INTER-INACTIVITY

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ABSTRACT

In this paper we describe the concept of "inter-inactivity", in which the artist makes conscious use of participants' stillness in defining how an interactive artwork behaves. Inter-inactivity is formulated as an expansion on approaches to interactivity which typically requires the user to constantly and actively engage the work in order to experience it. Inter-inactive works incorporate both motion and stillness into their design, often using periods of action to lead users into moments of rest. Our new media installation, *Still Standing*, demonstrates a specific instantiation of inter-inactivity in which the user is encouraged to both actively and inactively participate.

Keywords

digital texts, interactivity, dynamic typography, visible language, installation art, electronic writing

1. INTRODUCTION

New media artwork has evolved from a primarily static, low-speed textual experience to a dynamic, high-speed multimedia experience. As new media has evolved, the wider cultural media environment has become denser, inundating us with a constant barrage of frenetically edited image, video and audio streams. New media artworks, embedded within this high-speed culture, have leveraged increasing technical capabilities to present the user with ever-more complex interactional requirements which often require her to stay in constant motion in order to engage the work.

Within the larger popular culture it can be difficult to find moments of quiet, or periods of stillness, that allow one to process and contemplate all of the information received during the course of a day. Within the subculture of new media art practioners and audience the same can be said for a stroll through an exhibition of an interactive work. To exacerbate matters, the capacity for absorbing large amounts of dynamic information in the blink of an eye seems to entail an increased tolerance for loss of detail.

We developed the concept of inter-inactivity to capture the idea of designing interactive artworks that make use of both states of motion and states of stillness, often with the former leading the user to the latter. The goal is to provide the user with an experience that invites her towards a moment of focused attention.

2. THE INTERACTION DANCE

Interactive artworks define a set of rules on which the system relies in order to operate properly. The user is constrained by these rules in that if she were to break them the piece would either ignore her actions or cease to function properly. She must discover these rules the by trying different actions and observing the results. The necessity that users learn by acting leads to what we call the "interaction dance", on display at festivals and galleries worldwide, in which users jump and flail about as they attempt to discover the interactivity in a piece.

Projects that use complex systems to react to human behavior, like motion and body language, also contain restrictions affecting how much freedom the user has in the interacting process. The participants interact with the content, try to understand the boundaries which confine them and find the limits of the piece. If the user is given a broad set of rules, her experience will last longer before it becomes repetitive and she starts losing interest. The experience can further be extended if the set of rules itself changes as the longer she remains engaged with the work.

Rokeby's *Cheap Imitation* [1] and Snibbe's *Depletion* [2] are two works which induce the interaction dance, albeit with elegant and thoughtful results. *Cheap Imitation* cuts Marcel Duchamp's *Nude Descending a Stair Case* into hundreds of facets and projects them onto the wall. Each facet is interactive, moving from invisibility to visibility in response to movement in front of it. Small hand gestures show one or two facets whereas full body motion makes the whole composition emerge. Stillness, however, causes the projection to go dark. *Depletion* exhibits a similar action arc. The participant moves within the frame of the installation, causing it to capture her shadow and add it to the visual composition. The content fades to pure white once the user is finished interacting and steps out of the frame to observe the result.

Both *Cheap Imitation* and *Depletion* provide the user with an immediate visual response connected to her presence and motion in space. Experiencing the pieces requires that the user stay in motion to trigger the change and evolution of the content. The

user's attention is split between her own interaction, i.e., on how her body language is affecting the piece, and the results that appear on the screen. After interacting with this type of work for a certain period of time, she may rest and attempt to examine the changes she provoked. Yet this moment of rest is not recognized by the systems as a communicative act. Rather, it is interpreted as a lack of action and the system goes into a wait state. This analysis is not a fundamental critique of these two works, which initiate an elegant interplay between the user's movements and the dynamic qualities of the display. Rather it serves to illustrate how many interactive works operate.

3. INTER-INACTIVITY

We are interested in creating alternative strategies that use moments of stillness such as resting and contemplation in order to precipitate and utilize inter-inactivity. Inter-activity is partially a response to a common challenge we encounter with the work done in Obx Labs. Obx Labs conducts much of its art-led technology research in the area of dynamic digital text and typography. Installation pieces such as *TextOrgan* [3] and *Intralocutor* [4] create a tension between reading the text and acting on its visual representation. Reading text of any length beyond a few words requires sustained attention and focus, qualities that are often at odds with action strategies designed to attract a participant to an installation and keep her there. The question we often confront is how to bring the user to a point where she will gladly make time to read and think about several paragraphs or more of text, even while making the active component interesting to engage in and supportive of the semantics of the work as a whole.

Inter-inactivity expands the number of modes of interaction, and thus the number of strategies we can employ. We can identify two extreme states of human behaviors, motion and stillness. The spectrum of physical motion extends between these states from chaotic movement to complete immobility. Inter-inactivity focuses on the one end of the spectrum to generate a response from the stillness of participants.

An example that illustrates inter-inactivity is Utterback's *Untitled 5* [5]. *Untitled 5* leverages the user's stillness to create different visualization of the user in space. The user presence in front of the projection creates a painterly display which differs depending on whether she is in motion or standing still. The user's movements in the space create a colored path representing her trajectory. When the user leaves, tiny colored marks appear surrounding her course to later be pushed by the presence of future users. Displaced marks are attracted back to their original position to create strokes of color showing their displacement. In contrast, the user's stillness generates a subtle spray of color emerging from her position. Utterback's use of both states of interaction generates relevant graphics where motion creates a dense display, and stillness slowly spawns a mist of color.

4. STILL STANDING
4.1 Description

Still Standing is an inter-inactive installation in which the user is invited to engage, through motion and stillness, with the textual content of a projection. (See [6] for full video.)

Still Standing utilizes NextText [7], a library used for the rendering of interactive and dynamic text, to display and apply behaviors to a collection of characters. The participant moves in front of a projected screen (figure 1). The interaction is controlled by a video recognition module which detects the presence of participants in the space facing the projection. The video module extracts the user's silhouette to simulate collision with the textual content and distinguishes if the user is in motion or standing still.
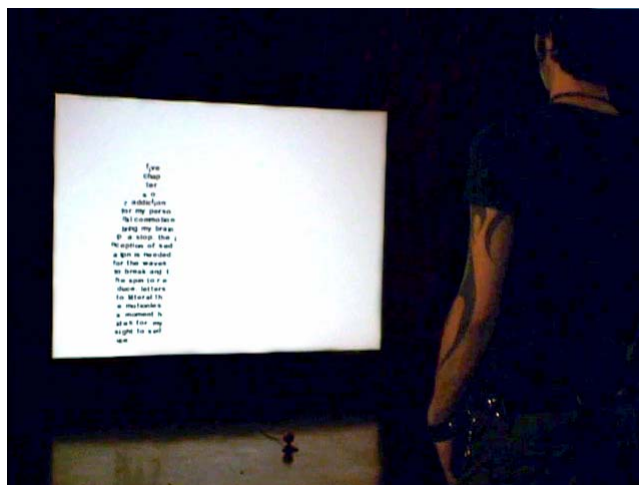

Figure 1: *Still Standing* setup showing relationship of user's body to the screen.

The text within *Still Standing* is a poem composed explicitly for use in the installation. It plays with the semantic and etymologic intersection between *motion* and *commotion* to advance a theme of longing for a perfect motionless moment. (See [8] for full text.)

When the user first encounters the installation, the poem is broken down into individual letters. These letters are positioned to suggest text slowly moving around on the ground, like leaves being blown by a gentle breeze. As the user walks in front of the projection, her motion through the frame disturbs the letters. They react as if they were being kicked and pushed by the user's silhouette. After the user passes through the frame, the letters fall back to the ground (figure 2).

The first movements of the interaction serve to attract the attention of the user who, going through her interaction dance, discovers more of the rules she can exploit. When the user goes motionless to observe the content she has affected, the letters continue bouncing off her body but begin to gravitate towards her position in space. This inter-inactivity encourages her to remain motionless in order to let the text complete its assembly into a readable poem. If she becomes impatient and moves again, the
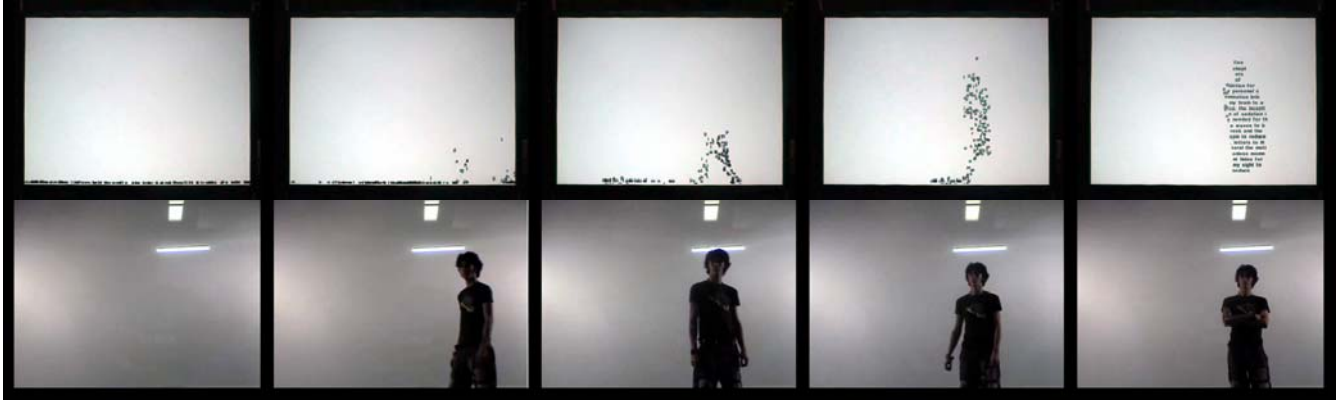
Figure 2: *Still Standing* **showing progression of interaction to inter-inaction.**

letters drop away from her and resume their interaction with her active movement. However, if the user stays in a state of motionlessness for more than seven seconds, the letters will move up, like water soaking up her body, to become more and more legible. Slowly, words and sentences form within her silhouette until the entire text can be read.

4.2 DISCUSSION

Still Standing encourages the user to both act and not act. By acting, she can play with the dynamic behavior of the text. By not acting, she transitions the piece into a more readable display. The longer she does not act, the more readable it becomes. This trajectory invites her to become stiller and stiller in order reach a motionless moment and read the text. In this way, playful interaction leads into meaningful poetic content.

Given that it is virtually impossible for the average person to stand completely motionless for even a few seconds, we had to refine our initial idea of standing still to recognize greater resolution. We observed that when the user first encounters *Still Standing*, she pushes the text around with the motion of her feet. Once her attention has been captured by the moving text, she tends to increase her motion, kicking around to see the extent of the interaction. While the user is exhausting the limits of the text reacting directly to her silhouette, she often stops for short periods of time to examine the details of the projection in order to understand the content. We re-defined stillness to make use of such periods so that, as long as the user's feet do not change position, we consider her motionless. This allows her to continue moving her upper body about and keeps the requirement for stillness loose enough that she does not have to act completely unnaturally. In this way, inter-inactivity can be tuned to fine distinctions in the spatial dimension as well as the temporal dimension.

We hope that *Still Standing* engages participants in larger debates concerning the role of reading within the digital media ecology. To some extent, the piece acts as a textual instrument of the type exemplified by *TextOrgan*. The user's performance differs from encounter to encounter, and it is possible that she interact with the

piece without ever composing the entire text. The letters of the text are the material out of which this performance is made, yet the composition of these letters into the text itself does not change or mutate such as in the N-Gram instruments described by Wardrip-Fruin [9].

This difference lies along a fault line in the discussion about whether digital texts, in order to be considered as fundamentally partaking of the capabilities native to the digital medium, must allow authorship at the level of linguistic (re)composition or at the level of visual (re)composition.

The text of *Still Standing* was developed along with the piece itself. We have previously offered a critique of text-based works which appropriate texts which have been written for oral or printed presentation and repurposing them for inclusion as part of a multimedia work. [10] This critique is not absolute, in that we acknowledge and ourselves partake of strategies for remixing such found texts. Rather, it is aimed more at encouraging new media artists to consider writing original texts as part of the creative process, in the same way that they carefully design the visual look and computer programming. It is our experience that works developed in such a manner exhibit a tighter integration of the semantics of text with the semantics of the interaction.

We consider *Still Standing* successful in terms of our original goal of developing strategies to encourage the reading of the text that lies at the heart of an interactive experience. By refining our notion of inter-inactivity to accommodate a more variegated idea of inactivity, using interactivity to lead the user to a motionless moment, and writing the text as an integral part of designing the work, we created a work that operates across a full spectrum of action and inaction, and engagement and contemplation. However, we anticipate the need for further refinement of these strategies in the context of observing a larger public encountering the work.

5. FUTURE WORK

We believe that stillness is often neglected in the interactive design process, and that using the motionless moments of the user provides us with new and interesting strategies for designing effective and interesting interactions. Such inter-inactivity is rarely effective by itself, as alone it does not provide the means for attracting a user to the work and creating a narrative for the interaction. Used in conjunction with interactivity, however, it can give creators a powerful tool for modulating the rhythm and flow of their interactive work, and for crafting experiences that focus more on contemplation than action.

Still Standing is the first in a series of inter-inactive pieces that will explore different methods for using stillness as an integral part of reading through and understanding poetic texts. Future technical work will include improving the video recognition module to refine the object segmentation and increase the precision of the motion detection. This gain in accuracy will give us the possibility to define more precise states of motion and stillness. We will also introduce tracking capabilities to distinguish recognized objects to allow multiple users interacting with the piece at once.

Future conceptual work includes using each moment of stillness as a means of moving from stanza to stanza, reading multiple poems simultaneously depending on which parts of the body are motionless, and having multiple users whose interplay is determined by how the act and in-act towards one another. The goal is to fully explore how to effectively combine the activity necessary for seducing users into an encounter with the installation with the stilled contemplation necessary for reading a complex text. As we conduct these explorations, we look forward to adding an interesting set of non-moves to the interactive dance.

7. REFERENCES

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