Understanding Audience Participation in an Interactive Theater Performance

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ABSTRACT
This article presents an empirical study investigating audience participation in an interactive theater performance. During the performance, audience members were enticed to act upon and contribute to the performance by sharing their opinions, emotions, values and other thoughts, by means of text messages that were integrated into the performance itself. The study aimed at understanding the main characteristics of audience participation in the interactive performance, as well as the role of communication technology as a medium enabling social participation. The results draw attention to the *immediate* and *reflective* facets of audience participation, both unfolding at two different but interrelated levels of interactions: an *individual* and *collective one*.

Author Keywords
Interactive performances; constitutive; epistemic and critical qualities; communication technology; social participation.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
Research conducted at the intersection of live art and digital technologies constitutes a blossoming area within HCI. This extensive and variegated body of work reflects the pervasiveness of technology in the context of artistic and cultural experiences, while bringing to the fore a number of emergent issues, such as people's participation in interactive installations and performances [10, 11, 13, 24, 29], the relevance of theories and key concepts borrowed from performance studies [7, 18, 21, 23, 25, 26] as well as the exploration of new design spaces [21, 27, 30, 34].

In this paper, we take a closer look at experiential qualities of audience participation and at aspects of participants' self-reflections, with the goal to better understand audience

participation in a theater play, and to discuss its implications for the study of interactive art and performances within HCI.

This paper presents a qualitative study focused on the interactive drama "ADA FTW[1]", a drama that encourages audience members to interact with, and contribute to the performance by means of mobile devices during the play. ADA FTW is based on the life of Ada Lovelace who lived in the early nineteenth century, and who is considered to be the developer of the first algorithms intended to be carried out by a machine, i.e. the world's first computer programmer. The drama focuses on Ada's frustrations, her hopes and feelings about her private and professional life in a society, and within a scientific field, dominated by male values and practices. Starting at the end of scene four (about halfway into the drama) up to scene seven, the audience is addressed directly and is invited to contribute to the performance. Four questions, all tightly connected to the plot, and introduced one by one in the end of each scene, are directed towards the audience members, and presented on a large video display located on the stage. The audience members' responses to these questions are then shown as text messages on the public display, thus becoming part of the scenography (Figure 1).

This study focuses on participants' interactions with the performance and on their acts of sharing personal text messages in a dynamic setting where everybody's contribution can add to the emergent meaning of the overall performance. The goal of the study was to understand: 1) audience participation from the participants' live actions and immediate reflections on the interactive performance; 2) the role of communication technologies as a medium enabling social participation in such a cultural context.

The empirical material was collected during the three days ADA FTW was performed. Collected data include observational, interview and survey data, as well as the data log of the 499 messages that were sent by audience members during the three times the performance took place. The analysis draws on Bell's theories of performances [4]

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[1] FTW is an abbreviation that stands for 'For The World'. It is often used as a social media internet meme. The title of the drama attempts to signal a modern social media context juxtaposed with a historical content.

and, more specifically, on the reinterpretation of qualities of performances presented by Nam and Nitsche [23].

In this paper, we argue that audience participation can be characterized as entailing at least, two facets: an *immediate* and a *reflective* one. The *immediate* facet draws attention to emergent qualities of audience participation. The *reflective* facet draws attention to the respondents' own reflections, characterizing audience participation based on their own personal experience. These two facets are intimately related to the whole aesthetic experience that unfolds simultaneously at both individual and collective levels of interactions. Our contribution is of interest to the HCI community as it acknowledges participants as sensual, emotional and self-reflective actors, and as it redefines social participation through communication technology as a dialogue between particular selves and particular others [22].

BACKGROUND

Over the last years, interactive art and performances have gained attention, as artistic aspects of interaction with technologies have been connected to traditional HCI topics and to third wave HCI [8]. As such, studies on interactive art and performances explore cultural aspects of Human-Computer Interaction through aesthetics, emotions, experience-based design [22] and reflexivity [8]. An expanding body of research has explored the potential of emergent media and interactive technologies in facilitating art installations in public places. Researchers at the University of Nottingham, in collaboration with the artists' group Blast Theory have, for example, staged large mixed reality performances [6, 12, 25]. Some of these performances were large-scale highly participatory events [9], others smaller, subtle interactive experiences [14]. Collaborations at the intersection of computer science, art and design have investigated design issues related to performative interactions in public spaces [27, 34], provided analytical tools to investigate interactive installations and audience participation [23, 29], and have contributed with theoretical frameworks, design methodologies and practices [6, 7, 18, 19, 26].

Audience participation

A number of productions have approached audience participation as an essential part of interactive performances, and research has looked at different design strategies for enticing audience members to contribute to the performance [10, 11, 13, 19, 21, 29, 30]. Audience participation has mainly been studied in public places (i.e. museums, art galleries, conference halls etc.), while settings such as theatres, where attendants' behaviors may be determined by a different set of rules, norms and values embedded in this cultural context, have less often been the object of such studies [13]. Overall, the design strategies and the technologies used to trigger audience participation in interactive performances have been quite mixed. Some complex productions have relied on sophisticated and highly customized technological equipment, while others have presented a simpler setup in terms of technological sophistication and complexity. Compared to performances where audience members had to give up all their belongings [9], or go riding on a bicycle [24], ADA FTW provides a markedly simpler entry to experiencing and participating in the performance. Audience participation is here designed around participants' use of their own mobile devices, and it is enabled from within the theater wherein the acting takes place, as well as from the variety of places people can be located at when experiencing the streaming version of ADA FTW.

Audience participation and the unfinished performance

The idea that the *meaning* of a piece of work is shaped primarily by the artist, but that it remains unfinished until the reader, the spectator or the attendant completes it, has its roots in influential and well-established theories of semiotics and aesthetics (cf. Umberto Eco and Ernst Gombrich's work) [32]. Such an idea has, for instance, been explored in the field of Film Studies by pioneer Radúz Činčera's in his "Kinoautomat: One Man and his House", which is considered today the world's first interactive movie. This was the first movie using interactivity to give the audience the possibility to vote (decide) what elements, or scenes, would be shown to them [17]. In the field of interactive and performance art in HCI, the idea of introducing interactivity in cultural performances has been adopted as a way to experiment with more active forms of spectatorships [32]. For example, the theatrical performance "Parcival XX-XI" [13], performed in a traditional theater setting, made use of Nintendo Wiimote controllers to enable active audience participation through gestural interaction. Participants were confronted with the effects of their own actions with the Nintendo device in terms of digital visuals projected on the stage, of performing dancers' behaviors, and of other participants' avatars. Another example is "Self − a smartphone theatre experience", by Michael Beets, where the audience received contents on their mobile devices that became part of the story, expanding the narrative, and providing an intimate portal into the characters' lives and stories [5].

Audience participation as text-messaging

Most studies on audience participation have looked at participants' involvement and engagement with the performance through participants' physical bodies and movements [13, 23, 29]. In comparison, a few studies have looked at interactive performances including participants' linguistic expressions as the main element of audience participation [19]. This body of work provides examples of how to enable visitors to participate in interactive performances. However, it is not directly intended to enable interactions, or collaborative participation, among audience members. As such, the main focus is primarily put on designing for interactions between participant-performance. This is also the main concern for a number of studies

focused on design aspects [6, 21, 25] and the evaluations of participants' experiences in interactive performances [13, 29]. Furthermore, most of these investigations have rarely focused on understanding actual participation through the participants' actions (i.e. expressions) during the performance. Most of them have, in fact, relied on observations and interviews based on the participants' recounting of their own experience, after the performance. Our work differs in this regard, as the methodology adopted allows us to account for participants' experience during and after the performance, through their actual contribution to the performance (i.e. the shared messages), and their own reflections about it.

ANALYTICAL FRAMEWORK

In order to provide a deeper understanding of participants' experience of audience participation in the interactive performance, we have drawn on a framework enabling us to identify qualities in audience participation as they emerge from the participants' lively interactions and meaningful engagement with the performance. This framework is grounded in Bell's [4] work on theories of performance, and Nam and Niche's [23] introduction into the HCI community. A number of frameworks have sought to study artistic practices and interactive performances by drawing attention to: i) the interplay between canonical trajectories (i.e how the experience is designed to unfold) and participants' own trajectories (i.e how the experience actually unfolds) [6]; ii) participants' wittingness, technical skills and interpretative abilities [29]; iii) the set of criteria for understanding participants' engagement in public places [10]; iv) requirements for designing audience participation in theatrical dance performance [13]. Bell's theorization [4] provides us with a key terminology to talk about qualities of performances, and as noted by Nam and Nitsche [23], it shows how interactive performances can be related to audience members' social and cultural backgrounds, critical thinking, and to their physical and emotional engagement. More specifically, this framework draws attention to:

Constitutive qualities relating to the way participants (i.e individuals, communities, social groups, etc.) establish themselves within, and through, a performance. This, in turn, relates to the interplay between participants' cultural and social perspectives and the performance itself. In other words, constitutive qualities reflect a connection between the performance and the participants' heterogeneous social and cultural backgrounds as they emerge through the interactions [23].

Epistemic qualities referring to a way of "knowing ourselves, others and the world" that is intrinsically intertwined with how we come to know about it [4]. This entails that audience participants come to know things about themselves, about others, and about the world based on their own embodied experiences and on the observation of others' embodied experiences during the performance [23].

Critical qualities relating to understanding a performance as a way to stake claims and to identify hidden forces, values, norms, or power relationship that can operate beneath a certain appearance [4, 23].

ADA FTW: THE INTERACTIVE PERFORMANCE

ADA FTW is an interactive performance designed and developed independently of research purposes; it was produced by RATS Theater that explores the use of technology in the context of artistic and cultural experiences. The performance was created in such a way that it could be experienced both by audience members located in the theater itself, and by remote audience members located at other locations. The latter case was made possible by live streaming tailored for both computers and smaller mobile devices. When the study was carried out, ADA FTW was being performed over three consecutive days at the Royal Dramatic Theatre, the national theatre of Sweden, located in Stockholm. ADA FTW was also simultaneously streamed to two public libraries equipped with large displays, and to the university students' pub at the computer science department of our university (this was limited to the first day). Since the live stream was available to the Internet on the play's own dedicated website, anyone with a fast Internet connection could watch the show. The show itself lasted approximately one hour.

ADA FTW: The Story

ADA FTW was part of a trilogy "Women in Science" centered around the lives of three female scientists, their scientific discoveries, and how being a woman affected their private and professional lives. ADA FTW recounts the life story of Ada Lovelace, born in 1816 as the daughter of the English poet Lord Byron. Early in her life, she became interested in mathematics and collaborated with Charles Babbage who developed the specifications for an analytical machine that is often considered to be the world's first, analog, computer [28].

Figure 1: ADA FTW's stage at the Royal Dramatic Theatre.

ADA FTW: elements of audience participation

The play is performed as a stage monologue by Ada Lovelace who, on her deathbed, reflects on her life. The scenography simply consists of a bed, the wallpaper on the sidewalls and a large digital display in the background (Figure 1). Two cameras are also present for recording and live-streaming the play. During the interactive performance, audience members are encouraged to reflect upon their own experiences by answering a number of questions that are raised in the end of each scene, starting from scene four. The questions posed were: 1) "*What do you want to change?*", 2) "*What makes your heart beat?*", 3) "*What prevents you from achieving your dreams*?" and 4) "*What discoveries would you like to see in the future*?". During the show, the questions were asked in the order above. Each one of them was tightly connected to the topic of the corresponding scene and to the mood and feelings evoked.

The play director designed audience participation around the possibility to answer these questions by sending messages via *SMS*, *twitter* or through the *performance's own website* (an input field at the same page where the play was also streamed to). The audience was informed about the possibility to participate via text in the beginning of the play by a message on the large on-stage display. Participants were able to send messages throughout the performance, including messages that did not relate to the questions or the play and these messages were displayed on the large on-stage screen, thus becoming part of the scenography. All the messages sent by the audience were moderated by a *technical moderator* who worked backstage to filter away sexist or vulgar messages, personal attacks on third persons or parties, or advertisements. In a short post-performance interview, the moderator explained to us that he tried to keep the interaction as open as possible, allowing, for example, the message "I'm horny", since it was not directed to anybody in particular.

STUDYING ADA FTW: METHOD

The empirical data was collected over a period of three days in November 2013. We collected 1) observational data through note-taking and photographing, 2) written answers to a set of post-performance questions that were handed out to audience members on postcards (from hereon referred to as 'postcards'), and the 3) log-data of all the messages sent during the three performances. Finally, we also conducted 4) post-performance semi-structured interviews with audience members.

The observations were carried out on-location, at the theater where the play was performed each evening. On one day, we also observed the performance at the two libraries where the play was broadcast and accessible for free. All the observations took place before, during and after the performance and for as long as audience members remained in the lobby. They were participatory in nature, as all the three authors took active part in the interactive performance by entering messages. As it is plausible that the messages

we sent might have interacted with participants' messages, they were included in the analysis. However, because of the limited number (about 15 in total), we do not believe that these messages had a major impact on the overall audience participation.

The postcards contained questions [cf. 15] and aimed at gaining insights into participants' first impressions and opinions about the interactive drama they had just seen. They were distributed immediately before the performance and were collected afterwards, in a box placed by the exit of the theatre. The postcards were transcribed and analyzed according to content analysis principles [3]. A total of 54 postcards were collected at the main theater, and three more at one of the libraries.

The log files that contained all messages sent by the audience members regardless of their physical location were collected a few days after the last performance. A total of 499 messages were logged, while 434 messages were analyzed. 65 messages were dismissed as they were filtered away by the technical moderator. Table 1 provides an overview of the text messages sent by the audience members during the different interactive performances.

Day	Total	Dis-missed	Analyzed	Twitter	Web	Sms
1	175	24	151	32	80	39
2	144	20	124	34	71	19
3	180	21	159	34	75	50
Total	499	65	434	100	226	108

Table 1: Audience messages sent via twitter, web and sms.

The messages sent over the three days, by participants located at the theatre and at distance, were coded and analyzed jointly by the three authors. First, an early coding was made separating the messages into to answers to the questions and others [20]. Secondly, the messages were categorized, in more detail, into a set of thematic categories that underlie the instantiation of qualities in audience participation and we detail in the result section. Methodologically, we used elements of grounded theory such as open coding and selective coding [17].

Most of the messages were written in Swedish, although a few were also written in English (around 20) and French (around five), partly because the streamed version had English subtitles. Since the researchers were familiar with all of the languages, the analysis of the messages was conducted in the original languages. The messages have only been translated for this paper.

Eleven interviews were conducted with audience members who were approached (randomly) when the performance

was over. Each interview consisted of twelve questions investigating the following aspects of audience engagement and participation in the performance:1) personal connection with the story and emotions associated to the performance, 2) the overarching experience of using mobile devices during the performance as well as of the variety of technologies included in the performance, 3) the participants' opinion about their participation in the performance and their motivation and interests in attending it. All the interviews were carried out at the theater entrance hall, a space that was crowded with people mingling after the performance. Because of the transient nature of the interview context, and because people were concerned about leaving the theater, the interviews were designed to last between fifteen up to twenty minutes. The interviews were conducted both in Swedish and English. They were transcribed and analyzed according to content analysis principles [3]. The interviews provided a sense of how people reflected on their participation and aesthetic experience of the performance, which we present in the results.

RESULTS

During the three days in which the interactive performance was shown, approximately 135 participants saw it at the theater (ca 40-45 people each day), while approximately 125 watched it at distance (although we were not able to determine the remote viewers' level of focus, particularly since they were watching the play from different locations). According to our observations in the theater and the library, as well as the responses to the postcards, the audience members who followed the three shows reflected a broad variety in terms of age range, (the postcards showed a span between 23 to 70 years old), of socio-cultural backgrounds, and of motivations for coming to the show. The audience members reported a wide set of occupations such as retired, librarians, people working for IT companies, unemployed, students, politicians, people working with cultural productions and theatre, physicians. Many were regular theatergoers. The overall motivation for going was curiosity about Ada's life story and her work, an interest for the overarching topic of "women" and "science", and for the combination of theater and interactive technology. The audience members were aware that the use of technology was a novel component of the play they were going to see, although most of them reported not having any previous knowledge of how the interaction modalities had been implemented in the context of the whole narration.

In what follows, we firstly introduce results emerging from the analysis of the message logs in order to further specify constitutive, epistemic and critical qualities of audience participation. Secondly, we introduce results extracted from postcards and interviews data, to illustrate participants' self-reflection on audience participation and the role of interactive communication technology in this specific situation.

Qualities in audience participation

Qualities are here understood as emerging attributes of people's participation in the interactive performance and not as attributes of the performance per-se. This, we believe, is an important distinction as it enables as to discuss the various relationships emerging from people's immediate engagement with the performance, and how it becomes constitutive of their own participation in it. The qualities introduced below are not intended as fixed categories, but rather as a terminology that allow us talk about the different ways audience members "acted upon" the interactive performance and contributed to it [31]. It should be noted that, besides the very first text messages sent by the facilitator (messages like *"Hello world"* or *"Ada was a British mathematician"*), the messages displayed were sent in the context of the four questions that triggered the audience participation and own reflection. While we do not claim that all the messages were a direct and obvious response to these questions, their concrete instantiation cannot be understood independently from them.

The corpus analyzed was rich in relation to the amount of messages sent and in terms of the quality of its messages. Participants shared both deep and intimate thoughts, expectations, dreams about their personal lives (i.e *"I dream to become a music produces, to run a music magazine and to become the agent of music artists")* or society in general (i.e. *"*[I dream of] *a vaccine against cancer"*), as well as (apparently) unrelated messages presenting a fun and playful character. As such, the messages presented a plurality and diversity of voices and points of view that materialized audience participation in an emerging polyphonic and dialogical narrative [1]. In the following sections, we present a number of emerging qualities of audience participation that were identified through its specific semiotic elements (i.e. the messages displayed).

Constitutive qualities

Constitutive qualities of audience participation relate to the ways audience members constitute themselves as participants in and through the performance. In discussing them, we have chosen three different categories that show how audience members' participation can be understood as entailing presential, topological and socio-cultural traits.

We regard as **presential** those messages that reflect the basic level at which audience members' established themselves as participants in the interactive performance. These messages echoed participants' experimentation with the interactive character of the performance, as some participants were seeking contact with audience members and other people. These were, for instance, messages such as *":) :):):):)"*, *"Hi everybody"*, or with the actress *i.e.* *"Poor Ada", "Come on Ada".* In other case these messages reveal an intention to address the technological layer of the performance and, thus, the very audience members'

conditions for participation, i.e *"the technology is rolling"*, *"The connection was bad now… it jumps a little"*, and the accessibility it provides *"I want to see the audience"*, *"Are you watching?"* *"I see nothing ☹"*.

Similarly, we have characterized as **topological** those messages that can be seen as actions whereby audience members establish themselves in the performance by referring to the physical place in which they are located, or by relating to the other sites where the play is also being shown. For instance, messages such as *"Theater at the Foo Bar!"* or *"Husby is here"* can be regarded as statements on the various places (i.e. student pub or at one of the public libraries) where the play was broadcast. Another message such as *"Hello Husby!/ the audience from Dramaten"* shows instead a direct attempt to create a connection between distributed people in the audience.

Examples of **socio-cultural** messages referenced to the audience cultural interests and socio-cultural backgrounds as they emerged through the performance. For instance, several messages were intertextual references to popular television series i.e *"the winter is coming"*, writers i.e. *"Poe wrote upon both"* (i.e. Edgar Allan Poe), or to an English song about love and promises. Other messages related to more personal cultural interests; for instance, *"Music gets my heart started"* and *"Biology"*, are here understood as expression of personal interests as constitutive of the self through the performance. Finally, other messages such as *"almost only women in the audience, girl power"*, *"The gang from the women's spirit is motivated by the show!"* reflect the constitution of oneself as participant on the base of gender issues.

Epistemic qualities
In discussing epistemic qualities of audience participation, we draw attention to aspects relating to participants' ways of knowing themselves and letting the other know about themselves through the performance. Such messages also resonate with elements of participants' involvement with the story itself and of engagement with the questions posed during the performance. Through the analysis, we have further characterized epistemic qualities as value-laden and dramaturgical.

Value-laden messages were the ones reflecting a serious tone and deep engagement with the questions asked. Because of the nature of the questions posed, the messages grouped under this category resonated with the participants' own and intimate dreams, life expectations, feelings and sometimes fear. In most cases, these messages do not show a direct connection to ADA FTW as the story being told, but rather to the emotions the story triggered as audience members related to their own life, and to the way they think of themselves through the performance. For instance, *"I should dare to speak aloud"*, *"I, myself prevent myself from growing-up"*, *"fear of not being good enough"*, and *"I want to change my life inspired by Ada and Mary Shelley"*

echoed personal reflections addressing life changes and hindrances. While messages such as *"I dream to be healthy again"*, *"I dream to sit on a bench and listen to the birds…that we could go out and do this instead…away from the technology"*, or *"[I dream of] new Gucci loafers"* reflected some of the participants' dreams and how they intertwine with values such as health, nature versus technology, or simply material goods.

Dramaturgical messages suggested instead traits of social participation with respect to what audience members knew, or did not know, about the story being told through the performance. This entails utterances such as *"Byron was probably a hunk"*, *"How old is Ada?"*, or *"Ada was a genius"*. Furthermore, this group of messages revealed a way for the audience to directly address the character Ada and, at the same time, to qualify the value and meaning of her life. This includes messages such as *"you [Ada] are worth all the attention for your power and actions!"*, *"What a life Ada had!"*, *"Poor Ada"*, or *"she [Ada] should be angrier"*. Some of these messages also disclosed a sentiment about things that ought to be done, both in terms of the style used to tell the story –*"the play needs more comedy"*– and in terms of actions to be taken by the main character, i.e *"[Ada], take your purse and leave the bed"*.

Critical qualities
In discussing critical qualities, we bring attention to the aspects of social participation that connote the audience members' reflection and critical thinking upon themes evoked by the play. In what follows, we have chosen to illustrate messages that provide examples of how participants' responses can be related to contemporary socio-political discourses, as well as of a critical reflection on the experience of participating in the performance.

Socio-Political elements of participation echoed participants' understandings and concerns in relation to today's societal and political issues. Similarly to the epistemic qualities introduced above, socio-political traits reflect a deep engagement with the questions posed throughout the performance, specifically the ones addressing change, hindrance and new discoveries. Tightly connected to the main topic of the play and the festival "Women in Science", several messages revealed a critique towards power structures and gender issues: *"my heart beats for the struggle that so many women fought before us!"*, *"female force"*, or *"We yearn for equality"* exemplify this point. Other messages instead resonated with the idea that existing gender norms constitute a barrier to personal development: *"patriarchy"*, *"I long for more voices will be heard"*; *"Racism, sexism and norms"*, *"Very little hinders me because I'm a guy"*.

Other socio-political messages are about issues not directly addressed by the play (i.e. war, environmental and climate issues, economical forces, etc.), but which seemed to be central to several audience members. They reflected

participants' aspiration to change current status quo, both on an international and on a local political level. For instance, messages such as *"Stop the war in Syria"*, *"taxes and the distribution of public money"*, and *"I dream of a world where we take care of each other and nobody votes for the moderate party"*, *"more budget to the health system"*, *"an egalitarian and equal society for all!"*. Similarly, messages such as *"I want to see multiple solutions to environmental problems"*, *"To act in the world, especially in USA and Europe, against catastrophic climate risks"* illustrate participants appropriation of the digital space as a means to freely express societal concerns, such as environmental issues.

Metacritical messages echoed participants' thinking about the very mechanisms underlying audience participation and how social participation was being orchestrated during the performance. For instance, one of the messages raised a doubt about a possible censor operating behind the stage: *"is there anybody who censors before it gets through?"*. A number of following messages were an answer to this question (i.e. *"absolutely, my previous message doesn't show up on the wall"*, *"I did not get for instance to write that everybody here votes red"*). A number of additional messages, further problematized this aspect by wondering how the final decision to post, or discard, a message was taken – i.e. *"But who watches the watcher?"*, and *"who is behind the screen, nobody knows"*.

Aspects of participants' self-reflections on audience participation enabled by communication technology

The analysis of the postcards and the interviews shows that most of the audience members had a positive inclination towards the use of interactive technology in the context of the play. For instance, the majority of them qualified the performance as "cool". As one of the respondents wrote, the play constituted a *"Modern concept"* (P.19, postcard, 43 years old), while another one expressed enthusiasm about participating as follows: *"it was cool and exciting to see the audience members' reaction to my SMS"* (P.43, postcard, 27 years old). Nevertheless, 51% of audience members also qualified their experience as distracting and unfocused, 32% found the overall experience fun and exciting and 8% mentioned their participation in the performance was troublesome. These results suggest that most of the participants had an ambivalent experience in relation to *being audience of social participation* in the performance (i.e. that is being spectators of other people's messages) and *being participant* in the performance (i.e. that is participating in the performance with their own messages) through the technology available. In the following sections, we draw attention to this tension, and discuss some aspects of the interactive performance that participants regarded as problematic.

Being audience of social participation in the interactive performance

Most of the participants located at the main theater found it problematic to concentrate on the actress's monologue and, to simultaneously, share messages or read them on the public display. As mentioned in the postcards, *several participants considered the "real" acting and the participation-through-technology as two separate elements in the performance*. This is exemplified in the quotes below in which two persons expressed their feelings about the interactive play by addressing the dramaturgical narrative and the technological means enabling social participation as two separate entities: *"Nothing happened, [it was] difficult to keep together technology and theater"* (P.5, postcard, 58 years old); *"Cool setting since it is different; however, it didn't feel that the SMS contributed so much to the experience. The play per se was super, the SMS a bit distracting"* (P.34, postcard, 32 years old). Thus, being able to share one's own thoughts in public, read other audience members' thoughts and taking part in the performance generated interest and curiosity among participants; this is a point that also resonates with the large number of text messages that were sent over the three days of the festival by some participants – 499 in total with approximately 260 participants in total. However, as it emerges from the analysis, *participants were joggling with multiple foci*. Messages from the audience were perceived as a narrative on its own, which sometimes competed with the audience members' concern to keep their focus on the actress. For instance, as two of the participants put it: *" I did not want it* [send messages], *it felt uncomfortable, I wanted to focus on the actress's performance"* (P.10, postcard, 52 years old); *"I stopped focusing on what was happening on the scene and I checked the big display only"* (P.53, postcard, 22 years old).

Being a participant in the interactive performance

The data shows that people were often ambivalent about the use of technology in the performance, as they enjoyed it but also criticized it. This is particularly true for the audience members who used mobile phones or tablets at the main theater. A possible explanation is that many of the participants were regular theatergoers, either at a professional or amateur level, or people working with IT who were curious about the possibility to see the boundaries of theater, or technology, expanded. However, both the interviews and the postcards reflected a grey area in which the appreciation for the novelty of the setting, and various technological concerns intertwined with each other. For instance, a number of participants explained that interacting with the performance was odd although it conveyed a feeling of *"being part of the performance in a certain way"* (P.45, postcard, 27 years old). As some respondents put it, participating was experienced as *"so much fun / [it was] rewarding to be able to think about one's own life and be seen! Being seen anonymously gets great needs satisfied"* (P.38, postcard, 31 years old); *"It is*

usually not Ok to talk during a play (theater, cinema) so that is a perfect way to unleash ideas" (P.39, postcard, 37 years old). Or, as another respondent noted: *"to be able to take note of others' thoughts and reactions; to participate gives an extra dimension"(*P.1, postcard, 70 years old*)*.

An aspect that made participation through technology challenging was the *participants' awareness of contextual social norms*. This is particularly true for some audience members located at the main theater where, we believe, the embedded social norms were in conflict with texting and, thus, participating in the performance. As noted elsewhere [13], narrative theater rarely includes active audience involvement and this might result in a sense of bafflement towards participation. In our case, some data pointed to the experience of what constitutes a proper or improper behavior as contributing to the degree of puzzlement towards social participation. As one person put it: *"It felt rude to the actor not having full attention on her, she was very good and alive"* (P.28, postcard, 37 years old). Moreover, another respondent, who had seen the performance both at the theater and at one of the libraries where it was being broadcast, explained that engaging with his mobile phone felt more comfortable at the library, since the absence of a stage resembled more everyday use of mobile phone: *"Here I am sitting in a room where it does not bother anybody* [texting]*, I think. There wasn't any problem, it was as usual* [...]*".* (Interview 3, 51 years old).

Another issue explaining why audience members experienced participation as problematic relates to their *expectations* about using communication technology throughout the performance. As the artistic director explained to us, the participants' messages shared were not meant to provoke any reaction from the actress in terms of acting and of unfolding of the story. Nevertheless, both the interview and the postcard data show that audience members aspired to participate in the actual story by having an impact on the acting, thus relating to improvisational theater. The quotes below exemplify this point: *"I wished all the time the actress could interact with what was written on the screen, improvise!!!"* (P.54, postcard, 23 years old), and *" It would have been fun if Ada had reacted more on what was written, more interaction"* (P.33, postcard, 34 years old). On a similar tone, another participant also questioned the very idea that the comments were part of the play: *"others' comments as part of the show? Well, I see them as comments to a text in the commenting field...I read them gladly but I cannot see them as a part of the show"* (Interview 3, 51 years old).

DISCUSSION
The data analysis draws attention to the *immediate* and *reflective* facets of audience participation, both unfolding at two different but interrelated levels of interaction: an *individual* and *collective one*.

The *immediate facet* of audience participation relates to the sensorial, intellectual and emotional engagement enabled by the interactive technology, and to the situated responses (the messages) becoming a constitutive element of the performance. By focusing on the emerging qualities of audience participation, we have illustrated how these facets can be characterized as constitutive (more specifically presential, topological and socio-cultural), epistemic (namely, value-laden and dramaturgical) and critical (specifically, socio-political and meta-critical).

The *reflective facet* is more directly connected to the audience members' experience of participation as recounted immediately after the performance. In this regard, the analysis points to a tension between the participants' enthusiasm for the use of the interactive technology, and more problematic issues – i.e the separation between technology and "theater", the participants' experience of contextual social norms, and their expectations towards the participation modalities in the performance. More specifically, most of the respondents mentioned that the participation-through-technology was disconnected from the "real" acting. As it emerges from the analysis of the messages sent, this disconnection does not emerge at a semantic level, as the contents of the majority of the messages shared were directly related to the themes tackled by the performance, or to the feelings and reflections evoked by it. Such a *disconnection was crystallized instead at the level of the narratives in the performance*: more specifically, the dramaturgical narrative, that is the acting, and the audience narrative, that is the dialogue emerging through their participation in the performance. McCarthy and Wright [22] discuss the compositional thread of aesthetic experiences, as the one concerned with the relationships between the parts and the whole, with the way people and events relate to each other. In our case, the dramaturgical and technological layers were experienced by many as separated and not as contributing to a whole emerging narration. This point also resonates with the "basic problem of understanding unity" [18] in relation to the use of media and representations within performances. More specifically, it connects to the dyad "form-participation" [18] which underlies questions concerned with: i-constituting participants as interlocutors in an open dialogue, ii- acknowledging the variations and transformations of the multiple relationships participants establish with elements of interactive performances (i.e with oneself and other participants in the audience, with the actors or the story, with interactive technology, etc.), and with iii- open-ended narratives in interactive performances.

Moreover, both the immediate and the reflective facets of participation bring attention to the *individual and collective aspects of audience participation*. In this respect, every audience member had the possibility to contribute to the performance by sharing their most immediate and, often, intimate feelings, opinions, and reflections in a dialogue that the different messages contribute to define and

determine as it happens. This point is tightly connected to the qualities of participation discussed in the analysis and is further addressed in the section below.

Participants as sensual, emotional and critical actors

Differently from other studies on interactive performances centered around corporeal aspects of interactions with the technology [13, 23, 29], ADA FTW, has provided an opportunity to examine participation in relation to intellectual and sense-making aspects of audience members. For instance, the traits of audience participation presented provide an example of how people's situated interactions with the technology can become constitutive of critical thinking through the interactive performance. In this respect, the data shows how the critical qualities of audience participation are not merely embedded in the design of the interactive performance, but rather emerging through it. Moreover, such qualities can be seen as the outcome of the way people connect the performance to contemporary issues, both at a socio-political level, and at a personal one or, as noted elsewhere [22], as an example of the way people finalize themselves for others within a very specific situation. It is indeed this process of constituting themselves through the participation in the performance that contributes to a renewed interest for the original purposes of theatrical productions, as arenas for public debates and for discussing societal and political issues [33]. More specifically to our case, and to HCI in general, this investigation: i) illustrates the type of technology-mediated interactions whereby people can make sense of their everyday lives, assumptions, hidden norms and values [2]; ii) provides an example of how participants can engage with "reflection or perception in action" [18].

Participation modalities and degrees of audience participation

Another point emerging from the data analysis concerned the participants' desire to interact directly with the actress according to improvisation modalities. This point, we believe, raises broader design issues that directly speak to how open audience participation can emerge in an interactive performance, and to what constitutes participation in an interactive theater performance.

As framed by Vies et al. [32] the idea of providing spectators with the possibility to complete artists' work has been largely appropriated in the field of digital art and performance. This idea is appealing as it is grounded in the intention to explore more active and interactive forms of spectatorship. However, based on the audience members' experience of ADA FTW, this exploration needs to take into account the range of participation modalities that interactive technologies can enable in relation to the degree of agency (the possibility to act upon the performance, and in the performance) the audience is given. For instance, instance, questions about choices participants can make through interactive technologies, or aspects of the

performance they can control, or not, are central for (re)framing current understandings of audience participation.

Degrees of participation in the context of interactive performances is still a rather unexplored concept that needs to be reconsidered in relation to how levels of audience participation intertwine with participants' experience of the performance. In this respect, questions addressing the openness and limitations of audience participation become central. As it has been noted [32], participation can be passive, and even unwitting, but yet satisfying for those involved. This point can be related to our results, particularly to the tension between the audience appreciation for participation and the participants' concern for not being able to fully follow the story. In this respect, emerging social participation facilitated by communication technologies in theatrical performances should not prevent the individual participant from engaging with the whole aesthetic experience while also being part of a participatory audience.

CONCLUSION

In this paper, we have illustrated qualities of audience participation in a specific interactive performance, and discussed the role of communication technology in such cultural context. More specifically, we have distinguished immediate qualities of participation, and reflective aspects more directly connected to the individual and subjective experience of participation. We have showed how these two facets are intimately interrelated and become central concerns in designing interactive and participatory performances.

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