Designing Audience Participation and Gamification in Intermedia Performance:
Conceptual Framework and Theoretical Implications Post COVID-19

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ABSTRACT

"Humanity: From Survival to Revival" ("Dystopia to Utopia") is a participatory survival game and audiovisual performance work that depicts the transformation of the dystopian state of humanity to utopianism in both the visual and sonic realms. Audience members are invited to participate in humanity's interactive survival games and to contribute their photographic facial outlines as visual content for the performance. This paper explores the theoretical framework behind designing audience participation and interaction by reflecting on the notion of dystopia as related to the COVID-19 pandemic, while also reflecting on this event's outcomes and challenges. In doing so, this study showcases the process of visual transformation, depicting the transition from dystopian to utopian paradigms via audience participation and musical performance.

KEYWORDS

Agency, Audience Participation, Audio-Visual Performance, COVID-19 Pandemic, Dystopia, Foucault, Human-Computer Interaction, Interactivity, Interaction Design, Intermedia Performance, Surveillance

INTRODUCTION

"Humanity: From Survival to Revival" is an intermedia performance that focuses on audience participation as an integral part of the audiovisual performance. The preliminary conceptual framework, interactive design, and first round of programming were done on Max/MSP software (programmer: Martin Ritter) prior to the COVID-19 pandemic. During that time, the work was briefly halted because of the uncertainty of the COVID situation since this performance requires the live participation of audience members. Approximately one year after the onset of the pandemic, this work was resumed by working closely with the programmer on ongoing experimentation, revision, and further development. As of the writing of this article, "Humanity" has been performed in three different venues. The first performance was showcased at the Humanities and Creative Arts Festival at Miami University Regional on April 8, 2022; this was a trial performance, more or less, since the artist wished to test the technical aspects of the interactive games as played by a live audience. Since then, this work has been slightly modified and was performed at the Eugene New Music Festival in

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Eugene, Oregon, on October 16, 2022, and the Ammerman Center for Arts and Technology, 17th Biennial Symposium at Connecticut College in New London on November 11, 2022. The new media artwork made via live performance and audience participation was also included as a solo exhibition at the New Media Art Conference at the CICA Museum, Gimpo, Korea, June 8–12, 2022.

This article offers an in-depth exploration of how audience and audiovisual interactivity were designed for this performance, reflecting on the COVID-19 pandemic and the post-COVID era. In doing so, the paper focuses on the theoretical implications of the visual representation of dystopia and how that relates to Foucault's notion of *docile bodies*. Because "Humanity" is an experimental performance combining multiple mediums, this work yields manifold interpretations and topics of analysis from a wide spectrum of disciplines. A slightly different variation of this work which the author created during the pandemic period also exists. "Me, Myself and I in Dystopia" (Suhr, 2021) utilizes the same software program design, but the interactivity occurs solely between the artist and the camera, documenting the facial expressions of a person living alone during dystopian times. Another thematic variation involves viewing this work from the peer-to-peer blockchain modality. The point is simply that other possible interpretations and applications exist outside the dystopian and COVID-19 pandemic frameworks. Therefore, it is important to clarify that the intent of exploring theoretical connections in designing audience interactivity and gamification is not an attempt to limit or restrict the subjective experience of the audience. Instead, the aim is to unpack how the act of reflecting on contemporary culture and society creates a symbiotic synergy in the design process of building gamification for audience interactivity and participation.

Furthermore, as an artist and researcher, the author wishes to discover ways in which practical aspects of artistry and creative work can integrate theoretical with personal reflection. With that said, unpacking an intermedia performance that involves both audience participation/gaming and musical performance can be tackled from two primary standpoints: (1) understanding the artist's vision, conceptual background, and theoretical implications; and (2) analyzing emerging themes arising from audience participation. This paper aims to achieve both points based on overarching observations from the three performances that took place in 2022. In doing so, this article further raises the potential curatorial challenges to incorporating audience interactivity in this performance.

HUMANITY: FROM SURVIVAL TO REVIVAL

The original version of this performance focused more on the broad, general ideas of the transformative process of people from a survival state to a revival state. During the COVID-19 pandemic, this work was reframed in the context of Foucault's notion of a disciplinary society, as a means to analyze emerging societal issues. Before discussing how the recent pandemic influenced the theoretical implication of this performance, it is essential to share the conceptual framework and synopsis of the work.

"Humanity: From Survival to Revival" depicts the transformation of the dystopian state of humanity to utopianism in both the visual and sonic realms. This intermedia performance not only involves the direct participation of audience members, but it creates an aesthetic experience wherein audience members collectively overcome a crisis, bond, heal through transformation, and create a new vision for humanity. In doing so, the performance raises the question of how can people collaborate to save themselves from crises to build a better humanity? The integral aspect of this performance involves allowing the audience's direct participation and collaboration to drive the audiovisual multimedia content. This multimedia, interactive, intermedia performance represents the change, progress, and rebuilding of human relations, collective healing, and bonding. Structurally, this work consists of four primary acts: (1) the audience takes photos of facial outlines; (2) an interactive survival game; (3) collective healing and bonding; and 4) rebuilding new humanity via an audiovisual performance. This work is interdisciplinary in that it crosses multiple creative genres and mediums and synergistically creates a unique aesthetic experience at the nexus of gamification, digital art, and music performance.

Survival can relate to varying aspects of the human condition of today; it may involve survival from a trauma, survival from an accident, survival from depression, survival from illness, survival from random gun violence, etc. The first movement is a chaotic, solemn, idiosyncratic sonic maze. If the power of speech and breath is the only tool to survive, how can audience members collaborate to save one another? To answer this question, in the second act, the audience will be given a microphone to speak freely, and their speech will affect the visuals on the screen in real time. To encourage the audience's voluntary participation and collaboration, if someone stops talking into the microphone or does not exhale air, the faces on the screen will vanish randomly to signify death, since breathing affects a person's biology. To this extent, "Humanity" considers physical biology and the emotional-affective dimension of psychology to inspire collective bonding and healing. By combining digital gaming and music performance, this work includes digital video art composed of the participants' faces. Based on the audience participation level, the varying number of survivors will affect the shaping of the 3D digital facial sculpture towards the end of the event. Finally, the live music performance anchors this intermedia performance. The sound design for Acts 1 and 2 reflects the themes of chaos and survival. In Act 3, the musical composition and live improvisational performance represent healing. In the fourth and final act, the music shifts its focus from survival to revival, from dystopia to utopia, by celebrating the ultimate change: a new vision for humanity that is created by the people.

CONCEPTUAL BACKGROUND AND THEORETICAL IMPLICATION: COVID-19 AND DYSTOPIA

Although the synopsis of the work described above is fairly straightforward and can be widely applicable to myriad situations, experiencing the COVID-19 pandemic has inevitably influenced this work. In 2020, the entire world shut down temporarily and was filled with confusion, chaos, and uncertainties. During this time, it would have been no surprise to anyone that coping with the unprecedented global health crisis felt like living in a dystopian society. Prior to this point, "Humanity" was meant to incorporate various survival scenarios along a spectrum, ranging from an individual's inner struggles to the larger societal issues mentioned above. For this reason, the artist's initial reflection on what it means to struggle and survive was quite broad and universally applicable to varying human conditions.

During the COVID-19 crisis, the context of this dystopia was reconceived to incorporate the notion of a dystopian society bound to a subjectivity distinct from the literal definition of the concept. On the video screen, up to 25 photographic images of the participants' facial outlines can be included at one time. Rather than utilizing an entire face, the artist chose to use facial outlines so that the lines could easily be turned into a 3D network chain, producing an abstract form to preserve anonymity. These facial outlines are then later turned into a digital 3D human face sculpture with musical accompaniment for fluid morphing and integration.

As each person's face is added, they fill up the invisible grid of the screen space in an orderly fashion. The seemingly orderly representation of human bodies holds implicit meaning because the visual representation in this work refers to people living in a dystopian society. To some, the portrayal of chaos may translate into the imagining of a disorderly and erratic depiction of human faces. However, the visual representation of dystopia is quite the opposite in this work because of the symmetrically aligned representation. While this may be the artist's subjective interpretation and depiction of people living in a society of dystopia, Foucault's notion of a disciplinary society relates closely to the COVID-19 dystopia.

In "Humanity," a dystopian society involves citizens having limited freedom and living under constant surveillance and control. Therefore, the behaviors of citizens are disciplined and restricted, due to fears of being punished or facing negative repercussions rather than being free and open. To visually represent this restriction, the notion of Foucault's *docile bodies* comes to the fore. But how could one visually represent docile bodies? People who cannot freely roam but are fixed in one place

within specific invisible boundaries. In Act 1, each person goes up to the camera and adds their face to the screen, which remains static on the screen (see Figures 1–2).

Foucault's notion of a disciplinary society is one in which citizens become compliant and "docile" under a state of pervasive, constant surveillance. In *Discipline and Punish*, Foucault stated:

The historical moment of the disciplines was the moment when the art of the human body was born, which was directed not only at the growth of its skills nor at the intensification of its subjection but at the formation of a relation that in the mechanism itself makes it more obedient as it becomes more conversely. What was then being formed was a policy of coercions that act upon the body, a calculated manipulation of its elements, its gestures, its behaviors . . . A "political anatomy," which was also a "mechanics of power," was being born; it defined how one may have a hold over others' bodies, not only so that they may do what one wishes, but so that they may operate as one wishes, with the techniques, the speed and the efficiency that one determines. Thus discipline produces subjected and practised bodies, "docile" bodies. Discipline increases the forces of the body (in economic terms of utility) and diminishes these same forces (in political terms of obedience). (pp. 137–138)

In order to survive in a dystopian society, citizens are more likely to make decisions that avoid negative consequences and punishment. This view can apply to citizens' overall behaviors, including what one is allowed to say and not say, as related to positive reinforcement and negative repercussions. Foucault's notion of a disciplinary society, coercion is unnecessary as citizens have already internalized the social norms and protocols to fit in. Instead of being forced to behave in a certain way, individuals adapt to the political and social climates of their time. Perhaps the most dangerous and excessive example of a dystopian society would be a situation where citizens are even oblivious to living in such times, and the thought of one being a subject within such a scenario is unthinkable and offensive. Therefore, a citizen might even be defiant to those raising critical voices to challenge the systems, rather than critically questioning the disciplinary regime of control. While some citizens may be keenly aware of being controlled, they may also feel socially and politically pressured to self-censor and self-monitor their behaviors to avoid negative repercussions.

How can one view the COVID-19 pandemic or post-COVID-19 era from the lens of Foucault's disciplinary society? What similarities exist to make connections to the docile bodies, and what concerns are being raised? During the pandemic, Abazi (2020) asserted that "many whistleblowers

Figure 1. Audiences add their faces via camera installation at the Ammerman Biennial Symposium (2022)

are initially censored and face disciplinary measures or even dismissals, although there are important differences between China and the USA/Europe on the level of censorship and information control" (p. 376). Another issue linking the COVID-19 pandemic to dystopian societies was the pervasive use of surveillance technologies. According to Eck and Hatz (2020), "governments in democracies and autocracies alike have turned to surveillance technologies such as contact tracing apps. Governments have also tightened their hold on communication flows in other ways, through censorship and information manipulation" (p. 603). The critical issue does not necessarily pertain to the operation of surveillance during the crisis but to how this practice can potentially become the norm post-COVID-19.

In a recent news article, Bacchi (2022) points out that "the two-year fight against COVID-19 has turned technology into a weapon of choice to defeat the virus but experts now worry that tech will outlive the pandemic and normalise mass surveillance" (para. 1). Similar concerns were raised by Couch, Robinson, and Komesaroff (2020) regarding how the COVID-19 pandemic might potentially lead to the standardization of continuous surveillance by directly incorporating Foucault's notion of the panopticon as a theoretical lens of analysis:

The COVID-19 pandemic has strengthened and justified a shift to more intense and penetrating forms of surveillance culture. It is likely that this process will have long-reaching cultural, political, and economic impacts and will fundamentally reshape the structures of the societies which emerge and our personal affective lives. The normalization of the extended surveillance poses risks and raises questions which should become the subject of ongoing, critical dialogue. (p. 5)

Taken as a whole, the authors' critical voices strengthen the overall argument that Foucault's disciplinary society could potentially be created via new policies, mechanisms, and regulations emerging from the COVID-19 pandemic. There seems to be an increasing proliferation of research articles that raise the alarm for the current world by problematizing various issues from the human rights perspective (Chiozza & King, 2022). The purpose of highlighting a few research articles here is to contextualize lesser-known aspects of COVID-19 societal implications; these studies further demonstrate how real-life examples, current events, and research have influenced the design process as well as implications of "Humanity."

TOWARDS ACTIVE AGENCY: WHAT ACTIONS RESULT IN RESISTANCE WITHIN A DYSTOPIAN SOCIETY AND LEAD TO A UTOPIAN CONSTRUCT?

The goal of this intermedia performance is not to simply depict or critique the scenarios of dystopian culture during or potentially after COVID-19; it is also meant to allow for various imaginative scenarios which can further be analyzed by the theoretical framework and relevance to current events. Therefore, the emphasis is placed on asserting the power of agency to overcome, combat, and heal for positive changes and growth. While researchers' problematization of surveillance culture and the control of information (censorship) illustrates the potential dystopian aspects of the post-COVID era, how can the interactive installation in this performance offer the experience of a shift from a dystopian society to a utopian society?

To explore the answers to the question above, two actions need to take place. The first action is the exercise of free speech with one restriction: no hate speech allowed. In addition to honoring free speech, the artist's personal view is that speech can be a powerful tool for positive affirmation; being able to say something positive to others can help them lift their moods, when the speaker considers which words will help others. The second action is allowing faces to be temporarily blurred to mask the facial outlines. This action symbolizes the act of defiance. While surveillance can occur via contact tracing apps and online face recognition, the camera is an increasingly prominent means of surveillance these days (Van Natta et al., 2020). In this camera installation, audience members are invited to show their faces and have their photos taken. While this action can ironically be considered

an extended act of surveillance (despite the fact that participation is volitional), the fading of the actual photographic images implies surveillance disruption. This can happen when one speaks (or makes noise) into the microphone; the artist has designed the interaction in such a way that the sound coming from the microphone randomly blurs the outlines of a face for a brief second. The first two performances were programmed with rapid blurring time, while the third performance had a slower impact, which made the blurring hardly noticeable.

GAMIFICATION OF AUDIENCE PARTICIPATION AND THE OUTCOMES

Despite the artist's intention, motivating audience participation in Act 2 will require some careful consideration. According to Glickman et al. (2018), "[g]amification is the use of game design elements in non-game contexts to encourage a desired type of behavior" (p. 21). Therefore, some hurdles may be reduced upon incorporating gamification. In studying the impact of gamification on motivating their audience's participation in their location-based mobile participation prototype, Thiel and Fröhlich (2017) concluded that those who participated in a gamified application had higher results than those who participated without the gamifying element. This factor, however, mitigated intrinsic motivation, which affects the activity levels in public participation.

In "Humanity," audiences are invited to play a survival game; however, depending on the demographics and personalities of the audience members, some individuals may be prone to participate of their own volition, while others will be less inclined to participate due to their shyness or desire for privacy. To encourage audience participation, what rewards and potential penalties could be offered? While imagining the dystopian scenario, the artist asserts that survival entails exercising free speech as a form of asserting active resistance and empowerment. However, what if audience members decide not to participate? This is the part where the gamification factor comes into play. If one does not participate, that individual will "die" in the game, and the audience must act together to save more people. In this regard, "Humanity" may also inspire teamwork, a conflict-resolution type of social experience.

In the past three performances, audiences have followed the instructions and made noise (light breathing) or spoken into the microphone. This approach, in fact, allowed for collaboration, as a means of creating a community within the performance space. In the first performance, held at Humanities and Creative Arts Festival at Miami University Regional, due to the small audience, the members of the audience participated in the survival game by handing the microphones back and forth to each other. The intimate performance environment promoted not only free speech among participants, but also carefree impromptu acting by student participants when the interactive game was repeated. In the second and third performance setting, there were some moderate distinctions between participating audience members and nonparticipating audiences, and the former formed a small community within the performance space by encouraging each other to participate, resulting in a subset community within the larger audience. While this may have been due to the setup of the performance space (because the third performance was at a traditional music concert hall, in which the audience members had to gather in the corner for quick access to the microphone), people who participated in trying to save one another definitely seem to form a closer bond than those who chose not to participate. At this point, the audience's participation turned into a public performance.

As far as working together to "save" one another, all three performances were successful because no faces were dropped from the screens due to lack of participation, except in the last performance; when the artist was transitioning from Act 2 to 3 on a computer, a slight pause accidentally caused one person's face to vanish. Besides this unintentional drop, the gamification worked successfully since everyone who decided to participate produced a variety of sounds throughout the duration of the performance. Although more detailed content from the audience vocalizations will be reserved for potential future analysis after the completion of additional performances, interesting observations have already emerged based on the three performances. Audiences made up things to say, made light

breathing sounds, read random scripts from their phones, and even sang. Overall, it is evident that the audience participation reinforced the original concept that the transformation of a society from dystopia to utopia requires collective, cooperative effort. However, it is important to note that, at times, the content of the audience members' statements deviated from following the instructions to say something positive to help people's emotional state.

CONTEXTUALIZING AUDIENCE INTERACTIVITY AND CHALLENGES

To further unpack audience participation in musical performances, it is helpful to understand how audiences' interactivity has been incorporated into a variety of creative genres and mediums from a comparative standpoint. Many practitioners and researchers have already explored artist and audience interactivity in visual art practice over the years (Ritter, 1996; Candy & Edmonds, 2002; Schraffenberger & Van der Heide, 2015; Rutten, 2018). For instance, in a visual art context, Suhr (2018) explored the augmented reality art series "Flame" to unpack the interactivity between the audience and the artist. This series allowed viewers to interact with paintings by using their mobile devices to scan a QR code mounted next to the paintings. Viewers were instantly able to see the paintings come alive, moving and shaping them into different images accompanied by music and sound design. The paintings started with the artist's initial creative strokes, but the idea behind this series was that each work could continue to "become," as inspired by Deleuze's notion of *becoming*. Therefore, the physical artworks in this series were neither finished nor static, fixed works of art. When the audience participated in unlocking the hidden augmented reality art, it added further aesthetic dimensions, such as sound and movement. While the intention was to introduce new ways of viewing artworks, many viewers were too accustomed to strolling passively through galleries rather than actively engaging in downloading the app and interacting with the AR element. Yet, this type of logistical challenge could potentially be reduced with pre-event promotion, so that audiences could be prepared to interact with a traditional medium through an atypical viewing activity.

In the context of the theater arts, White (2013) emphasized the importance of examining the "aesthetics of invitation" in theater practices. He observes that works that include audience participation can be meaningful when considering both the procedures and the processes of invitation. This is because once audience members start participating, they become an artistic medium: "these processes and procedures, particularly in the control they both share and withhold and in the point of view they engender in the participant, are aesthetically important" (p. 9). Heim (2015) also explored the impact of emerging technology on audience participation by examining "how an audience's repertoire of actions changes diachronically as new technologies and new opportunities for the audience to perform arise" (p. 3). In a similar vein, Cerratto-Pargman et al. (2016) conducted an empirical study on audience participation in an interactive theater performance in which the qualities of audience participation were divided into immediate and reflexive actions. The instantaneous aspect of audience participation was facilitated by interactive technology and allowed for "sensorial, intellectual and emotional engagement" (p. 9). On the other hand, the reflective facet was related to the experience after the participation, whereby technical engagement generated either enthusiasm or more distance (p. 9). From this finding, one can discern that evaluating and accessing audience participation can be quite complex when viewed through a multitude of analytical lenses.

In musical performances, audience participation can also be examined from various angles to influence the actual music content. Freeman's (2008) work explores the real-time music notation system, which involved inviting the audience to actively contribute to the live musical performance. The real-time notation system operates on a triangular feedback motion: "the audience influences the notation, the notation influences performers, and the performers, in turn, influence the audience" (p. 31). In this sense, the music honors spontaneity as well as live real-time interaction between the audience and the performer. However, audience-performer interaction also faces some challenges in live musical performances. Zhang et al. (2016) explored audience participation in live performances by

incorporating smartphones as an interactive system to control the stereo panorama of the lead guitar. The researchers observed that the musicians did not fully relinquish control during the performance but were cautious, while audience members also desired control and feedback. The tensions that rise between audience and performer in music-making are worth noting in live collaborative environments. Not all synergy between audience and performer results in inspiring or effective outcomes.

Creating interactive multimedia performances incorporating audience participation in the musical setting presents some practical challenges which are intertwined with deeper philosophical reflections. The challenges may exist in terms of curatorial context and in probing the role of the audience and performer. If the traditional and normative conception of the audience's role is to passively sit and watch a performance in musical performance settings, works that incorporate audience interactivity may encourage audiences to stand up, move and contribute to the content, at least in some parts or throughout the whole performance. Once this aspect is involved, the dynamic between the artist and the audience can become obfuscated and disrupted. One of the challenging aspects of creating an interdisciplinary performance inviting audience participation is the contextualization of this type of performance, as the hegemonic relations between audience and performer can be unintentionally lopsided. Often the excitement or interest in audience participation in the context of performance may be interpreted as an artist having to relinquish some control. Furthermore, the blurring of boundaries between audience and performer may potentially be viewed in contemporary performance practice as a democratization of the platform that results in the breaking down of the invisible gap between the performer and audience. However, the goal of inviting audience participation does not always entail this inverted dynamic, with the artist taking the passive backseat. This issue, thus, becomes muddy in the case of musical performance, more so than in the other creative arts disciplines mentioned above.

In "Humanity," the artist gave instructions to the audience to follow, which provided the artist with some level of control until free speech took place. However, not understanding the hegemonic tensions and roles of audience and performer interactivity can potentially affect curatorial decisions, such as where to put more emphasis on this performance when thinking about venues and physical spaces for the performance. If a work is created to involve an audience, should the setting only prioritize the creation of a convenient environment for audience participation? The notion of *co-creative content* deserves thought, rather than simply categorizing it as creative works intended only for the audience's participation.

Another related concern with performing interdisciplinary work relates to achieving a fluid transition between the interactive aspect of the media installation/games and the performance. In order to have a cohesive and fluid transition, the former and the latter parts of the performance should not interrupt one another. In addition, there ought to be an awareness and understanding that the musical performance is equally significant in the overall meaning of the performance. In the case of this work, the first half of the performance was devoted to interaction, and audience members were asked to be seated. However, due to time constraints, during the past three performances, photos were not taken of the audience members as initially programmed; individuals had to be invited to stand in front of the camera installation, so their facial photos could be taken automatically as sounds were triggered instantaneously. While compromising the original intention, the artist/performer had to actively intervene and snap the photos manually. This step required a bit of rigid structure because the artist wanted to meet the time requirement. After this process, audience members were invited to the microphone.

Although the ongoing challenge is to aim for a cohesive integration and avoid a sharp bifurcation between interactive games versus musical performances, some level of compromise inevitably occurs at times due to the limitations of time or the context of the venue. On the one hand, an aspect like this can easily be avoided if an artist declines to present her work in a context that largely compromises a performance's original intent (this, in fact, happened with this work in the past). Nonetheless, negotiating the contextual meaning can most effectively be shaped by collaborative efforts between the artist and the organizing members. As a result, an appropriate balance can be reached between

the interactive gaming aspects and the musical performance, rather than valorizing the audience over the performer or vice versa.

ACTS 3–4: PERFORMING THE VISUAL AND SONIC NARRATIVE

In line with the previous discussion, the temporal aspect of the audience's participation is another important factor to consider. To this effect, one should ask if the goal of the work is to allow audience interactivity to complete an artwork. Depending on when the audience's interactivity is invited, the role of the audience can be more clearly determined. In "Humanity," audience interactivity only occurs in the first half of the performance, and the performer is the one completing the work by allowing the music and sounds to affect the degrees of visual activity (faces moving and rotating) on the screen. In the first performance, the third act included a cello performance with a singing bowl, followed by the violin and fixed media electronics. The second performance was limited to violin performance (Act 4). In the third performance, Acts 3 and 4 included a traditional Korean bamboo flute called a *danso* and a singing bowl, along with the violin performance. The final acts demonstrated the visual and sonic narrative of humanity going from survival mode to revival. In Act Three, the rigid, immobile format of the participant's faces in the grid line was broken apart by the sounds (see Figure 2). This effort illustrated emancipation and freedom, as the musical performance caused the individual faces to disintegrate and move randomly via real-time interaction.

After this point, the audience members' faces start to be reshaped and undergo various modes of metamorphosis with music performance. This can be done by setting the parameters prior to the performance; depending on the amplitude of the sound, the real-time interactivity between musical performance and visuals can dictate the amounts of "lights" created on the screen and the types and colors of lights as well as the movement and the full rotation of the faces in the x, y, and z dimensions based on the amplitude of sounds (see Figures 3, 4, 5). These parameters are set prior to the performance through creative experimentation.

Despite the abstract nature of the overall visuals, when comparing the real-time artworks produced from all three performances, the fine details of facial lines and the prominent facial features (such as beards, hats, glasses, or even the expressions of audience members) created a unique visual imprint each time thereby resulting in a one-of-a-kind visual experience. Similarly, the performer's structured improvisation also made a distinctive impact since the emotions of the performer in the shared space

Figure 2. Bamboo flute performance and live electronics, audiovisual interaction, Ammerman Biennial Symposium (2022)
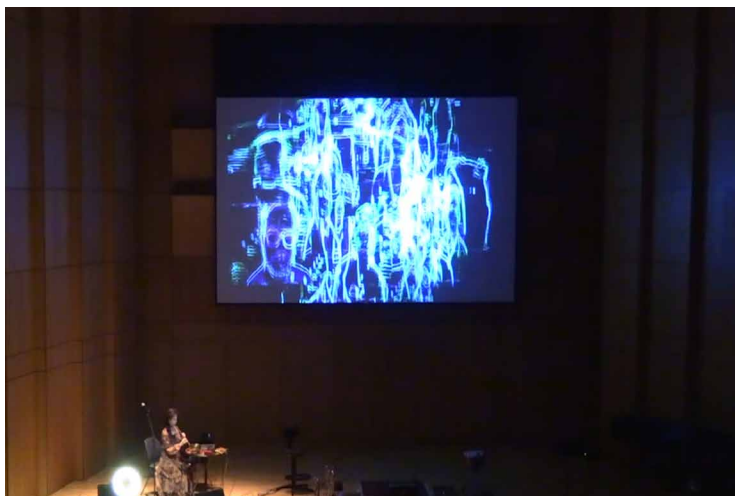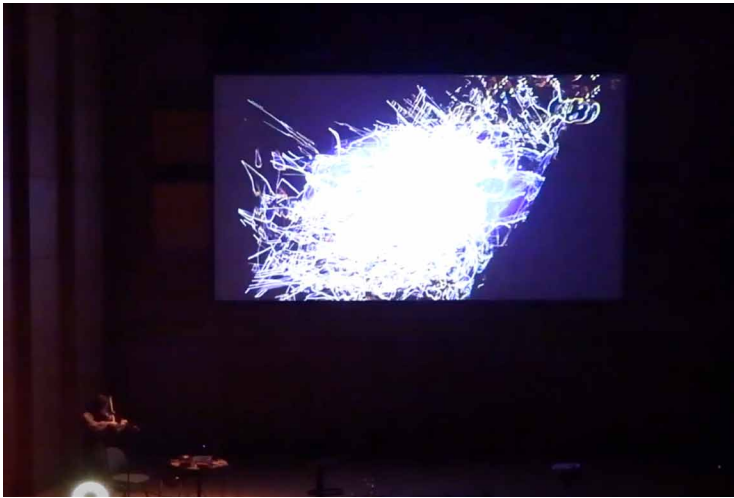
Figure 3. Violin performance with fixed electronics, audiovisual interaction, Ammerman Biennial Symposium (2022)

inevitably affect the movements and lights within the facial sculpture through music (see Figure 4). Toward the end of the performance, the utopia was created through the symbols of a circle, sun, and light (see Figure 5).

CONCLUSION

Audience interactivity and participation have long been part of performance art, theater, visual art, media art installations, and interactive music performances. But the question of why artists allow audience participation in their work deserves some consideration. The rationale for audience participation is not about creating better quality works per se, but the crux of the issue boils down to how one contextualizes and conceptualizes the role of the audience in one's work. Are audiences simply individuals who sit back and watch a performance while passively receiving an artist's message,

Figure 4. Still image of audiences' faces as a digital facial sculpture
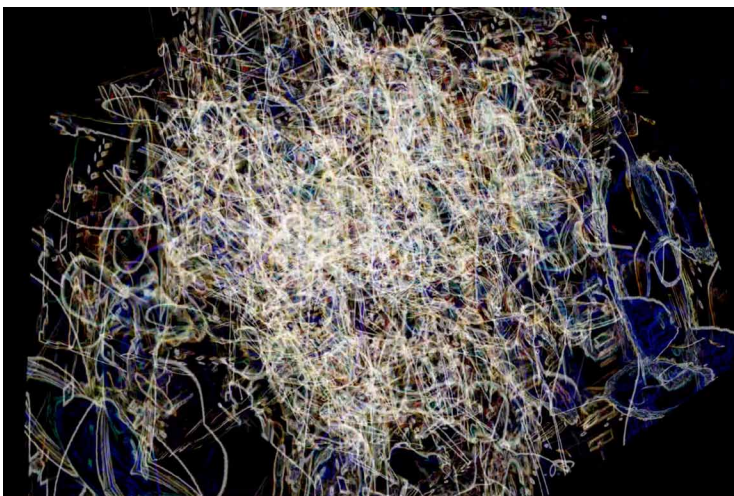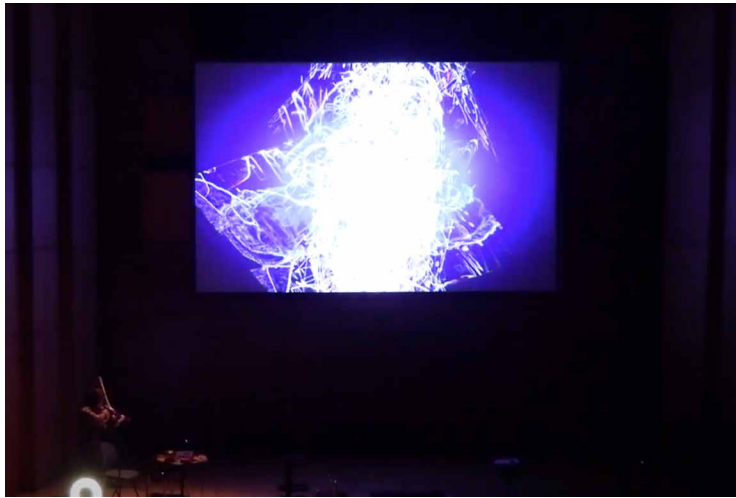
Figure 5. Violin solo performance with interactive lights as a symbol of utopia, Ammerman Biennial Symposium (2022)

or can their agency play a role in shaping the content of creative works? While neither perspective has any bearing on a work's artistic merits, this topic certainly broadens and challenges the scope of how artists and creative practitioners define the boundaries within their creative genres. Is it even possible that artists can effectively communicate their messages when creative works yield subjective interpretations? Just because an audience is sitting back and watching a performance does not mean that it is merely passive; viewers may be actively trying to decode the meaning of a performance or discover their individual interpretations. Therefore, analyzing audience interactivity, reception, and participation in creative settings is a complex topic that can be observed from multiple angles.

In this article, the conceptual background, along with theoretical implications related to Foucault's notion of the docile body, was discussed. While the inspiration for designing audience interactivity may stem from everyday life and personal experience and interests, connecting to a current case study and various theories further enriches the interpretation of works from myriad angles. This paper also explored specific challenges related to the musical performance genre when combined with an interactive game/installation. As artists push more boundaries and cross various mediums and genres in their work, a couple of aspects are important to consider: (1) conceptual designs and theoretical implications matter, not only from the standpoint of the interactive design process but also from interdisciplinary scholarship, whereby theoretical conceptions are incorporated into an artistic work to expand its meaning; (2) mixing and combining creative genres should include careful consideration of the synergy within the immersive aesthetic experience, although this is not without challenge regarding the interpretation and contextualization of the work. Therefore, understanding the cohesive, integral framework of the interdisciplinary work is critical; otherwise, certain curatorial decisions and the presentation of the creative work may unintentionally undermine the intricacies of the work's meaning and overall impact.

As more performances take place, follow-up studies to this analysis can further explore other aspects of audience agency, such as practicing the act of resistance and empowerment within the framework of an interactive game. In-depth ethnographic research evaluating and accessing audience actions, behavior, and impact during the performance may offer one other promising avenue for research in intermedia performance and audience interactivity, since it could shed light on the broader, longstanding goal of using creative arts for social and cultural impact and positive individual changes based on collective experiences.

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