The Moving Maze—System and Units

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Artwork Description

In a system, complexities arise from the simplest and most elementary things. A brainchild of our gamer philosophy, *The Moving Maze* is a maze that could move its parts methodically in response to the player's movement, as if a chess player were vying with the chessboard. We design a method that generates an unpredictable and self-renewable system with fragmental movement according to simple gamer-interactive rules, in which the gamer achieves the joy of navigating through discovering these moving rules and smartly rerouting with human-specific flexibility of mind.

Artist Statement

First, we are interested in complex systems. Second, we are in pursuit of a unit that is homogeneous and neutral in and of itself. Simultaneously, we are enticed by mazes as an archetype of play. Ultimately, we are motivated by creating an organic game with the least contrivances that brings out the most variations of scenarios. *The Moving Maze* is where all of these obsessions and contemplations converge.

Project Description

In *The Moving Maze*, the protagonist is represented by the player enters the maze and aims to navigate a way to a given destination. The initial layout of the maze is randomized according to some principles. With each step the player moves, the system takes the direction of the move as an input and makes one change to the maze layout by applying implicit rule-based operations to some of the maze parts. The sensitive player, who summarizes their patterns of movement and picks up the rules eventually navigates to the destination with eureka moments.

System-Unit Relationships

There are two kinds of systems according to the part-to-whole relationships posited by Reiser & Umemoto (2006)—systems made of parts with stable meanings, such as chess, and systems made of parts whose meanings depend on their contextual relationships, such as go. In a system consisting of only one kind of parts, the form of parts is not so important as the relationship between parts, which makes the whole much more than the sum of its parts. This go-like structuralist approach in tectonics aligns with Jonathan Blow's idea (Blow, interview with Peckman, 2016) that a good game is one designed with the least contrivances (human-imposed rules) that can generate the most variations. *The Moving Maze* tests out the theoretical framework of a complex system in which the uniform and homogeneous units are arrayed equidistantly, but which can generate a myriad of variations in the configuration.
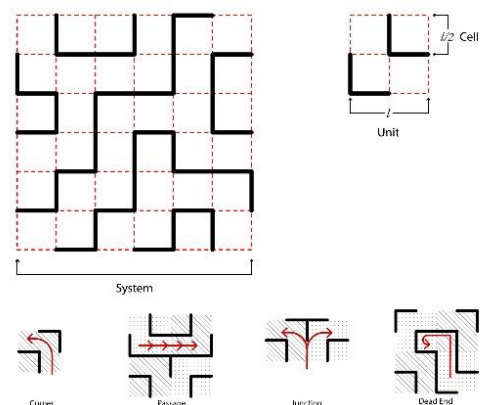

Fig. 1. *The Moving Maze*, System, unit, cluster. 2021, Yiou Wang & Yujie Wang, video game, Copyright of the authors.

System-Unit Maze-Building Method

Different from maze-generation algorithm precedents (Kim, 2019; Hamada, 2013), we assume the maze system as a field composed of homogeneous units oriented randomly at default. Upon rigorous tests, we fixed the form of the unit as a double "L" in order to generate from its combinations all types of nodes found in a standard maze—corners, passages, junctions and dead ends. The proposed units are devoid of independent meaning or variation of intensities as standalone elements but bind to each other in a wide range of possible configurations and propagate into a field of uneven intensities from their interdependent relationships. Thus, without intrinsic qualities, the units are neutral, but their collective is heterogeneous, mutative, and responsive. Their collective forms a multicursal maze which elicits humans' curiosity around routing. The player's movement direction and distance methodically trigger unit-centered orthogonal rotations in part, resulting in time-based, interactive variations in the configuration of the whole.

Fig. 2. *The Moving Maze*, 2021, Yiou Wang & Yujie Wang, game cover image, Copyright of the authors.

Scales

The Moving Maze has different characteristics on three different scales. On the microscale, it is uniform and homogeneous—each one of its units is identical with the rest; on the mesoscale, where we examine clusters of adjacent units, the maze is semiotic, characterized by *corners, passages, junctions, and dead ends*, each type having stable meanings in terms of navigation and spatial logic; on the macroscale, as a unity, the system is unique at each moment.

Reactive, Recursive Movement

Radically different from a conventional maze, puzzle, chess, or board game, the maze's recursive self-adjustment to its layout is reactive to the player's action. The locus of this change is locally based. In each turn, the gamer can move in any orthogonal direction for arbitrary steps. Then the system would transform configuration of units by partial unit rotation to respond to gamer's movement.

Technical and Logistical Requirements

Game, the ninth art, is the best medium of the artwork because interactivity leads to adaptability of the maze. The video game *The Moving Maze* could be played on a computer with keyboard, or a touch-screen tablet. The interface could be projected to a screen that turns the individual player activity into a public event.

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Biographies

Yiou Wang is a multidisciplinary artist and architect encompassing architecture, drawing, digital illustration, comic, game, and video. With a psychology background and an architecture training, Yiou focuses on gamified architecture, design for indeterminate programs, gamer as the basic state of being, and human consciousness. Yiou is an architecture master's

student at Harvard University Graduate School of Design.

Yujie Wang is a graduate student at MIT. He enhances human connection through shaping human-machine and human-environment relationships.