbing interfaces of social media and the hope for gratifying exchanges, she argues that our highly mediatized culture breeds "social diffusion, intellectual fragmentation, [and] sensory detachment." She continues with a vivid warning: "The seduction of alternative virtual universes, the addictive allure of multitasking people and things, our near-religious allegiance to a constant state of motion: these are markers of a land of distraction…In short, we are slipping toward a new dark age."[1] In his own volume published the same year, Former Google strategist James Williams frames social media as not merely a distraction, but a deliberate and insidious attempt by technological giants to supplant individuality, free will, and the very fabric of a functioning society.[2] Indeed, many of the criticisms aimed at social media seem justifiable, and quite understandable. What these two critiques have in common with many others is the fear of losing one's capacity for volitional attention in the "real" world of flesh and blood, while becoming lost in a virtual space replete with absorptive bubbles that divide our attention into smaller and smaller fragments. In other words, Jackson and Williams share a widely-held belief that the ability of media technologies to seize our attentive faculties is a direct threat to our free will.

This idea is not uncommon, and frequently carries over into music and media studies. In his 2017 article "How Internet Music is Frying Your Brain," Adam Harper

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[1] Maggie Jackson, *Distracted: Reclaiming Our Focus in a World of Lost Attention* (Amherst, NY: Prometheus, 2018), 21-22. See also Maggie Jackson, *Distracted: The Erosion of Attention and the Coming Dark Age* (Amherst, NY: Prometheus, 2008).
[2] James Williams, *Stand Out of Our Light: Freedom and Resistance in the Attention Economy* (New York: Cambridge University Press, 2018), 18-20.

demonstrates that the aesthetics of fragmentation, maximalism, quantization, and digital

manipulation in electronic music genres parallel—and are perhaps framed by—the

perceived negative effects of a culture rooted in digital mediation.[3] Although Harper

himself does not subscribe to the view that social media is inherently detrimental, his

study on the emergent genre of "Internet music" as a product of the music-centered social

media platforms Bandcamp and Soundcloud betrays widespread anxieties over attention

in a sea of digital distractions. In her 2019 study on viral media, Paula Harper (of no

apparent relation to Adam Harper) describes how cultural critics have likened the

immediacy and pervasive nature of attention-grabbing media to viral infections. In the

context of Internet culture and virtual networks, the "protein shell" of a virus comes in

the guise of a visual image, a sex scandal, a musical riff, a celebrity's fashion faux pas,

something that gets our attention. The virus attaches to some receptor, such as an Internet

subculture, the front page of *Reddit* or the featured section of *Vox* or *People*, and injects

an ideological code in the form of "memes," a shorthand virtual language that describes

popular media, and whose semantics and semiotics are governed by the products of

popular media. Despite the scholastic intent of such critiques, an overt bias is apparent

within the language itself; we are expected to make no mistake in understanding that

these are viruses.[4] Of particular note is Harper's claim that virality need not occur only at

the level of a media object itself; in fact, many (possibly most) audiovisual objects

considered to be "viral" are also "modular," indicating that interpretations, alterations,

and discourses *around* a given object have also gone viral.[5]

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[3] Adam Harper, "How internet music is frying your brain," *Popular Music* 36, no. 1 (2017), 86-97.
[4] Paula Harper, "Unmute This: Circulation, Sociality, and Sound in Viral Media," PhD diss., (Columbia University, 2019), 21-23.
[5] Ibid., 36-37.

At the center of viral media, Internet music, music platforms, and social media in general—and ultimately, what is at stake—is the attention of their participants. Attention itself, as well as the social values surrounding an attention/distraction dichotomy, greatly inform the co-development of social media and music livestreaming. In this chapter, through an examination of the relationship between these technologies, I contend that despite the warnings of morally anxious critics, attention and distraction are not necessarily at odds, but have become vital components of an Internet-based music culture. The chapter will first outline the emergence of social media platforms with a focus on music sharing functionality, and will then more closely examine musical aesthetics in the age of social media. I then consider the debates and anxieties surrounding attention, distraction, and digital media, eventually turning to livestreaming considered alongside attention. I close by making the case that livestreaming is more than simply another form of broadcast media, taking into account its integration with social media and an attention economy based on virtual networks.

Social Media in Development

Although the broad history of music and social media may extend as far back as the introduction of electronic communication technologies in the nineteenth century (some of which were examined in the previous chapter), for the purpose of a focused discussion we will only consider those media that have emerged since the development of Web 2.0. As Jonathan Obar and Steve Wildman discuss in their 2015 study on the definitions of social media, one of the central features is that social media services are Web 2.0 applications, which prioritize user friendliness and participation through self-

generated content.[6] This initial condition leads to the other components of their definition, that (2) social media depend on user-generated content, (3) individuals and groups create their own user-specific profiles as a means of self-identification among other users, and (4) these services facilitate the development of social networks through individual or group connections.[7]

For the purposes of this study, social media begins with the establishment of Web 2.0, an informal phase of Internet advancement that appeared around the year 2000, in which new websites and applications began to allow users to interact with each other and generate their own content, rather than simply view published content (as with Web 1.0). This participatory aspect of Web 2.0 applications and websites is critical to our consideration of social media, especially as it concerns livestreaming, because as I argue, one of the defining features of Internet livestreaming is its interactivity. Therefore, our consideration of social media will begin at the turn of the twenty-first century.

Among the first social media platforms that came out of this period was SixDegrees (launched in 1997), which allowed users to post updates and send messages to friends. After the year 2000, Friendster and Myspace (both launched in 2003) took up the model of adding contacts or friends, among whom users could send direct messages or publish more public updates. During the height of Myspace's popularity between 2005 and 2009,[8] users had the freedom to manipulate their profile webpage to a considerable degree, including customizable cursors and wallpaper designs, embedded videos from YouTube (which had just launched in 2005), and notably, integrated music within a

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[6] Jonathan A. Obar and Steve Wildman, "Social Media Definition and the Governance Challenge: An Introduction to the Special Issue," *Telecommunications Policy* 39, no. 9 (2015), 745.
[7] Ibid.
[8] As Facebook grew in popularity in 2008, Myspace began to fall out of fashion.

profile page. Facebook (launched in 2004), allowed users to embed music and videos in their page as well, in the form of "status" updates.

Despite Facebook's eventual popularity, it was not the first platform to enter the realm of Internet-based music sharing. Myspace was not only the first globally successful social media platform—easily overtaking SixDegrees and Friendster—but its options for customization and the inclusion of music made it an essential part of its users' identity constructions in a culture that saw young people gradually migrating their social lives to the Internet.[9] James Verini, in a prescient 2006 piece for *Vanity Fair*, wrote "in the way that Google, Craigslist, and eBay have changed how people share and absorb information and goods, Myspace has changed how people, particularly young people … share and absorb one another."[10] Myspace also entered the territory of exchanging information and goods, as it quickly became a central hub for sharing and advertising music. In particular, hip-hop artists were able to market their material easily and freely on the platform, as then-15-year-old rapper Soulja Boy did in 2006. His release of "Crank That (Soulja Boy)," largely helped by the free publicity of the rapidly growing Myspace and YouTube, gave hip-hop a major boost in visibility among young Internet users.[11]

More broadly, the increasing ubiquity of music on social media platforms has altered the course of social networking. The music-centered social networking platform SoundCloud is an interesting example of this integration. SoundCloud is a producer-oriented platform, which indicates that it prioritizes the ability of typically independent

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[9] Bernie Hogan, "The Presentation of Self in the Age of Social Media: Distinguishing Performances and Exhibitions Online," *Bulletin of Science Technology & Society* 30, no. 6 (2010), 382-384.
[10] James Verini, "Will Success Spoil Myspace.com?" *Vanity Fair*, October 10, 2006. Accessed January 12, 2021. https://www.vanityfair.com/news/2006/03/myspace200603
[11] Yoh Phillips, "How Soulja Boy & Myspace Brought Hip-Hop into the Internet Era," *DJBooth*, March 24, 2016. Accessed January 12, 2021. https://djbooth.net/features/2016-03-24-soulja-boy-myspace-internet

producers to distribute their work on their own terms, and interact with fans directly. One way in which SoundCloud facilitates this, for instance, is through the waveform visualization of audio tracks. As a song plays, a cursor moves along the waveform interface in real time, essentially functioning as a more detailed scrubber, or cursor that moves along the waveform (typically for the purpose of audio editing, though here its purpose is primarily for playback). Users can then enter comments directly into the waveform at particular timestamps, engaging in dialogues with one another—even if indirectly or unintentionally—over a common interest. This interactivity is a hallmark of social media, as well as of any productive performer-audience relationship. David Hesmondhalgh, et al., claim that these kinds of interactions on SoundCloud (and similarly on Bandcamp) resemble discussion threads found on Twitter.[12] The participatory mechanisms and user-generated content of these platforms situate them essentially in the same category as social media platforms; in fact, their rather focused, specialized area of interest affirms this, as social networks tend to revolve around specialized interests in the first place.

Music and "Digital Degeneration" in the Age of Social Media

To take this idea further, it is not only the case that musical networks can direct the functionality of a media platform.[13] The habits and aesthetics of mediatized culture, in turn, inform the content of music itself; in fact, social media has specifically altered the ways some musics are written, produced, and heard in the twenty-first century. For

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[12] David Hesmondhalgh, Ellis Jones, and Andreas Rauh, "SoundCloud and Bandcamp as Alternative Music Platforms," *Social Media + Society* (October-December 2019), 4.
[13] For more on this, see Nancy K. Baym, *Personal Connections in the Digital Age* (Malden, MA: Polity Press, 2010), 44-45.

example, the rapper Lil Yachty's 2016 single "1 Night" capitalizes on the proliferation of

Internet memes, especially in the music video (which is arguably the ideal format in

which to experience the song). The video's extensive use of computer graphics,

fragmentation, and maximalism fit squarely into the aesthetics of digitized media culture

as explored in a brief, yet dense study by Adam Harper on Internet music. He argues that

the accelerationist tendency to *play into* the workings of contemporary technological

capitalism—represented in the case of "1 Night" by the abundance of viral meme

references, collage aesthetics, and the use of emojis—seems to be the artistic goal of

contemporary producers, in part as a way to garner the attention of potential listeners, but

perhaps more pointedly, because those techniques closely reflect the ways those potential

listeners live their mediated lives.[14]

Harper acknowledges the array of writers who lament these tendencies as harmful

to our attentive faculties, and therefore to our very essence as humans; these writers often

frame our media-driven culture as distracting, overwhelming, detrimental, lamentable,

and in direct opposition to a "human element." In counterpoint to these claims, Harper

argues that these observations are relative, instead opting for an analysis that

demonstrates the mirroring discussed above. This "aesthetics of digital degeneration," as

he calls it, boils down to three general facets: maximalism, kitsch, and the uncanny.[15]

Maximalism, in Harper's context of digital media and music, signifies an information

overload, especially in terms of "density, scale, structural convolution,"[16] and a headlong

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[14] lil boat, "Lil Yachty – 1 Night (Official Video)," May 23, 2016,
https://www.youtube.com/watch?v=h1WRpCsR2EE. Accessed January 9, 2021.
[15] Adam Harper, 89-90.
[16] Simon Reynolds, "Maximal Nation," *Pitchfork*, December 6, 2011, accessed December 29, 2020.
https://pitchfork.com/features/article/8721-maximal-nation/. Quoted in Harper, 90.

dive into mediatization, as opposed to the perceived physical and mental health benefits of periodic disconnection promoted by William Powers and others.[17] This aesthetic category clearly mirrors the bottomless nature of the Internet and digital media, as well as the always-connected habits and a general desire for "more," "bigger," and "louder."

Somewhat related to digital maximalism's structural convolution is digital media's embrace of kitsch. For Harper, kitsch conveys populist tastes somewhat akin to Muzak or background music, as well as the accelerationist lean into commercialism and the appearance of decreased attention spans (a problem to be addressed later in this chapter). Writing about James Ferraro's album *Far Side Virtual* (2016), Harper describes the album's aesthetics as indulging "tacky, disposable, and digitally simulated muzakal idioms to the point of curiously energetic pastiche, and the results are both sublimely ridiculous and ridiculously sublime."[18] His assessment, while seemingly harsh out of context, is in fact rather appropriate, considering that kitsch aesthetics—especially in the contemporary musics of digital media—tend to signify a degree of referentiality, self-awareness, and perhaps facetiousness.

Finally, the uncanny aspect of digital media primarily points to the digital manipulations of the human voice, often manifesting as synthesized choirs, heavily autotuned vocal tracks, the use of vocoders, or other digital means of synthesizing or altering the voice. These techniques are often appealing to audiences of contemporary popular music, but can also be the most alienating aspects of the music itself. The "uncanny valley," as this experience is often called, refers to the unsettling, sometimes

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[17] William Powers, *Hamlet's Blackberry: Building a Good Life in the Digital Age* (New York: HarperCollins, 2010).
[18] Harper, 92.

repulsive feeling of encountering something almost human; artificial intelligence, robotics, human-like dolls, and computer graphics imaging have all been tagged with the uncanny valley label as technology approaches the ability to approximate facial expressions, human voices, and body movements. Justin Adams Burton has argued that the uncanny manipulation of voice in contemporary popular musics achieves something more than just alienation; rather, through the distancing one experiences from hearing an altered voice, listeners might come to an understanding of alternative modes of being human, one of the foundations of posthumanism.[19] The altered voice may also be found in the discourses that encircle digital musics; to recall Paula Harper's discussion of modular media, we observe disembodied voices constantly: it can be found in hashtag culture, the comments of YouTube videos, and Twitter discussion threads.[20]

These three facets of contemporary aesthetics—maximalism, kitsch, and the uncanny—do not encompass the entirety of digital media. However, they serve as a convenient common ground as we consider the cultures and behaviors surrounding livestreaming and the place of livestreams within a broader social networking context. As mentioned above, one of the defining aspects of these media is their appeal to our attention. Contemporary digital media and music often draw our attentive capacities by exploiting overwhelming maximalism, kitsch's appeal to populist tastes, and the distanced reflection of ourselves in the uncanny. Of vital importance here is that these media vie for our attention *now*, in the given moment. The perceived problems of

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[19] Justin Adams Burton, *Posthuman Rap* (New York: Oxford University Press, 2017), 6-9, 73-76. See also Alexander G. Weheliye, "Feenin': Posthuman Voices in Contemporary Black Popular Music," *Social Text* 20, no. 2 (2002), 21-48; Weheliye, *Habeas Viscus: Racializing Assemblages, Biopolitics, and Black Feminist Theories of the Human* (Durham: Duke University Press, 2014); Robin James, "'Robo-Diva R&B': Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," *Journal of Popular Music Studies* 20, no. 4 (January 1, 2008), 402-23.
[20] Burton, 52-67.

attention and distraction arise when we evaluate the meaning of a given object and the intent of its source. I (with others) am skeptical of the ideas that attention and distraction are inherently opposed, and that distraction is somehow a societal threat. Nonetheless, this fundamental disagreement forms the basis of discourses around social media and livestreaming. In order to understand fully the cultural work of livestreaming within social networks, we must consider the ways people have problematized the ways they engage our attention, as well as the implications of distraction on our moral and social fabrics.

Social Media and the Attention/Distraction Problem

As explained above, one of the defining aspects of social networks is that of shared interests. Most social networks—including virtual ones—revolve around shared beliefs, geographic regions, sports teams, or musical tastes, to name but a few. Another defining quality is the volitional joining of such groups. One is not typically coerced into joining a social network or interest group; membership comes from a desire to participate and engage with others over a given activity or idea. This desire is directly related to the idea of volitional attention: we, as individuals, possess the ability to pay attention to things that interest us. William James, in *The Principles of Psychology*, asserts that "the things to which we attend are said to *interest* us. Our interest in them is supposed to be the *cause* of our attending."[21] Continuing on to describe the varieties of attention— sensory or intellectual, immediate or derived, passive or active—James claims that voluntary attention is always derived through an "effort" to attend to a given object. This

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[21] William James, *The Principles of Psychology* (New York: Holt, 1890), 1:416. Emphasis in original.

stands in stark contrast to passive attention, which occurs effortlessly and is, by nature, involuntary.

In our contemporary lives, it seems that voluntary attention, as a signifier of free will and our essence as human beings, is valued considerably over involuntary attention; the latter is often perceived as occurring in the face of distraction, which is seen by writers like Williams, Jackson, and Powers (above) to be undesirable and unhealthy. Although Williams acknowledges a public appetite for distractions, he is explicitly unwilling to accept anything other than an adversarial view of technology's hold on our attention:

> A perceptive and critical reader may object here that I've given too much airtime to the *problems* of the digital attention economy and not enough to its *benefits*. They would be quite right. This is by design. "Why?" they might ask. "Shouldn't we make an even-handed assessment of these technologies, and fully consider their benefits along with their costs? Shouldn't we take care not to throw out the baby with the bath water?"
> No, we should not. To proceed in that way would grant the premise that it's acceptable for our technologies to be adversarial against us to begin with. It would serve as implicit agreement that we'll tolerate design that isn't on our side, as long as it throws us a few consolation prizes along the way. But adversarial technology is not even worthy of the name "technology." And I see no reason, either moral or practical, why we should be expected to tolerate it.[22]

Although he dials back his animosity on the following pages, suggesting that his position does not constitute a "brake pedal" on technology but rather a "steering wheel,"[23] his point is well-established: in his view, technologies that seize our attention are adversarial and irredeemable. Of course, this is an extreme example of the puritan moral view that attention and distraction allegorize good and evil.

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[22] James Williams, *Stand Out of Our Light*, 97.
[23] Ibid., 99.

To be fair, Williams is far from the first to express concerns over distracting technologies. Eighteenth-century Enlightenment writers were just as concerned as Williams about temptations of distraction. Before the Enlightenment, attention was generally thought to be directed involuntarily, but by the late eighteenth century, it had become "our means of volition," in the words of Margaret Koehler. By this time, Enlightenment writers recognized that through the force of will, attention brings us a step removed from involuntary, automated consciousness to an active process of decision-making.[24] This is a critical recognition because of the way it reframes the attention/distraction dichotomy: in any situation where the mind is occupied, one might choose to attend to some other stimulus, which essentially distracts from the original object of attention.

Such distractions may, in fact, prove healthier than the original object—for example, choosing to listen to music instead of the harsh, metallic soundtrack of a subway train and the constant murmur of fellow passengers. This was precisely the argument made for the Sony Walkman in the 1970s, against an outcry of moral panic and concerns over public health instigated by the new device. Rebecca Tuhus-Dubrow's account of this problem encompasses two possibilities for physical harm caused by excessive use of the personal stereo—or any device with headphones—namely, the likelihood of hearing loss, and the impairment of one's awareness in public spaces. Beyond this, Tuhus-Dubrow explains that there was also (and perhaps more urgently) a general discomfort among those who saw in the Walkman a means to cut oneself off from the world, to opt out of shared space, behavior that was often considered antisocial

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[24] Margaret Koehler, *Poetry of Attention in the Eighteenth Century* (New York: Palgrave Macmillan, 2012), 32-33.

and insular.[25] Yet, to those who bought and used the Walkman obsessively (and there were many who did), they were not giving into antisocial impulses; they were experiencing something magical. Andreas Pavel, a German engineer generally credited with devising the prototypical Walkman, recalled that his first experience with personal stereo was "unreal…Life became a film. A 3D film. Suddenly I'm inside a film…This was a magical device."[26] For Pavel and others after him, sonic insulation has nothing to do with misanthropy. A similar case was made for the use of a personal stereo or sound machines to block out the discomfort or pain of tinnitus. This is an area of focus for Mack Hagood, who writes about the self-determination inherent with "orphic media" as an aural remedy for those who suffer from undesired sonic violence, whether the source is internal or external.[27]

Members of social networks who tune in to livestreams are typically not doing so to relieve tinnital symptoms or have magical experiences, but the point stands—simply, distractions can be healthy or productive. In the case of social media, the case is a bit more complex. Although the argument for a healthy degree of escapism certainly holds weight, some credence must be granted to those who warn against it. Consider, as Michael Posner and Jin Fan suggest, that attention comprises an organ system with its own circuitry and protocols, similar to our respiratory or nervous systems.[28] Attention does not simply occupy one's actively directed mental faculties, but also involves passive brain functions, involuntary body movements (e.g., moving oneself closer to a sonic

[25] Rebecca Tuhus-Dubrow, *Personal Stereo* (New York: Bloomsbury, 2017), 54-65.
[26] Quoted in Tuhus-Dubrow, 28.
[27] Mack Hagood, *Hush: Media and Sonic Self-Control* (Durham: Duke University Press, 2019), 63-64.
[28] Michael Posner and Jin Fan, "Attention as an Organ System," in *Topics in Integrated Neuroscience: Cells to Cognition*, ed. James R. Pomerantz (New York: Cambridge University Press, 2008), 31-32.

source object, or pushing the "volume up" button on a controller). In light of this, it is reasonable to acknowledge that any bodily or mental system benefits from some degree of training and self-discipline. It is perhaps from this vantage point that Maggie Jackson or William Powers make their arguments against distraction.[29]

Nonetheless, for most participants within an increasingly technocratic domain, distractions are inevitable, and in fact necessary. Considering the ubiquity of virtual social networks for the vast majority of anyone with a device, distractions variegate our lives and add complexity to quotidian routines. Joshua Rothman, in a 2015 piece for *The New Yorker*, writes that distraction, like attention, can be volitional—if the subject *wills* it. To that end, he promotes the notion that the self-serving, passive characterization of distraction (e.g., we are "distracted by" the Internet) is a gross misinterpretation of the phenomenon. Instead, he suggests that "it's not just that we choose our own distractions; it's that the pleasure we get from being distracted is the pleasure of taking action and being free…When you're waiting to cross the street and reach to check your e-mail, you're pushing back against the indignity of being made to wait. Distraction is appealing precisely because it's active and rebellious."[30] While this is certainly not always the case, the motivations and behaviors of distraction by virtual social networking seems to amount to the assertion of autonomy. Even when one allows social media to subsume their daily life, the individual does not vanish; Anahid Kassabian has argued that lower levels of attention (if we can call passive distractions "lower levels," although this was not her point), operate within the modality of affect. She defines this as a circuit of bodily

[29] Maggie Jackson, *Distracted*, 21-22.
[30] Joshua Rothman, "A New Theory of Distraction," *The New Yorker*, June 16, 2015. Accessed December 12, 2020. https://www.newyorker.com/culture/cultural-comment/a-new-theory-of-distraction

and neurological responses which do not necessarily manifest as willful, conscious thought, but which leave behind a residue of sorts; that residue accumulates within the subject, and contributes to a unique, essentially customized subjectivity.[31]

Thomas Davenport and John Beck take a slightly different approach, considering the issues of attention and distraction as economic components of our daily experience. Calling our modern world an "attention economy," they argue that "every business is an engine fueled by attention."[32] As they go on to demonstrate, attention is a rare resource for which businesses and media entities constantly compete. After all, individuals can only attend to so many objects at one time, and there is only so much time in the day. When considering the sheer saturation of media in the capitalist technocracy that is currently western civilization, it should come as no surprise that a heated competition is constantly unfolding between its major players, and our attention is the prize. In other words, the demand for our attention is at an all-time high, and the supply is at an all-time low. This situation has driven media entities—from technology giants looking to increase their user count, to YouTubers or TikTokers[33] competing for more subscribers—to explore strategies for acquiring our attention as quickly and impactfully as possible; these strategies include episodic short-form content, and maximalist aesthetics (per Harper), among others.

Davenport and Beck's position on attention as an economic resource undoubtedly complements the work of both Rothman and Kassabian. Rothman' argument that

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[31] Anahid Kassabian, *Ubiquitous Listening: Affect, Attention, and Distributed Subjectivity* (Berkeley: University of California Press, 2013), xiii.

[32] Thomas H. Davenport and John C. Beck, *The Attention Economy: Understanding the New Currency of Business* (Boston, MA: Harvard Business School Press, 2001), 16.

[33] These platforms did not exist at the time of Davenport and Beck's writing, though the situation is essentially similar.

attention and distraction are volitional forces originating from within ourselves, which we

can utilize to assert free will, becomes all the more potent in light of the idea that the

attention economy, in contrast to other economic models, is actually "bottom-up" rather

than top-down. Rather than consumers vying for a limited supply of goods, the creators

of goods and services compete for a limited supply of consumer attention—which, as

Rothman would argue, is where the power resides. In turn, the relationship between affect

and attention drawn out by Kassabian further fuels the power dynamics of attention

between creators and consumers, because according to her analysis, the things we pay

attention to influence us on a deep level, the affect generated by our experiences accretes

in our system, and becomes part of us. In economic terms, this increases the value of our

attention immeasurably, because for the consumer, the stakes are so high.

Livestreaming, Voluntary Attention, and Social Networks

       We likewise experience a similar impulse toward autonomy when we tune in to a

livestream. Choosing to watch a livestreamed performance—just like choosing to watch,

read, or listen to anything—is not a passive, involuntary act. It is a choice, and perhaps a

more powerful one than it may initially seem. The recurring cultural anxieties over

distraction typically arose out of some fear that the activity at hand (or perhaps lack

thereof) encouraged antisocial tendencies: isolation from others at best, and an antisocial,

degenerative disposition at worst. The foci of these arguments were often individual

activities, such as reading an absorbing novel or listening to music with headphones. To

watch a livestream, however, activates a different kind of attention. By nature of the

livestream occurring in real time, viewers are not alone in their viewing experience. In

the previous chapter, we established that "liveness," especially by the twenty-first century, no longer required a shared physical space; indeed, that requisite was abolished over a century ago. There remains a semblance of togetherness through the simultaneity of a livestream. Despite the possibility of a slight delay for one viewer or another, all members of the audience view livestreams with the knowledge that they are sharing the experience with other viewers in the same moment. This phenomenon differs in an essential way from the above-mentioned distractions, as livestreaming (whether performing or viewing) is a distinctly social engagement. The same counterargument against social media's distractions could then apply, of course, as any absorbing experience may be called distracting. Yet, the willful act of viewing the livestream itself sets it apart from a generalized, perhaps passive absorption within virtual networks.

The social aspects of livestreaming go beyond the simple dichotomies of attention/distraction and social/antisocial behavior. Whereas the use of personal stereos seems to manifest as antisocial and attending a concert in person apparently activates a more integrated sense of sociability, livestreaming occupies a more liminal space. It is both private and public; viewers who occupy their own personal spaces share a virtual space with others, each in their own physical bubble. Writing on the musical salons of the Enlightenment, Rebecca Cypress notes that the household spaces where *salonnières* would socialize and perform music with each other were at once private and public, by virtue of happening behind closed doors in a private residence, but also being an intrinsically social gathering.[34] Like other forms of gatherings in the seventeenth through nineteenth centuries, musical salons constituted an important form of sociability

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[34] Rebecca Cypress, *Women and Musical Salons in the Enlightenment* (Chicago: University of Chicago Press, 2022), 61.

throughout the music cultures of Europe. Peter Clark has written on British social clubs

in those years as sites of "a fashionable form of public sociability," indicating that

sociable behaviors—specifically, those that occupied the liminality between private and

public spaces—were significant parts of social life.[35] Although these salons and clubs

existed over two centuries ago, livestreaming is positioned uniquely within these patterns

of behavior. It also exists side-by-side with the inherently social and participatory music

cultures around the world. Thomas Turino notes that, by nature, shared listening practices

create and shape social groups (what he calls "cultural cohorts") based on self-

identification.[36] As a means for identity building, those practices are personal by

definition, but as *shared* practices, they are also public to varying extents, and contribute

heavily to the sociability of music within a given cohort. Participating in a livestreamed

performance is on one hand a deeply personal act (as no two viewer experiences may be

precisely the same), and on the other hand equally sociable. Chapter 3 will more

comprehensively explore the ways in which participants bridge that liminal space, but in

the context of public concerns over sociability and attention, livestreaming is not as clear

cut as critics (or proponents) may assume. Its position as both a personal and public

activity is enabled not only by the functionalities of social media platforms, but also by

the nature of social media as both socially integrated and (albeit paradoxically) distanced.

One example of this comes from the video game livestreaming platform Twitch.tv

(or simply Twitch), a social media service catering to networks of gamers who share their

experiences online in real time. Typically, users livestream their gaming experience on

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[35] Peter Clark, *British Clubs and Societies 1580-1800: The Origins of an Associational World* (New York: Oxford University Press, 2000), 26.

[36] Thomas Turino, *Music as Social Life: The Politics of Participation* (Chicago: University of Chicago Press, 2008), 95.

Twitch for a community of viewers with a similar interest in the game at hand, or simply

an interest in the host of the livestream. Often, participants can play with the host

simultaneously, if the game supports online multiplayer options. One prominent feature

of Twitch is the chat field, where viewers can converse with others or simply post their

thoughts. In the last several years, however, Twitch has expanded to music livestreams,

and now features a music section with over nine million followers.[37] In 2014, Twitch

hosted its first livestreamed music concert, featuring electronic dance music producer DJ

Steve Aoki transmitting from a venue called Pacha in Ibiza, Spain. Aoki performed in

front of a live audience in Ibiza, but Twitch members from around the globe were able to

tune in, watch the performance, and interact with each other at no cost. Twitch organized

the livestream after taking a poll among members, to which eighty percent confirmed

they would like to watch live concerts on the platform.[38]

Twitch's interface and mechanics, its popularity among gamers, and the

overwhelming desire among users to watch live music on the platform, all indicate

deliberate behaviors and a willful, active viewership. In a 2019 study of Twitch's impacts

on livestreaming and the video game industry, Mark Johnson and Jamie Woodcock

understand the platform's position within the broader dynamics of media, especially as

television viewership has declined among young viewers (generally in the 11-24 age

group). Johnson and Woodcock note that in this context, Twitch represents a medium—

among several other platforms—which essentially enables anyone to become a television

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[37] Current as of March 8, 2023.

[38] Paraphrased from a Twitch company statement in Nick Statt, "DJ Steve Aoki to Star in Twitch's First Live Concert Tonight," *CNET*, July 30, 2014. Accessed December 12, 2020. https://www.cnet.com/news/steve-aoki-to-star-in-twitchs-first-live-concert-tonight/

provider.[39] This decentralized, democratic, and undirected approach to live transmissions

of entertainment therefore give viewers the option to view any host they wish, and

interact with other viewers who made the same choice. It also opened the door for an

already-established virtual network of users to experience live music on their own

platform. At this point, music livestreams on Twitch are not limited to transmissions of

in-person concerts, as was the case with Aoki's performance. The platform now hosts a

multitude of musicians who perform exclusively for Twitch audiences.

Beyond Broadcasting

Exploring the highly diffuse and variegated economics of music production,

performance, and reception, David Bruenger explains that broadcast media such as radio,

television, and livestreaming assist performers in aggregating audiences and creating

access for potential listeners. Bruenger indicates that in-person performances act as a

means of driving the music industry from the perspectives of the performers, listeners,

and venues; however, he promptly adds to this position by acknowledging the integral

role of digital media in the past two decades, and he claims that the ideal approach to

audience aggregation is "multipronged," incorporating physical concerts *in addition to*

live broadcasts of those performances.[40] Bruenger notes,

> In a very real sense, digital media, including web-based video platforms like
> YouTube, make everything both global and local. A live gig video can put a
> music fan in Maine in a club in Albuquerque hearing a just-starting-out band from
> Lubbock, Texas, on tour. Location still matters and the amenities that support
> daily life, music making, and shared experience are still relevant. But the ease

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[39] Mark Johnson and Jamie Woodcock, "The Impacts of Live Streaming and Twitch.tv on the Video Game Industry," *Media, Culture & Society* 41, no. 5 (2019), 672.

[40] David Bruenger, *Create, Produce, Consume: New Models for Understanding Music Business* (Berkeley: University of California Press, 2019), 179.

with which the musical experience can be extended—including by live streaming a local event—is unprecedented.[41]

This concept—that the technologies and networks surrounding digital media and livestreaming have radically altered the ways audiences can access live music in ways we have not witnessed before—indicates that livestreaming is more than simply another form of broadcast media. Through its position as an extension of social media platforms (which can, and does, encompass both global and local networks), livestreaming serves as a means for people to view live music remotely, share their experiences with each other, and connect socially with people in the same room, across town, or on the other side of the globe. By harnessing the expanded and highly-adaptable ways people can connect through virtual networks, livestreaming and digital media have disrupted the previously-standard formats of creation, production, and reception.[42] As discussed in Chapter 1, many of the changes in media technologies have been continuous and gradual; however, it is also true that livestreaming presented a more drastic change than preceding media developments. Social media platforms have not only created greater access for audiences to find and consume live music, but they have also facilitated more integrated networks between those audiences and the performers, who can now interact with one another more easily and freely than before. In the realm of advertising through social media platforms, three "facets of interactivity" have proven to be particularly significant in the perception of interactivity within virtual networks, specifically from the perspective of consumers regarding advertisers online—those facets are responsiveness, nonverbal information, and speed of response. Through channels like Facebook,

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[41] Ibid., 180.
[42] Ibid., 206.

Instagram, and Twitch (among the many other available platforms), advertisers can take advantage of those facets to create a sense among their constituents that they are interacting and socializing in impactful ways.[43]

For example, when the band Bent Knee livestreamed a studio session over Twitch in June 2021, they interacted directly with their audience through Twitch's chat function, as well as through simultaneous conversations occurring over the social networking platform Discord. The band members monitored the conversations occurring during their session, responded to questions, and conversed with their audience in an informal, somewhat unstructured way. Although they performed a setlist that was mostly predetermined, the audience had the capability of requesting material and the band occasionally took unplanned breaks from performing to rejoin the several simultaneous conversations occurring on both platforms. Their constant real-time engagement with their audience, as well as nonverbal communication through music and gesture, created an environment of dynamic interaction that livestreaming made possible distinctly through the flexibility and varied functionality of the platforms they used. Per Bruenger, these platforms create effective networks of engagement between performers and audiences through enabling sight, in addition to hearing; extending the study of Bruner, et al., the ability to convey nonverbal information—such as through music or gesture—aids in creating a more immediate and effective sense of interactivity, as opposed to simply hearing a performance without video.[44] Because of the possibilities afforded to audiences by *seeing* the musicians perform, viewers can interact more directly with the performers

[43] Gordon C. Bruner II, Grace J. Johnson, and Anand Kumar, "Interactivity and Its Facets Revisited: Theory and Empirical Test," *Journal of Advertising* Vol. 35, No. 4 (Winter 2006), 35.
[44] Bruenger, *Create, Produce, Consume*, 176.

and each other, taking advantage of the social network to which they belong; one example of this is viewers commenting on the t-shirt worn by the band's drummer, Gavin Wallace-Ailsworth, with several references to inside jokes that only devoted fans of the band would understand. Insider references like this, surrounding a band and their fans, is not uncommon, and often occurs within virtual social networks that developed around shared interests in the first place, Twitch being a particularly pertinent example.[45] Thus, livestreams within social media platforms are more than an extension of broadcasting, essentially becoming their own means of social networking.

The following chapter will explore the Bent Knee livestream in greater detail, in addition to other cases, as examples of the different ways in which audiences participate in music livestreams. Building off the framework of viewing livestreams within social networking platforms as an extension of broadcast media—as well as an extension *beyond* them—the following chapter delves into the specific modes of engagement through the lens of group (or joint) attention.

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[45] Johnson and Woodcock, 672.

CHAPTER 3
Joint Attention and the Modalities of Participation: Observational, Reactive, Generative

In the previous chapter, I examined the relationships between Web 2.0 social networks and the patterns of discourse surrounding attention, including a historically-recurring moral panic regarding media and distraction. Writers expressed their concerns about threats to our attention even by the Enlightenment. Margaret Koehler in 2012 explained that by the late eighteenth century, the realms of attention and distraction were understood as volitional, and our attention—now a precious vessel for our free will—was to be guarded vigilantly.[1] The widespread panic over distraction arises time and again in western cultures as new technologies and media find their way into public use and occupy our senses, and the twentieth- and twenty-first centuries are no exception to this. Some authors go so far as to label digital media "adversarial technology,"[2] and warn us of "slipping toward a new dark age."[3] As the Walkman gained traction in urban settings during the 1970s, panic set in once again this time over the device's perceived hazards to public health.[4]

But distraction is not always to our detriment. Francesca Brittan writes that throughout late-eighteenth-century European musical cultures, as the Enlightenment began to give way to a romantic worldview, the preferential position of attention itself

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[1] Margaret Koehler, *Poetry of Attention in the Eighteenth Century* (New York: Palgrave Macmillan, 2012), 32-33.
[2] James Williams, *Stand Out of Our Light: Freedom and Resistance in the Attention Economy* (New York: Cambridge University Press, 2018), 97.
[3] Maggie Jackson, *Distracted: Reclaiming Our Focus in a World of Lost Attention* (New York: Prometheus, 2018), 22.
[4] Rebeca Tuhus-Dubrow, *Personal Stereo* (New York: Bloomsbury, 2017), 54-65.

had begun to deteriorate.[5] In the twenty-first century, the massive saturation of social

networking platforms and short-form audiovisual media indicate a widespread inclination

toward distraction, even total absorption, within the digital realm. Several cultural

groups—cultural critics, political pundits, and worried parents, to name a few—take

every opportunity to condemn such behavior, but this hostile attitude toward distraction is

far from ubiquitous. Joshua Rothman argues that distraction reflects "the pleasure of

taking action and being free."[6] Indeed, Rothman claims that checking one's email while

waiting at a crosswalk signifies an active rebellion, a "pushing back against the indignity

of being made to wait."[7] Sociologically, these little acts of resistance iterate a basic form

of James Scott's "hidden transcript," wherein social actors—typically those with little in

the way of cultural power[8]—defy the conventions of social order.[9]

     The significance of distraction does not end there, however. After all, what is

distraction if not a form of attention itself? The dichotomy between the two, and the logic

informing the value judgments and fears based on the perceived split between them,

break down when one considers that distraction simply means one's attention is devoted

to something else, whether something new or something more interesting. Psychologists

William James and Théodule-Armand Ribot knew this in the nineteenth century; James

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[5] Francesca Brittan, "Idle Schubert," *Journal of the American Musicological Society* 72 no. 2 (Summer 2019), 559

[6] Joshua Rothman, "A New Theory of Distraction," *The New Yorker*, June 16, 2015. Accessed December 12, 2020. https://www.newyorker.com/culture/cultural-comment/a-new-theory-of-distraction

[7] Ibid.

[8] "Power" is an extremely loaded word, but in this case simply refers to resources that amount to means of social influence—capital, clout, control of information dissemination, and technologies of communication and transportation. These cultural currencies are often carefully safeguarded by those who wield them, and not openly available, leading to the development of hidden transcripts and coherent forms of insubordination. See James C. Scott, *Domination and the Arts of Resistance: Hidden Transcripts* (New Haven: Yale University Press, 1992).

[9] Scott, xiii.

even went so far as to claim that extended, undivided attention may be physically and

psychologically unhealthy. In his *Principles of Psychology*, he briefly recounts the

behavior of sixteenth-century mathematician François Viète, who "was sometimes so

buried in meditation that for hours he bore more resemblance to a dead person than to a

living, and was then wholly unconscious of everything going on around him."[10]

Furthermore, James' description of attentive experience could easily be read as an

account of distraction, if only it were named so:

> Millions of items of the outward order are present to my senses which never
> properly enter into my experience. Why? Because they have no *interest* for me.
> *My experience is what I agree to attend to*. Only those items which I *notice* shape
> my mind—without selective interest, experience is an utter chaos. Interest alone
> gives accent and emphasis, light and shade, background and foreground
> intelligible perspective, in a word.[11]

What most of these studies and discourses have in common is their focus on

attention and distraction as individual experiences with occasional, potentially social

consequences. But when examining musical performances—or any musical activity

involving more than one person—thinking in terms of individualized attention is not

enough; we must take into account how people pay attention *together*, even if the people

involved are experiencing the same event in different spaces. Livestreamed performances

employ the mechanisms of joint attention in particular and unique ways that force us to

consider the possibilities and limitations of social media and networking platforms. The

modes of engagement and interaction within these platforms during livestreams are

directly informed by the phenomenon of joint attention, as participation within a given

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[10] William James, *The Principles of Psychology*, (New York: Holt, 1890), 419.
[11] Ibid., 402. Emphasis in original.

situation is guided by the nature and degree of one's attention to it (or distraction away from it), especially in relation to others sharing the experience.

With that process in mind, in this chapter I introduce and explore three modalities of participation in music livestreams which shape the shared event to varying degrees, and are all necessarily informed by the experience of joint attention: *observational participation*, *reactive participation*, and *generative participation*. These three modalities represent the ways audience members—or perhaps more accurately, participants—in a livestreamed performance interact with each other, the performer(s), and the musical event to contribute to a unique shared experience. Case studies from across platforms including Facebook, Twitch, and YouTube will demonstrate the utility of analyzing livestreamed performances through the lens of these modalities—namely, that it allows for a deeper understanding of the ways livestream viewers not only perceive liveness, but participate in the creation of unique, powerful musical experiences with palpable psychological, social, and ethical effects.

Joint Attention, A Participatory Process

In describing the social conditions surrounding musical performances, Christopher Small explains that

> If we widen the circle of our attention to take in the entire set of relationships that constitutes a performance, we shall see that music's primary meanings are not individual at all but social. Those social meanings are not to be hived off into something called a "sociology" of music that is separate from the meaning of the sounds but are fundamental to an understanding of the activity that is called music.[12]

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[12] Christopher Small, *Musicking: The Meanings of Performing and Listening* (Middletown: Wesleyan University Press, 1998), 8.

Small's notion of music as inherently social naturally conveys the usefulness of seeing musical attention as a joint process, in parallel with the way some cognitive scientists understand all mental phenomena as social by nature.[13] However, it also betrays one of the fundamental differences between attending a musical performance versus, for example, painting or a film. The perceptions of these objects develop gradually and evolve with the attendant over time. In describing the experience of observing an Edouard Manet painting, Jonathan Crary writes that the painting "takes us outside of a stable circuit of visuality to an arrangement in which neither eye nor objects in the world can be understood in terms of fixed positions and identities."[14] There is no fathomable circumstance where a perceptual experience does not take place over time, and therefore evolve with the attendant as they engage with it. The perception of a musical performance, though, (in addition to theater, dance, or any other performance art that unfolds in real time) involves the active attention of the attendants *as well as* the performer(s). While their roles tend to be quite distinct in the context of the western classical tradition, performers and audience members are typically attending to the same unfolding experience from opposite sides.

The performer/audience split is even less obvious outside the western classical tradition. Thomas Turino describes a framework in which the participants in a musical performance intrinsically understand the event as an "interactive social occasion."[15] Although Turino's subject is explicitly non-western participatory music, his description

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[13] Axel Seemann, *Joint Attention: New Developments in Psychology, Philosophy of Mind, and Social Neuroscience* (Cambridge, MA: MIT University Press, 2011), 2.

[14] Jonathan Crary, *Suspensions of Perception: Attention, Spectacle, and Modern Culture* (Cambridge, MA: The MIT Press, 2000), 87.

[15] Thomas Turino, *Music as Social Life: The Politics of Participation* (Chicago: University of Chicago Press, 2008), 29.

easily applies to performances that seem to be presentational. He makes a distinction

between "participatory" and "presentational" music in order to facilitate his discussion of

music's social patterns and its consequences, but following Small's argument to its

logical conclusion demonstrates that all music is participatory to some extent. This notion

can be proven further by considering a concert audience which—by simply attending the

concert in that space with each other, by listening, by holding their coughing fits until the

end of a movement, and by applauding when the music is finished—shares in the real-

time construction of the event itself. No, the audience members may not necessarily alter

the performance of the music, and one may hypothetically swap out an entire audience

with little to no effect on the performance, but in doing so the event as a whole would be

intrinsically, perhaps radically different. Cageian though this may seem, the particular

ways individual audience members pay attention together, and therefore participate

together, are vital aspects of any musical event.[16]

At the opposite extreme, there are some musical scenarios where audience

members directly and powerfully contribute to the unfolding of a performance. As Ingrid

Monson observes in her study of jazz improvisation *Saying Something: Jazz

Improvisation and Interaction*, music performance is discursive in nature, whether it be

over a historical time scale or between the musicians interacting in a given moment.[17]

The discursivity of performance can also extend to the interactions between musicians

and their audience members. Especially in smaller venues, jazz convention includes the

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[16] At the risk of making my point with a cliché, John Cage's *4'33"* is an extreme, if not effective case study in demonstrating this idea. Theoretically, no two performances of the piece will ever be the same, primarily as a result of audience involvement, whether voluntary or not.

[17] Ingrid Monson, *Saying Something: Jazz Improvisation and Interaction* (University of Chicago Press, 1997), 97.

possibility of interjections by audience members expressing their satisfaction and enjoyment, frustrations, or desires to the performers. In a truly interactive setting, the performers might heed the reactions and exclamations of the crowd and perform accordingly, thus transforming the audience members into participants with some degree of productive influence. Participatory environments like a jazz club bring about veritably unique musical experiences. Yet this process does not provide a complete picture. Perhaps one of the most vital preconditions for that discursivity is the joint attention of both the audience members and performers. In this context, the manners and degrees to which both parties are invested in the performance unavoidably guide the way in which it unfolds.

The mechanics and consequences of joint attention as they relate to the experience of a musical performance are thus paramount to understanding the nature of the event and its social ramifications. Across the available literature on joint attention, there is no consistent approach to discussing or even understanding the phenomenon, nor is there a unified consensus regarding its definition, key mechanisms, or consequences. Attention in a general sense has been examined from various angles including economics and marketing, neuroscience, childhood development, twenty-first-century media technologies, literary histories, and the perception of art, among others. Joint attention has seen similar treatments, having been explored in as many contexts as its overarching field of "attention." Yet at the outset of his edited volume *Joint Attention: New Developments in Psychology, Philosophy of Mind, and Social Neuroscience*, Axel Seemann confesses that "while we may not quite be forced to admit that nobody knows what joint attention is, no generally accepted definition is available, nor is there a well-

ordered overarching research program."[18] While "a well-ordered overarching research

program" is neither required nor inherently desirable, Seemann's assessment comes

across as bold as it is negligent. Perhaps his testament is intended to serve as an impetus

for the varied studies that follow his introduction; however, any good-faith study of (or at

least incorporating) joint attention must account for the fact that the variety of extant

studies of the subject does not demonstrate a lack of unity between researchers. Rather, it

represents an array of open doors, much like the field of attention studies in general.

Nonetheless, it is intrinsically worthwhile to construct our own understanding of it from

scratch.

At a basic level, attention has generally been characterized as the action of taking

notice, or otherwise engaging with an object that interests the subject, voluntarily or

otherwise. Psychologists and philosophers across several centuries have discussed the

nature and processes of attention from an individual perspective (see Chapter 2). Joint

attention seems to occur when two or more people (1) attend the same object(s) together,

(2) are aware of each other's presence, and (3) are aware of each other's attention on the

object(s) at hand. This fundamental characterization of joint attention appears in various

sources to different degrees and with varied agendas.[19] Yet across the board, those three

conditions appear to be prerequisites for the occurrence of joint attention.

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[18] Seemann, 1.

[19] For example, see Vera Tobin and Todd Oakley, "Attention, Blending, and Suspense in Classic and Experimental Film," *Blending and the Study of Narrative*, edited by Ralf Schneider and Marcus Hartner (Berlin: Mouton de Gruyter, 2010); Francis Steen and Mark Turner, "Multimodal Construction Grammar," in *Language and the Creative Mind*, ed. Michael Borkent, Barbara Dancygier, and Jennifer Hinnell (Stanford: CSLI Publications, 2013), 255-274; Matthias S. Gobel and Daniel C. Richardson, "Social Attention," *The Handbook of Attention*, ed. Jonathan M. Fawcett, Alan Kingstone, and Evan F. Risko (Cambridge, MA: MIT Press, 2015), 349-367.

Although seemingly straightforward, the above process only describes the initiation of joint attention. As soon as an object acquires the attention of more than one person, and those people become aware of the shared experience, the situation becomes increasingly complex. First of all, once the preceding conditions have been met, the participants note (even if subconsciously) a layering of experience. Their attention is focused primarily on the object at hand, and to lesser extents on the presence of other attendants, as well as the attentional perspective and possible mindset of those in the room. Secondly, this layering of attention—and as a consequence, the division and compartmentalization of attentional resources—changes the attendant's experience of the object. For example, it is quite a different experience to listen to music through headphones on a bus versus playing the music for others to hear via loudspeakers.[20] For a less extreme example, it is also a different experience to view a film or a painting alone, rather than doing so with another person.

Experimental psychologists Matthias S. Gobel and Daniel C. Richardson agree, stating that "when attention is embedded in the social world, what emerges is a complex interplay between interpersonal communication, a visual context, and the relationship between the people who share it."[21] They further argue that within a shared experience, a person's attention is influenced by the beliefs or assumptions about other people's cognitive states (what they call "top-down influences"), as well as by the presence of another person, their gaze direction, emotional expression, and social identity ("bottom-up influences").[22] But this paradigm does not work so neatly in all cases. When attending

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[20] There are more immediate experiential (i.e., acoustic) differences as well.
[21] Gobel and Richardson, 349. The "visual context" they reference here may be replaced with a sonic context.
[22] Ibid.

to musical experiences, one cannot "see" the direction of another person's listening (gazing at a performer does not necessarily indicate the object of an audience's auditory attention), so the influence on the person's subjective attention shifts to Gobel and Richardson's "top-down" paradigm. In addition, the "bottom-up" paradigm becomes more complicated considering that the presumption of a stranger's emotional state and identity can only ever be a projection based on one's own assumptions about the person next to them. Short of asking the other person where their auditory attention lies, which may not be possible for any number of reasons, the best one can do is to assume.

Yet despite these shortcomings, Gobel and Richardson's framework is a useful starting point, particularly in its supposition that participation is a natural component of joint attention (or as they call it, social attention, which amounts to the same phenomenon).[23] Critically, Gobel and Richardson demonstrate that joint attention is inherently reciprocal in nature. Attendants of a given experience not only perceive information from the object and other people, but they also signal information into the shared space. Individuals interact by fluidly shifting between perceiving and signaling states. For Gobel and Richardson, this demonstrates the necessarily reciprocal quality of joint attention, which they call "reciprocal social attention."[24] Attendants thus become participants, not as a consequence but as an essential feature of the jointly shared experience. In this way, participation itself hinges on joint attention.

In the context of musical performance, joint attention and participation are essential—perhaps given—components of liveness. Although the concept of liveness was

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[23] I will continue to refer to "joint attention" rather than "social attention." In my view, joint attention implies an experience that is not only shared, but cooperatively *and* socially constructed.
[24] Ibid., 361.

primarily the focus of Chapter 1, here it brings into focus the ways joint attention and

participation unfold in livestreams. Ironically, that consideration begins with a glaring

complication: in the first chapter, we established that as soon as the concept of liveness

emerged in the late-nineteenth century—even if only experientially, as technology

created that distinction, and not necessarily by name—it no longer required spatial

proximity. The distinction between "live" and "not live" only became apparent when

technology allowed people to experience the same event in real time in different spaces,

sometimes over considerable distances. In other words, prior to technological

advancements allowing real-time transmissions, the live/not live difference implicitly

depended on the condition of proximity. This simple fact throws a sizeable wrench in

Gobel and Richardson's framework, in which they assume the participants share the same

space and can thus verify each other's presence and attentional focus through direct lines

of sight and in-person social cues. As discussed in Chapter 1, Philip Auslander would

inherently disagree with the position that liveness relies on proximity and lines of sight.

In fact, the opposite is true; liveness is defined by media.[25] Paul Sanden, too, argues that

liveness "always implies mediatization, because without electronic media, the concept of

liveness is meaningless. The various changing tensions between liveness and

mediatization are what give rise to the many different manifestations of liveness beyond

the temporal and the spatial."[26] In other words, electronic media have disturbed the once-

ingrained connection between performance and space. The severing of liveness from

space may come through in the transmission of a musical event in real time, or perhaps

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[25] Philip Auslander, *Liveness: Performance in a Mediatized Culture* (New York: Routledge, 2008), 17.
[26] Paul Sanden, *Liveness in Modern Music: Musicians, Technology, and the Perception of Performance*
(New York: Routledge, 2013), 34.

through the disembodied nature of acousmatic sounds.[27] Either way, the idea of live

music has long been untethered from physical space, which also suggests that audience

members need not occupy the same space, either.

In light of this complication, the processes of joint attention play out somewhat

differently in the context of livestreaming. When two or more people view the same

event in spatial isolation, the subjective separation between them is even more

pronounced than it is in person; whereas in the context of shared space it is possible to at

least guess the object of the other person's attention, in livestreaming contexts it is often

not possible to determine if the other is paying attention to begin with. Several

livestreaming platforms, such as Facebook, Twitch, and YouTube, provide a live viewer

count which displays the number of users who have the event streaming to their device in

a given moment. Yet, that information offers no way to determine the degree of those

users' actual engagements with the performance. Therefore, we turn to other factors:

namely, the specific, observable modalities of participation enacted by various users

during the course of the livestream.

At any given time during a livestreamed performance, audience members

generally participate in three potential ways, which, to varying degrees, help to construct

the performance as well as the experience of it for all those involved. The first of these

modalities, *observational participation*, involves audience members viewing and

listening to a performance without engaging directly with the performer(s) or with each

other, whether by choice or the result of limitations imposed by the platform. In cases of

observational participation, the audience member does not influence the performance in

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[27] Ibid., 170n24.

any tangible way. Although the presence of observational participants may change the circumstances of the event in a general sense, there is little to no influence upon the unfolding of the event itself, the music being performed, or the experience of other audience members.

Reactive participation occurs when audience members publicly respond to the performance, typically through the use of public comments, direct messages to other participants, or reaction icons (e.g., emojis or meme images) in real time. The reactions of audience members may or may not be visible to the performer, and as such, their degree of influence on the performance is variable and dependent on other factors, including the capabilities of a given platform to display those reactions to the performers, and whether the performers themselves choose to interact with the audience members.

Generative participation, possibly the most dynamic and consequential of the three modalities, involves direct interactions between audience members and performers.[28] In this case, the flow and contents of the performance itself are overtly shaped by those interactions, which might manifest as performers taking audience requests, asking or answering questions, or even performing with members of the audience. More than the other two modalities, generative participation expands the role of the audience through the addition of responsibility; in such performances, the audience may be expected to interact and contribute to the performance in some manner. Attention, therefore, is not simply a factor in the participatory process, but becomes a substantial and effectual responsibility of the individuals in the audience as they help to produce the

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[28] Interaction with the technological interface itself is also a component here. Paul Sanden writes that some mediatized interactive performances comprise a situation wherein technological media could be viewed as "performance partners rather than simply as tools or instruments to facilitate this interaction." See Sanden, 89.

event. While all three modalities contribute to or "generate" the shared experience to some degree, the specific difference of "generative participation" is that public, interactive participation explicitly impacts the contents and unfolding of the event.[29]

Through the consideration of audience participation via these three modalities, we can determine and measure the direct impact of joint attention on livestreamed musical performances. In the case studies that follow, these modalities can be noted at two levels: the expectations on the audience by the performers and the type of platform used, and the actual degree of participation by the audience, either by choice or by technological limitations. It is also essential to note that these modalities are not hard categories. A performance may consist of a blend of modalities, or individuals may shift between them at any time. In addition, a performance may exhibit a particular modality while audiences interact on an entirely different platform or medium (before, simultaneously to, or after the performance). Because of the central place music livestreaming currently holds within a widespread Internet-based culture, one of the larger goals of this project is to define this particular broadcast medium and establish frameworks for analyzing livestreamed performances. In light of the dynamic nature of joint attention in this increasingly digitized culture and its effects on participatory music, these modalities offer a productive lens into the mechanisms of livestreaming media and the ways they impact the experience of live music, as the case studies below will demonstrate.

Observational Participation

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[29] The effects of generative participation can extend beyond the unfolding of the musical aspects of a given performance. Secondary consequences—social, economic, even psychological—often manifest as well, as some of the following case studies will demonstrate, both in this chapter and in the Conclusion.

When Severe Tire Damage performed on the Palo Alto campus of Xerox PARC in 1993, they made history as the first musical act to be transmitted live over the Internet via the MBone infrastructure discussed in Chapter 1.[30] The MBone developers transmitted the performance as both an experiment and a demonstration of the backbone's capabilities for long-distance communication and distribution of multimedia information. Although the MBone was intended to serve as an interactive system—and it did, in other communication contexts—the concert's remote viewers did not interact with one another in real time. However, the experimental nature of the transmission meant that those viewers were acutely aware that other individuals could have been simultaneously observing the performance. According to accounts of those involved, the transmission was received by at least one end-user in Australia, but sources are not clear regarding the exact number or locations of receivers. The following year, the MBone transmitted the first twenty minutes of a November 1994 concert by the Rolling Stones from Dallas, Texas, to about two hundred computers around the world.[31] These events demonstrated the MBone's ability to transmit live music over the Internet, suggesting that the potential for multicast media was likely comparable to live television broadcasting.[32] Like television, these particular multicasts did not offer audiences the ability to interact with one another—let alone the performers—within the platform itself.

Both of these concerts provide examples of observational participation, in which the audience members did significantly participate in the experiment of MBone

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[30] Available evidence does not suggest any earlier examples. Yves Lepage, et al., "Musical Events," *MBONE: Multicasting Tomorrow's Internet*, 1998, accessed September 12, 2020, https://www.savetz.com/mbone/ch6_4.html.
[31] "The MBone: Can't You Hear It Knocking?" *Newsweek*, December 4, 1994, https://www.newsweek.com/mbone-cant-you-hear-it-knocking-185526, accessed November 5, 2021.
[32] See Chapter 1.

multimedia transmission, but did not actively contribute anything to the performance itself. In fact, the performance by Severe Tire Damage was already underway by the time the MBone developers took notice and made the impromptu decision to transmit the event, and in the case of the Rolling Stones' concert, the band performed to an in-person audience of thousands; practically speaking, remote viewers had little direct impact on these performances. Yet the virtual audience's limited options for interaction did not interfere with the attentional processes that fostered their awareness of each other. In fact, there was a particular awareness among them of the virtual presence of other viewers, even if they could not interact, because most of the MBone end-users occupied universities or other research institutions where the use of the MBone for this purpose was experimental, and therefore deliberate.

Francis Steen and Mark Turner unpack the complicated layers of this type of scene, undergirded by what they call "blended joint attention," which stands in contrast to "classic joint attention," the type of scene discussed by Gobel and Richardson. Using the example of watching a televised news broadcast, Steen and Turner explain:

> The many mental spaces needed to make sense of a scene of watching network news include classic joint attention, the broadcast viewer, everyone in the viewer's environment involved in jointly watching the broadcast, everyone outside the viewer's environment involved in watching the broadcast, the staff involved in crafting the communication, the crews that handle the technology, the technology itself, the items that are the focus of the news and to which our attention is directed, and so on and on and on. This diffuse mental network would be intractable to the viewer except that we can blend its many connected mental spaces into an anchoring scene of *blended joint attention*, much of whose structure is provided by the all-important input space of classic joint attention.[33]

[33] Francis Steen and Mark Turner, "Multimodal Construction Grammar," in *Language and the Creative Mind*, ed. Michael Borkent, et al. (Stanford: CSLI Publications, 2013), 257-58. Original emphasis.

Steen and Turner view blended joint attention as a derivation of classic joint attention (i.e., in-person joint attention). Through the experience of blended joint attention, the audience members' awareness of each other shapes their individual experiences of the event, and they are able to interact without the need for spatial proximity, albeit obliquely. We can further validate this point by acknowledging that in scenes of classic joint attention, attendees in the same room may also indirectly engage with each other, even without speech or eye contact; body language and etiquette among other attendees in a concert hall still amount to indirect interaction, even if only in an observational capacity.[34]

Two songs into the Rolling Stones performance, the band's singer Mick Jagger addresses the virtual audience directly, stating "I wanna say a special welcome to everyone that's climbed into the Internet tonight and has got into the MBone. And I hope it doesn't all collapse."[35] By attempting to close the virtual gap between the performers and remote audience members (or perhaps, increasing the conceptual gap by drawing attention to it), Jagger demonstrates his own awareness of the shared experience via the Internet, but the remote audience cannot reciprocate the gesture, leaving him to wonder whether it had indeed "collapsed." Shaun Gallagher discusses joint attention and interactive social cognition; he writes that joint attention inherently involves the coordination of two or more minds that are mutually aware of each other's attention.[36] For Simon Baron-Cohen, joint attention even precedes theory of mind, and is essential to

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[34] Ibid., 1-4.

[35] EdBmusic, "The Rollling Stones Live Full Concert Cotton Bowl, Dallas, 18 November 1994 (+ video fragments)," July 16, 2021, 12:24, https://www.youtube.com/watch?v=uKj_qRezPl0, accessed October 11, 2021.

[36] Shaun Gallagher, "Interactive Coordination in Joint Attention," in *Joint Attention: New Developments in Psychology, Philosophy of Mind, and Social Neuroscience*, ed. Axel Seemann (Cambridge, MA: MIT Press, 2012), 294-296.

human communication.[37] During the concert, Mick Jagger obliquely acknowledged that coordinated attention; for him and his remote viewers, implicit communication via joint attention holds up remarkably well across distances, even if the minds involved cannot know anything more about each other beyond their own assumptions.

Yet even if the MBone users were able to communicate directly with each other during the performance, they had no means of communicating with the band. This one-sided engagement firmly places the MBone users in the realm of observational participation, with no option to shift modalities and affect the performance itself in any overt way. The virtual presence of remote viewers did construct a layered scene that exhibited blended joint attention, contributing to a unique experience for the performers and members of the in-person audience, and in this manner "generated" a vital aspect of the event as a whole, but they themselves did not generate any change in the musical performance.

Nonetheless, this is not to say that the MBone system itself lacks interactive capabilities. The developers of the Rolling Stones' MBone transmission created an accompanying website for the concert, within which users could watch a live video of the concert (via a small window on the side of the screen labeled "StoneBone Video") while clicking on hyperlinks to view additional text and images. This is an interesting decision for an experiment in live video transmission because it reveals an early interest in the multitasking and interactive capabilities of the Internet as a space for watching live performances while simultaneously browsing related media. The primitive, yet highly

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[37] Simon Baron-Cohen, "Precursors to a theory of mind: Understanding attention in others," in *Natural Theories of Mind: Evolution, Development and Simulation of Everyday Mindreading*, ed. Andrew Whiten (Cambridge, MA: Basil Blackwell, 1991), 233-251.

interactive (especially for its time) website provided an immersive setting that, for its

users, amounted to more than the concert itself. Although still participating in an

observational capacity, users had the flexibility to watch and listen to the music, see

images related to the Rolling Stones and their *Voodoo Lounge* tour, and read short bits of

text about the band and their music—a degree of interactivity in digital media that was

unprecedented and signaled new potential directions for the Internet. This flexibility

primarily resides in the users' ability to shift their attention toward or away from the

performance to create a unique, self-guided experience for themselves. Users thus

participate in an event that is on one hand shared, as hundreds of others are logged on to

the same site, but on the other hand intrinsically different for everyone, especially

considering the probability that most users were not directly communicating with each

other during the event. The example of this MBone transmission and accompanying

website demonstrates the significance of joint attention for the event itself,[38] as well as

for our understanding of the perception and participation of those involved.

As a distributed (i.e., decentralized) network, the backbone has been used for the

creation of highly interactive artistic projects via the Internet. In 1995, the MBone was

used for a Poietic Generator, an interactive networking game through which users

collectively created a mosaic-style work of visual art in real time. While still a clear

demonstration of blended joint attention—a layered scene involving users' awareness of

each other's presence and contributions, attention to the artwork-in-progress, and

awareness of the technology and user interface—the Poietic Generator additionally

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[38] The "event" here refers holistically to the concert, the transmission of the concert via MBone, the variable attention of remote viewers using the website, and the mutual awareness (i.e., coordination) between viewers and performers.

exhibits generative participation among all the users involved. Whereas a scene of

blended joint attention inherently shapes the ways participants experience a scene and

engage with each other, the actual modality of participation may change drastically for

any one person over time. In the mid-1990s, the MBone had proven itself to be a

potentially useful multicast infrastructure which allowed for a remarkable degree of

interactivity for such a nascent Internet culture, but its developers were not prepared to

take full advantage of its interactive elements in the context of live music transmission,

and it eventually faded from use as it became replaced by other network backbones, and

as the entire Web 1.0 framework morphed into Web 2.0 (see Chapter 2). Nonetheless, it

was an integral first step toward the fully interactive capabilities of livestreaming via

social media platforms.

Reactive Participation

Since the establishment of Web 2.0 and the growth of social networking platforms

(see Chapter 2), interactivity has been one of the defining features of Internet usage and

media consumption. Livestreaming technologies and interfaces have adapted to that

model, evolving drastically from the simple, yet critical step taken by the MBone. Since

the early 2010s, social networking platforms like Facebook have integrated livestreaming

capabilities, while sites originally designed for media sharing (e.g., YouTube) have since

expanded to include livestreaming as well as social networking tools like public

comments, profiles and channels, and real-time interaction between users. Twitch, a

platform which already encompassed social networking and video game livestreaming,

expanded to music livestreaming in 2014 in order to compete with YouTube and

simultaneously cater to the broader desires of its users (see Chapter 2). As livestreaming

became part of the social media fabric, interactivity was a critical step forward and soon

became a necessary component of the livestreaming experience, with viewers able to

react to performances immediately and publicly, and even hold conversations with each

other within the platform's user interface.

In the case of a platform like Twitch, the volitional and interactive processes of

attention bear out rather straightforwardly. Of course, users of Twitch already belong to a

virtual network of shared interests, however broad they may be. Users who watch a given

livestream on the platform therefore do so with an awareness that the other viewers are

sharing the experience, and likely are interpreting it in a similar way. The interactive

nature of the chat field, which allows users to communicate with each other as well as the

host, facilitates the overall experience in real time as a group effort. Together, these

layers form an experiential field within which participants can modulate their attention,

divert their attention to different objects in the field at will, and to an extent, direct the

attention of fellow participants. Through this set of possibilities, multiple subjects share

their attention toward an object and mutually recognize that their attention is being

shared. This process is nearly identical to the case of "classic joint attention," where

attendant individuals are co-present with the object in question. Through the use of

language and social cues learned since childhood, individuals signal and share their

attention with each other.[39] Joint attention can also occur in situations of technological

mediation where attendants and objects are not necessarily co-present, called "blended

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[39] Vera Tobin, "Joint Attention, *To the Lighthouse*, and Modernist Representations of Intersubjectivity," *Textual Choices in Discourse. A View from Cognitive Linguistics*, ed. Barbara Dancygier, José Sanders, and Lieven Vandelanotte (Amsterdam: John Benjamins Publishing Company, 2012), 45.

joint attention."[40] In either case, these situations of joint attention are necessarily social, combatting the position (at least in part) that absorption within digital media is unnatural, unhealthy, or antisocial. It is not a question of attention versus distraction, but of the freedom to choose to interact with others who share the same virtual spaces. On specialized platforms such as Twitch, participation within a livestream is an essential way of developing social networks in a climate of digital mediation.

The introduction in 2015 of Facebook Live, Facebook's integrated livestreaming service, made the platform a contender in the growing livestreaming arena alongside YouTube and Twitch.[41] Jazz bassist Esperanza Spalding recorded a livestream over Facebook Live in 2017, which captured over seventy-seven consecutive hours between September 12 and 15, documenting the composition and recording of her album *Exposure*.[42] Spalding created the album with the collaborations of several other musicians including Lalah Hathaway, Robert Glasper, and Andrew Bird, as well as the live feedback of Facebook users viewing the process in real time. In line with Nate Chinen's observation of jazz's shift from individualism to "collaborative community building,"[43] Spalding's project depends largely on the liveness afforded by Facebook, and is ultimately *about* the collaboration activated by the joint attention of musicians and spectators. The capabilities and mechanisms of Facebook allowed users to react to the recording session and indirectly participate with the musicians; such mechanisms include

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[40] Steen and Turner, "Multimodal Construction Grammar," 258.
[41] Other platforms have existed, including Meerkat, Instagram Live, Periscope, and TikTok Live, with some of these still in use today. However, Facebook, YouTube, and Twitch achieved the most widespread use as social networking platforms that also began integrating livestreaming within a few years of each other (YouTube in 2008, Twitch in 2011 [music in 2014], Facebook in 2015).
[42] The seventy-seven hours of livestreamed footage included breaks and rest periods, not only studio hours.
[43] Nate Chinen, "The Gig: Jazz's Post-Masculine Era?" in *JazzTimes: America's Jazz Magazine*, September 4, 2013, https://jazztimes.com/features/columns/the-gig-jazzs-post-masculine-era/.

the visibility of comments as well as Facebook's "reaction" icons. Reactive participation allowed viewers to become part of the livestream. In her announcement preceding the livestream, Spalding described the album as a transparent process: "We are performing for you. It's real time and I presume you'll have comments and thoughts and feedback and we'll incorporate those too. So, it's an exchange. I want to take away all the layers we usually hide behind as creators and just get right to the conversation of creating directly for you."[44]

Despite Spalding's intentions at the outset, the music and overall performance did not undergo many significant changes due to audience participation, but the stream did create a dynamic and transparent space in which spectators could still observe, react, and converse with each other. While the final recordings did see a limited release of 7,777 copies, the recording session for *Exposure* is in fact synonymous with the album. In order to maintain the "liveness" of the recording session, Spalding did not archive the livestream for later public accessibility; all available footage of the session exists on third-party YouTube channels, and then only in fragments.[45] Therefore the intended—and essentially achieved—result of the livestream was to grant active Facebook users temporary access to the unfolding of an album's creation, a process typically unseen, and often disassociated from the marketed album.

One existing segment of footage shows Spalding working on the track "Heaven in Pennies" with pianist Robert Glasper. The segment shows viewers an exchange that is

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[44] Esperanza Spalding, "New From Esperanza: Exposure," July 26, 2017, 00:48, https://www.youtube.com/watch?v=pAOezi2Ea0k&t=1s, accessed January 14, 2022.
[45] Just over eight hours of footage exist on YouTube, accounting for only 10.8% of the seventy-seven-hour session. Even factoring in time for Spalding to sleep (which was included in the overall timeframe), more than half of the footage is essentially lost. However, the footage that does exist spans most of the three-day period.

probably typical in many recording studios, but is often invisible to listeners who can only access songs or albums as finished products. As they listen to a demo Spalding previously recorded for the sake of capturing the song's harmonic and formal shapes, Glasper asks her, "When did you write this?" to which she replies, "This morning." During their listening session, Spalding also shares ideas with Glasper regarding the final recording, as in one moment in which she ironically tells Glasper she wants him to play thirds in a steady quarter-note pattern, and immediately follows up with, "No, not that. Anything but that," or another where she gestures dramatically and exclaims, "This is giant! You can't tell here, but it's giant."[46] These normally mundane exchanges in the studio are on full display for the viewers, who flood the screen with "heart" reaction emojis as they hear, for the first time, the skeletal version of what would become one of the most popular tracks on *Exposure*. "Laughter" icons soon take over, as Spalding and Glasper speculate about the use of whistling in the song, and when Spalding melodramatically sings the melody along with the demo track.

The use of emojis in this context demonstrates a critical step beyond the capabilities afforded to the MBone viewers in 1993 and 1994. Two decades later, viewers can publicly (albeit anonymously) express their reactions to the performers; the gap between participants has partially decreased. The interface of reaction emojis allows reactive participants to make the object of their attention known to each other. Whereas in 1994 Mick Jagger had no sense of whether anyone was actually seeing the Rolling Stones over the Internet, in 2017 it is clear to the performers—as well as other viewers—

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[46] A Mandolin Player on Carnegie Hill, "Esperanza Spalding EXPOSURE snippet 8 - with Lalah Hathaway - Coming to Life - Heaven for Pennies," September 20, 2017, 19:38, https://www.youtube.com/watch?v=p1LVT3gdDBo, accessed January 14, 2022.

that they are not alone. In his chapter on joint attention and coordination, Shaun

Gallagher cites the work of John Campbell, who uses the behavior of cows as an analogy

for limited intersubjective awareness. Campbell writes that a herd of cows engages in a

basic form of social referencing when moving together toward an object, but this does not

involve any propositional attitudes, assumptions, or concepts of each other's mental state

or objects of attention—they simply move together.[47] Gallagher expands on this analogy,

explaining that the relational attention between the cows is not something that requires a

mutual understanding of each cow's awareness, or even a theory of mind; the cows

simply check to see that the rest of the herd is moving with them. Humans, with our wide

range of potential social awareness, behave the same way at times. Gallagher elaborates

with a vivid hypothetical scenario built upon Campbell's original analogy, placing

himself as the object of the herd's attention:

> In many cases, attention that I share with other humans is nothing more than
> something like this. If John and I happen to be in the pasture looking at a
> stampede coming toward us, if we catch each other's eye, as they say, if John
> grabs my arm and yells and we start to run, is there anything more to joint
> attention that we have to explain? I'm assuming that we have here […] a "mutual
> open-ended perceptual availability" of which we are mutually aware. We know
> that we see the herd coming toward us, and we know that we know—and I take
> the status of such knowledge to be of a very practical kind that is based on
> occurrent perception. Do I need to have a theory that explains why someone grabs
> another person's arm? Do I need to simulate John's situation or what he might be
> thinking? Rather, I suggest, everything I need for mutual interaction, and for
> understanding John's intentions, is already there in the eye direction and its
> timing, in the arm grabbing, in the intonation of the yell, and I don't have to go
> any further to try to discover a set of beliefs or desires that John might have. Of
> course it might be interesting to learn that John believes that these cows are
> actually bulls (something I might learn later in conversation), but it would serve
> no useful purpose in the moment when we decide to move out of the way.[48]

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[47] John Campbell, "Joint Attention and Common Knowledge," in *Joint Attention: Communication and Other Minds: Issues in Philosophy and Psychology*, ed. Naomi Eilan, Christoph Hoerl, Teresa McCormack, and Johannes Roessler (New York: Oxford University Press, 2005) 287-297.
[48] Gallagher, 298.

While a rock concert is hardly comparable to an approaching stampede (though perhaps some listeners might argue otherwise), the inability to know the existence and/or mental states of a remote audience—or more fundamentally, the concession that such information is unnecessary—is very much like the awareness of an approaching herd. The mental states of the cows, such as they may be, are hardly as important as moving out of the way.

Yet in the *Exposure* session, the entire point of the livestream was to share mental states; from Spalding's perspective, it was her goal to express her mental states to viewers through a transparent look at her songwriting and recording process, while for the viewers, the ability to express their reactions allows them an intimacy with Spalding that fans do not often boast the privilege to have. As noted above, when Spalding first announced the livestream, she suggested that the viewers might provide feedback which she could incorporate into the album; however, that expected generative mode of participation did not bear out the way she intended, possibly due to logistical or technological limitations, or perhaps her own state of absorption in the recording process. Yet without Spalding directly responding to viewers or conversing with them, the platform nonetheless affords viewers the distinct capability of reacting to the session, interacting with other viewers, and thereby participating *with* Spalding in a unique, ephemeral experience, even if they could only go along for the ride.

Generative Participation

As mentioned earlier in this chapter, these modes of participation are not necessarily rigid, distinct categories. A substantial degree of overlap is possible. Generative participants still observe and react among each other, and through their own means, reactive or observational participants may contribute or generate something unique to a given livestream. Additionally, participants may (depending on the capabilities of a given platform) shift modalities at any time. Yet more than the previous two modalities, generative participation is by far the most interactive, and the most immediately consequential. All three modalities produce significant effects in various aspects of social and musical life; however, the effects of observational and reactive participation in a livestream are not as immediately apparent as those of generative participation. By making song requests, interacting with the performer(s), or even altering the digital environment within the user interface, generative participants shape the outcome of an event to a degree that places them alongside the performer—essentially making performers out of the audience. All three of these methods will be explored through the case studies below.

On June 11, 2021, the Boston-based progressive rock band Bent Knee recorded a seven-hour livestream via Twitch, during which they performed songs from their then-upcoming album *Frosting* as well as other songs in their repertoire, and otherwise casually interacted with each other and their viewers. Throughout the day, viewers interacted with each other and with the band via Twitch's chat room, as well as on a Discord channel running parallel to the Twitch stream. Discord is a communication platform that allows groups or communities to create and maintain chat rooms regarding various topics of interest. Users can send instant messages to the entire group or to

individual users (via direct messages), as well as links, images, or files. Preceding the

June 11 livestream, Bent Knee opened a Discord channel, giving users the option to

converse either on that platform or on Twitch during the livestream. One advantage of

using an external server like Discord while streaming on Twitch is that the chat room can

remain open after the stream ends. One disadvantage from the perspective of this study,

however, is that there is much more variability in evidence of the Discord users' attention

to the livestream itself. Because Discord is a separate platform from Twitch, and because

the Discord channel does not have any specific connection to the livestream, there is no

way to know whether the Discord users are in fact paying attention to the livestream.

Within the Twitch chat room, there is sufficient reason to believe that the users are

attending to the livestream to at least some degree. During the livestream, the band made

a point of interacting with its users via the Twitch chat room, and to some extent with

those on the Discord channel (although, again, there is not sufficient evidence to

determine whether some or all Discord users were watching the livestream or not). In this

way, the performers and viewers maintained a considerable degree of interactivity, and

generated the event from both ends of the performer-audience spectrum together in real-

time.

      Although Twitch is a social media platform that primarily appeals to video game

enthusiasts, there are few (if any) aspects of the Bent Knee livestream—or Steve Aoki's

Twitch livestream, discussed previously—that involve gaming, specifically. However,

gaming itself has proven itself to be a particularly fruitful environment for generative

participation in livestreamed musical performances. On February 2, 2019, an electronic

dance music DJ named Marshmello hosted a livestreamed concert over *Fortnite*, an

online video game known for its sandbox and battle-royale mechanics, where players typically create and customize their characters, acquire and modify costumes, accessories, and weapons, and fight each other. At the time of the concert, though, all battle mechanics were disabled, and players' avatars were instead transported to a virtual space within the game called Pleasant Park, where a stage was waiting for them. Marshmello's avatar appeared, resembling the real-life performer with his characteristic white, marshmallow-shaped helmet, and began his ten-minute set. While Marshmello himself was broadcasting his music, voice, and motion-captured movements to players, he encouraged those in attendance to make their avatars dance to the music. The result was a lively virtual dance party that resembled an exaggerated, sometimes gravity-defying simulation of an EDM concert as avatars danced (or attempted to), jumped as though on trampolines, and flew around the stage.[49]

Although *Fortnite* does not utilize the same networking and transmission protocols as a typical livestream, there is no other feature or condition that separates this particular concert from livestreaming practices. Although the game's networking processes differ from those of, say, Facebook Live, the end-user interface and experiential outcome still amount to a broadcasted performance through which users can interact with one another—albeit in this case, more intensely. Indeed, the internal mechanisms of livestreaming often change anyway, as technologies develop and alternatives present themselves; consider, for example, the technological differences between The Rolling Stones' MBone transmission in 1994, and the 2014 Twitch

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[49] The livestream was recorded as a video and can be accessed on YouTube. Marshmello, "Marshmello Holds First Ever Fortnite Concert Live at Pleasant Park," February 2, 2019, https://www.youtube.com/watch?v=NBsCzN-jfvA. Accessed January 2, 2022.

livestream by Steve Aoki. Between these two performances, the technological

distinctions varied drastically, as did the types of interactions and participation. In the

case of Marshmello's *Fortnite* concert, the participants could interact in a way that,

compared to previous forms of livestreaming, was significantly heightened, perhaps

second in intensity only to virtual reality—a technology that has only begun to break into

the live music industry.[50]

      Despite the virtual space and use of avatars, *Fortnite* offers participants a palpable

integration within the event; taking into account that players could view each other's

avatars, interact with them in real time, and that Marshmello could view the unfolding of

events on screen, it is clear that the participants indeed generated a unique experience

with (and for) each other. Writing on the grey area between "real" and "imaginary" in the

context of gaming, William Cheng recalls that during his childhood, he played *Super

Mario Bros.* with his brother, but unbeknownst to him, his controller was nonfunctional.

However, Cheng maintains the position that his actions somehow mattered, and the mere

fact of his presence encouraged, distracted, or somehow influenced his brother's actual

gameplay. According to Cheng, the boundaries in gaming between real, virtual, and

imaginary are not as clearly defined as one might assume.[51] In addition, the sheer scale of

the *Fortnite* concert had real-world economic impact, as well; the concert, viewed by

several million individuals,[52] was the largest event ever hosted by the game, and in the

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[50] Kopal Srivastava, "Using VR & AR In Live Music," *Arts Management and Technology Laboratory*, January 20, 2022, https://amt-lab.org/blog/2021/12/virtual-reality-amp-augmented-reality-in-live-music-w7dec. Accessed May 13, 2022.

[51] William Cheng, *Sound Play: Video Games and the Musical Imagination* (New York: Oxford University Press, 2014), 8.

[52] The actual number is unverified. Some sources claim approximately ten million individuals viewed the livestream. See the following sources.
Peter Rubin, "*Fortnite*'s Marshmello Concert is the Future of the Metaverse," *Wired*, February 5, 2019, https://www.wired.com/story/fortnite-marshmello-concert-vr-ar-multiverse/. Accessed March 1, 2022.

days, weeks, and months following the performance, global interest in Marshmello increased dramatically: within four days after his concert, Marshmello's YouTube views increased by five hundred percent, and his subscriber count rose by 1,800 percent. He gained 147,000 new followers on Twitter, and became the most-searched artist on the *Songkick* entertainment and sales platform, with his page views rising by three thousand percent.[53] This concert also coincided with a rise in popularity for *Fortnite* in general, its user count having risen five-fold between 2018 and 2019, to about 200 million players. Epic Games, the developer of *Fortnite*, seems to have been turning the game more into a medium, or social platform where users can congregate for specific events, such as an in-game rocket launch in June 2018.[54] Along with the impressive magnitude of Marshmello's concert and its powerful degree of participation, *Fortnite* has demonstrated that virtual spaces serve as an impactful avenue for livestreaming and interaction by promoting intense joint attention on a massive scale.

Other examples of livestreaming within virtual spaces do exist, but data remain scant. *Soundscape Universe*, a virtual reality platform launched in 2017, allows groups of users to occupy simulated, futuristic spaces with some degree of customization, and experience live music performances with each other. The developers present *Soundscape Universe* as a platform rather than a game (in similar fashion to *Fortnite*'s turn of strategy in 2019), where users can explore and compete in races if they wish, but can also simply occupy the virtual space together with no particular agenda.[55] This sandbox type of

Tom Gerken, "Fortnite: 'Millions Attend' Virtual Marshmello Concert," *BBC.com*, February 4, 2019, https://www.bbc.com/news/blogs-trending-47116429. Accessed March 1, 2022.
[53] Kat Bein, "Marshmello's Fortnite Concert: Breaking Down the Social Impact," *Billboard*, February 6, 2019, https://www.billboard.com/music/music-news/marshmello-fornite-concert-social-impact-8496868/. Accessed March 1, 2022.
[54] Rubin, "*Fortnite*'s Marshmello Concert is the Future of the Metaverse."
[55] *Soundscape Universe*, https://www.soundscapeuniverse.com/, accessed July 28, 2022.

environment is particularly conducive to generative experiences, because other than a given musical performance that might be taking place within the platform, it is up to the users to interact with the space as they see fit.

This chapter has built off of the discussions of the previous two chapters including broadcasting media, social networking, and the anxieties of attention and distraction, in order to develop a context for the framework established here. These three modalities of participation—observational, reactive, and generative—are as organic as the participants who engage in a given livestream, and the modalities themselves depend upon the processes of joint attention to structure the social networks occurring in the first place. Over virtual connections, and without the advantage of occupying the same spaces and detecting others' lines of sight or fields of hearing, it is necessary that audience members become aware of each other and initiate an environment of joint attention (whether implicitly or deliberately), at which point they can participate with one another and engage with the experience at hand, to varying degrees. This framework for analyzing livestreamed musical performances allows us to gain a better sense of why livestreams should be considered an extension of broadcast media, what their function is within the realm of social media and digital cultures, how audiences engage with liveness in virtual spaces, and where we can expect livestreaming to go in the future. These issues will be further explored, to some extent, in the conclusion of this project.

CONCLUSION
"In These Uncertain Times": Music Livestreaming During COVID-19

The goal of the preceding chapters has been to examine the contexts and social

processes surrounding music livestreaming, and to lay the groundwork for analyzing

them in a holistic and systematic way. As there have been no such studies up to this

point, this project would ideally serve as a useful starting point for future work by

questioning the modes through which audiences engage with livestreamed performances

via social networks, how those modes of engagement contribute to unique experiences

for viewers and performers, and the historical precedents for those behaviors and

outcomes. The project thus far has put forth the following points, having demonstrated

them through varied examples from the past three decades:

1. Livestreaming comprises new technologies, but also long-established practices

   that began in the late-nineteenth century with telephonic transmissions, and

   continued through radio, television, and multicast backbone networks. In practice,

   then, livestreaming is an extension of broadcast media and familiar listening

   habits.

2. Through these previous iterations of broadcast media and now through

   livestreaming, media-consuming cultures have gradually and implicitly modified

   the meanings of "liveness" over the past century, stretching the limits of what

   constitutes a live music experience.

3. The novelties of livestreaming are therefore primarily technological (rather than

   behavioral), and manifest as a result of integration with the faster, interactive

   capabilities of Web 2.0 and social networking services. Yet, those technological

novelties have in turn effected significant developments in audience behaviors

surrounding broadcast media in general (which includes livestreaming).

4. The degrees of interactivity afforded by social media platforms produce a web of

   digital and geographically-dispersed interpersonal and intergroup connections and

   experiences, which can be mapped through examinations of joint attention and

   group participation over virtual networks.

5. These manifestations of group participation, which are informed by the processes

   of joint attention, take the form of identifiable and distinguishable (yet often

   overlapping) modalities: observational participation, reactive participation, and

   generative participation.

6. Finally, these modalities all contribute to the unfolding of unique musical

   occurrences that are just as varied and dynamic as in-person experiences, but are

   completely unique to virtual contexts. Just as in-person musical events cannot

   adequately be replicated virtually, the reverse is also true: virtual experiences are

   completely unique and cannot be simulated without technological mediation,

   because mediation is among their defining features.

As a result of its integration with social media platforms and the modalities of

participation taking place, livestreaming amounts to more than simply an extension of

broadcast media, but a means for social networking. This roadmap of arguments

extracted from the preceding chapters is a potential map for others who will observe

livestreams in the future and theorize about their contexts, processes, and effects.

   One possible application of this framework is the analysis of music livestreaming

during the COVID-19 pandemic, particularly the period of lockdowns during 2020 and

2021, but more generally over the span of three years (2020 through 2022).

Livestreaming during the period of COVID-19 has not occupied a central place within

previous areas of this project because in order to adequately grasp the significance of

livestreaming during such a pivotal historical moment, we first had to explore the

contexts, technological capabilities, and social mechanisms involved. Having done so, we

can then extrapolate the meaningful place of livestreaming in a quarantined society.

There is some truth to the potential argument that a substantive, honest, and reasonably

objective analysis of such a recent and traumatic event would be disingenuous because

the effects of the pandemic on the music industry and the world of livestreaming are still

unfolding and being observed. Yet, such an investigation is necessary for precisely the

same reason; through examining the past, we may better understand our present. What

follows is a preliminary consideration of livestreaming during COVID-19, as an example

of where future studies might apply the frameworks herein.

A Return to Normal? Liveness During the Pandemic

On March 13, 2020, when the executive branch of the United States government

announced a national state of emergency, and two days later individual states began

instituting stay-at-home orders and lockdowns of schools, private businesses, and other

nonessential establishments, music venues were among the first to close.[1] Although

philosophically speaking, music is indeed an essential component of social life, such an

outlook has no effect on public health crisis management. Because of the ancillary

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[1] Centers for Disease Control and Prevention, "CDC Museum COVID-19 Timeline," *Centers for Disease Control and Prevention*, August 16, 2022, https://www.cdc.gov/museum/timeline/covid19.html, accessed February 20, 2023.

position of live music during the pandemic and the resulting shutdown of music venues

worldwide, music creators and their audiences embarked on a mission to reclaim live

music. Writing for *The New York Times*, Jon Caramanica notes that "everyone wanted to

feel 'normal' again, among fellow fans."[2] At the end of 2020, *Rolling Stone* published an

article pining for the "return" of live music in 2021.[3] There was a widespread hunger for

live, shared experiences, and livestreaming offered a way for an increasingly digital

culture to expand its conception of what liveness meant, and how audiences might

participate in it together, even if it meant doing so virtually. It appears that listeners

longed for in-person experiences nonetheless for personal and social reasons, as well as

economic ones. With venues closed down, employees and stakeholders of those

establishments suffered financially, and the music industry as a whole saw major

disruptions in the areas of touring and studio production.[4] Although livestreaming offered

a potential solution to the social problem at hand, it could not recoup the industry-wide

losses incurred by the pandemic, nor could it replicate the atmosphere of a live concert.

These issues ultimately rendered livestreaming an insufficient substitute that induced a

more noticeable longing for in-person events.

Moreover, as Chapter 1 demonstrates, the desire to "reclaim" liveness was

misguided in the first place. Live music was never lost or in need of reclaiming; it was

simply extended and modified, as it had been continually since the late-nineteenth

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[2] Jon Caramanica, "Live Music Is Back! (Live Music Is Back?)" *The New York Times*, August 8, 2021, https://www.nytimes.com/2021/08/08/arts/music/live-concerts-covid-19.html. Accessed February 11, 2023.
[3] Jon Blistein and Ethan Millman, "When Will Live Music Return?" *Rolling Stone*, December 22, 2020, https://www.rollingstone.com/pro/features/when-live-music-return-2021-covid-1106719/. Accessed February 15, 2023.
[4] Caylen David, "COVID-19's Impact on Music: An Analysis of the Industry Post-Lockdown," *WQHS Radio*, August 4, 2020, https://wqhs.upenn.edu/covid-19s-impact-on-music-an-analysis-of-the-industry-post-lockdown/. Accessed December 14, 2022.

century as new technologies surfaced that allowed for new ways to tune into a live performance. Building off the work of Nick Couldry, Auslander remarks that "liveness is not limited to specific performer-audience interactions but to a sense of always being connected to other people, of continuous, technologically mediated co-presence with others known and unknown."[5] Couldry's notion that interpersonal connections drive live experiences more than the specific means of interacting (i.e., occupying the same spaces) meshes seamlessly with the ways liveness has transformed over the long-twentieth century.[6] Yet, despite the fact that livestreaming exists on a spectrum of liveness, the sudden crisis of pandemic-induced lockdowns created a sense of urgency around a perceived need to maintain live music cultures, even if liveness never truly went away. Even if livestreaming essentially failed to replace the comfort and familiarity of in-person concerts, it nonetheless had a palpable effect on the perceptions and understanding of liveness by way of extending broadcast media and capitalizing on the interactive functions of social media platforms.

Surviving the Pandemic: Participation in Livestreams as a Coping Mechanism

More than serving as another broadcasting tool, though, livestreaming has also proven to be an effective coping mechanism in the midst of a public health crisis, including increasing occurrences of mental and emotional trauma. Livestreaming on one hand allowed for the continuation of live music for those who needed it; musicians deployed livestreaming as a means of marketplace viability, or to put it more simply

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[5] Philip Auslander, *Liveness: Performance in a Mediatized Culture* (New York: Routledge, 2008), 60-63; Nick Couldry, "Liveness, 'reality,' and the mediated habitus from television to the mobile phone," *The Communication Review* 7, no. 4 (2004), 357.
[6] Couldry, 357.

(albeit dramatically), survival. On the other hand, audiences were able to latch onto

livestreaming in order to deal with the traumatic loss of shared live music, an essential

component of social life. Following in the footsteps of anthropologists since the

nineteenth century, Thomas Turino identifies "culture" itself as comprising "habits of

thought and practice shared among individuals"; chief among those habits are artistic

practices, namely, music.[7] Habits contribute to individual identities directly and vitally,

and in turn inform the identities of groups, communities, cultures, and entire societies.[8]

The apparent revocation of live music, a socially-ubiquitous and critical aspect of culture,

is a direct threat comparable to a sudden and traumatic amputation.

      With its dramatic user growth in the initial months of the stay-at-home orders,

livestreaming quickly became a salve for this large-scale cultural injury. Between March

15 (when the CDC announced its social distancing recommendations) and March 20

(when the New York State governor's office issued its stay-at-home order), Twitch

viewership rose 524%, from approximately 92,000 to 574,000. In the second half of that

same month, Instagram Live saw a viewership increase of 70%.[9] Musicians as wide-

ranging as Yo-Yo Ma, Michael McDonald, and Dua Lipa began livestreaming from the

privacy (and safety) of their homes, while audiences tuned in with staggering attendance

numbers. Yo-Yo Ma's #SongsOfComfort livestream campaign, launched in 2020 and

continuing into 2023, has brought music to millions of news feeds during the pandemic;

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[7] Thomas Turino, *Music as Social Life: The Politics of Participation* (Chicago: University of Chicago Press, 2008), 109.

[8] Ibid., 121.

[9] Kristin Westcott Grant, "The Future of Music Streaming: How COVID-19 Has Amplified Emerging Forms of Music Consumption," *Forbes*, May 16, 2020, https://www.forbes.com/sites/kristinwestcottgrant/2020/05/16/the-future-of-music-streaming-how-covid-19-has-amplified-emerging-forms-of-music-consumption/?sh=6500cd4d444a. Accessed December 14, 2022.

rapper Tory Lanez's "Quarantine Radio" on Instagram Live reached 350,000 views[10];

Colombian R&B singer Kali Uchis took song requests live over Instagram, and donated

ten thousand dollars to the CDC.[11] In both figurative and literal ways, these livestreamed

events were a balm of sorts: they did not eliminate the problem at hand, but offered a

means to heal. Matt Bizer, a festival producer from Texas who organized the Luck

Reunion 2020 livestream festival, noted that "I think more than anything right now,

everyone is feeling a little confused and lost […] including myself. There is a lot of

uncertainty. Where there's a lot of uncertainty and insecurity, it's very easy to feel alone

very quickly. Anything that allows people to come together and embrace a sense of

community is very important."[12] Others have noted that livestreaming and reimagining

performance production strategies serve as a release for frustrations over the feeling of

separation between artists and their listeners.[13]

Part of the healing power in livestreaming during the COVID-19 pandemic comes

from the ability of audiences to participate in them. When Dua Lipa hosted a livestream

over YouTube where she lip-synched and commented on songs from her *Future

Nostalgia* album on March 27, 2020, viewers swarmed the chat feed with adulation and

gratitude; several viewers identified their nationality or country of residence (a few

examples include Bulgaria, Vietnam, and Türkiye).[14] This behavior is essentially similar

to how viewers responded to Coldplay's November 2019 livestream from Amman,

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[10] Ibid.
[11] Amrita Khalid, "Livestream platforms are a home for the world we've lost under quarantine," *Quartz*, March 30, 2020, https://qz.com/1828586/twitch-is-a-home-for-the-world-weve-lost-under-quarantine. Accessed December 14, 2022.
[12] Ibid.
[13] Alex Taylor, "How Covid is 'creating a new genre' for live music," *BBC.com*, February 8, 2021, https://www.bbc.com/news/entertainment-arts-55947209. Accessed December 15, 2022.
[14] Dua Lipa, "Dua Lipa – Future Nostalgia Livestream PART 2 - #StayAtHome #WithMe," *YouTube*, March 27, 2020. https://www.youtube.com/watch?v=U-9HR4a5Jag. Accessed February 11, 2023.

Jordan, as discussed in Chapter 1. Although their performance did not take place in the

midst of a public health crisis and the audience response to their performance came out of

a starkly different context, both events facilitated large-scale reactive participation. Kali

Uchis' livestream over Instagram, however, constituted a true example of generative

participation by way of viewers making song requests in real-time. Even on a smaller

scale, New Jersey-based acoustic duo Rouvan hosted a series of "Quarantine

Quaranstreams" over Facebook Live primarily for their local circle of fans and friends,

taking song requests and interacting with their audience informally and with minimal

preparation.

On October 22, 2020, the opera company White Snake Projects premiered a

virtual opera entitled *Alice in the Pandemic*. Advertised as being performed in

"cyberspace," the opera was created by Cerise Lim Jacobs and Jorge Sosa, and tells the

story of a frontline healthcare worker during the pandemic—Alice—who finds that her

mother has fallen ill from COVID-19, and must venture through a surrealist virtual world

in order to reach her. Jacobs describes the opera as "a cathartic response to the separation,

dislocation, and isolation we all feel today and an acknowledgment of the sacrifice our

medical heroes make every day as they put their mission to save lives before

themselves."[15] Acknowledging the medical, social, and emotional difficulties brought

about by the pandemic and the sacrifices of healthcare workers, Jacobs suggests the opera

itself as a way of coping.

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[15] Cerise Lim Jacobs, "*Alice in the Pandemic*: The Inspiration," White Snake Projects,
https://www.whitesnakeprojects.org/productions/alice-in-the-pandemic-a-virtual-opera-fall-2020/.
Accessed October 23, 2020.

The production deployed a modified version of Zoom to synchronize the singers without any lag time, and livestreamed their performances within a three-dimensional virtual world, creating the appearance that the singers occupied that space, even though they performed remotely from their own homes. In contrast to traditional livestreams (if they can indeed be called "traditional") which present a performer occupying a real-world space that spectators can view, *Alice in the Pandemic*'s audience is immersed in an uncanny virtual space to the same extent as the performers; in this way, the opera most closely echoes the setting of Marshmello's 2019 *Fortnite* concert, examined in Chapter 3. The performance of *Alice in the Pandemic* itself allowed for reactive participation by the audience, with an integrated chat function that enabled real-time responses to the performance, while the producers of the opera allowed for a more generative experience afterwards in the form of a question-and-answer session. However, the beginning of the production was inadvertently met with generative participation as technical difficulties emerged, and the performance was delayed. The chat field showed audience members conversing with each other about their viewership location, discussing the technical issues causing the delay, and expressing to each other their excited anticipation.[16] The highly social nature of this virtual opera performance had both the audience members and performers generating a unique experience—indeed, as Jacobs hoped, a cathartic one. Deeply emotional responses to the performance which flooded the chat window, with comments such as "I'm not even crying […] I'm BAWWLING! [sic]," "perfect…crying," and a teardrop emoji.

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[16] Although the rights to any recorded version of the performance belong to its creators, the author of this project retains detailed notes regarding the interactions that took place during the event. These are available upon request.

The emotionally charged interactions that took place during *Alice in the Pandemic*

could not have been replicated in a traditional concert setting. Although it only truly

allows for observational participation, the Metropolitan Opera's *Live in HD* broadcasts

have presented a similar type of distinction between in-person and broadcast

performances. The *Live in HD* productions offer detailed, close-up camera angles and

high-fidelity sound; while greater detail at an affordable price may be advantageous to

spectators, those heightened qualities do not reflect the experience of in-person

attendance.[17] This problem reflects the issue of fidelity in recorded music, which has

been considered at length in musicology, notably by Mark Katz, who even claims we are

currently in a "post-fidelity age."[18] However, the trade-off of realism for greater intimacy

seemed particularly appropriate during the quarantine periods, when isolation was the

rule rather than the exception. That intimacy—the personal connections forged between

performers and their audiences, as well as between audience members—is precisely the

remedy that it needed to be; in these uncertain times, livestreaming created a path for

healing. No, it did not replace in-person experiences, but it allowed groups of individuals

around the world to create new ones.

Livestreaming the Future

By 2023, however, isolation had once again become the exception. Concert

venues re-opened, and audiences were attending concerts in person once again.

Economically, the live music industry steadily recovered. In light of the returned

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[17] James Steichen, "HD Opera: A Love/Hate Story," in *The Opera Quarterly* 27, no. 4 (Autumn 2011), 443-459.

[18] Mark Katz, *Capturing Sound: How Technology Has Changed Music* (Berkeley: University of California Press, 2004), 217.

optimism surrounding live music, where does livestreaming fit in? Will livestreaming fade, or perhaps vanish altogether? Some writers believe this is not so, and that livestreaming is here to stay. When rappers Timbaland and Swizz Beatz hosted the first "Verzuz" live rap battle against each other on Instagram, they began a series that would end up becoming one of the most successful pandemic-era livestream campaigns. Other Verzuz battles would include high-profile pairings like Teddy Riley and Babyface, Erykah Badu and Jill Scott, and DJ Premier and RZA. Writing for *Time*, Raisa Bruner notes that although lockdowns are a thing of the past, Verzuz continues, and may yet expand into the realms of sports and comedy.[19] In fact, as a whole livestreaming is only growing in programming and popularity. In 2023 The Cleveland Orchestra entered an official partnership with the classical music streaming service Medici.tv, with several livestreamed concerts planned for the 2024 season and beyond, available on both Medici.tv and Adella, the orchestra's own digital platform[20]; this is part of a larger effort to grow the orchestra's digital brand and bring classical music to global audiences.[21] Les Délices, White Snake Projects, and Bent Knee have also continued livestreaming since 2022. If anything, it appears that livestreaming has only grown over the past year.

Perhaps more than as a response to the pandemic, livestreaming has demonstrated its value as both an additional touchpoint for performers and their audiences, and a channel for renewed creativity among music producers who are experimenting with new ways of engaging listeners. In addition, it is important to remember that music

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[19] Raisa Bruner, "The Livestream Show Will Go On. How COVID Has Changed Live Music—Forever," *Time*, March 30, 2021, https://time.com/5950135/livestream-music-future/. Accessed February 15, 2023.
[20] Medici.tv, "The Cleveland Orchestra partners up with medici.tv to broadcast concerts globally," press release, February 7, 2023, https://www.linkedin.com/posts/medicitv_the-cleveland-orchestra-partners-up-with-activity-7029754365573754880-9rDq?utm_source=share&utm_medium=member_desktop.
[21] André Gremillet, memorandum to the staff of The Cleveland Orchestra, February 2, 2023.

technology has consistently adapted to fit into contemporary lifestyles and cultural

orientations. Chapter 1 explored the developments of broadcast media and technologies

alongside ever-changing conceptions of what "live music" means; and even with the

return of in-person music, there is still a market for livestreaming as it provides unique

opportunities and experiences that are not attainable in person. Bruner claims that live

music need not be the "death knell" of virtual events.[22] Ali Rivera, YouTube's Head of

Live Music and West Coast Artist Relations, has said that YouTube "[has] been focused

on being this virtual venue for the world, and we want to continue those efforts."

Similarly, Ian LaPlace of the live event platform First Tube Media, anticipates "more

livestreams and people doubling down and digging into the interactivity of them to create

more in-depth digital experiences." Both Rivera and LaPlace expect to see livestreaming

become a standard part of any given live music event, especially as artists across genres

become more comfortable with virtual performances.[23]

     I argue that Bruner, Rivera, and LaPlace are correct in their assumptions; we can

fully expect that livestreaming will not just continue to track with its current growth, but

even outpace it. With the exponential leaps in media technologies, as well as the

exponential rate at which those leaps occur, livestreaming will soon become a more

standard component of our musical lives. Whether that is for better or worse depends on

the individual, but it is at this point conjecture takes over. I have outlined some

considerations regarding livestreaming during and after COVID-19, to which future

studies can apply the framework I have proposed in this project. The frameworks of

liveness in broadcast media, livestreaming as an outgrowth of virtual networking, joint

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[22] Bruner, "The Livestream Show Will Go On."
[23] Ibid.

attention, and the modalities of participation can be productive starting points for any intensive study of livestreaming. The story of livestreaming has only begun, and will expand significantly in the coming years as augmented and virtual reality platforms develop, new social media platforms emerge, and music creators experiment with novel production and performance technologies. As livestreaming inevitably takes its place among these developments, the above frameworks should take their place as well. The guiding principle behind them has been the idea that musical performance is a social act, and any future examination of livestreaming should account for the ways groups interact and generate unique experiences together.

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