Doing Game Design in Theatre

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Games and Theatre have a long shared history, but are often separated along disciplinary lines. We investigate this from a practical and design perspective, and present a unique project that supported nine professional theatres bringing game design and game technologies into their work over five years. Based on a series of interviews, discussions and direct reflections on game design work embedded within the project, we investigate the frictions and opportunities that emerge when game design practice operates within professional theatres. This includes practical issues, such as complexities of rehearsing shows with thousands of variations, differing expectations around technology development, to surprising design problems like convincing audiences that the game choices are actually real and not a theatrical trick. We highlight that while frictions between disciplines run deep, a shared spirit of experimentation, and desire to tell interesting and rewarding stories, creates genuine opportunities for creative exchange that can enrich both disciplines.

CCS Concepts: • **Applied computing** → **Performing arts**; **Computer games**; • **Human-centered computing** → *Mixed / augmented reality*.

Additional Key Words and Phrases: Game Design, Interactive Theatre, Interactive performance

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1 Introduction

In Games HCI research, when we talk about theatre it is often positioned as a consumer, or recipient of games tools and techniques rather than a source of design knowledge in its own right. This can be exciting, but there is great potential here to make that relationship deeper. Theatre is fundamentally an interactive art form with sophisticated existing practices around building meaningful exchange between audience/users and creatives/designers. It's barely necessary to point out the shared etymology of "play", and key early game studies literature is also about theatre and performance [17, 39]. Historically "the overlap between games and theatrical plays was a foregone conclusion for premodern people" [12] and the earliest commercial theatres were built next to gaming establishments, drawing from play practices in their organisation and storytelling. In this paper we investigate this reciprocal relationship between games and theatre further. First, by exploring how connected the worlds of theatre, game design, and games technology already are, and then by analysing a major project where game designers and theatremakers worked together on a series of public-facing theatre productions with game elements over five years. In doing so, we ask what frictions and opportunities emerge when these two disciplines meet in contemporary professional practice, and what that integration reveals about both.

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1.1 Contemporary games as performance

Role-playing games have the clearest links to theatre and performance, as participants embody characters and collaboratively construct narratives in real-time. Nordic LARP traditions [79], in particular, have developed sophisticated frameworks that blend avant-garde theatre practices with game mechanics, exploring themes of social justice, personal trauma, and political conflict through structured improvisational play[62]. This relationship is also seen in the popularity of Actual Plays, which often feature professional performance of RPG gameplay, turning a form akin to participatory theatre, back into conventional theatre for an external audience [19]. Similarly, there is a well established record of how performance arts theories can be drawn on to design adaptive narrative systems [27, 55, 59].

This contemporary game-learning-from-theatre space is fuzzy and includes things like streamers who perform gameplay for audiences on platforms like Twitch and YouTube, narrative escape rooms, and reimagined stage shows that use game structures with a performative twist. For example *Knightmare Live*[1] reimagines the beloved TV show of puzzles and adventures as an interactive stage show, *The Dark Room*[2] as a comedy stage performance of an extremely difficult text adventure, and even *Bongo's Bingo*[3], an over-the-top self-styled "Social Extravaganza" built around the formal game structures of a Bingo night.

These hybrid forms blur the distinction between player and spectator, creating a liminal space that incorporates elements of both roles. They have become an active object of games HCI research, particularly around livestreaming contexts where audience members can influence gameplay in real time [74], and in interactive theatre where individual and collective dimensions of participation create distinct design challenges [18].

Liveness emerges as a defining characteristic that distinguishes these hybrid forms from other kinds of games [80], as the temporal immediacy of performance, whether face-to-face in LARP or RPG, through proscenium at a stage show, or mediated through the window of a streaming platform, liveness is fundamental to the experience. This ephemerality, and the dynamic relation between artist and audience is central to debates about the nature of theatre itself [4, 64, 67].

1.2 Games technology in theatre

Games and games technology have seen extensive application in contemporary theatre practice. For example, the need to distance performers and audience members during the Covid-19 pandemic accelerated experimentation with streaming and virtual environments as a necessity for performers that were forced out of traditional venues (e.g. [21, 63, 75]).

The virtual spaces and worlds provided by game engines give tremendous opportunities in terms of scenography (e.g. [26, 31, 82]) as the material constraints are reduced in virtual worlds where we can define our own physical laws, bend space, and conjure complex objects and environments from nothing [59]. This creates profound implications for how theatremakers can relate to audiences, and reshape storytelling in these spaces. VR in particular is a space that has seen considerable experimentation (e.g.[29, 51, 60, 85])

These need not be empty worlds, and can bring more to the theatre practice than the space. For example "*Grand Theft Hamlet*" is a documentary about attempting to performing Hamlet in the "living" virtual world of *Grand Theft Auto: Online* [23], situated amongst the world of virtual characters continuing their lives, as performers adapt the tools of the game (e.g. emotes, costuming,

[1] https://knightmare.com
[2] https://www.thejohnrobertson.com/thedarkroom/
[3] https://www.bongosbingo.co.uk/

gratuitous violence) to support and elevate a performance that happens in dialogue with a game world and system.

Outside of live performance, game technologies and worlds have also found great value in supporting rehearsal [50, 56], or pre-visualisation [57], or hooking into existing technical (e.g. light, sound) infrastructures [76]. Game engines have also been used as a way to archive otherwise ephemeral theatre performances [34, 58].

The application of game technologies is not always successful. Some simulated environments demonstrate a "lack of intent" in their application and can therefore "seem sterile"[66], and sometimes a focus on immersion can undermine the narrative experience altogether[52]. Often there can be conflict between the stage production and interactive tools and techniques - for example the careless inclusion of game elements can create a feeling of "token interaction"[49] that isn't always meaningful for audiences. This is where it is important to recognise the value of interaction design, and especially game design, in constructing these kinds of experiences.

Interdisciplinary collaborations involving game designers working alongside practitioners from other fields have been documented in contexts such as education and healthcare [3, 41, 44], where the challenges of building shared vocabulary and trust across disciplinary boundaries are well recognised [45]. The present work shares these dynamics, but is distinctive in bringing game design into dialogue with an established creative practice with its own sophisticated design traditions.

1.3 Game Design in theatre and performance

Theatre is already a deeply interactive art form, and as Bloom [12] warns, there is danger in the "assumption that the rhetoric of interactivity is derived from digital culture". It is important to recognise the position structured play and games have in existing practice. There is a tight connection between "playing" and performance [71] and formal game structures have been extensively used to support improvisational work in particular [77, 78]. We can see how Tabletop Roleplaying Game classes echo the archetypes of renaissance Commedia dell'Arte[24, 83]. These handful of familiar characters that can be configured for certain character dynamics and build space and situations as fertile space for improvisation. More formally, game-like structures around improvisation are explicit in "Theatresports"[43, 53] and related forms, where a layer of competition is introduced in between scenarios, and actors are awarded points by judges or audiences as part of a game framing that adds weight and pressure to an otherwise unstructured form.

Game structures are widely used as conceits and constraints for improvisation. Comedy panel shows on radio and television have long used game elements (rounds, points) borrowed from quiz formats to imply a structure that either does not exist, or is not meaningful (e.g. *QI*, *Just a Minute*, *Whose Line is it Anyway*). Perhaps most famously, BBC Radio 4 comedy panel game show *I'm Sorry I Haven't a Clue* plays with games and game structures liberally, in particular for *Mornington Crescent*, where the rules are themselves the material of the performance.

Contemporary "immersive theatre" experiences draw on and explore similar ideas as open world games or "immersive simulation" experiences [9], using carefully designed and staged environments to tell and build stories. Audiences are typically mobile, and encounter aspects of the story in different orders, creating unique (although not unproblematic [2, 37]) experiences [10, 22]. The idea of audience members as "players" and active participants in theatre is also well established. Rancière argues for an "emancipated spectator" [65] and recognises the audience member as active participant in every kind of theatre practice, forms such as Boal's theatre of the oppressed [13], situates the role of "spect-actor" as an active participant both within the space of a staged or improvised story, and the political realities outside that space. More recently, Greig describes the concept of 'ergodic theatre'[32], drawing from game studies (e.g. [1]) to explore mechanics of interaction from a theatremaking perspective [33]. Participation in theatre (and the arts more

broadly [11]) is a complex topic. From an HCI perspective, audience participation can be seen as a continuum that extends from reactive engagement with a performance, through forms of influence and augmentation, to the assumption of performative roles and, ultimately, control over the performance itself [81]. Indeed, both theatre and games grapple with where on this spectrum to position their audiences, and how to design meaningfully for that position. This tension sits at the heart of the present work.

1.4 Summary

The history of theatre and games are deeply connected, sharing goals, methods, tools, and ways of engaging audiences. Despite this, the practice of game design and theatremaking remain somewhat distanced disciplinarily and structurally — for example, game design teaching is frequently situated in Computer Science or adjacent faculties, often siloed from arts and performance studies. Within HCI, the most sustained engagement with theatre has been primarily through the lens of interactive technology and experience design [7, 8], generating valuable frameworks for understanding performance as interaction but framing theatre as a context for novel technologies. What remains unexplored in our community is almost the reverse question: what happens when game design, as a creative practice and disciplinary culture, is embedded within professional theatre organisations making work for real audiences? Theatre presents a productive site not merely as an application context, but as a place where the assumptions and vocabularies of game design become visible through friction with an equally sophisticated but distinct creative discipline [30]. This paper investigates this question through three related sub-questions: What frictions emerge when game design is embedded within professional theatre production? What opportunities for creative exchange arise from such collaboration? And how does working within theatre production as a game designer illuminate the relationship between these two disciplines? We address these through a combination of interviews and group discussions with theatremakers, and design reflections from a game designer embedded within the project.

2 Method

The PlayOn! project was a major cultural project funded by the European Commission from 2019 - 2024. The project brought together nine professional theatre organisations from nine countries together to collaborate on a series of theatre pieces that explored game design, games technology, and urban spaces as part of their productions. Over the course of the project, 34 new theatrical productions were created and presented to public audiences across Europe.

This project presented a unique opportunity for game designers and technologists to work closely with professional theatre organisations as they worked with game designers and creative technologists to develop and produce novel concepts. The authors of the current paper were brought into the project as academic advisors, facilitators, and the first author contributed as a game designer in some productions. Table 1 shows a summary of the theatre partners included in the project and the research described in this paper.

Although most theatres had their own premises and performance spaces, nearly all theatres engaged in some kind of touring, promenade and site-specific performances as part of their work. The structure of the project was built to support international cooperation: partners were expected to work together on productions, sharing expertise, software and hardware. The project provided only a broad brief requiring the use of game design and digital technologies in theatre, leaving individual companies to determine the specific form and focus of their productions. For example, responding to creative contexts such as national funding, venue capacity, wider creative programmes, and audience market research.

Table 1. Participant theatres and professionals

Name	ID	Location	Scale
Theater Dortmund	DT	Dortmund, Germany	Large municipal theatre with multiple venues and academy
Elsinor	EL	Milan, Forlì, Florence, Italy	Three venues across Northern Italy
Kolibri Színház	K	Budapest, Hungary	Youth theatre 0-18 in 3 venues in Budapest
Teatr Ludowy	LU	Kraków, Poland	Municipal theatre with large venue
Landestheater Linz	LL	Linz, Austria	Regional theatre with large custom built venue
Teatro O Bando	OB	Palmela, Portugal	Touring and site specific works at rural property
Pilot Theatre	P	York, UK	UK based touring theatre
Teatret Vårt	V	Molde, Ålesund, Norway	Regional theatre with two dedicated venues
VAT Teater	VAT	Tallinn, Estonia	Local theatre with dedicated venue
Dirk Neldner & Sven Laude*	DN/SL	Berlin, Germany	Project management team
Fast Familiar*	FF	UK	Touring experimental theatre

To help give participating theatres a starting point in exploring game design, the project began with a short series of facilitated workshops and a game jam. Participants had various previous experience playing games, but generally limited to games on mobile phones, some experience of videogames, and physical sports. At the workshops representative members of the creative teams were introduced to core game design concepts (using MDA [40] as a basic framing) and literature (including e.g. [25, 70, 87]), played a selection of simple card and board games, and participated in tabletop game jams. These jams mixed participants into random groups and had them build basic board/card games over a 6 hour period. The aim of these sessions was to give participants a basic vocabulary in a range of game types, to meet with colleagues from other theatres in a creative activity, and to give confidence to explore ideas like game mechanics and dynamics of game systems. Through demonstrating that they could make simple games quickly, the aim was for participants to gain a rough initial sense for that kind of creative work, and how that relates to their own creative practice.

2.1 Production phases

Following the project setup, there were three cycles of production work punctuated by regular cross-project meetings across partner organisations. Each cycle nominally lasted around 12 months, however between Covid-19 restrictions, seasonal structures of theatres, and scope/scale of different productions, it varied between 6-18 months in practice. Theatres engaged local game designers and developers, to support interaction/game design and game development work where needed. Each production was performed for public audiences of various sizes as part of each theatre's normal performance seasons. This varied from small limited run performances, to situated pieces, through to productions that became part of a theatre's repertoire. Audience sizes varied from around 30 at a time for promenade pieces, through to 350 per performance in larger venues.

This project creates a unique situation where theatremakers - including directors, writers, scenographers, dramaturgs, choreographers, actors and dancers - worked with, or became themselves, game designers for sustained projects that were otherwise situated in their typical practice. Importantly, the overarching project is not primarily a research-led one, instead funded as an international cooperation effort around artistic endeavour - this presents a rare and valuable opportunity to look at game design within authentic professional context [69].

With this sustained project as background, the current paper describes a mixed methods approach to investigate the project as a way to build a deeper understanding of the process of embedding game design in theatre production from complementary perspectives. All of the studies and approaches detailed below were conducted under the ethical approval and guidance for performing non-anonymous research at the University of York.

2.2 Interviews and Discussions

The first approach was in the form of a series of interviews and group discussions to gather reflections and insights from partners during the course of the project. This involved two forms of data collection:

- A series of 9 individual semi-structured 30 minute interviews were held by the second author with senior members of the creative teams in a subset of the theatres, reflecting on their experiences in creating and performing their work. This included [K, LL, LU, OB, P, and VAT]. In addition interviews were also held with members of the management team for the project [DN, and SL] (both experienced theatremakers), and members of an associate theatre group [FF] who have significant experience in this kind of production.
- To complement this, we held a shared group discussion session during an in person project meeting, chaired by first and third authors, involving 10 senior members of the theatres' creative teams, to reflect on the whole process, share challenges and lessons learned in a more conversational setting. This discussion lasted 45 minutes and included [DT, DN, EL, LU, LL, OB, P, SL, V, and VAT]

Participation in the research was voluntary, and in response to a request made by the researchers to all the partners in the wider project. In all cases participants were experienced and senior creative members of their organisations, Creative Directors or equivalent, of either the entire theatre or, in the case of larger theatres, of major departments [DT, EL, FF, K, LL, LU, P, V, VAT]. We also included experienced directors [DN, SL] unattached to theatres but engaged with the project in management roles.

We took this approach to recruitment to ensure that all participants had significant responsibilities for implementing and overseeing theatre projects that embedded game design, but also that they had a (more or less) complete view of those productions. For example, participants led creative teams that included directors, game designers, writers/dramaturgs, actors and scenographers, but also worked with the practical aspects - how productions sat alongside other seasonal output of the theatre, and how they connected to theatre-technical (sound, light, etc.), administrative, marketing and outreach efforts of the theatre organisations. The aim was to capture insight based on those broad experiences rather than a narrow perspective from within each production.

In both the interviews and group discussion the questions/topics were provided in advance and facilitated by researchers to keep discussions on topic, however participants were free to explore ideas, and researchers asked follow up questions where more detail was required, or if participants hinted at some further insights tangentially related to the question (following Braun & Clarke [14]).

Interviews were led with questions about: how they have approached incorporating games into their production; details about the game mechanics in the production; specific dramaturgical

challenges in embedding game elements, or surprising alignments; interactive aspects of the production (e.g. using phones, other game devices); how they prepared audiences for such unusual productions, and reflections on that; if there were any game outcomes for audiences (e.g. could audiences win or lose?) in the work and how that was negotiated creatively.

In the group discussion there was a looser format so that participants would lead the discussion based on sharing experiences and mutual reflection. Since all participants had been working within their own theatres, this was a useful moment to connect to peers in similar leadership roles across the project. Each participant briefly (2-3m) shared the project they had been working on, highlighting main successes and challenges, followed by an open discussion that touched on production and practical aspects, dramaturgical decisions and implications, challenges with audiences, and their visions for what might come next.

The audio was recorded and transcribed. The group of participants is multilingual, and the theatre productions are in a range of languages, however all research was conducted in English. In one case (participant from VAT) the audio recording failed, however notes were recreated following the interview and the conversation reconstructed over email, with approval from the participant.

The aim of these interviews and discussions was to capture detailed, in-depth reflections from theatremakers about how they understood games and game design as something that became embedded in their own practice. It is important because the insights shared are not speculative, but rooted in the realities of delivering a production to ticket-buying public audiences in a professional context.

The data was collected and analysed using reflexive thematic analysis. This is a qualitative method that helps researchers identify and articulate meaning from rich data, such as that gathered through interviews [14]. In particular, it recognises the role of the researcher in this analytical process, and the value in active and interpretative processes for generating deep insights. Following the approach described by Braun & Clarke [15], data was analysed in an iterative multistaged process using the MaxQDA software.

Since the interview data was collected by the second author, they performed the first passes of semantic and latent coding of the interview material. The aim of this process is to surface more complete meaning in the words used by participants. For example, the original interviewer has insight about the points that were being made, based on how the discussion was going, any social cues, sarcasm and implied meaning, that may not be readily understandable from the raw transcript. The same process was followed by the first author for the transcript of the discussion, especially in moments where there is cross-talk and group dynamics that add context. At this point, both sets of data and semantic codes were brought together for the continued analysis. Following a stage of (re)familiarisation with the raw data by the first author, at this stage there were 930 unique codes across the data.

The following iterations worked to combine and collate codes to eliminate duplication, but also to combine semantically similar codes. The reason to join and combine codes from multiple sources in this way is because the discussions and interviews help us triangulate and explore meaning more thoroughly. For example, an idea expressed in an interview might be further developed from insights in the group discussion.

This was followed by mapping of themes using MaxQDA to identify relationships and connections across the data. This process was repeated, with some themes being eliminated based on scope or relevance to the current research, and other themes being consolidated under new broader themes. Further iterations refined this further until the final candidate themes were identified that expressed insights gained from the data at an appropriate level of complexity and abstraction. The reflexive thematic analysis resulted in four overarching themes, each of which contained multiple subthemes. These themes will be expanded and explained in the results section, but are summarised in Table 2.

Table 2. Final themes and major subthemes from RTA

Major theme	Subthemes
Working for Audiences	*Responsibilities to the audience; what audiences bring; setting new rules; stopping designing*
Paradox of Agency	*Combinatorial complexity; Theatre is bullshitting; What's the point in interaction?; Manipulating audiences*
Game technology and the Speed of Story	*Tech takes time; Theatremakers are technologists; Everything breaks*
We speak the same language but don't understand each other so well	*Shotgun weddings; game designers vs game developers; game design is core; negotiating ownership*

2.3 Design Reflections

One of the challenges of this project is the scale and scope of the data. Over the course of the project, participants created 34 distinct theatrical productions that were collectively witnessed by over a hundred thousand audience members across the continent. These productions were diverse, including stage productions, promenade, site-specific work, dance, opera and drama. Some productions had more game elements than others, some included professional game designers and game developers and some relied on their own experience. [4]

To complement the interviews and discussions we introduce two examples of specific shows that were performed by participating theatres in the project. These two were chosen because the first author was directly involved as consulting game designer and developer in these projects, and was a part of the creative team throughout the development and completion of each project. This is useful for several reasons. First, it gives useful anchors to the work. The case studies described were more or less "typical" of the game-like theatre productions, and help serve as useful illustrations of the kind of productions around which the insights from participants were generated. Second, it gives the complementary perspective to the thoughts of theatremakes-cum-game designers, by offering the views of a game designer and creative technologist experiencing it almost in reverse. The first author has significant experience in designing and building digital and tabletop games, but had no prior experience in making theatre at this level. Finally, because the first author was also the primary analyst in the RTA process described above, their design and production work as an "embedded" researcher in the project gives unique and deep context to the material gathered through interview and discussion. This experience is vital to the reflexive approach that recognises the value and importance of what the researcher brings to an analytical process.

This view from inside the design work conducted in the project is informed by reflective design methods, and specifically by precedents in HCI for interleaving artistic practice, study and theory generation in live performance contexts [8]. In particular materially engaged ways of recognising and valuing insights gained during design as a process [73]. In games specifically this means understanding game design as a practice[48], and embracing the "chaotic knowledge acquisition"[54] of this kind of work. This is linked to concepts from game design research around critical [28] and conceptual [35] game design that are part of a collection of tools in "Research through Game Design" (RtGD)[38]. This reflexive approach foregrounds knowledge generated in "conversation with the material" [6, 47].

[4]See https://play-on.eu/ for a summary of all the theatre productions, videos, photographs and other material.

The combined perspectives of design and production are key to the questions at the heart of this research. Therefore, insights from the examples presented are intertwined with the discussion of the themes developed from interviews and discussion to help give a fuller picture. The productions are introduced and summarised in the next section to support that illustration.

2.3.1 Futebol. is a production directed by João Neca at Teatro O Bando in Palmela, Portugal ([OB]) that explores the "natural history" of Football, and the role of the sport in culture, politics and social issues like racism, sexism and fascism.

The show is structured as each performance representing a single football match between two rival teams (Serra and Vale - Mountain and Valley) over the course of a season of performances/matches. Before attending the performance, audience members are asked to download a custom mobile game application (created by the first author) that acts as both ticket, prop, and souvenir. They are also given a newspaper, and a double-sided football scarf that allows them to choose which team they will support during the show. All aspects of the show are in Portuguese.



Fig. 1. Audience members cheer for their team in *Futebol*. Photograph ©Teatro O Bando

On stage, a series of vignettes are played out by four actors, two representing Serra and the others Vale. Between each vignette, the audience is asked to "substitute" each character and choose their role in the next vignette, by voting for them using the mobile interface to indicate decisions live in the auditorium (holding the phone like a referee brandishing a card).

In this way, each vignette contains a short story told between the four characters in varying roles, and ends with one team scoring a goal against the other, materialised by the player kicking a real football into the net of the opposing goal. Throughout the show the audience is encouraged to shout and cheer for their team, and characters lead them in chants and songs. The end result of the match/show is then recorded in the app as part of the ongoing season. Attendees at previous shows are notified of the result through the app, along with any changes in league standings. This enables a continuation of the experience after the show, and replicates the experience of a football fan following the results of their team at matches they could not attend. *Futebol* was performed in a tour of venues around Portugal between April 2021 and May 2023.



Fig. 2. The audience of *Futebol* plays a mobile game to help direct the action. Photograph ©Teatro O Bando

2.3.2 Áruló. is an adaptation of *Traitor* by Esther Richardson and Cecilie Lundsholt, directed by Vidovszky György at Kolibri Színház in Budapest, Hungary ([K]).

In *Áruló*, the audience follows the story of a pizza delivery rider, who accidentally finds themselves at the centre of a conflict between a shadowy corporation and a group of rebels. This is a production aimed at young adults, and centres the mobile phone as a tool of potential oppression and freedom. As part of the show, all seats in the auditorium have a mobile phone on a flexible armature attached to the seat in front. The phone is directly in the view of the audience member at all times, and also visible to their neighbours. It is used extensively throughout the performance. At the start of the show audience members are shown a game-like interface to decide the name, and appearance of the main character. Results are projected live in the venue and actors respond directly to decisions made throughout the story. There are many different interactions, such as through mini-games where audience members are tasked with (e.g.) controlling CCTV cameras in the fictional building, and finding clues hidden in the scenes that are responded to by the characters. The phones also mirror characters' phones at points, showing video calls and text message conversations, live as they happen on stage.

Over the course of the show the role of the phone becomes increasingly central to the story, both for characters on stage, but also for the audience as the powers of phones for surveillance and oppression are further explored. The climax of the show has the front-facing camera on every device simultaneously activated by technicians remotely, providing a reflection of the audience back to themselves.

Áruló was first shown in September 2022 and was shown regularly until late 2025 as part of the repertoire of Kolibri Színház at the Pince venue in central Budapest. This venue is situated in a converted cellar and fits one class (35) of (age 14+) school pupils per performance.

3 Results

The following section introduces the high level themes constructed through this research, that is explored through reference to direct quotes from participants, but illustrated through reference to



Fig. 3. An actor performing on stage, holding a phone that mirrors to audience devices. Photograph ©Kolibri Színház

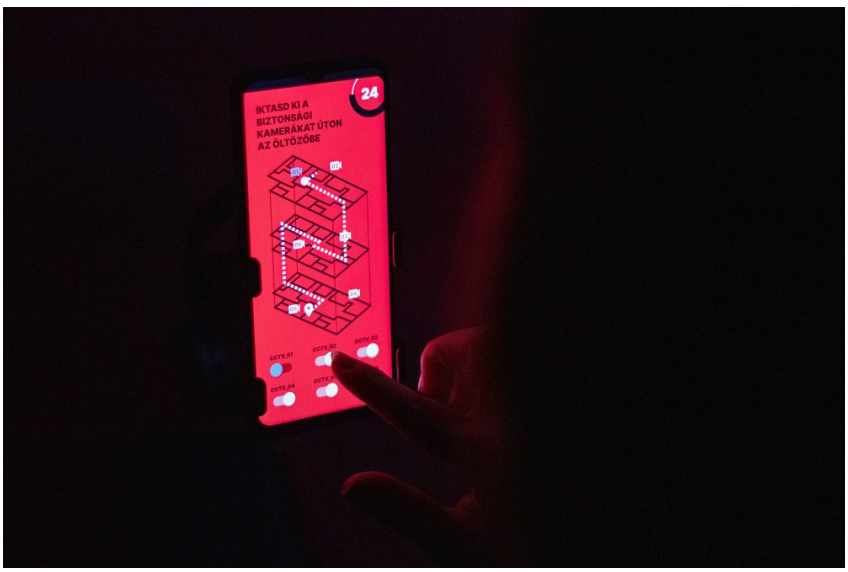


Fig. 4. An audience member controls a minigame to turn off CCTV cameras while the actor on stage sneaks around the space responding to activity. Photograph ©Kolibri Színház

insight gained through both the design process, and the reflective part of the analysis. As discussed in the methods section, the position of the authors as researchers, co-designers and advisors informs all parts of the analysis, and the reflexive approach gives uniquely deep perspective across the research. Where quotes from participants are used, they are referenced by participant ID (see Table

1) for space reasons, but remain non-anonymous. Note that while insight from all theatres and partners supported the development of themes, not all are directly quoted in the following section.

3.1 Working for an Audience

Dramaturgy is the work that happens as theatres connect the text, the staging and production, the historical, local and social contexts to audiences. These are fine, precise, and deliberate creative decisions. It is already a challenging process that games and game design complicate further. In the productions actors "*talk to the audience through a machine*" [FF], literally in the case of technology-mediated work, but always also through the mechanisms of the gameplay and interaction.

There is a core question of how to communicate the rules for this mediation as part of the show. "*You have so much **responsibility for audience** comfort and care for an audience. And unless you do care for an audience and you do make them feel secure, they won't feel okay enough to take the intellectual risk or the emotional risk you want them to take within your show*" [FF]. To some extent this happens in all theatre, but the audiences here are put in a particularly difficult position. "*The usual relationship is between audience member and the stage, so if people just go in a dark auditorium and they observe a production, then none of these elements can be applied… we totally have to change the starting point of the production and make sure that the audience member understands*" [K].

Audiences bring expectations too: "*some people have associations of like, 'oh, games are for kids'...we consciously avoid using the word 'games' because it can really polarize people*" [FF]. There is a perceived "*generational thing as well. So for instance, adults, even if they come and they know what they come for, are afraid of certain techniques, digital tools, like VR… I don't know what to do with that*" [K]. Audiences are asked to become performers in a sense, and "*I feel like it's a thing like singing, where people are like, 'oh my God, no, I can't do games. I can't sing in public*". [FF]

It was interesting to see how the humble tutorial helped manage this process. A short vignette at the start that introduces the audience to the tool, sets the expectations of what they could do, or would be asked to do, and importantly also confirms the new boundaries. In the case of *Futebol* audiences whooped and cheered for their teams during the show, encouraged to take their role as football supporters, but still became quiet when there was dialogue. A first, trivial interaction allows the audience to explore the app or interaction space, and **set the new rules** and boundaries, before the story starts to develop. Similarly for Teatr Ludowy's take on a gameful version of *1984*, "*Whenever the play was starting and the interrogators were on the stage … the people were like, 'you are the audience, please take out your phones and tell us how you feel today. What did you think about the weather?' It was more about, like, making them used or getting them used to taking out their phones*" [LU].

Balancing this shifting of audience roles during the performance becomes a challenge, "*when people are watching and they are immersed in whatever is happening on the stage. It's quite challenging to make them go use their phones, and then go back to the play*" [LU] For dramaturgy, there is also the problem of **where to stop**. "*we had more interaction in our mind at the beginning, during the rehearsals and during the preparation… it just felt too much. The question is how you find the bounds between what is necessary*" [K]. This resonates with work from Schnädelbach et al [72], where technology shifts the roles of participants and operators in enhanced fairground rides.

As with everything in creative work, "*the key for a successful implementation of game structures in theatres [is that] there must be a very clear idea why you're using it.*" [DN], otherwise "*the audience members as well feel that, 'okay, this is great that I have this tool in my hand … in some cases, it doesn't really make sense, then they will feel that, oh, this is just for its [own] sake. So it is not for supporting the show, it is just because they have this tool*" [K], echoing critiques of poorly applied gamification in other contexts [36, 86]. It creates "*a bit of a complicated conflict between ways of working on a new experience, [that's] not so much in big stage work*" [P].

3.2 Paradox of Agency

Most game designers have painful experience with the dangers of **combinatorial complexity**. When you give the player a series of decisions, the number of potential paths balloons quickly (as explored in [27, 55]. This creates a challenge in both the volume of material needed to support different choices, but also maintaining a coherent story across the possibilities. In theatre this is a particular problem because not only does there need to be content, it usually needs to be rehearsed and ready to be performed live on stage. "*Actors had to be able to handle a very high number of possible outcomes and storylines, which ended up being needlessly complex, as not all storylines could ever be explored.*" [VAT]. "*We have 300,000 different possibilities of shows, because of different combinations of the characters*" [OB]. In some productions "*they got the digital tools working, but they had to produce two thirds more of theatre, and never be sure if they ever show the different storylines. But they always have to have them ready and prepared*" [SL]

Just as stepping into the river, a play is never performed more than once. We might argue this is the heart of theatre and the nature of liveness. Even so, expectations around theatre as an audience member is that "*you do not really replay, right. You do not go to watch the play again*" [LU] This is the paradox of audience agency in theatre - the audience has a linear experience of any non-linear story. In a branching narrative it is only the performers that witness the possibilities and true reach of the piece. So a question becomes - what is the point the interactivity at all? Theatre is a place of stories, "***people go to the theatre to be [bull]shitted***" [OB], so the interaction can be perceived as part of that fiction, and the performers cannot be trusted. "*We go to theatre, and we accept that we are engaged with the story - with the fiction 'This is not real'. And we say, of course, but in theatre, theatre is not real. Theatre is a fiction. Of course this could be not real, but that part is real.*" [OB] In another production they had "*a final decision to show people that it really matters or what they do really matters, but I've read some of the reviews later on. And nobody believes that [was real]*" [K].

So the problem becomes: how do we convince the audience **the point of interacting**, and that their decisions matter and that the story is responding? "*People know that the actors need to know 16 different characters, but only perform four… And it's really bizarre, people that don't believe it: 'We are voting, but this vote doesn't count - Of course you have everything prepared'*" [OB]. This challenge has parallels in games HCI research on audience participation, where audiences are described as 'neither fish nor fowl', able to influence outcomes but with limited agency, and that establishing a sense of agency is identified as a core design challenge [74]. In *Áruló*'s tutorial we try to demonstrate their decisions affect the show by having the first choice be the colour of the uniform of the main character who is getting dressed backstage. Even witnessing this, audiences would feed back that it was an illusion or trick. What worked was simply showing the bar chart of live results on screens, and allowing audiences to change their decisions in real time. Because there was extremely low latency in our system, audiences could see the chart move as they pressed buttons, reinforcing that something actually was happening - it was real. In *Futebol* a more theatrical approach was taken in counting votes live, and visibly, in the room rather than automatically. "*The responsibility is the actors', because it's really, it's theatre. It's really simple. If you, if you [count in] your head… it's a possibility. But if you say 1, 2, 3, it changes completely. If you point with your finger, it's enough for people to understand that you are counting that vote. It's one of… it seems really stupid and simple, but it's like that*"[OB]

The solutions found to these frictions reflect a deliberate move toward what Reeves et al. [68] would characterise as an "expressive" strategy, revealing the performer's manipulation of the system to spectators precisely in order to establish that the interaction is genuine rather than theatrical contrivance.

It is a fight to convince audiences that the decisions are "real", but ironically, once they are convinced, it opens up **opportunities to manipulate the audience**. "*no one is ever like, 'you must walk on this line!', but you know, you can put the bollards in a certain place and you can put the trees in a certain place, which suggests to people that this might be a route they might want to follow* " [FF]. In some cases, the story context of the decisions means that different audiences tend to make the same choices - then either there is no need to rehearse certain branches at all, or there is some balancing required in the story. "*The people were always voting for the same person. You're paying the actors that are not playing… they also get frustrated because it's always the same person.*" [LU] At a key moment in *Áruló* audiences are asked to choose between the rebel and the corporate representative. Audiences would always choose the rebel, so the script was revised over and over to make the corporate character more sympathetic, and the rebel more sinister, to attempt to balance the outcome of this decision between and within audiences.

This dramaturgical challenge is "*an interesting balance, I think, between the agency that you give away to players or audience*" [FF] because "*If you want to play against the spectators, you are facing a really harsh problem, because the spectators will win for sure. You, you think that you could win, but you didn't*" [OB]. "*Game studios do amazing work with huge branching narratives, which are incredible. But I think that actually just that small leap for a theatre company for the audience to have that agency, is the element of gaming that I think was the most exciting and probably the most difficult for theatremakers … because they're so used to just presenting.*" [P]

3.3 Game technology and the speed of story

Despite the shared experiences of game creators and theatremakers in telling stories, the practical and game implementation aspects of production diverge considerably. Theatres "*usually plan for two months of rehearsal before the premiere of a show. By contrasting, two months is nothing in games, and is too short a timeframe to build something. Two months is too short for games experts, but two years would be way too long for theatremakers*" [VAT]. The **tech takes time**: there is "*a very different rhythm, because theatre, you can change quite a lot quite fast and see different things. And it can take a very long time to change things when they're written in software, and then you can see them and then you'd go, 'oh I don't like it'. And somebody spends two weeks changing that thing*" [FF]. This challenge of integrating technology into theatre rehearsal has been noted in HCI before [5], but where prior work looks at fixed technology, the productions here compound that further as the integrated game design was subject to negotiation and change through the process. Fundamentally these are theatre productions, and theatres were "*having to preempt ourselves and limit ourselves in some ways with the material, because the timescales were different to what I was trying to work to, in terms of booking actors and all that kind of stuff*" [P]

Theatremakers are technologists: they have extensive experience using complex systems of lighting, sound, video and stage effects in their storytelling practice, but the stability of new or repurposed interactive technologies to support their game productions present specific challenges that are hard to manage and respond to. For example when adapting Zoom as a platform for audiences to interact and "play" the show, "*Sometimes Zoom like had new extra features and that crashed parts of the, of the show. Or … sometimes the Internet broke, or sometimes some features did not work as before.*" [LL] In using mobile platforms to deliver the game, "*sometimes, Apple will update something and then it will break our whole show at the last minute.*" [FF]. Partly this is an issue of scale, "*games deal with smaller audiences than theatres are used to: interactive experiences require a lot less people to work properly… Scaling up an interactive theatre production is very difficult.*" [VAT] but fundamentally the complexity of such systems creates many points of failure. "*One of the biggest challenges we have, is to premiere the show in a region without internet, or with really, really bad internet access. And because of that, we have to have the application to be possible to use in*

offline mode. And because of that, we have to simplify the application; but simple doesn't mean easy, and it's about it simplifying to achieve more" [OB]

This lack of stability was a significant cause of anxiety, adding weight of responsibility for **breaking everything** should an unexpected bug or glitch appear. When making a digital game for a fixed platform, a crash is rare and affects few people at a time, and might be fixed with a new version, and perhaps players are more used to glitches and issues, but in theatre the audience is only with you once. Yet, the endless optimism of theatremakers was inspiring - often reassuring that "*theatre is a friend to failure*" [Notes]. When things do go awry with the game technology, "*the amazing thing about a human actor is if something goes wrong, they, humans are incredibly adaptable, and that's great in live theatre.*" [FF].

3.4 "*We speak the same language but don't understand each other so well!*" [P]

Aside from the practical interactive technological aspects, it is interesting to experience how game designers and theatremakers work together. "*Game developers and theatremakers have the similarity in developing stories and telling stories, but … there's so much we have not in common, because the way of developing and producing the story is so, so different*" [SL]. This relationship is one that needs a lot of work to get right - "*so many collaborations in the theatre and tech space are **shotgun weddings** over an application form. And I think that is terrible [laughs]. I think it just results… It's very hard to build a shared vocabulary in one project.* " [FF]

With many theatremakers there were a lot of anxieties, both in terms of literacy and experience with games, but also about creative ownership. "*most theatremakers don't play games, and are not exposed to this kind of field. It is very different to what they are used to, and they are not familiar with how games are made* " [VAT]. "*Sometimes people can go, 'we want to make theatre more like games', and then they have in their head a kind of a World of Warcraft or Minecraft type of game. Whereas actually there's, there's a lot more different kinds of games in that.* " [FF]

In terms of literacy, coming to understand **the difference between a game designer and a game programmer** was a learning curve. "*With game designers, we have a set of people much more in common, and the language is much easier, a common language is much easier to find* " [DN]. "*With programmers, it is worse… So that is vocabulary, and the way of thinking, creating ideas, it's totally different there. There you really need a translator.*" [DN].

In some productions this work was smoother than in others, and part of that seems down to positioning. In one production they saw the game designer as "a *costume designer or something like that … a person who is contributing to the work of the director, and has to more or less follow the main idea of the director, or what is written in the script by the writer…they don't trust [the game designer]*" [DN]. There can be a barrier to trust, because there's "*not much of a symbiosis between game developers and theatre people, who may perceive that you are taking away their possibility to tell a story*" [VAT]. More success was had through closer creative collaboration, and treating **game design as core** from the start. "*The first meetings about the creative process, we want everyone together in a circle since the beginning. Because the creative process [is] like a train that starts really slow, but never stops. But if, since the beginning, you don't have everyone inside the carriage, it's really difficult for people to go with the train already on the way*". [OB] This mirrors longstanding findings in participatory design research, where early and genuine inclusion of all stakeholders in the creative process is consistently noted as a prerequestite for successful collaboration [16, 84]. A healthy relationship of mutual trust really helps smooth over anxieties and get more from one another: "*We always try to disclose problems. And for me it was really good that the [game designer] is so full of humour and so easy to talk to… that made it easier for us*" [LL]. Game designers can also break those preconceptions about what this can be: "*[The designer] said 'why don't we not make this goal-based as a game, let's keep it open, let's make it narrative'. And I think that, that*

made the approach much easier in terms of communication, and that allowance for an open-ended framework was really helpful for me, because I was worried that if we didn't have that, was this a game? "[P]. From the perspective of game designers, this is rewarding to hear, but often is a kind of **negotiation** that was not always successful. The theatre productions we worked in involved dozens of people with different ideas for the show, the final decisions resting with the director. An example of this negotiation is around voting mechanics and branching narratives. They are not so exciting for a game designer, and we'd try and steer away, but as mechanics, are familiar and close to hand to everybody both working on the production and, ultimately, for the audiences too. As discussed, complexity is a challenge, but the negotiation here was against *familiarity*. An actor needing to rehearse multiple versions of a scene is a legible and containable cost. So voting finds its way in by directorial decision, but so does other more experimental twists - making it public, making it changeable, that enrich the experience and imbue more meaning.

This negotiation, and need to elevate the game designer creates some conflict because "*the nearer you get to the date of the premiere, [directors want] to take back control of the artistic production, feeling a responsibility towards the audience to deliver a complete experience that they control entirely.*" [VAT] As the game design is intertwined with every part of the experience it can be difficult for directors to feel under total control of the production. Similarly, as a game designer it is challenging to feel the need for stability in a world that feels defined by constant change.

4 Discussion

The collection of themes and subthemes describe a kind of pervasive ludic dramaturgy - game mechanics cannot be easily compartmentalised as other aspects of stage technologies, such as sound and lights, might be. It is not just a game app, or an interface, but a fundamental shift in both the final narrative experience, and the way in which it is constructed. There is a need to recognise both the distinction from the supporting game technologies themselves (e.g. VR, app interfaces) but also the space that exists before the unstructured forms seen in narrative immersive theatre experiences [61]. Instead these intermediate "ludic forms"[46] are an opportunity to build richness in playable or game-based theatre. In this paper we have explored this specifically from the perspective of theatremakers and game designers, as independent creative voices, rather than a focus on experiences of the audience.

There is a closeness in this work because, as authors, we were working with the theatres as advisors, or direct collaborators in some cases, as well as interviewers and discussion leaders. Rather than try and separate or abstract this closeness in the work we take a reflexive approach that recognises our perspectives, and the value this rapport and empathy brings (e.g. [42]).

In terms of frictions between game design and theatre, this is clearly visible across the themes, as we might expect when working across disciplines. A lot of this is practical, coming from different traditions. However, the friction around timescales described in "...speed of story" is more than a scheduling problem. Prior work on performance-led research in HCI has described the interleaving of artistic practice and technical development as a productive and generative process [8], and the productions described here confirm that potential. However, our findings suggest that this interleaving is complicated by a fundamental characteristic of theatre practice that is easily underestimated from the outside: narrative in theatre is not always a stable foundation on which game systems can be built, but a constantly renegotiated agreement between creative collaborators that can shift substantially even in the final moments of production. This is qualitatively different from the kinds of iterative change familiar in game development, where narrative requirements are expected to stabilise as production matures. For game designers embedded in theatre, this instability is not an inconvenience to manage but a defining feature of the medium to accommodate. This requires a fundamental reorientation of working practice. Wales et al. [85] describe the distinct

roles and processes that emerge in VR theatre production, but the narrative instability identified here as a source of friction for game designers is not addressed in that account, suggesting it may be specific to contexts where game design, rather than game technology, is the primary point of integration.

The vocabulary friction described in “we speak the same language..." points to a deeper disciplinary tension than simple miscommunication. The finding that distinguishing game designers from game developers was itself a significant learning curve for theatremakers reflects a broader structural issue: game design as a creative practice remains less well known. This has direct consequences for how game designers are positioned within theatre productions — sometimes as creative equals, but often, as participants describe, as contributors subordinate to directorial authority, positioned similarly to a production designer rather than a co-author of the overall work. This contested positioning is consequential: where game design was treated as a core creative voice from the outset, productions found more productive collaborative relationships. Where it was not, the friction was compounded. This resonates with the concern about "shotgun weddings" between theatre and technologists. The friction is not merely a communication problem but a symptom of the same structural issue identified in critiques of gamification and gamewashing [36, 86], where game elements are applied without genuine integration into creative process or sufficient recognition of game design as a distinct discipline. The implication for future collaborations is that establishing the role and creative authority of game design early, as participants in this study consistently found more productive, is not simply good project management but a prerequisite for the kind of genuine disciplinary exchange that makes these collaborations worthwhile.

Beyond the frictions identified, the collaboration between game designers and theatremakers generated genuine opportunities for creative exchange that illuminate the shared ground between the two disciplines, as we see across all the themes presented. Perhaps the most tangible of these is the surprisingly resonant transfer of the game tutorial into theatre practice. In games, the tutorial is a familiar and necessary mechanism for communicating rules before play begins. In the productions described here, it took on a more fundamental role: not merely explaining interaction mechanics, but establishing the new social contract between audience and performance, and crucially demonstrating that the interaction was real rather than theatrical contrivance. This transfer was not straightforward imitation but genuine creative adaptation, with theatremakers finding theatrical forms for what is essentially a game design solution, such as in the opening vignette in Futebol, and the early phone interactions in Áruló.

Similarly, the “paradox of agency" feels like a problem, but usually proved generative. The resistance of theatre practice to conventional game structures (e.g. branching narratives, win conditions, fail states) acted as a constraint that pushed it toward less conventional and more theatrically integrated solutions. For example, how actors are used to mediate space in moments of interaction in Futebol and Áruló, “*their interaction doesn’t break the flow of the production, and which is, which is amazing, but still they can influence it.*” [K]. Similarly, how the phones in Áruló become a special kind of character, with relation to audience member, their neighbours, and to the actors on stage, tied thematically to the story of everyday surveillance. These are not compromises imposed on game design by theatre’s limitations, but creative innovations that emerged from the negotiation between two disciplines with different assumptions about what interaction should achieve. From a game design perspective, this is significant: the theatre context functioned as a productive constraint that surfaced assumptions about player agency that might otherwise remain invisible. The assumption that audiences should be convinced their decisions matter, for instance, runs counter to the theatrical convention that audiences willingly suspend disbelief. This connects to the framework proposed by Reeves et al. [68] around expressive and magical spectator experiences. For our theatre contexts, the most effective strategies for games specifically, are those

that make the mechanism of interaction visible precisely in order to establish its authenticity, rather than concealing it to preserve theatrical magic.

The combination of interview-based and embedded design perspectives employed in this research reveals something that neither approach could have shown independently. The frictions could easily be read as problems to be managed, timescale mismatches to be negotiated, and vocabulary gaps to be bridged. The embedded design perspective complicates that reading. Working inside theatre productions as a game designer revealed that the instability and contestation that characterise these collaborations are not incidental features to be minimised but constitutive conditions of the work itself. This is consistent with broader arguments in design research that insider participation in creative practice generates qualitatively different knowledge than observation alone. This is knowledge that is materially engaged with the realities of the work rather than abstracted from it [6, 47, 73]. The narrative instability that makes game design so difficult in a theatre context is inseparable from the creative freedom that makes theatre generative. Stories shift late, characters change, and directorial priorities evolve in ways that a game designer observing from outside would understand intellectually but not feel as a design constraint. Similarly, the contested ownership over game design decisions described in the “paradox of agency" is not visible in its full complexity from interview data alone: Directors and creative leads relate their process as more intentional and resolved than it felt from within. The embedded perspective reveals that negotiation over creative authority is ongoing and unresolved throughout production, and that the game designer’s own disciplinary assumptions (e.g. about what interaction should achieve, and what constitutes a meaningful decision) are as much under pressure as those of their theatre collaborators. That mutual pressure, uncomfortable as it often is, is precisely what makes the insights generated through the work useful, and distinguishes this kind of embedded collaborative research from studies that position the game designer as an external consultant or technology provider.

4.1 Limitations

Theatre and games are both complex, multidimensional and evolving art forms. This is not something that can be distilled into a single validated understanding, and any research like this will always be a picture defined by the context of the work. In this case, the research was conducted in a European context, with a relatively homogeneous sample of practitioners that fit a certain picture of theatre making, despite their many different approaches and scales. Due to requirements of the funding in the project, theatres had to use digital technologies in their work. As noted in the related work, games and theatre overlap in lots of interesting ways, however here the digital aspect narrows the overall view of the work.

Theatres were in a unique position of being part-funded to support this experimentation, which reduced but did not eliminate the financial pressures of making theatre for public audiences, and the investment of time, effort and material in novel kinds of production. However, given the international scale of the project and experience of participants as working professional theatremakers, it presented a unique opportunity to understand the practice and gain insights that could not be captured in small-scale experimental contexts [20, 69]. As design oriented research, our focus has been intentionally on the process of production from within, informed by design-led approaches in HCI (e.g. [38, 88]). A rigorous picture of audience response to the experimental work is therefore absent from this research, apart from in direct observation or anecdote. This intentional focus on design keeps the paper tied to insights and reflection on production and practice, and while clearly the response and interpretation of audiences is interesting and valuable, it is out of the scope of the current research.

5 Conclusion

In this paper we have explored the idea of "Games as theatrical media and theater as an interactive gaming technology" [12] in the context of contemporary professional European theatres embedding game design in their practice. This is not an observational study, and we were situated as advisors, collaborators, and often as members of creative teams, working with theatres as part of creative teams over a sustained period. With 34 productions performed to public audiences across nine theatres over five years, this project represented a rare opportunity to understand game design practice in a theatre context at a depth that experimental or short-term studies cannot provide.

The interleaving of interviews and group discussions with direct design participation and reflection was essential to this, with each perspective complicating and enriching the other in ways that either method alone could not have achieved. The result is a grounded account of what game design practice actually looks like when embedded in professional theatre, and what it produces when it gets there.

In particular, the frictions that emerge when game design is embedded in professional theatre are substantial and wide-ranging, and arise from fundamental differences in how the disciplines treat narrative, time, and creative authority, both conceptually and in working practice. Despite this, the opportunities are exciting: the resistance of theatre practice to conventional game structures proved generative rather than limiting, producing novel and unexpected experiences that builds on both creative traditions. These frictions and opportunities are inseparable, creating unique creative constraints that are not readily apparent from outside the process. The research demonstrated a shared spirit between theatremakers and game designers that show they have more in common than either might expect - game design is an expressive technology itself, distinct from hardware and software where it is often encountered, and presents opportunities to make new kinds of theatre, just as theatre helps explore new kinds of game.

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