

Body Electric Timeline

As contemporary dance advances into the 21st century, numerous choreographers are working with various new technologies and scientific ideas in the development and presentation of their work. Whether commenting on and experimenting with artificial intelligence, interactive technologies, or making use of motion capture and related animation techniques, the possibilities for dance artists to create embodied ways of exploring ideas, many historically associated with scientific inquiry, have never been greater. In tune with this pulse, The Dance Center's Spring 2010 season will present dance works that have provocatively woven science and technology into their process and manifestation.

From electrical impulses within the body to sparks of light that project images of ourselves in alternate forms, technology and movement continue to drive excavations and realizations of what human being means. From thoughts, energy and gesture, to shadows, electrical impulses, and abstract reflections, flesh becomes line and lines of electricity become flesh, as science, technology, and movement progress. This timeline traverses a time span from 1300 AD to present day, investigating some of the breakthroughs that have captured the human in motion, electrically.



Late 1800s – Early 1900s
Loie Fuller, an early modern dancer and innovator, pioneered and developed mixed media infused hypnotic choreography. Fuller used an arrangement of devices from phosphorescent materials and fabric to illumination fixtures, which transformed her image and presence as she moved.



1896
The "effect" of live dance was first experienced through a Vitascope projection at Koster and Bial's Music Hall in New York City.

1880s
Étienne-Jules Marey invented methods of recording movement that revolutionized our way of visualizing time and motion. His chronophotographic gun recorded several phases of movement on one photographic surface.

Late 1800s
Eadweard Muybridge uses photography to extensively study human movement and pave the way for motion-capture technology, opening the door for a series of movements to be studied and dissected.

June 1752
Benjamin Franklin performs his famous kite-flying experience, in which he gets sparks to jump the gap between his hand and a key, thereby using the human body to explore electricity.

Approximately 1300 AD
Tai Chi, a healing art that cultivates body's energetic flow, is developed.



Lauded worldwide for its innovation, grace and extreme physical fluidity, Cloud Gate Theatre of Taiwan's *Moon Water* is a contemporary exploration of the Tai Chi Tao Yin movement. The New York Times proclaims "Moon Water is not about meditation but is a meditation in itself." Photo by Gert Weigelt

1976 - 1988

Australian performance artist Stelarc attaches a robotic Third Hand to himself as part of his endeavor to "improve" the body with technology. Future attempts in the same vein include a stomach sculpture and exoskeleton.



Merce Cunningham had been extending the frontiers of choreography for more than half a century, most recently with his use of the computer program LifeForms now called DanceForms. DanceForms is the first software designed for dance teachers and choreographers, allowing them to visualize and chronicle dance steps or entire routines in a 3D environment. The illustration is a screen-shot of the DanceForms software.

1991
Merce Cunningham debuts *Trackers*, his first piece made using the LifeForms/ DanceForms software.

1990 - 1993

Troika Ranch directors Dawn Stoppiello and Mark Coniglio and many others collaborate on telematic performances with Sheerie Rabinowitz and Kit Galloway of the Electronic Café International. Using various new high-speed data transmission technologies to connect performers world-wide in real-time performances.



Mark Coniglio, tech whiz and co-Artistic Director of Troika Ranch. Photo provided by company.

1989

MidiDancer is developed by Mark Coniglio of Troika Ranch, allowing for interaction between a dancer's body and a MIDI sensor system that outputs audio tones.

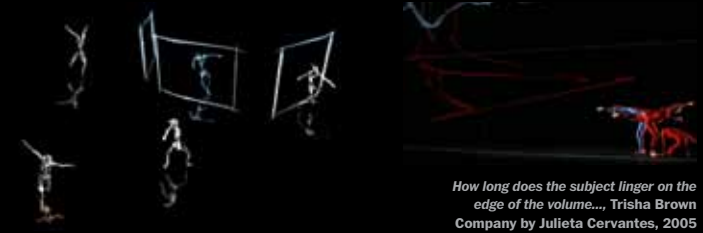
Late 1980s

Modern motion-capture technology develops. Towards the end of the 1980's motion-capture as we know it today began to appear, with software that algorithmically applied captured witness points to three-dimensional objects. At the same time the availability of a "skeletal system" using a knowledge-based digital skeleton first appeared in the university research environment, gradually making its way into commercial turnkey animation systems.

Late 1980s - present

Innovative artists write their own software and hack game controllers and electronic musical instruments to create their own sensory systems for the body and the stage.

Body Electric Timeline (cont.)



A dual screen motion-capture performance choreographed by Merce Cunningham. Image courtesy of SIGGRAPH

1998
First use of optical motion-capture for dance installation—*Hand-drawn Spaces* (Merce Cunningham, Paul Kaiser, Shelley Eshkar)

1999

Mark Coniglio, Scott Delahunta and Scott Sutherland reinvigorates the Dance & Technology list serve that was originated at Ohio State University. This list serve began to connect dance and technology artists around the world.

1999

IDAT99 is hosted by Arizona State University. This International Dance and Technology Conference marked the first time international dance and technology artists met each other face to face.

1999

Bill T. Jones collaborates with Paul Kaiser and Shelley Eshkar on *Ghostcatching*, an innovative film fusing digital technology, dance, evocative drawing, and computer composition.



Still from *Ghostcatching* by Paul Kaiser and Shelley Eshkar

Still from *BIPED* by Paul Kaiser and Shelley Eshkar

1999

Cunningham collaborates with Paul Kaiser and Shelley Eshkar to produce *BIPED*, an incredibly innovative piece that displaces fixed categories of identity and is considered a turning point in "digital dance."

2005
Trisha Brown and the OpenEnded Group premiere real-time motion-capture on stage in *How long does the subject linger on the edge of the volume...*

2004
Patrice Barthes creates *Double Cue* with multi-media artist Fabrice Nourrichard. *Double Cue* presents a dancer alongside his virtual double created with the animation software, Poser.

2001

Australian's Company In Space's work, *CO3*, explored the body and identity in real and abstract terrains. A solo performer wore a metallic exoskeleton, known as the gypsy system, bringing the performers' presence into computer generated 3D environments inhabited by an array of avatars.



2001 - present

Troika Ranch makes use of Isadora software for the first time in their piece *Riene Rien* and all subsequent works thereafter.



Riene Rien, Troika Ranch. Image courtesy of Susan Hamburger, 2001

2000

Isadora media-manipulation software developed by Mark Coniglio of Troika Ranch.



16 [R]evolutions, Troika Ranch by A.T. Schaeffer

2006
Troika Ranch's work *16 [R]evolutions* linked Isadora program with EyesWeb motion-tracking software that allows the performers to leave 3D traces of bodies' movements during performance.

2006
Marlon Barrios Solano begins a new Dance & Technology site to continue to connect these international artists.

2006
Chunky Move premieres *Glow*, an "illuminated choreographic essay" by Artistic Director Gideon Obarzanek and interactive software creator Frieder Weiss.



Glow, Chunky Move, by Rom Anthoni

Body Electric Timeline (con't.)

May 2009

William Forsythe debuts his new website synchronousobjects.osu.edu, developed in collaboration with Ohio State University. The website uses various interactive technologies to analyze a dance performance.



Still form annotated video illustrating alignments, the way in which Forsythe designs relationships in space and time. Credit: Synchronous Objects Project, The Ohio State University and The Forsythe Company.



3D Alignment Forms. Animation of dancer's traceforms in *One Flat Thing*, reproduced and mapped to 3D space. Credit: Synchronous Objects Project, The Ohio State University and The Forsythe Company.

Present

Choreographic Language Agent (CLA), a software, being developed by Wayne McGregor|Random Dance, OpenEnded Group and Crucible Computer Laboratory, to build autonomous choreographic agents as a means to broaden understanding of the physical and mental interface inherent in dance.



McGregor's evening-length work, *Entity*, is based on months of collaborative research with an international think-tank of 16 individuals working in cognitive science, psychology, neurosciences, linguistics, human-computer interaction and robotics, exploring links between artificial intelligence and choreography. Photo by Ravi Deepres

Present

Koosil-Ja/danceKUMIKO is developing *Blocks of Continuity/Body, Image and Algorithm*, exploring 3D realities between the body, technology and space using live processing and other technological devices.



mech[a]OUTPUT, Koosil-Ja/danceKUMIKO by Nanako Nakajima

Definitions

Motion-Capture

Motion-capture is a process of taking a human being's movements and recording it in some fashion.

http://www.siggraph.org/education/materials/HyperGraph/animation/character_animation/motion_capture/motion_optical.htm

MIDI

MIDI (Musical Instrument Digital Interface) is an industry-standard protocol defined in 1982 that enables electronic musical instruments such as keyboard controllers, computers and other electronic equipment to communicate, control, and synchronize with each other.

http://en.wikipedia.org/wiki/Musical_Instrument_Digital_Interface

DanceForms

From the legacy of LifeForms animation software, DanceForms 1.0 was designed by dance teachers and choreographers to enable visualizing and chronicling choreography in a 3D environment.

<http://www.charactermotion.com/danceforms/index.html>

Isadora

First shown publically at the Monaco Dance Forum in 2000, Isadora is a graphic programming environment for Macintosh and Windows that provides interactive control over digital media, with special emphasis on the real-time manipulation of digital video.