Dreaming Machine #3 (Prototype 2)

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ABSTRACT
"Dreaming Machine #3" (Prototype 2) is the second iteration of work in progress towards the "Dreaming Machine #3" (DM3), the third in a series of site-specific generative art installations informed by conceptions of dreaming. DM3 senses its visual environment through a static video camera where images are segmented by perceptual processes. Segmented percepts are clustered and serve as the material from which dreams, generative and free-associative compositions, are constructed.

Author Keywords
Dreaming; Creativity; Mental Imagery; Mind-Wandering; Perception; Generative Art; Biopsychology

ACM Classification Keywords
J.5 [Arts And Humanities]: Fine arts

A MACHINE THAT DREAMS

Dreaming Machine #3 (DM3) [2] is a generative site-specific artwork and model of visual mentation and spontaneous creativity informed by biopsychological conceptions of perception, mental imagery, mind-wandering and dreaming. The artwork follows from a series of site-specific works, *Context Machines* [4, 5], that use live cameras to collect images from the environment to be used as material for generative image-making processes.

DM3 is situated in a dynamic visual context where a live camera collects images of the surroundings, as pictured in Figure 1. These perceptual images are segmented into colour regions and are the material from which perception, mind-wandering and dream images are formed. These generated images range in abstraction from photo-realism, through photo-collage to total abstraction. Figures 3 and 4 show aesthetic explorations of collected visual material constructed independently of the system's dreaming and mind-wandering processes.

DM3 is both an artwork and model informed by an *Integrative Theory* [6] of perception, mental imagery, mind-wandering, dreaming and spontaneous creativity wherein all of these phenomena exploit overlapping mechanisms of visual simulation — the construction of hypothetical images or sequences that *imitate* visual reality. These mechanisms are enabled by a common set of perceptually-oriented associative representations.

C&C '13, June 17–20 2013, Sydney, NSW, Australia.
ACM 978-1-4503-2150-1/13/06.

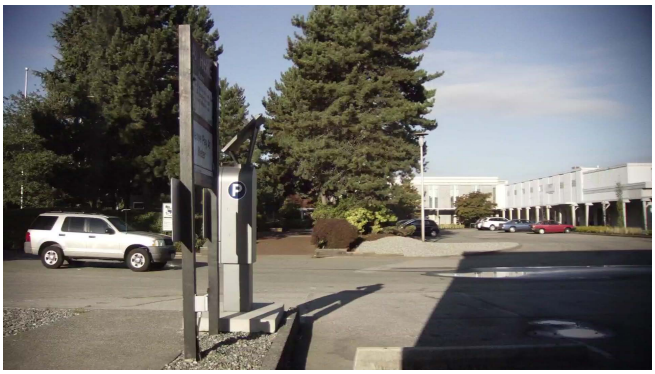

Figure 1. Example of an unprocessed input frame showing the live cameras view. All following figures were composed from segmented regions from this camera view, differing only in time.

AN ARTIST IN PROCESS: A COMPUTATIONAL SKETCH OF DREAMING MACHINE #3

A prototype of *Dreaming Machine #3,* pictured in Figure 2*,* was exhibited under the title *An Artist in Process: A Computational Sketch of Dreaming Machine #3* [2] at the New Forms Festival [1] in September, 2012 in Vancouver, Canada. The exhibition involved a short residency period during which a live camera was installed to collect images of the parking lot beyond the exhibition space. During residency, Ben Bogart continued to implement algorithms to segment live images into colour regions, and explored aesthetic combinations of this segmented material.

These explorations were manifest in the presentation of a number of 8.5×11 prints, examples of which are pictured in Figures 3 and 4. In parallel, a prototype of the dreaming system was developed that sequenced segments based on the propagation of associative activation of nearby segments in feature space. Segmented regions were sorted according to their visual properties (such as area, colour, position) and the *dreams* of the machine were associative trajectories through collected material. Figure 5 shows a frame grab of a dream sequence presented during the exhibition available in a documentation video available online [3].

Figure 2. Photograph of exhibition of "Dreaming Machine #3" prototype for the New Forms Festival, September 2012 in Vancouver, Canada. The foreground shows the artist working in residency in the exhibition space. Left: The projected output of a prototype dreaming system generatively free-associating through segments of collected images. Right: A set prints documenting aesthetic explorations of the same material collected and segmented on site. © Scott Kaplan

Figure 3. Background percepts generated from segmented pixel regions in images collected during the New Forms Festival residency and exhibited in print form. © Benjamin D. R. Bogart

Figure 4. Similar to above where segmented foreground percepts are presented without background. The aesthetic here was described by viewers as "water-colour" and results from an early clustering failure that attempted to average perceptually dis-similar regions in subsequent frames. © Benjamin D. R. Bogart

Figure 5. Single frame from a typical dream sequence generated by the prototype system exhibited at the New Forms Festival. © Benjamin D. R. Bogart

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