

## **Part B1 – General Description of Production Project**

Title: **"Dreaming Machine: Study of Cognitive Processes #2"**

Format: Responsive Installation

Period: September 1, 2008 to August 31, 2009

This installation is a continuation of a series of autonomous responsive installations that use their surroundings as raw material in the machine's own creative process. The machine is given a creative process through the use of artificial intelligence techniques and is inspired by cognitive science in the areas of creativity, memory and dreaming.

## **Part B2 – Detailed Description of Production Project**

Cognitive science and artificial intelligence consider the mind a computational machine. Dreams, creativity and imagination are thought to be processes that could be computational. How could a computer dream? What would its dreams contain? These are some of the questions this work aims to explore. Through artistic practice embodiment, dreams and memory will be studied in the creation of machines that are intended to exhibit these qualities.

In my graduate study I have been developing a project entitled "Memory Association Machine: Study of Cognitive Processes #1" (aka Self-Other Organizing Structure #1), which was the first in what I hope to be a long series of installations inspired by the disciplines of cognitive science and artificial intelligence.

All works in this series are considered site-specific, but the site can be arbitrary as each installation uses its surroundings to construct its own relationship to site. The installations are meant to be located in public settings for long periods, where the environment is dynamic and continuously changing. The installation is embodied. It can perceive and remember the world around it, and its form is a direct result of the negotiation between the world and itself. The system can be considered creative in that it can juxtapose previous and present experiences in ways that are not random nor pre-determined, but a result of the machine's embodiment. Cognitive science and artificial intelligence are sources of inspiration and through an embodied system models of dreaming, creativity, perception and memory are explored.

Whereas “Memory Association Machine” concentrates on a mechanism to integrate and sort sensor data (visual images) from its environment, and free associate through that experience, “Dreaming Machine” is designed to have a more complex and compelling aesthetic quality. “Memory Association Machine” only sees its world through a camera, whereas “Dreaming Machine” will include both audio and visual stimulus. “Memory Association Machine” only captures still images from its world, but “Dream Machine” will capture short clips of video. The installation will consist of three screens (each twenty-one inches diagonal), a projector, a pan-tilt-zoom computer-controllable camera, a pan-tilt microphone, two speakers and a computer. One screen shows the live camera image and is accompanied by the direct sound feed from the microphone. The memory of the system is presented on a second screen. The memory consists of a collage of videos that encompass the machine's entire experience (see support material for details of the memory system from “Memory Association Machine”). The memories are sorted into organic patterns as the artificial intelligence attempts to relate current and past experience. The third screen is the free association of the machine. This free association takes on two forms. During the day the free association is a daydream where images from the world stimulate parts of its previous experience, in turn stimulating other memories. This sets up a sequence of images, from the familiar to the abstract, in relation to current stimulus. The sequence of images is presented as a cinematic montage. During the night the machine will go into a subconscious state where the cascade of free-association will not be effected by outside stimulus. During this period a large projection of the dreams will be visible to the public.

The software that runs “Dreaming Machine” will be based on the work conducted for my MSc thesis project at Simon Fraser University. The software will be written entirely in Pure-Data, an open-source audio-visual programming language, and will be released to the public to promote the artistic exploration of artificial intelligence and autonomous site-specific machines. All of the software used in the production, distribution and documentation of this project will be open-source.

“Memory Association Machine: Study of Cognitive Processes #1”, the first in the series, was highly constrained technically and artistically due to its context in an research program. The new work “Dream Machine”, proposed in this application, directly follows from the “Memory Association Machine”. I propose this project to coincide with the completion of my Master's degree. I will not be pursuing any academic studies during the time of this grant. It is my intention that this grant will allow the artistic and aesthetic aspects of the series to flourish and expand in the year between completing my Master's degree and starting a PhD. It is crucial to the series that aspects of its production happen outside the limitations of a research institution.

Computational models of cognitive processes in the human mind stand to be an influence on my work for a lifetime. It is rare of science to explore a wholly integrated model of those qualitative aspects of human consciousness. Artistic inquiry, based on strong technical and artistic skills, is a unique exploration of these ideas. The most crucial aspect to these installations is that they are embodied in a physical world. They are not meant for the gallery, but for the street. I aim to leverage the work done under this production grant, through documentation and publicity, in order to increase the visibility of electronic media artwork in the public's imagination and to find potential venues for the long term public installations of the series. The long term goal for this series is that the installations continue to run in a dynamic context for years after completion. I am currently in discussion with Simon Fraser University and Malmo University (Sweden) for possible residency opportunities, as well as the Make Art festival (an annual festival focused on artworks and performances created using only open-source software) and Valerie Lamontagne for possible exhibition of the project.

## Part C1 – Budget

<u>Item</u>	<u>Amount</u>
Subsistence	\$24,000.00
Rental Costs	\$2,000.00
Material Costs	\$1,000.00
Specialized Hardware (pan/tilt microphone)	\$2,000.00
Professional Fees	\$1,000.00
Travel Costs (for possible residency)	\$2,000.00
Subtotal	\$32,000.00
Contingency (10%)	\$3,200.00
Promotion (2%)	\$640.00
Total	\$35,840.00
<b>Rounded Total</b>	<b>\$36,000.00</b>

## Part E3

### Item 1

Title: "Memory Association Machine: Study of Cognitive Processes #1"  
(aka "Self-Other Organizing Structure #1")

Applicant's role: Artist

Type of production: Responsive Installation

Format: Video Documentation

Filename: **mamvideo.dv**

Description: The installation proposed in this application directly follows from the work completed for the installation documented herein. In many ways "Dreaming Machine" will resemble "Memory Association Machine".

Digital Video file, Tested on Macintosh

## Part E4 – Detailed Description of Digital Images

<u>Filename</u>	<u>Title</u>	<u>Date</u>	<u>Medium</u>
<b>mamdetail1.png</b>	"Memory Association Machine"	2007	Detail of Memory System #1
<b>mamdetail2.png</b>	"Memory Association Machine"	2007	Detail of Memory System #2
<b>mamdetail3.png</b>	"Memory Association Machine"	2007	Detail of Memory System #3
<b>resurfacing.png</b>	"Resurfacing"	2006	Interactive Installation
<b>floatscript.png</b>	"Floatscript"	2005	Interactive Installation
<b>vector.png</b>	"Vector"	2005	Improvised Visual Performance
<b>volume.png</b>	"Volume Curvature"	2005	Improvised Visual Performance
<b>self-similar.png</b>	"Self-Similar"	2004	Improvised Visual Performance
<b>threads.png</b>	"Threads"	2004	Improvised Visual Performance
<b>step.png</b>	"Step & Repeat"	2003	Interactive Installation
<b>oracle.png</b>	"Oracle"	2003	Interactive Installation
<b>engineered.png</b>	"Engineered"	2001	Interactive Installation
<b>aporia.png</b>	"Aporia"	2001	Photographic/Interactive Installation
<b>seed.png</b>	"SEED"	2000	Interactive Installation

The digital images attached are chosen to show the history of my electronic media art practice from 2000 to 2006. They showcase my commitment to this art form and my evolving interests at the intersection of art and technology. More images and project details are available at <http://b.goto10.org>.