Multi-Device Web Artwork:
An Interactive Digital Medium for Composing Complex Systems

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ABSTRACT

The way multiple digital devices connect through the web and interact in real time has long been discussed in Human-Computer Interaction and is increasingly present within digital art practices. This thesis studies the case in which audience members' actions on their own devices change what the surrounding devices in the installation display, so that the devices and the audience operate as an interconnected system. It asks how such a system can exhibit non-linear, emergent properties and behave as a complex system, what its artistic implications are, and how it relates as a medium to multi-channel installation and web art.

The thesis names this case Multi-Device Web Artwork (MDWA) and defines it as an interactive art medium. It reads MDWA through Systems Art, which treats a work as an interactive, evolving system rather than as a static object. It then further expands its interactive and interconnected properties to investigate how the medium can communicate, operate, and contaminate the characteristics of complex systems.

Through practice-based research on three MDWAs, the thesis examines how each artwork represents a complex system (*SoTA*), operates with its audience (*Banpo-Xism*), and exists as a complex system itself (*Goldfishes*). A cross-case analysis then identifies the characteristics shared by the three works, how these characteristics relate to web art, and how Cross-Device Interaction within this structure enables Dialectical Rupture as a compositional technique.

This thesis contributes (1) a definition of MDWA and its position within multi-device and web-based art, (2) three case studies of how this medium represents, operates with, and exists as a complex system, and (3) the medium-specific characteristics of MDWA identified across the three works.

RESEARCH QUESTIONS

Main How can an interconnected system of multiple audiences and devices exhibit non-linear, emergent properties and behave as a complex system?

Q1 How does the multi-device structure represent a complex system? (*SoTA*)

Q2 How does the multi-device web structure operate non-linearly? (*Banpo-Xism*)

Q3 Under what conditions does the multi-device web artwork itself behave as a complex system? (*Goldfishes*)

Q4 How does such a system relate to multi-channel installation and web art?

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THESIS STRUCTURE

