STANDARDS AND DOUBLE STANDARDS
INTERACTIVE INSTALLATION WITH BELTS THAT TURN TOWARDS YOU

SYNAPTIC CAGUAMAS
BEER BOTTLES THAT SPIN ACCORDING TO NEURAL NETWORK LOGIC

WAVEFUNCTION
RESPONSIVE WAVES OF CHAIRS

RAFAEL LOZANO-HEMMER

Mexican-born Lozano-Hemmer is an electronic artist who develops interactive installations at the intersection between architecture and performance art. His main interest is in creating platforms for public participation by perverting advanced technologies such as robotics, computerized surveillance or telematic networks, in a poetic and critical way. Between analogue and digital, his hardware-heavy installations usually consist of simple, individually controlled elements repeated in large arrays and coupled with artificially intelligent software to create complex emerging behaviours that mimic organic systems, both within the pieces themselves and in the reactions of the audience.

Synaptic Caguamas is an array of 30 Caguama-style beer bottles, disposed on a large Mexican cantina table. Thanks to the 30 networked stepper motors concealed underneath the table top, the bottles can spin on themselves, displaying patterns generated by a cellular automata algorithm. This is a kind of software that simulates the behaviours of neuronal connections in the brain and approaches coding as the repetition and interaction of small pieces of interrelated code, each linked to a particular bottle, rather than a fixed, global algorithm controlling all the bottles together. Every few minutes the bottles are reset and seeded with new initial conditions for the algorithm so that new, ever-changing movement patterns can emerge. The bottles thus create a magical and fascinating spectacle, materializing, as Hemmer intended, the mathematics of recollection and thought.

Standards and Double Standards relies on similar principles and integrates another component in the interaction with the viewer. Here, 50 fastened belts are suspended at waist height from the ceiling and controlled by stepper motors. Informed by a computerized tracking system, the belts rotate automatically to follow the public, turning their buckles slowly to face passers-by. When several people are in the room, their presence affects the entire group of belts, creating chaotic patterns of interference. Non-linear behaviours emerge, displaying turbulence, eddies and relatively quiet regions, similar to those observed in a weather chart. One of the aims of this piece is to visualize complex dynamics, turning a condition of pure surveillance into an unpredictable connective system. An 'absent crowd' interacts with the viewer's own presence and creates a complex feeling between discomfort and enjoyment.

His latest installation to date, premiered at the 52nd Biennale in Venice in 2007, mixes the two approaches. Entitled Wavefunction, the kinetic sculpture comprises classic Eames chairs placed in a 9 x 4 array, facing the entrance to the exhibition space. When someone approaches the work, a computerized surveillance system detects their presence and the closest chairs automatically begin to lift off the ground, creating the crest of a wave that then spreads over the whole array. A system of electro-mechanical pistons softly raises each chair up to forty centimetres from the ground. The pistons are controlled by a computer that runs a mathematical model based on fluid dynamics, thus making the waves interfere with each other, generating turbulence or becoming calm, just like real water.

Synaptic Caguamas
2004
Subsculpture 4

Glass bottles, wood table, motors, computer, custom software
Dimensions variable
Edition of 3

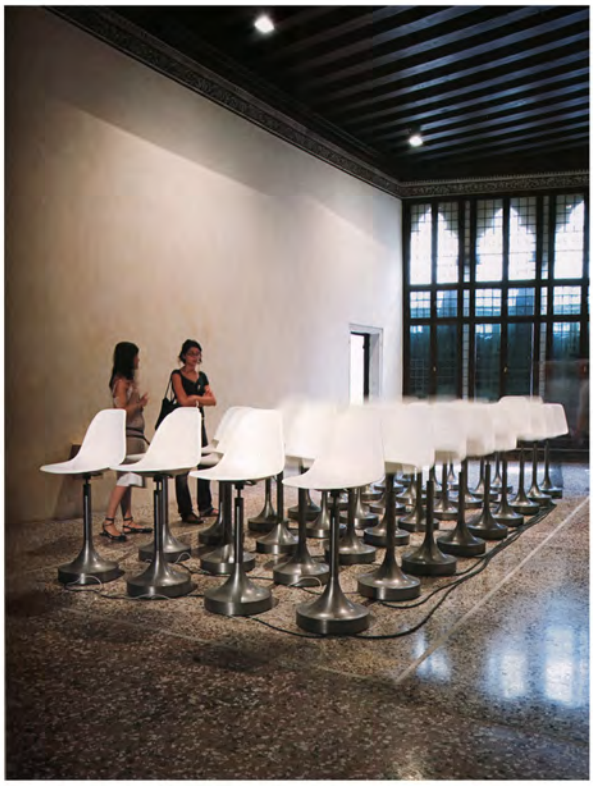
Freyer, Conny, Noel, Sebastien and Rucki, Eva. *Digital by design*, 2008, p.90-93

Standards and Double Standards
2004
Subsculpture 3

Suspended belts, motors, computer, custom software, screen
Dimensions variable
Edition of 3

Wavefunction
2007
Mexican Pavilion, 52nd Venice Biennale

Electromechanical pistons, computers, chairs, surveillance cameras and circuits
Dimensions variable
Edition of 3



Freyer, Conny, Noel, Sebastien and Rucki, Eva. *Digital by design*, 2008, p.90-93