OpenEnded Group

artists' statement
selected artworks 1998–2009

OpenEnded Group

l-r: Kaiser, Downie, Eshkar

The OpenEnded Group consists of three digital artists — Marc Downie, Shelley Eshkar, and Paul Kaiser — who create works for stage, screen, gallery, page, and public space.

Exhibit and performance venues have included Lincoln Center, Barbican Centre, the Whitney Museum, ZKM, SIGGRAPH, Ars Electronica, the Center for Contemporary Art (Glasgow), Massachusetts Museum of Contemporary Art (MASS MOCA), the ICA (London), the Wexner Center for the Arts, the MIT Media Lab, the Brooklyn Academy of Music, the Kitchen, the New York Film Festival, the Berlin Film Festival, the Fondacio Antonio Tapies (Barcelona), the Yerba Buena Center for the Arts (San Francisco), the York Minster, the Nabi Museum (Seoul), the ICC (Tokyo), the Monaco Dance Festival, Théâtre de la Ville (Paris), the Grand Theater (Hong Kong), the Chicago Museum of Contemporary Art, the Jerwood Space (London), and many others.

They have had artists' residencies at MASS MOCA, Bell Labs, UC-Irvine, Arizona State University, Harvard University, Empac, Cooper Union, Le Fresnoy: Studio national des arts contemporains, and the Exploratorium.

Reviews have appeared in *The New York Times*, the *New Yorker*, *Wired*, the *Village Voice*, the *Guardian*, the *London Times*, *Newsweek*, *Time*, *Computer Graphics World*, the *Wall Street Journal*, the *Financial Times*, *Le Monde*, *Die Welt*, *National Public Radio*, ABC TV, and many others.

Among the prizes they have won individually or collectively are a Guggenheim Fellowship, the John Cage Award from the Foundation for Contemporary Arts, a Media Arts Fellowship from the Rockefeller Foundation, a Bessie award, an Arts in Multimedia Award from the Brooklyn Academy of Music and Lucent, and an Award of Distinction from Ars Electronica.

See *www.openendedgroup.com.* Or contact Paul Kaiser: *paul@openendedgroup.com;* mobile: *646 641-7841.*

Artists' Statement

We are intent on making works of sufficient beauty and depth as to engage viewers on multiple levels and scales. We do so by considering the two principal axes of time and space: time — so that a passing encounter with a work is captivating in its own right but can also lead to a deeper, committed exploration of its underlying complexities; space — so that that views from afar and views from up close disclose the work differently.

Much of our imagery reflects what one apprehends with the mind's eye. While our imagery is nearly always representational, it is also somewhat abstracted, as if is has been thought through — pondered or conjectured, rather than simply seen.

Though our medium is digital art, our works all bear the unmistakable trace of human presence. This is most clearly seen in the many pieces of ours that evoke human movement directly, whether of dancers on a stage, of children in a playground, or of pedestrians in a city. But the human trace is equally present in the very lines of our renderings, for which we have created a signature "hand-drawn spaces" style. With this, we can conjure up a three-dimensional world in the manner of gesture drawing rather than of the photorealistic lens, thus conveying senses of touch and intuition while tracing the movements of eye, hand, and mind.

We write our own code so as to have complete creative control of our art-making. For the past eight years, most of our time-based works are computed live in *Field*, our software platform, so that the works can continually shift — never quite repeating, they keep surprising even the viewer who has encountered them before.

This real-time capability also allows us to create interactive works that respond to their environments. This response is not merely a matter of automatic triggering and mirroring as in so much interactive design, for artificial intelligence methods allow us to endow the imagery of certain works with intentions and predilections of their own as they respond to the world. The idea is that the artwork makes sense of shifting situations by picturing them to itself, the visual work being the trace of that process.

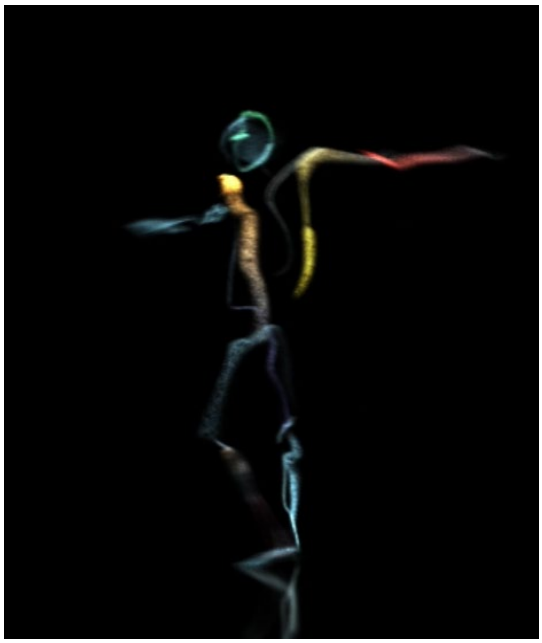
Hand-drawn Spaces

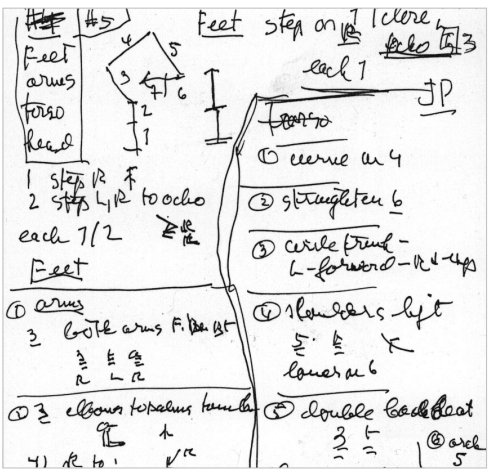
Hand-drawn Spaces (1998, 2009) is a virtual dance installation that presents a mental landscape in which motion-captured hand-drawn figures perform intricate choreography in 3D. Commissioned by SIGGRAPH as a massive 3-screen projection, it was created in collaboration with Merce Cunningham (choreography). Designated an NEA "masterwork" in 1999, it was restored with a new surround soundtrack.

The virtual dancers appear as life-size drawings emerging from the darkness and moving in an apparently limitless three-dimensional space. Though the dancers are visible on three screens, they move through a much larger virtual area, and so travel in and out of projected image, often traversing the spectators' space. The spatial sound-score by Ron Kuivila evokes their positions in space, making their presences felt even when not seen.

A smaller gallery version was exhibited at the Wexner Center for the Arts, the Barbican Centre, and many other venues.

Created with support from the The National Dance Residency Program, a grant program underwritten by the Pew Charitable Trusts and administered at The New York Foundation of the Arts; The Foundation for Contemporary Art; Harvestworks; and the National Endowment for the Arts.

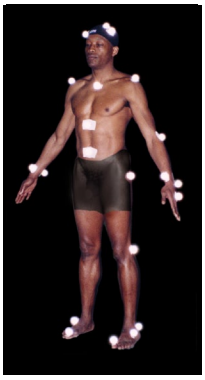




Ghostcatching

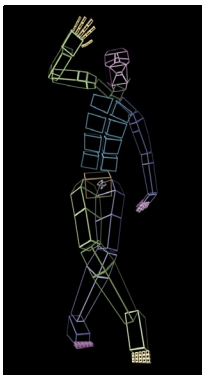
Ghostcatching (1999) is a digital art installation that fuses dance, drawing, and computer composition. Based on the motion-captured dance phrases of choreographer Bill T. Jones, the work is a meditation on the act of being captured and of breaking free.

Bill T. Jones improvising

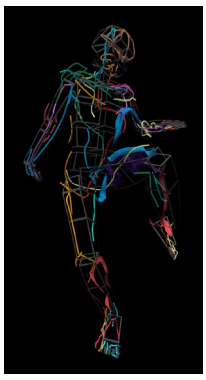


Motion-capture markers

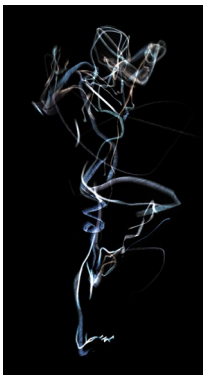
Optical conversion to 3D



Motion files on 3D skeleton



"Hand-Drawn" anatomy



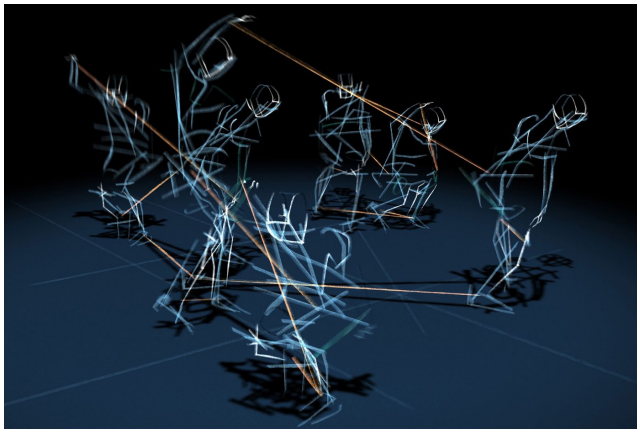
Final drawn body

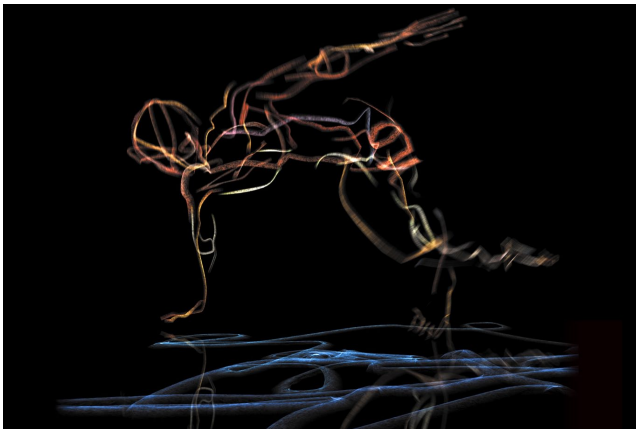
Captured dance phrases are the building blocks for the virtual composition. As data, the phrases can be edited, re-choreographed, and staged for a digital performance in the 3D space of the computer. Here, the body of Bill T. Jones is multiplied into many dancers, who perform as three-dimensional drawings. Their anatomies are intertwinings of drawn strokes, which are in fact painstakingly modeled as geometry on the computer — never drawn on paper.

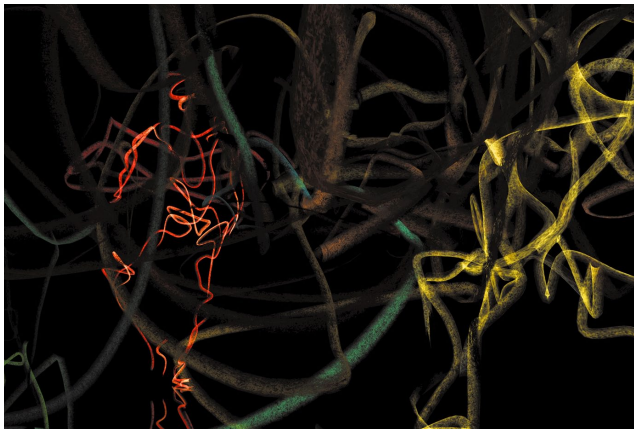
Jones developing material at The Cooper Union, 1999.

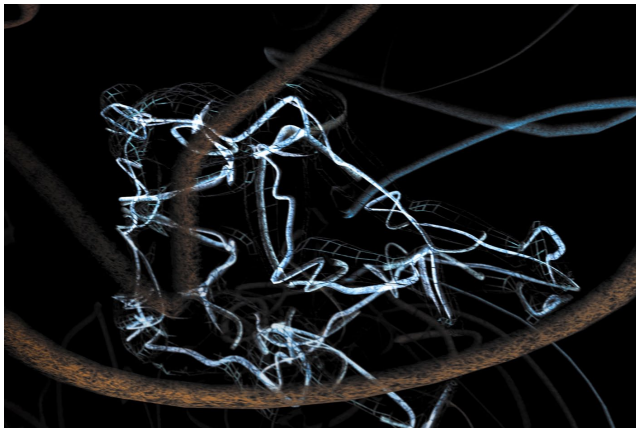
Commissioned by the Cooper Union for the Advancement of Science and Art, with further support from the Keith Haring Foundation, the Estate Project for Artists with AIDS, and the Foundation for Contemporary Arts.

A new stereoscopic version of Ghostcatching has been commissioned by SITE Santa Fe for June 2010.



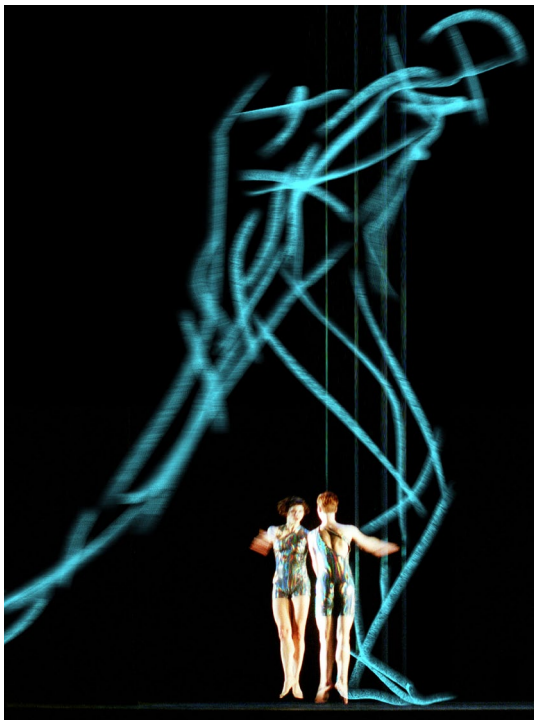


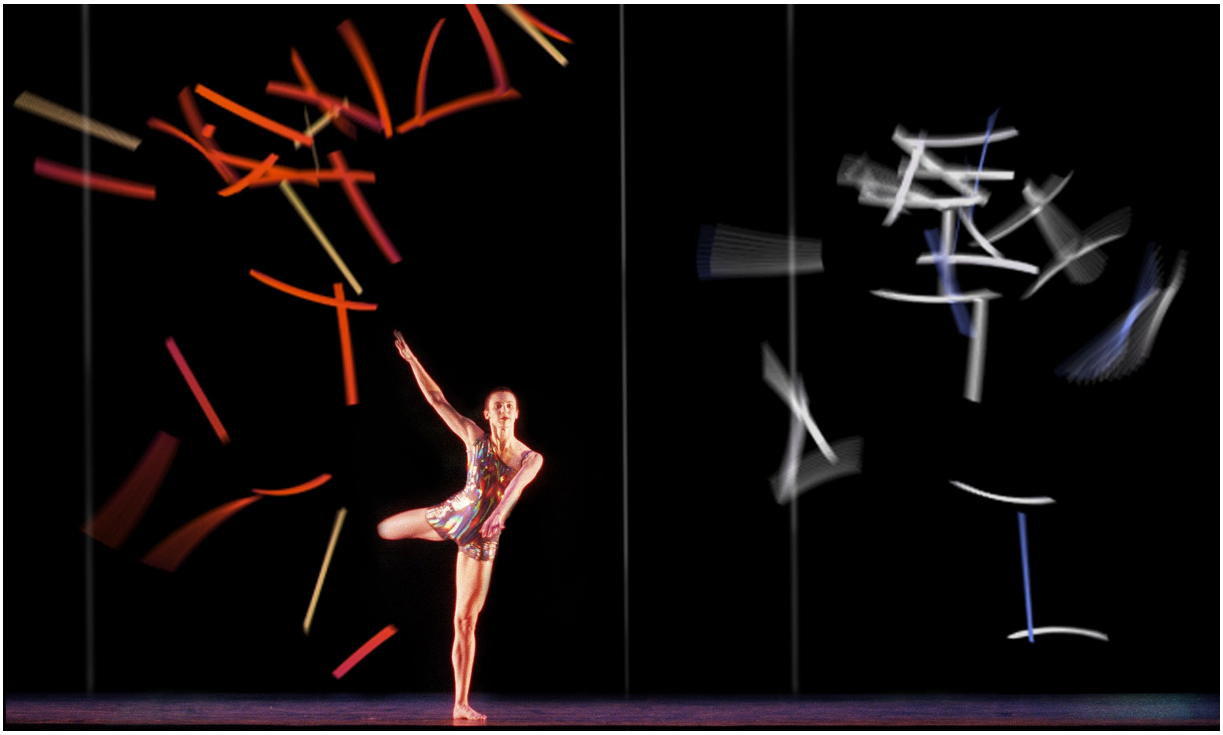




BIPED

Biped (1999) is an extended digital animation that serves as the visual décor for a dance of the same name choreographed by Merce Cunningham. The movements are largely derived from motion-captured phrases from the choreography, which drive abstracted images of hand-drawn dancers moving through spare and evocative spaces. *Biped* is the most widely seen of any Cunningham dance; it has been performed numerous times throughout the world.





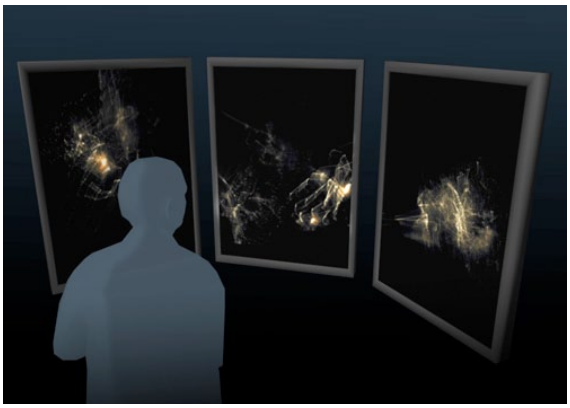
In performance, the imagery is projected on a huge transparent scrim covering the front of a large proscenium stage, giving the illusion that it floats in front of and among the live dancers behind it.

The BIPED projections were supported by the AT&T Foundation, the Andy Warhol Foundation for the Visual Arts, Compaq Computer, and Discreet/ Autodesk.

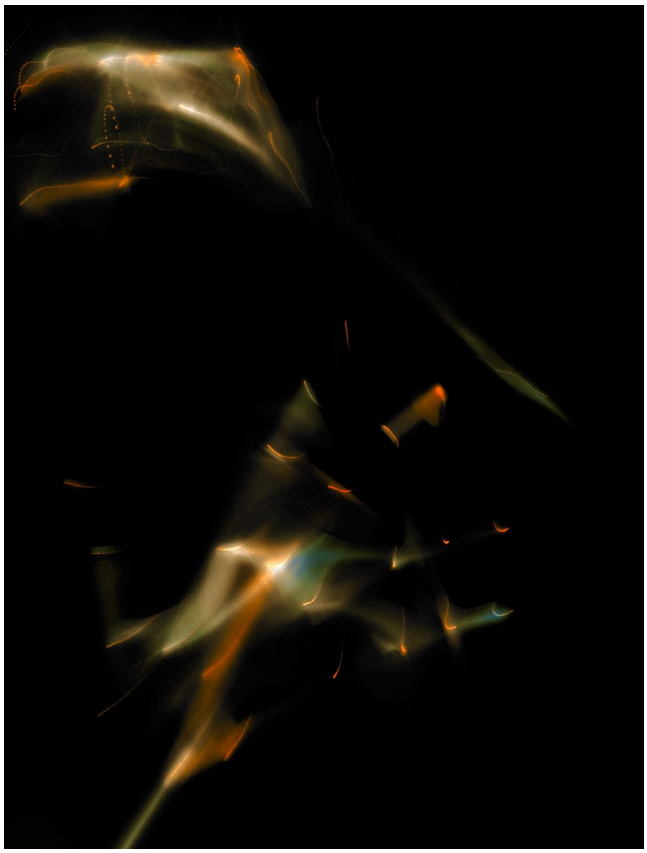
Loops

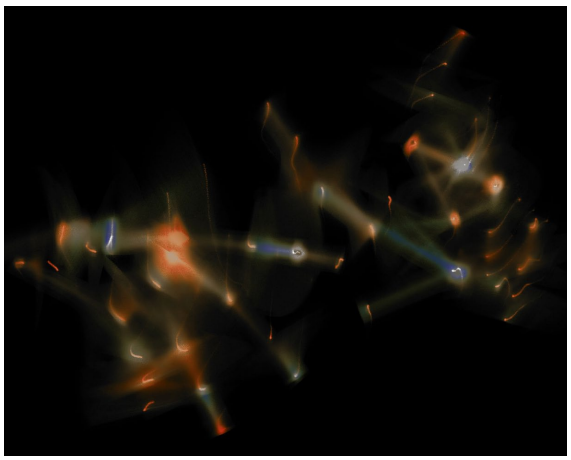
Loops is an abstract digital portrait of Merce Cunningham that runs in real time and never repeats. Originally commissioned in 2001 by the M.I.T. Media Lab for the "ID/Entity" show, its sound score was re-made for Ars Electronica in 2005. In 2007 it was re-created in tryptich form and its underlying code released as open source and Cunningham's choreography released under a Creative Commons license.

Loops is a portrait of Cunningham, but it attends not to his appearance, but to his motion. It is derived from a motion-captured recording of his solo dance for hands and fingers. The motion-captured joints become nodes in a network that sets them into fluctuating relationships with one another, at times suggesting the hands underlying them, but more often depicting complex cat's-cradle variations. These nodes render themselves in a series of related styles, reminiscent of hand-drawing, but with a different sort of life. Many viewers liken their experience of seeing *Loops* to that of gazing into nature: its flickering motions put them in mind of fire or of primitive biology, perhaps seen under a microscope.



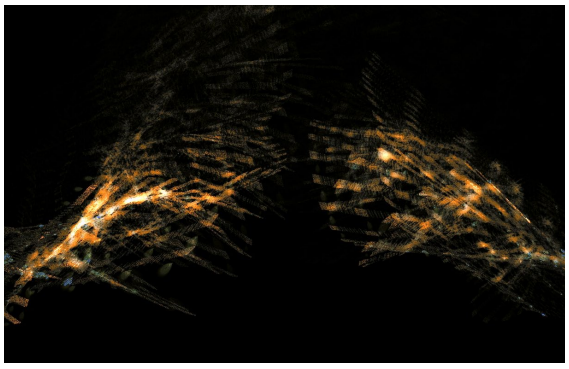
In its current triptych arrangement, three views of *Loops* are presented. The central screen has the virtual camera facing Merce's hands directly, while the flanking screens give sideway views from the left and right respectively.





Just as Cunningham's motions generate the imagery in *Loops*, we now use his voice to generate the music. The initial source is Cunningham reading diary entries from his first visit to New York City in 1937, when he was 17 years old–an old man's voice evoking an earlier city and an earlier self. Later we had the idea was that if we had Cunningham speaking, then we would have John Cage listening to him, at least virtually. And so we propelled the intonation and rhythm of Cunningham's sentences into a virtual instantiation of Cage's prepared piano.

Additional support for Loops was provided by the John Cage Trust, Modern Uprising Studios, and the Mellon Foundation.



Pedestrian

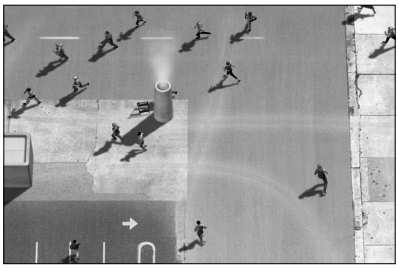
Pedestrian (2002) is a public artwork that projects its imagery directly down onto a city sidewalk. Its digital projection merges with the rough surfaces we walk upon: the tiny denizens we see down there wander through a *trompe l'oeil* illusion in a city that seems to float both upon and within that surface. First presented in 3 public spaces in New York City, *Pedestrian* has since been exhibited in numerous locations in Asia, Europe, and the US.

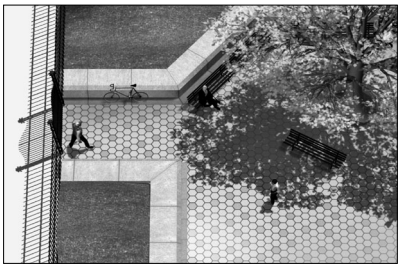
Pedestrian at the Studio Museum of Harlem

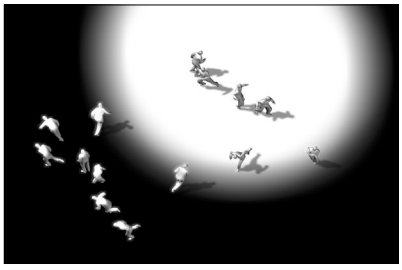
Pedestrian at Rockefeller Center

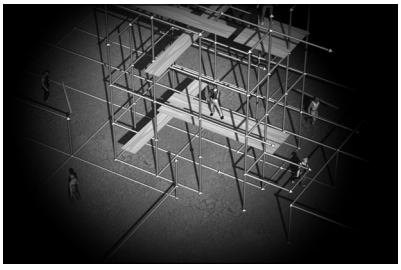
The environment under the tiny feet of *Pedestrian*'s figures is an abstract and simplified gameboard of Manhattan, with strong contours and rhythmic subdivisions. These grids, tiles, and area boundaries echo and emboss the real physical pavestones hit by the projection. We the viewers, with our tall, dark bodies, stand in for the buildings of Manhattan's verticality.

Pedestrian was co-produced by Art Production Fund and Eyebeam. Additional support came from Dancing in the Streets, with public funds from the New York State Council on the Arts; the University of California: Irvine; and Unreal Pictures.

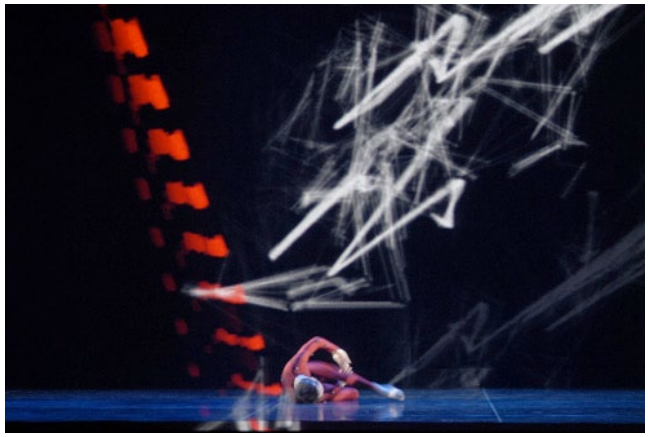


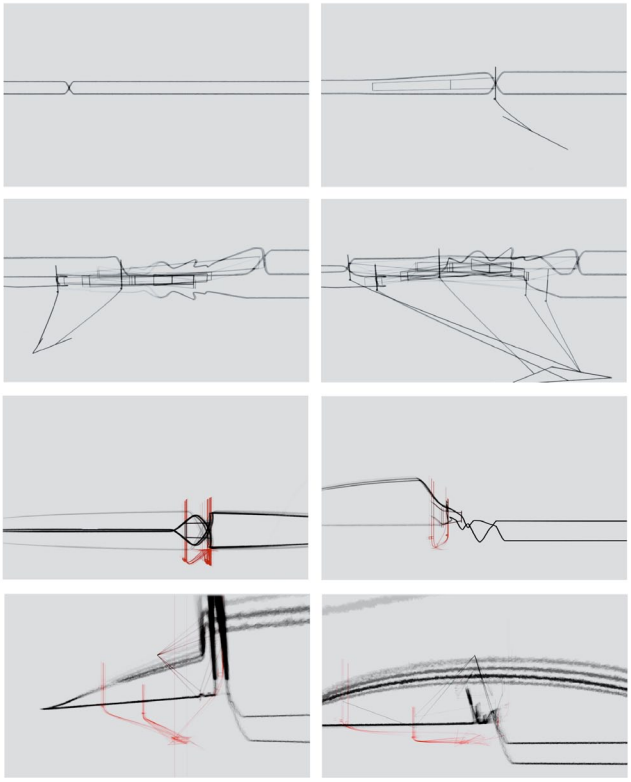





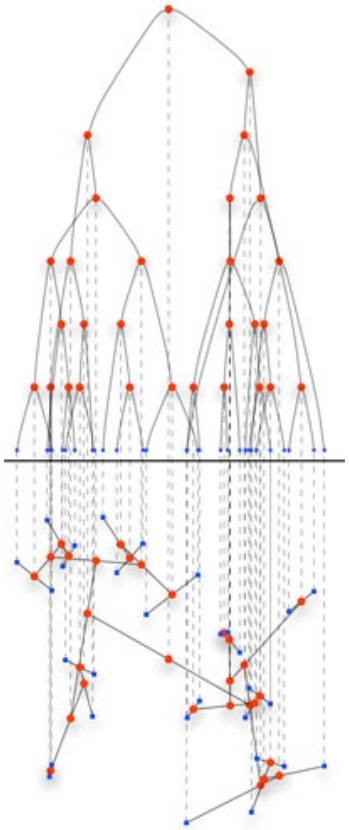
how long does the subject linger on the edge of the volume

In *how long does the subject linger on the edge of the volume*… (2005), projected imagery responds in real-time to the motion-captured live performance of the Trisha Brown Dance Company. The imagery has a mind of its own, as it were, since an artificial intelligence program determines the exact picture at any given point in time. It detects patterns and relationships in the choreography as it unfolds, which it represents in pictures that continually re-adjust themselves to the dancing.





Weaving: A very simple agent constructed from a hidden creature that looks only at the ordering of the dancers, from front to back, and tries to retrace this ordering by weaving a set of lines in space.



Tree: Tree constructs a skeleton for an offline captured solo and re-injects it into the piece, partially overlapping with the performance of the solo itself.

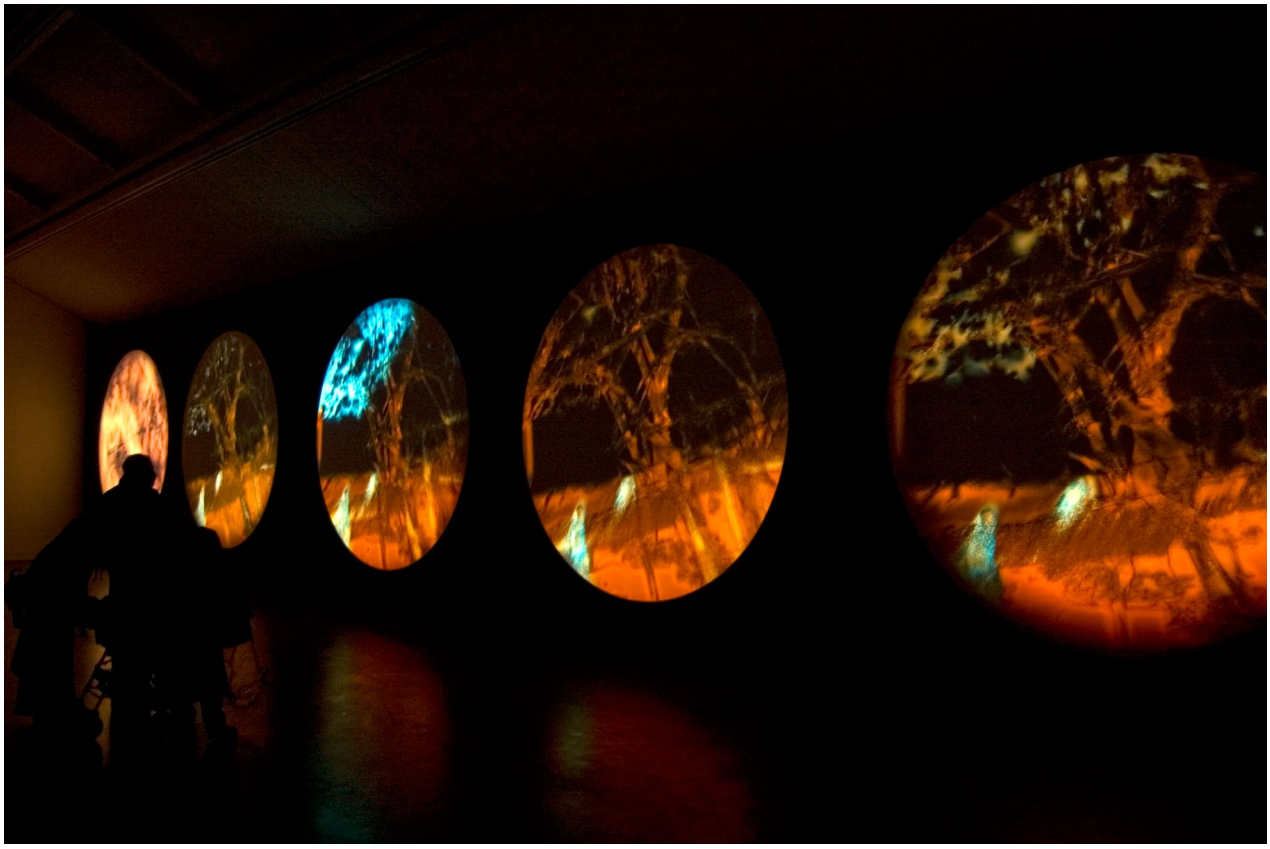
how long... was commissioned by Arizona State University with additional commissioning support from Lincoln Center. It was supported in part by the National Endowment for the Arts, the National Science Foundation, Motion Analysis Corporation, Arizona Public Service, and City of Tempe Cultural Services.

Forest

Forest is a visual enactment of outdoor games played in childhood. In this five-screen live installation, virtual children wander through a forested parkland playing hide-and-seek among the tree-trunks. They swing dizzily on monkey bars, then clamber up among the branches overhead. They lose themselves in revery and then re-encounter each other in the forest. The children's movements are uncannily life-like, for they are drawn from an extensive library of motion-capture data created specifically for Forest.

It's not just the children playing in this fashion — for the imagery itself plays similar games across the five circular projections.

Each of its portholes looks out on the same forest scene, but these views are in dynamic disequilibrium with each other. One porthole may decide to jump to a different camera angle, for example, and the adjadcent views will then struggle to catch up with that new angle. Another porthole may choose to switch its color relations, and again the others may try to shift theirs in the same direction.



installation at the Centre for Contemporary Arts, Glasgow

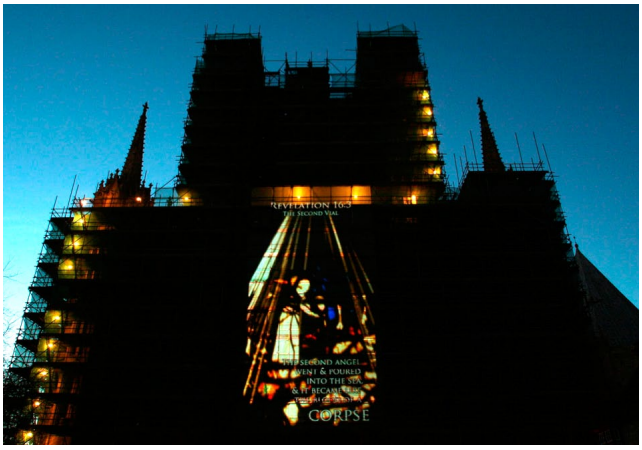
The circular frame of each projection plays odd tricks with perception, gently undermining the viewer's sense of gravity, especially when the camera angle rolls slightly.

The rich ambiguity of visual perception is intensified by the "visual physics" embedded in the custom 3d renderer created for the work. For example, the renderer can conjure up the moving image out of the propagation of its own grain.

Forest was created with support from Dancing in the Streets, the Greenwall Foundation, the New York Foundation for the Arts, Renew Media, and the Rockefeller Foundation

Recovered Light

Recovered Light (2007) is a site-specific public artwork created for the York Minster in England. Projected directly on the scaffolded eastern facade of the cathedral, it acted as a kind of massive virtual x-ray (90' tall), peering through the scaffold at a masterpiece of 15th century stained glass, the Great East Window. The piece ran live for five hours every evening, taking more than seven hours to complete a single cycle of its never-repeating imagery. It is now on permanent display inside the Minster.

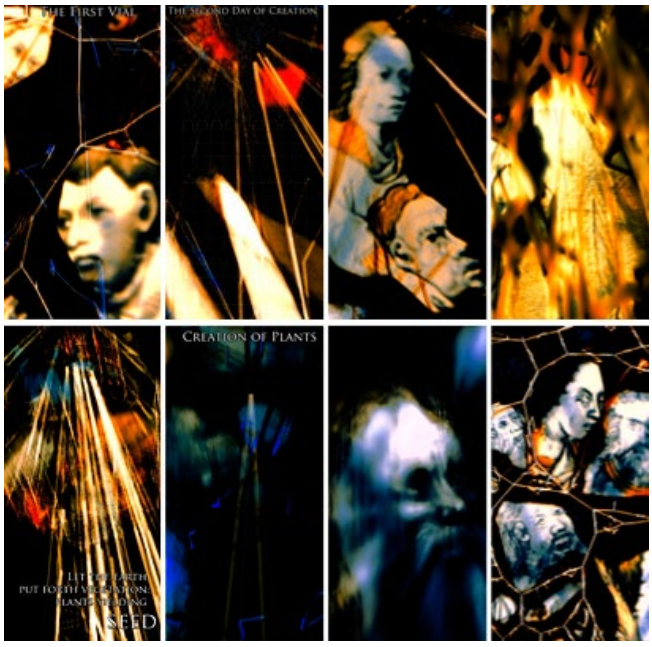


Recovered Light "solves" the puzzle of each main stained glass panel by magnifying its key elements and then reassembling them as if they were pieces in a complex jigsaw puzzle, matching the corresponding biblical passage with the given scene. In the process, it brings to light the expressive faces and vivid scenes from the past, many visible for the first time. Since this act of recovery runs live, the reassembly and magnification of a given panel never quite repeats from one cycle to the next.

The artwork does not perform a simple act of visual restoration; rather it performs an intricate act of artistic retransformation. It is a creative response reaching back across time from the 21st century to the 15th, its bright projected beam providing a new sun for the darkened glass.

Discovering network of image boundaries

Second network joining centers of bounded areas.



Recovered Light was commissioned by Illuminating York with support from the York Minster.

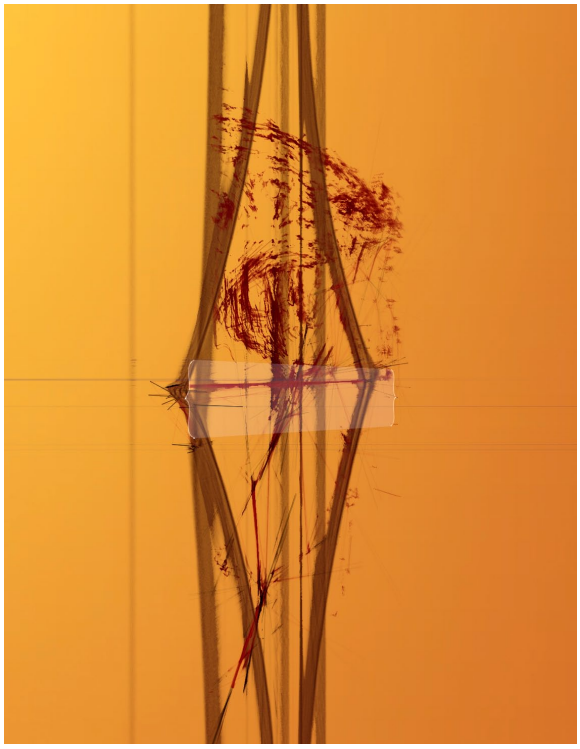
Both analyses used to select parts & recompose the whole.

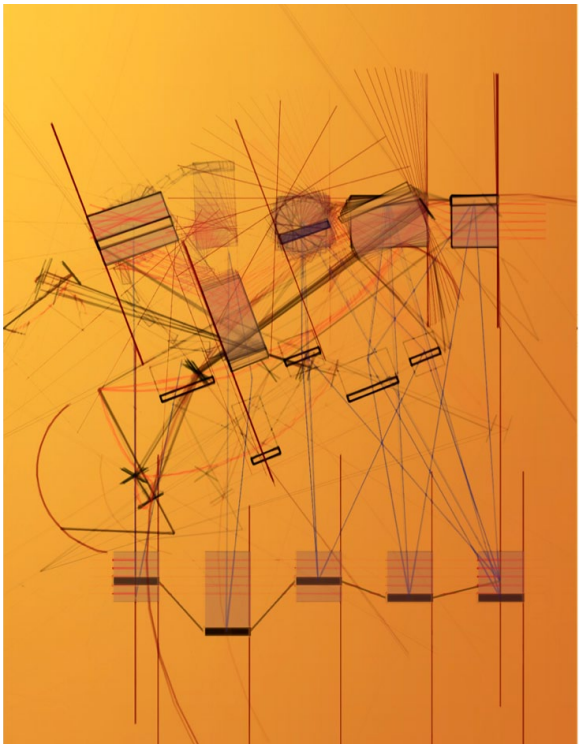
Enlightenment

Enlightenment (2006) is a live public digital artwork that actively investigates, visualizes, and reconstructs the deeper musical structures of Mozart by means of artificial intelligence and realtime graphics.

Enlightenment applies Information Age methods – akin to DNA sequencing and data-mining – to make new sense of Mozart, a quintessential figure of the Age of Enlightenment. More precisely, it solves a problem of its own making – to intelligently reconstruct Mozart's most intricate musical structure (the coda to the "Jupiter" symphony) with a minimum of prior musical knowledge.

Enlightenment was commissioned by Lincoln Center, with sponsorship by Jerome L Greene Foundation and The Peter Jay Sharp Foundation.

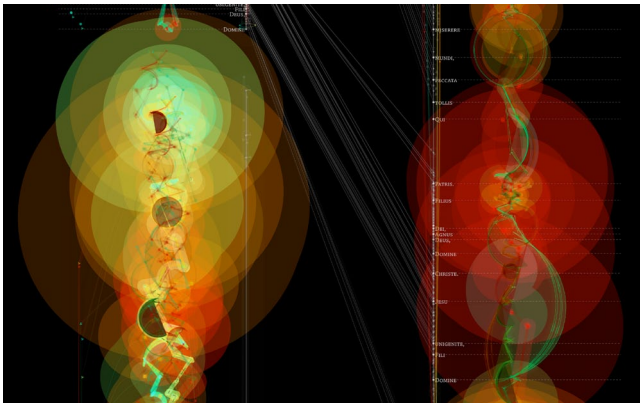


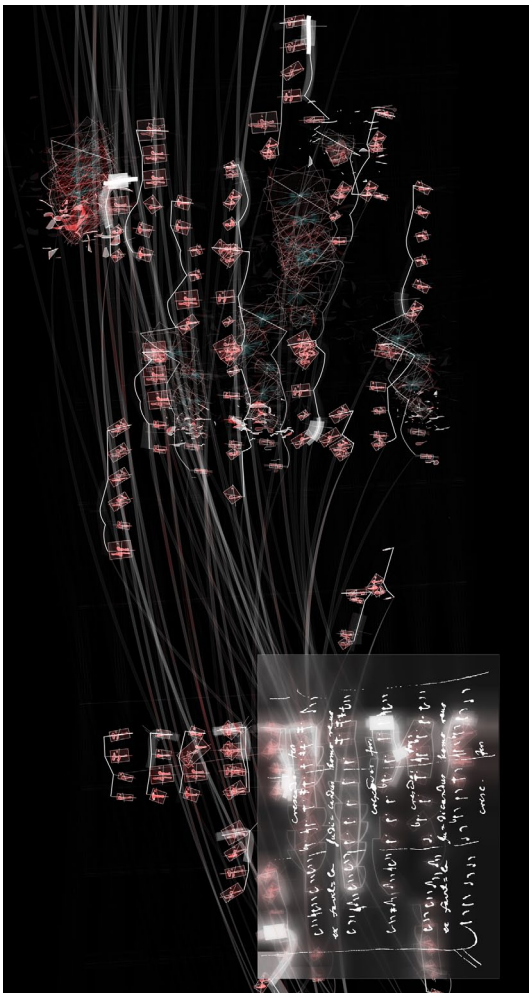


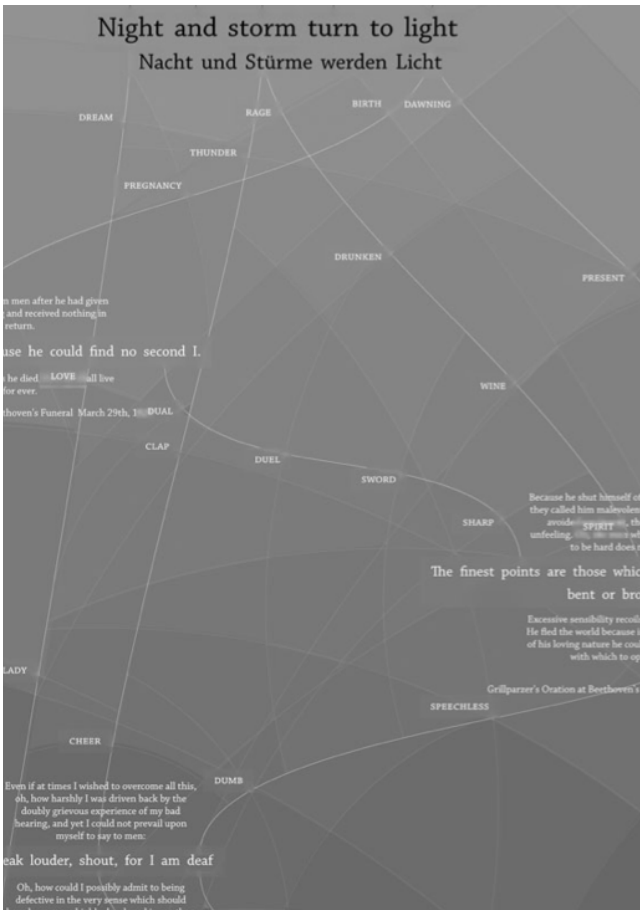
Breath

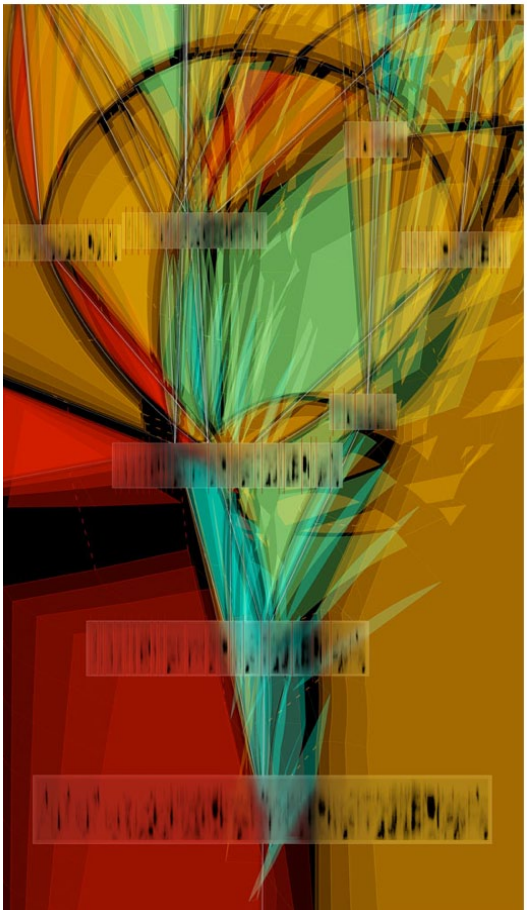
Breath (2007) is a site-specific public artwork for Lincoln Center that explores the idea of sacred music through an interlocking series of banners and lightboxes, the lighting of which is coupled to the ebb and flow of a live musical composition. The imagery of each lightbox arose from a computer-assisted analysis of a given subject, finding patterns in information often so dense as to elude manual search.

Breath was commissioned by Lincoln Center.









Point A→ B

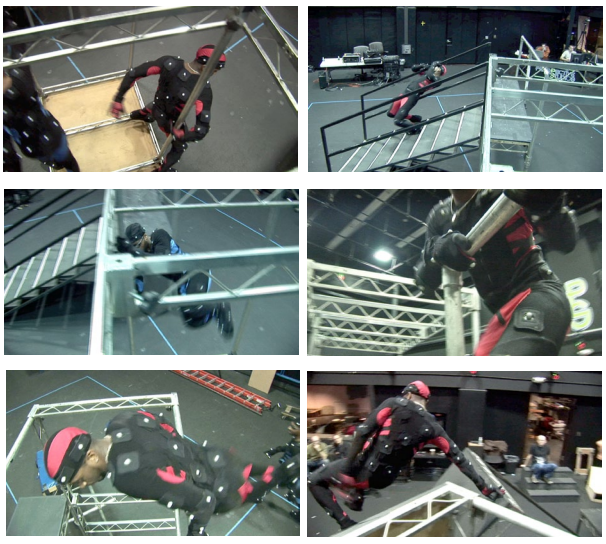
Point A → B (2007-9) is an installation that takes the urban sport of parkour as its point of departure. Just as the *traceur*'s goal is get from point A to point B as rapidly, as inventively, and often as dangerously as possible, so too do the virtual figures encounter a vertiginous world where action, perception, and location are continually overturned. This sensation is heightened for the viewer by the two parallel projections of the piece, which only rarely coalesce into a continuous panorama — more often they divide the space like a chasm.

installation at the Pro Arte center in St. Petersburg, Russia

For both figure and viewer, it is hard to traverse the space of *Point A → B* since it seems mainly conjectural, as if its design had been left incomplete on the architect's drawing board. The built terrain is under mental construction, the process of which is everywhere evident in generic cubes, wireframe scaffolding, place-holder masses, stock elements, translucent surfaces, and cut-away and cross-section views.

The artwork is composed for two screens, set to be inclined towards each other, as pictured above in this installation photo from Pro Arte in St. Petersburg.

Point A → B was commissioned by Capture05 and with the support of the English and the Scottish Arts Councils. Project partners included Urban Freeflow, the Jerwood Space, and the Centre for Contemporary Arts (Glasgow).

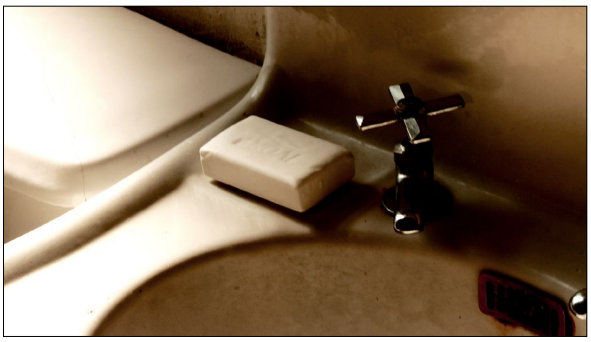


Motion capture with traceurs practicing parkour

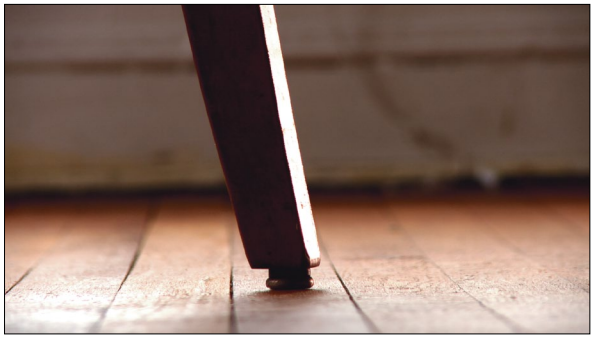
Housebound

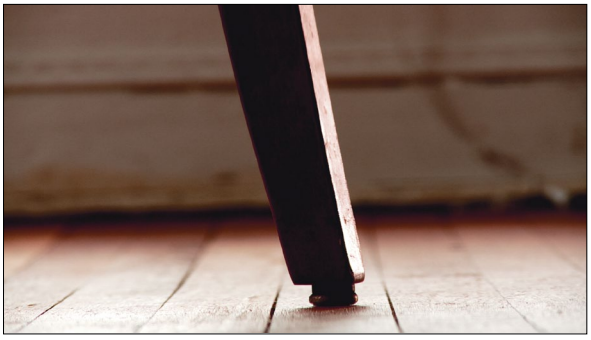
Housebound (2008) is a stereoscopic installation that uses motion stabilization and geometry recovery in order to place narrative text into the illusory depth of subjective hand-held camera shots. Commissioned by Le Fresnoy: Studio des arts contemporains, the stereoscopic depth of *Housebound* is of film-like resolution, shot with paired cameras streaming uncompressed HD video directly to two computers.

Housebound tells the story of a woman trying reconstruct the eccentric thoughts of her deceased lover by "reading" the spaces of his now mostly vacant apartment. We gaze out his windows at the sky and at the bustling streets of upper Manhattan; we inspect his chair, his desk, and his bedframe; we scrutinize a light fixture and outlet, a sink and a stovetop, a drinking glass and a spoon, an intercom and a hallway.



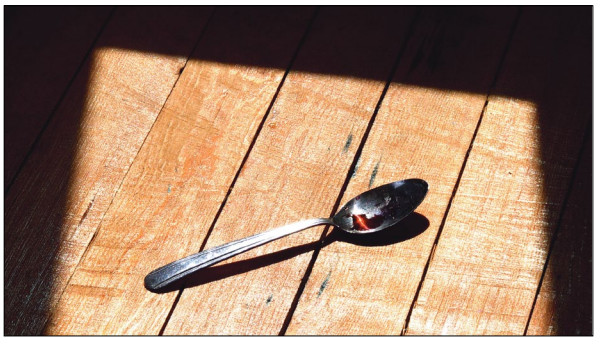
6. adjusting





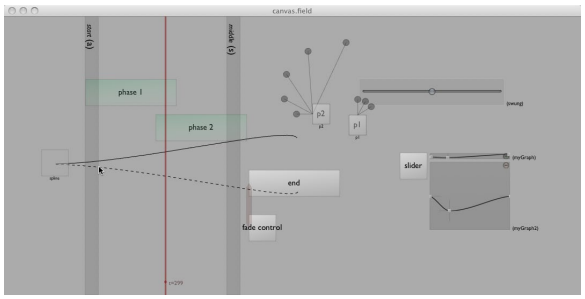
12. feet cold

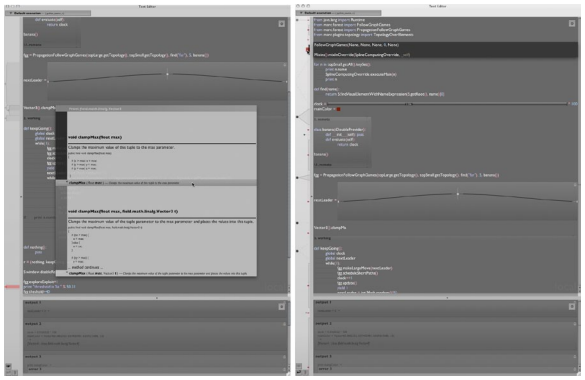
25. superimpose

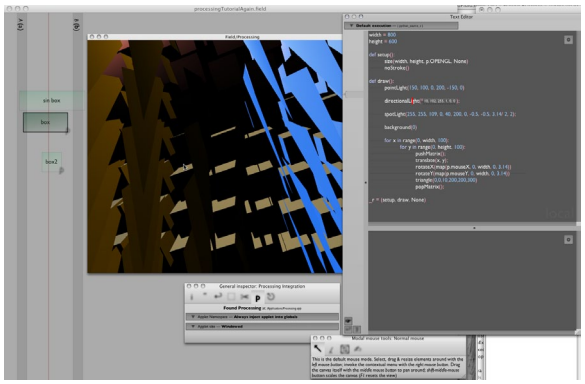


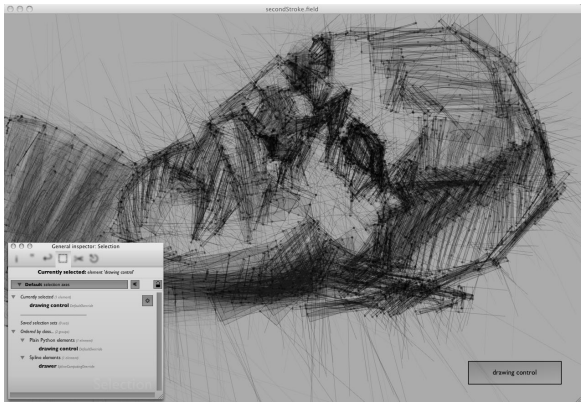
66. no French kissing

Field (open source software)









Field is a software project initiated by OpenEnded Group, for the creation of their digital artworks. It is an environment for writing code to rapidly and experimentally assemble and explore algorithmic systems.

Based on ideas started at the MIT Media Lab, Field was in development in-house since early 2001. In 2008 we released it as an open source platform for use not only by other digital artists, but also choreographers, architects, and engineers.

More than an authoring system, *Field* is in fact a system for creating authoring systems (a "meta authoring system," if you like). It allows users to fashion their own authoring environment for any given project; and as they work they can continue to adjust and even to recast this environment as the need arises.

Field underpins all of our artworks since 2002 — for example *Enlightenment* (2006), the AI exploration of Mozart's final symphony we made for Lincoln Center; *Loops* (2001-8), an abstract portrait of Merce Cunningham; and *how long does the subject linger on the edge of the volume...* (2005), a live motion-capture stage performance created with Trisha Brown.

The Field project has received support from the Mellon Foundation, the National Endowment for the Humanities, Portland Green Cultural Projects, and the Experimental Media and Performing Arts Center (EMPAC).