

Los Angeles Times



Northern CA | Fo Inv

Click Here - To See Our Investm

<http://www.latimes.com/entertainment/news/arts/la-ca-cognition8-2009mar08,0,1585797,full.story>

From the Los Angeles Times

DANCE

Cognitive scientists seek to quantify body movement

At UC San Diego, a dance troupe teams with researchers who follow their every move.

By Anne Marie Welsh

March 8, 2009

Reporting from San Diego — With a dozen high-def cameras and a couple of camcorders, plus pens, notebooks, sketch pads and laptops, more than 40 people spent three recent weeks in a black-box theater on the campus of UC San Diego documenting what was occurring there.

The object of their study was notoriously elusive: dance and the process of choreographic creation.

What happens, they wondered, when choreographer Wayne McGregor creates movement on (through? with?) the protean, hyper-articulated bodies of his Random Dance Company? How do the dancers visualize his cues? How do they respond to one another in the group dynamic? How do they remember? And how does he?

By the end of every day during those three weeks, each person in the theater had interviewed or been interviewed by others participating in a meticulously crafted experiment exploring the nature -- and role -- of cognition in creating dance.

Three years in the making, the experiment was initiated by Martin Wollesen, director of UCSD's ArtPower! presenting organization; carried forward by professor David Kirsh, director of the university's interactive cognition lab; and heartily supported by McGregor, Britain's leading contemporary choreographer.

"I feel like I'm in therapy 2 1/2 hours a day," the choreographer said before one early evening debriefing with Kirsh. "David's questions make you define terms, help you not to be woolly about the words you use. We're talking intimately about what I'm doing, about the body as a thinking body, about how it processes information and visualizes movement."

McGregor, also the Royal Ballet's resident choreographer and a much-sought-after opera director, created portions of his next piece, "Dyad 1909," while in San Diego with his company and support staff as ArtPower!'s first innovator-in-residence.

The residency kicked off with a performance by Random Dance of "Entity," a startling, virtuosic 2008 work, itself part of McGregor's ongoing inquiry into the relationship between the thinking mind and the moving body. The weeks of intensive investigation and creation were also part of a course taught by Kirsh, centered on creative and "distributed" -- meaning "group" -- cognition.

The investigation was designed to result, said Kirsh, "in a singular document of the process that will be available to others and analyzed for years to come."

Make a note of it

Like American dance innovator Merce Cunningham, McGregor has long been interested in what jump-starts his creative process. His company name, Random Dance, implies Cunningham's belief that random numbers can be as useful as logic, that chance and indeterminacy are core artistic tools.

McGregor said he'd "been fascinated with disruptions, diversions, randomness, incompleteness, the different set of intelligences involved in dance and the different ways of extracting information with the body."

At UCSD, he said, he became more aware of "what I'm giving attention to." He wanted to "understand how we're thinking about ideas, to extend and develop my cognitive capacity about the body" in hopes of developing new methods that would cut against any "formula motifs" or habitual ways of making.

One way to improve or change his choreographic techniques, he said, might "involve building images acoustically rather than visually." A week into the experiment, he had discovered that "the things we're taught to talk about in dance don't actually describe what's happening in the mind. I want to blast that vocabulary open."

The dancers, his "best group by far," were eager participants -- not passive guinea pigs but note-taking thinkers. Citing "their extraordinary techniques and capacity to do so much mentally," McGregor said he'd chosen the international troupe of seven men and four women for "their serpentine physicality" and "mental aptitude. They're all curious and open-minded."

Their daily activities created a continuous feedback loop. First thing in the morning, Kirsh interviewed the choreographer in general terms while the dancers warmed up during company class. (Dancers rotated teaching duties, but the class was always ballet, followed for some by rigorous sets of abdominal crunches.)

At 10:30, Kirsh's students, each assigned a dancer, filed in with their laptops and notebooks. Cameras were activated, a documentary filmmaker and the Random Dance research coordinator took their places, and McGregor set his dancers to work on a task, a riff, an idea, a rhythmic challenge.

Students' fingers flew across keyboards as they described gestures, moves, attitudes, dancer responses and adaptations that provoked

questions they would ask later in the day about why and how. Some used a coding system developed by a graduate assistant. Others sketched.

During the afternoon creative session, McGregor and the dancers generated more movement, more phenomena to watch, record, analyze. Then the dancers, led by associate director Odette Hughes, recapped the day's new movement phrases. Last came the debriefings -- McGregor interviewed again by Kirsh, the dancers queried specifically and persistently by the students. All those interviews were videotaped too.

Creative cognition

When ArtPower!'s Wollesen first spread the word on campus that he was seeking neuroscientists, cognitive researchers and computer scientists for a possible collaboration, Kirsh showed sustained interest. When they met, Kirsh and McGregor had an almost immediate "mind meld," Wollesen recalled, and continued their dialogue over many meetings, delays and setbacks.

"I wondered whether such a project had electricity," Kirsh said during a lunch break. "Dance seemed such a fertile ground for exploration as disciplines are exploding. Many of us in the 21st century are exploring the same theme -- the different avenues by which humans rationally engage the world. In dance, it's not the apparent meaning of the artistic product that's of interest but the huge amount of rationality that goes into its creation."

Despite the loss of a large grant, Wollesen, Kirsh and McGregor persisted. In London, Kirsh watched McGregor and a group of Cambridge University scientists investigate the possibility of building computer software that could "think" in movement terms and intervene in the creative process.

In this country, postmodern dance pioneer Cunningham has been experimenting for nearly 20 years with the software program Life Forms and the cinematic (and video game) technique of motion capture. More recently, Cunningham has combined software-generated ideas for shapes and movement with his usual chance operations to create new choreography.

But McGregor and his research coordinator, Scott deLahunta, were after something different -- a new software program that could alter, break or reverse choreographic patterns and create new ones. During the London workshop, Kirsh said, "Wayne made a three-minute piece in under three hours. The scales fell from my eyes. It was such a magnificent instance of distributed creative cognition where the phenomena were dripping on the surface."

Translation: Dancers and choreographer together solve problems, generate movement and coordinate ideas before the choreographer chooses what to integrate into a completed structure.

That computer program is still in the works. But once McGregor, Kirsh and deLahunta had determined how they might do "an ethnographic study" of creative cognition, the UCSD performance, residency and course were scheduled. And now, having worked with Kirsh, the choreographer is exploring representations of movement in human minds and memories.

In a typical afternoon session, McGregor asked his company to improvise an arm combination involving sliding, folding and rotating one arm or both, the dancers working either singly or in pairs. As they invented, he soaked in ideas, sometimes moving among the dancers, sometimes trying out a sequence inspired by what he saw.

Within an hour, he had created an intricate gestural series performed at speeds seemingly impossible to execute, let alone duplicate; the dancers copied, learned, practiced, mastered the sequence.

McGregor next asked them to add the arm work to complex rhythms they had developed that morning for the legs. He superimposed detail (leg circles, foot beats, torso tilts). Then -- almost miraculously, it appeared -- McGregor structured the swift, counterintuitive motions with against-gravity torques, twists and undulations of the dancers' super-supple torsos, melding all that into a choreographic structure by calling the rhythmic cues for two dancers, then two more, then a larger group to enter with their parallel or counterpointed or echoing responses.

"It was a good day," he said later when interviewed by Kirsh, whose professional vocabulary does not include the word dancer Paolo Mangiola used when he was interviewed by a student team. Finding neither scientific language nor recalled movement to express what he had experienced in the rehearsal room with McGregor, the dancer called it "magic."

Participants were pleased, many exhilarated. Students interviewed said they were developing a methodology for real-time data collection replicable in other ethnographic fields -- including gymnastics training, human-computer interaction and primate communication.

Wollesen is looking toward teaming on another innovator-in-residence project with UCSD's Sixth College, devoted to performing arts and technology. And aside from McGregor's potential additions to an already mind-boggling choreographic tool kit, Kirsh sees practical applications emerging from their mutual investigation.

"I've made delightful and rich observations about giving and taking instruction that may help us learn how to improve the cognitive efficiency of instruction in other fields by making it multi-modal," he said. "We are learning how distributed memory has to be turned on to be retrieved. We are seeing that choreography is a form of sustained brainstorming with a leader being the constraint on the outcome.

"There are applications in a broad range of disciplines," Kirsh added. He cited psychology and the treatment of people, such as anorexics, with body image problems.

calendar@latimes.com

If you want other stories on this topic, search the Archives at latimes.com/archives.

TMSReprints

[Article licensing and reprint options](#)

Copyright 2009 Los Angeles Times | [Privacy Policy](#) | [Terms of Service](#)
[Home Delivery](#) | [Advertise](#) | [Archives](#) | [Contact](#) | [Site Map](#) | [Help](#)

partners:

