Chapter XIII
Memory Association Machine

Benjamin David Robert Bogart
Simon Fraser University, Canada

ABSTRACT

“Memory Association Machine” (also known as “Self-Other Organizing Structure #1”) is the first prototype in a series of site-specific responsive installations inspired by cognitive processes. The artist provides a mechanism that allows the structure of the artwork to change in response to continuous stimulus from its context. Context is defined as those parameters of the environment that are perceivable by the system and make its place in space and time unique. “Memory Association Machine” relates itself to its context using three primary processes: perception, the integration of sensor data into a field of experience, and the free-association through that field. “Memory Association Machine” perceives through a video camera, integrates using a Kohonen Self-Organizing Map, and free-associates through an implementation of Liane M. Gabora’s model of memory and creativity.

INTRODUCTION

This text describes and frames the first prototype in a body of work that aims to create artworks that find their own relationship to their context. These artifacts are embodied, meaning that they are manifested in a physical form and are effected by, and effect, the world around them. The artifacts could be considered creative machines in that they transform material from their context into an original representation. The machine creates this representation through a mechanism provided by the artist. My research aims to use artistic enquiry to develop a meta-practise that binds the practises of responsive electronic media art, site-specific art, and artificial intelligence. This meta-practise includes theory from the philosophy of embodiment and is developed through the creation of embodied artifacts-as-processes—artifacts composed of computational processes. The material of the artwork is a set of computational processes that are causally connected to the physical world. The mechanism of the artwork is intended to exhibit emergent properties through the negotiation between software and physical context.
The system’s processes are causally connected to the outside world through sensors (inputs) and external properties (outputs). How can an artifact—even a process—find a relationship to its context? Artifacts such as “Memory Association Machine” form an embodied relationship with their context in two ways; firstly, by being embodied so that they can both change and be changed by their context, and secondly, by having their structure altered through the process of embodiment. A more detailed account of the creation of “Memory Association Machine” is available in “Memory Association Machine: An Account of the Realization and Interpretation of an Autonomous Responsive Site-Specific Artwork” (Bogart, 2008). The process of embodiment is the negotiation between the subject and the object—the relationship between seeing and acting.

This text begins by weaving a theory of practise which has been, and is still being, developed. The practise is focused on the fundamental relationship between the artwork (artifact-as-process), the artist (author), and the world in which they are both embodied. A description of “Memory Association Machine” is interjected throughout the framing and followed by a detailed description of the system’s architecture. Future work is presented at the conclusion of the text.

The Artifact

The formalization of the creative process is made up of two iterative sub-processes: realization and interpretation. The relationship between these processes is pictured in Figure 1. Realization is the path of intention from the artist to the world, whereas interpretation is the path of causation from the world back to the artist. This formalization is influenced by a theory of embodiment, the “intertwining”, that binds the mind and body according to the phenomenology of Merleau-Ponty (1968). For each pair of actions (realization and interpretation) a frame is created which colours the artifact (at that moment in time) with the tension between the expected results of realization and the following interpretation. Realization occurs when the artist chooses to effect the world in some way that manifests physically—for example, choosing the colour yellow for a particular region of a painting.

Interpretation is when the artist observes, experiences, and attributes value to the results
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