

Responsive Playgrounds

How do creative practices integrate historical developments such as optical illusion and cinematic methods with modern gaming and data technologies to create innovative hybrid media, and how might this fusion inspire new works that contains visual traces of media archaeology

Introduction

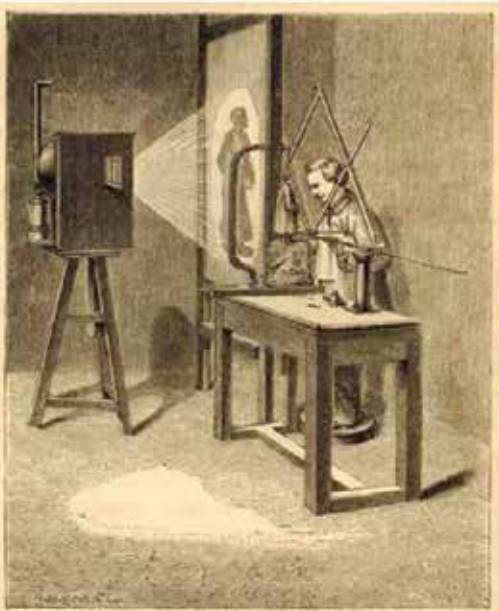
The parallel evolution of cinematic and optical illusions with video game development spans a broad timeline, from early 19th-century motion devices like the zoetrope to mid-20th-century computer experiments such as the 1950s oscilloscope games and military simulations. This convergence becomes more apparent over time, culminating in the late 1990s and early 2000s when real-time rendering, motion capture, and virtual cinematography bridged the two fields, blending storytelling, interactivity, and perception into hybrid digital experiences.

This project investigates how the intersecting trajectories of cinematic illusion, gaming technologies, and their associated tools and devices have influenced both historical and contemporary forms of hybrid media. It leads to the question: How might new contributions to hybrid media emerge from the fusion of these technologies, and how could they shape future design practices?

Rather than viewing these developments as a linear progression from low-tech to high-tech, the project explores alternative trajectories that challenge dominant technological narratives and industry standards. By recontextualizing and integrating legacy technologies with emerging tools, or by valuing the distinct affordances of older media, it seeks to uncover new paradigms for technological development and creative practice.

As boundaries between media forms continue to dissolve, the convergence of cinema, gaming, and digital technology has given rise to a proliferation of hybrid works that defy traditional categorization. These works share a core concern with illusion, whether cinematic, optical, or interactive, and collectively reshape how we perceive space, time, and narrative within media environments.

This research aims to explore how these changes have developed over time and how they appear today



Peppers Ghost, 1933



Sega Helicopter 1986

This research furthermore aims to investigate how cinematic illusion and gaming technologies have evolved in parallel and sometimes intertwining ways, particularly through the material tools and devices that shaped their development: from early optical toys like the zoetrope to contemporary game engines.

These devices form a historical lineage of visual trickery and interaction that underpins today's immersive and hybrid media works. Central to this evolution is the manipulation of perception, space, and narrative, which has influenced how we engage with design, media, and storytelling.

Design concepts such as modularity, interactivity, and user agency have roots in both cinema and games. For example, the first-person perspective, which began with early optical experiments, has become a standard in game design and interactive installations, transforming user experience by merging viewpoint with agency. Similarly, the game engine has evolved from a gameplay-specific tool into a highly flexible platform used in cinematic visualization, real-time simulations, and speculative design.

These tools now enable designers to craft dynamic systems that respond to user interaction, allowing for more participatory and immersive forms of media.



The Vieww 1982, VPL Research



Mutoscope, 1908



Kaleidoscope

A key reference point is the early 2000s era of net art, when artists and designers began to experiment with the web as a medium in itself. Utilizing tools such as HTML, Flash, and Java applets, these practitioners developed raw, often intentionally “unfinished” aesthetics. Their work embraced repetition, feedback loops, and non-linear navigation to challenge the conventions of both traditional design and web usability. Artists such as JODI, Olia Lialina, and Cory Arcangel were instrumental in framing the internet as a site for play, performance, and visual experimentation. These experiments laid the groundwork for contemporary participatory design approaches by emphasizing user interaction, DIY ethos, and the importance of informal or “vernacular” creativity.



JODI, 2001



This ties directly into the concept of digital folklore, as defined by Lialina and Dragan Espenschied, which refers to the grassroots practices and aesthetics that flourish in online spaces; such as memes, ASCII art, emoticons, and other user-generated content. These informal digital expressions are often dismissed as trivial, yet they have profound implications for design. They challenge top-down aesthetics by highlighting the role of users as cultural producers, thus influencing everything from UI/UX design to branding strategies in contemporary digital culture.



Digital Folklore - Dragan Espenschied & Olio Lialina

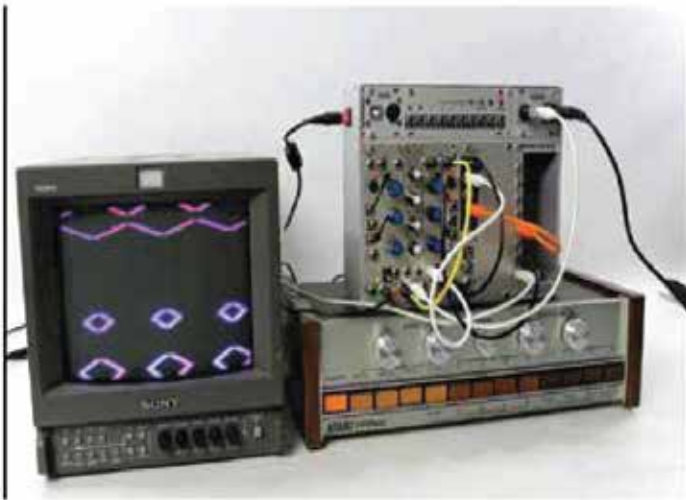
In addition to these cultural movements, the visual language of data graphics has played a critical role in shaping hybrid media. From early military command systems to contemporary dashboards and real-time visualizations, these interfaces carry forward cinematic techniques such as framing and layering while drawing on gaming conventions like heads-up displays (HUDs). The result is a blend of narrative, information design, and interaction, offering new models for immersive storytelling and interface aesthetics that blend data and emotion, logic and illusion.

Games, in particular, have introduced powerful conceptual and structural models for interactive design. Through modular environments, non-linear storytelling, and real-time feedback systems, game design has influenced cinematic visualization, digital installations, and speculative design environments.

These systems prioritize user choice and interaction, allowing for open-ended experiences that blend authored content with emergent behaviors. Game engines, once confined to the gaming industry, are now central to the development of experiential spaces, enabling designers to create responsive, generative, and immersive systems.

Performative and generative aspects are also central to this study, particularly in the tradition of live cinema and VJ culture. Beginning with early experiments of the 1930s, where artists drew directly onto film and evolving through analog electronic devices developed at institutions like Bell Labs and the Experimental Television Center, this lineage of live visual performance continues in contemporary media practices.

Simultaneously, video game consoles and home computing platforms such as the Atari, Amiga, and Commodore 64 gave rise to the demoscene: a subculture that used gaming hardware to create real-time audiovisual performances. These early experiments with game-based generativity laid the groundwork for present-day practices in live coding, audiovisual performance, and interactive installation.



Atari Video Music 1977 - Commodore Amiga 1986

The emergence of machinima in the late 1990s and early 2000s marked another significant point of intersection. By using real-time game engines to create animated films, users began blending cinematic storytelling with the interactivity of games. Titles like Quake, The Sims, and Halo offered tools and environments that could be repurposed to tell personal, political, or fantastical stories, often outside of any commercial framework. Machinima represented a democratization of animation and storytelling, one that aligned with the broader ethos of remix culture and participatory media.



Machinima Cinema / Datamoshing

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Importantly, the resurgence of analog tools, such as modular video synthesizers, has reintroduced tactile and material approaches into digital media practice. Often associated with early pioneers like Nam June Paik and Steina Vasulka, these systems are once again central to live visuals, interactive installations, and hybrid media performances. Analog synthesis allows for hands-on manipulation, real-time signal distortion, and the use of feedback loops that resist the linearity of digital logic. Rather than opposing digital media, analog systems are increasingly used in tandem with digital technologies, offering a richer palette of expressive possibilities and introducing unpredictability into generative workflows.



LZX Instruments



Nikita Diakur

This interplay between analog and digital methods challenges the assumption that media progress is unidirectional. Analog is not treated here as obsolete, but as a parallel method of signal processing with its own unique affordances, ones that digital tools can augment, but not replicate. The hybridization of these approaches reveals new creative opportunities and more nuanced understandings of media systems.

Finally, the research considers the work of independent animators such as David O'Reilly and Nikita Diakur, who actively subvert the conventions of mainstream animation. Drawing from game design principles, particularly physics engines and procedural animation, they intentionally break industry rules, embracing glitches, ragdoll physics, and "unrendered" characters to create expressive, offbeat visual languages. Their work resists the hyper-realism of commercial CGI and instead embraces the aesthetic of incompleteness. These practices illustrate how contemporary designers and animators can repurpose industry tools to produce novel forms of expression that prioritize experimentation, play, and authorship.

Motivation

This project is motivated by the desire to cultivate an independent approach to understanding and creating hybrid media. By examining the intersecting histories of cinematic illusion, gaming technologies, and digital tools, it aims to question dominant narratives of technological progress and standard industry practices. Through recontextualizing legacy devices, exploring alternative trajectories, and experimenting with both old and new media, the research project aims to foster critical thinking, creative autonomy, and the ability to generate novel forms of hybrid media.

The past few years I have had an interest in creating works that reveal how technology, storytelling, and perception intersect in ways that challenge conventional media forms, offering opportunities to experiment, question dominant narratives, and explore alternative creative possibilities.

Playfulness is a central aspect of my work, serving as a catalyst for experimentation and discovery.

By embracing a playful approach, both the process and the outcome become open to exploration, with the goal to allow unexpected interactions and ideas to emerge. Equally important is audience participation: engaging viewers as active participants transforms them from passive observers into collaborators, fostering a shared experience where meaning and interpretation are co-created. This combination of play and participation aims to encourage dynamic, evolving works that blur the line between creator and audience.

Showing audience-participatory work often leads to unexpected outcomes, as the audience's interactions introduce spontaneous behaviors and interpretations that shape the work in unanticipated ways.

My aim is to create a dialogue with my audience by encouraging interaction and engagement, allowing the work itself to communicate ideas and provoke responses without the need for words or conventional forms of communication; this experimental outcome generates unforeseen insights that continuously inform and shape the development of the work.

Audience participation is always an unknown factor, making it a crucial element of the work, as their unpredictable interactions continuously shape its form and meaning

Another key element for this research project is how it is situated in the context of community and knowledge building that contributes to the design field. By engaging with others, sharing insights, and collaboratively exploring ideas, the project not only advances individual practice but also fosters collective learning and innovation within the broader design community.

This is demonstrated both online with platforms as github, arduino and other sharing platforms as well as offline, in physical spaces.

Operating outside of dominant design platforms is important for the field because it encourages critical thinking, and independence from standardized workflows. It allows designers to question conventional limitations, explore alternative techniques, and uncover unique affordances in tools that are often overlooked, ultimately fostering innovation and a more experimental, reflective approach to design practice.

Low-tech approaches are important because they foreground experimentation, accessibility, and hands-on engagement, allowing focus on the underlying principles of a project rather than being constrained by the capabilities or conventions of high-end tools. Working with low-tech materials and methods highlights alternative possibilities, fostering experimentation, creative problem-solving, and a deeper understanding of the fundamental principles that fuel the project

Contextualisation

By situating itself within maker culture, the project emphasizes hands-on creation, collaboration, and the iterative exploration of ideas. It values the process of making as a form of inquiry, where playful experimentation with materials and technologies fosters both learning and the generation of novel hybrid media works.

This project recognizes play as a fundamental aspect of learning and innovation. Through critical making practices, playful interactions serve as both a research method and an outcome. The methodology embraces experimentation, allowing for unexpected discoveries and iterative development through hands-on engagement with materials and technology.

This approach reflects the core of maker culture, where curiosity, creativity, and hands-on experimentation drive both learning and meaningful creation

Maker culture foregrounds hands-on experimentation, collaboration, and learning through doing, positioning the act of making as both a method and a form of inquiry. Within the design field, it encourages iterative processes, playful exploration, and the integration of diverse materials and technologies, enabling designers to test ideas in real time. By adopting maker practices, designers can bridge historical and contemporary approaches, reimagining traditional techniques through digital and interactive media to produce innovative, hybrid works that engage audiences in new ways.

Design practices increasingly explore the intersections of media, technology, and interactivity, finding new ways to engage audiences through immersive, participatory experiences. This research examines how historical visual techniques, such as optical illusions, pre-cinematic apparatuses, and early filmic methods, alongside early interactive interfaces and games, can be reimagined with contemporary gaming and data technologies to create novel hybrid media.

****By fusing the material and perceptual qualities of historical media with the immersive, procedural, and interactive capacities of digital design, the project investigates how designers might prototype innovative hybrid experiences that challenge conventional distinctions between analogue and digital practice. From optical toys and mechanical amusements to early video games and digital engines, both gaming and cinema share roots in illusion, motion, and immersive spectatorship.****

****By looking back at these shared histories, the project explores how designers can bring together the visual, temporal, and interactive qualities of both cinema and gaming to create new kinds of hybrid media experiences, by revisiting where gaming and cinema first started to overlap, this project plays with how their visual rhythm and interactivity can be combined in new, experimental ways.****

Methodology

Exhibitions and public presentations become essential in providing visibility beyond digital spaces. Attendees may be invited to engage with the artwork by playing or interacting with the works. This creates a dialogue between the viewer and the work, where the interaction is not just passive but integral to understanding the piece.

By providing a space for both the creation and experience of these artworks, this approach aims to encourage deeper appreciation and broader engagement for the creative potential embedded in what might otherwise be seen as outdated or obsolete technology.

It demonstrates how limitations, rather than being a hindrance, can lead to the invention of new visual and auditory languages that resonate across time and technology.



Exhibition i organised and participated in, at Jinos in December 2024 that shows experimental interfaces and novel devices for interaction

The methodology used in my project “Responsive Playgrounds” is twofold: first, it focuses on the creation of interactive prototypes that integrate principles of DIY technology while drawing on elements from both cinematic devices and gaming technology, exploring how these can interact within the experiments, by integrating findings from research into the design process.

Second, the project aims to exhibit these works and invite audience interaction. The goal is not only to encourage participation but also to organize events alongside peers, events focused on DIY technology and experiential learning that enable hands-on engagement with tools and concepts in a collaborative environment. These events foster innovation, problem-solving, and community building, transforming abstract ideas into tangible, creative outcomes and helping to develop design principles based on this approach.

Building on this foundation, this research adopts a methodology grounded in maker culture: emphasizing learning through doing and experimentation. It values hands-on engagement, iterative exploration, and playful DIY technology.

Maker culture draws on the core concepts of critical making, community building, the reuse of technology, and permacomputing: a practice focused on resilience and regenerative approaches in computer and network systems, inspired by permaculture.

Using and developing DIY technology is important because it gives designers greater control over materials and processes, encourages experimentation, and allows for the creation of tools and systems tailored to specific creative goals, rather than being limited by the constraints of premade technology.

Community building is central to this approach: sharing knowledge, skills, and feedback fosters collective creativity, supports iterative development, and helps navigate complex challenges collaboratively.

Part of the methodology that ties into community building is presenting work publicly that situates individual projects within a broader design context, fostering dialogue, exchange, and recognition that help shape and inform both personal practice and the wider field.

Ultimately, Sharing knowledge and learning together helps designers create their own context within the field, shaping a practice that is informed by collaboration, experimentation, and the exchange of ideas while carving out a unique space for their work.

As a methodology, carving out a unique space for creating and presenting works is important because it allows designers to develop an independent train of thought, explore ideas on their own terms, and establish a distinct perspective within the broader design field.

This approach encourages critical reflection, experimentation, and the integration of diverse influences, supporting the creation of work that is both personally meaningful and innovative.

Project delimitation

This research does not aim to provide a comprehensive historical overview of cinema, gaming, or digital media in their entirety. Instead, it focuses on specific intersections and convergences between cinematic illusion, gaming technologies, and data visualization—particularly as they relate to the development of hybrid digital media works within the design field.

The project is delimited in the following ways:

- Discursive Research: Responsible Design, Critical Making, Art-Science collaborations, and Transdisciplinary approaches will help to conceptualize, develop and research alternatives to the yet dominant systems in the design industry; to shape and disseminate the new narratives that are called for; to explore and experiment with alternative (hybrid) formats and materials; with the aim to explore innovative paths in creating and making to further develop the Crossdisciplinary domain of Animation and Interactivity.
- Technological Scope: The investigation emphasizes select tools and devices; such as game engines, analog video synthesizers, and early optical toys, that have had a significant influence on hybrid design practices. It does not cover the full technical evolution of these media but highlights key examples that illustrate conceptual and aesthetic
- Temporal Scope: The research focuses on developments from the early 20th century to the present, with a specific emphasis on late 20th to early 21st-century movements, including net art, machinima, glitch aesthetics, and the resurgence of analog
- Cultural Context: While drawing from global examples, the project primarily examines Western and internet-based digital media cultures, especially where design practices intersect with independent creative production and subcultural aesthetics (e.g., the demoscene, net.art communities).
- Design Focus: The project is situated within the design discourse, with particular attention to interaction design, visual aesthetics, and participatory media. It does not attempt to make claims about broader film theory, game studies, or data science in isolation, but rather their overlap as they inform design innovation and media
- Creative Practices over Commercial Industry: The emphasis is on experimental, self-directed, and subversive practices rather than mainstream commercial media production.

While industry tools and techniques are discussed, the focus is on how designers repurpose these for independent or offbeat creative outcomes.

Expected Outcome

The expected outcome of this project will be a series of new works presented in an exhibition, showcasing both finished pieces and developmental prototypes. These works will emerge from iterative experimentation, reflecting the insights gained through hands-on engagement with materials, technology, and audience interaction.

My aim is to create prototypes that will serve as exploratory tools, revealing alternative design possibilities and allowing concepts to evolve through trial, error, and observation.

My aim for the works, that include interactivity and audience participation, is embed core concepts of critical making, diy technology, and hybrid media, emphasizing the interplay between play, interaction, and perception.

I plan to integrate Legacy technologies and low-tech materials alongside contemporary digital tools, highlighting alternative trajectories and challenging conventional narratives of technological progress.

Media archaeology plays a key role in this process by uncovering forgotten or overlooked technologies, allowing their histories, affordances, and material qualities to inform and inspire new creative possibilities-

My aim for the exhibition will also emphasize participatory elements, inviting the audience to actively engage with the works, thus making their interactions an essential part of the experience. By doing so, the outcomes will explore how meaning and form can emerge collaboratively between designer and viewer.

Community-building and knowledge-sharing is an important factor in my research project, reflecting a practice that values dialogue and co-creation. Overall, the exhibition aims to function as both a presentation of research and a space for experimentation, where concepts are not only displayed but actively tested and reinterpreted.

Through these works, my aim for my research project is to demonstrate how design can operate outside dominant tools and workflows, generating new perspectives on hybrid media, interaction, and participatory practice.