EasyChair Preprint

№ 15827

Research-Creation of Alternative Controller Games

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February 13, 2025

Research-creation of alternative controller games

Designing novel game interfaces through the lens of game studies

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ABSTRACT

This paper addresses the emergent field of alternative controller game design in the context of academic research.

> Alternative controllers are a mix of custom-created devices and / or re-appropriations of conventional input and feedback devices for novel interactions.[1]

In this paper, five practice-based researchers address topics and problematics inherent to the relationship between alternative controller games and their field of research. Tatiana Vilela dos Santos, researcher in alternative controller game design at the University of Lorraine focuses on the specifics of alternative controller game design as opposed to traditional game design. Enric Llagostera, researcher at Concordia University focuses on alternative controller game design as a political practice. Edward Melcer, researcher and professor at the University of California, Santa Cruz, focuses on the educational aspect of alternative controllers. Mona Bozdog, researcher and lecturer in immersive experience design at Abertay University focuses on accessibility issues raised and solved by alternative controller games. Lynn Love, researcher and lecturer in computer arts at Abertay University focuses on the socialisation made possible thanks to alternative controller games.

CCS CONCEPTS

Human-centered computing, Human computer interaction (HCI), Interaction paradigms

KEYWORDS

alternative controller, game design, game studies, playfulness, interaction, tangible interface, research-creation

Introduction

The term alternative controller game emerged in 2014 when the Game Developers Conference, an annual conference for video game developers held in San Francisco, dedicated a part of their exhibition floor to independent games featuring custom-made tangible interfaces. This section of the festival was titled alt.ctrl.GDC. While games featuring original artisanal tangible user interfaces (TUIs) existed long before this event, the creation of a space dedicated to this type of game, in such a recognized professional festival, contributed to the federation of a movement of independent game designers and makers around a common practice. Since then, a community of developers started gathering in different physical and online spaces with titles or taglines featuring the terms “alternative controller”, “alt controller”, “altctrl”, “alt.ctrl” or “ALT+CTRL” [1].

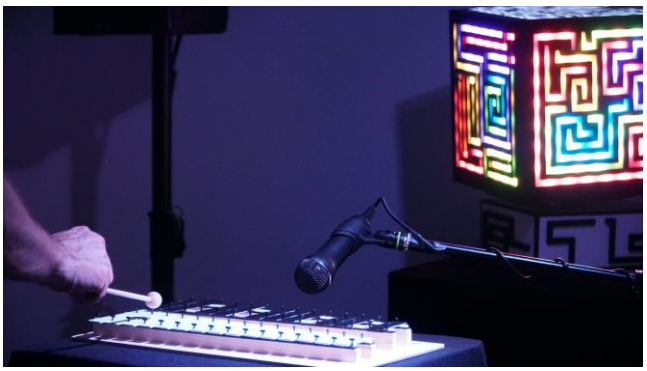

Figure 1: L’Oeuf-Sphinx, an alternative controller game designed by Tatiana Vilela dos Santos featuring a hijacked metallophone as an input device and a hand-made interactive light sculpture as an output device

[1] Enric Llagostera. 2019. “Cook Your Way: Political Game Design with Alternative Controllers”. *DIS '19 Companion*, 3.

All these games feature custom or hijacked TUIs exploring new ways to play. Most of the games showcased at the alt.ctrl.GDC are played with custom dedicated controllers replacing the traditional keyboard, mouse and gamepad with home-made input devices. But some also feature home-made output devices, like simple LEDs. Some altctrl games do not involve any type of interface construction and rather use traditional devices in an unusual way to provide new game experiences. The term alternative controller currently encompasses several types of game devices from custom-made TUIs (Fig. 3) to wearable game controllers (Fig. 2) and one-of-a-kind playful installation (Fig. 1) [2].

Figure 2: Adsono, an alternative controller game designed by Tatiana Vilela dos Santos featuring a wearable controller

Over the past decade, altctrl games have been researched in a variety of areas from humanities to engineering. Altctrl design is a rich field allowing for a broad range of studies. From politics [3] and education [4] to accessibility and socialization [5], here are four ways to embrace altctrl game design studies through research-creation.

1 Alternative controllers and politics

Alternative game controllers are a meeting point and a crossroads from which to imagine and experiment with alternatives to the materials, conditions, and processes of gameplay. Attending to this "alternative" is a political endeavor, one that needs to interrogate such changes. It is crucial to have conversations, as practitioners and researchers, about how alternative game controllers push (or not) at the forms of hegemony in games. There is a need for both more nuance and radicalism in framing the politics of alternative game controllers. Nuance is needed in approaching them as heterogeneous phenomena. Romanticizing them as utopian vessels of game design innovation risks paving over the contradictions they enact and the continuities they maintain. Radicalism is needed in attending to how they are produced, circulated, and used, and how these practices trace different paths in a creative landscape of unequal conditions.

2 Alternative controllers and education

Another interesting and emerging area for the application of alternative controller games is in the education domain. Previous work has demonstrated the powerful benefits that more explicitly incorporating bodily play into educational games can provide [6,7,8], including greater learning outcomes, increased positive feelings towards learning concepts, improved spatial recall and mental manipulation skills, and more intuitive and accessible interfaces/interactions due to customizable affordances. However, there are also some notable drawbacks to the use of alternative controller games in education, such as the difficulty of developing and distributing custom interfaces at scale. This requires more creative thinking and exploration of new techniques that can better democratize such technology.

3 Alternative controllers and accessibility

By repurposing dated platforms in custom controllers, alt controllers can also lower the barrier to entry and facilitate access for audiences who are unaccustomed to or intimidated by videogames. For Generation ZX(X) [9] we developed a series of games and installations based on the herstories of the female workers in the Timex factory who assembled the ZX Spectrum computers. The *Assembly* custom controller (Fig. 3) used CRT screens encased in cabinets fitted with buttons (controlled by a Teensy board) to facilitate engagement for an older demographic. The installation re-created the layout and simplified functionality of an assembly line whilst building on input and display devices that they were familiar with.

Figure 3: Assembly, a game designed by Mona Bozdog and Dayna Galloway featuring a custom controller

4 Alternative controllers and socialisation

Alt controllers can be valuable objects for socialisation. They incite collective meaning making in co-located play settings due to the questions their novelty, unconventional interaction, spectatorship, and performative forms of play pose to spectators. Boundaries between player and spectator are blurred as gameplay strategies are collectively formed, tested, celebrated, criticised and reiterated by the group. Alt controller games design strategies, particularly to foster collective spirit and ease social interaction [10] may have broader societal impact given further analysis of their transferability, viability and ethics.

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