

Collision course

DANCE

Choreographing sub-atomic particles to sweep from booster to synchrotron to Large Hadron Collider is one thing. Choreographing physicists and dancers to sweep around each other at CERN is quite another. But this is the task of Swiss choreographer Gilles Jobin, who is the second artist

to win the international Collide@CERN competition for an artistic residency at CERN, following on the heels of the first prize-winner, German visual artist Julius von Bismarck. Be it with visual art or choreography, both have attempted a new style of interaction with scientists — a 'collision' of minds, if you like, observing the physicists and, most importantly, exchanging ideas with them as equals.

This programme of creative collisions has been established by the head of International Arts at CERN, Ariane Koek, around a core of mutual respect and interaction — a willingness to explore each other's world and an openness to share the ways in which both scientists and artists think and come up with ideas. But does it work? When artists come to stay at CERN to discover, interact and create, the bar is very high. Nevertheless, the results



© GREGORY BARTADON

have been commensurate with the hopes raised by this latest CERN experiment.

The choice of artist is crucial, demanding excellence in art that will match the excellence of the science. Unrelenting curiosity, a willingness to experiment and to think outside the box, an ability to recognize

fruitful opportunities where others see only the mundane, steadfastness and intellectual rigour — all of these qualities define both scientists and artists, as do playfulness, poetry and the occasional legerdemain and bending of rules. Timing is also essential: artists who are set in their ways might be impermeable to new discoveries; those who are not sufficiently mature might be swayed or perhaps even awed too easily. And the final ingredient: a deep affinity for science, mathematics and technology, without which neither dialogue nor respect would be easy to establish.

Recognizing all these qualities in Julius von Bismarck's and Gilles Jobin's 'interventions', physicists and other staff at CERN have been spreading the word, passing on information on the venues for forthcoming appearances like whispered recommendations for a trendy night club. At these events, the artists appear and disappear with the ephemerality of a flash mob, leaving behind the surreal feeling of having witnessed a dream, but one shared by a growing number of intrigued and astonished individuals.

Mathematical and scientific concepts have long fascinated a wide range of artists with their rigour and beauty, and choreographers such as William Forsythe, who also recently visited CERN, have integrated such concepts deeply into their work. When Gilles Jobin began his residency, he had been thinking about algorithmic choreography and

ON OUR BOOKSHELF



Why Cats Land on Their Feet: And 76 Other Physical Paradoxes and Puzzles

by Mark Levi

PRINCETON UNIV. PRESS: 2012. 216 PP. \$19.95/£13.95

Quite how a falling cat manages to land on its feet is a classic conundrum for undergraduate students of physics. Levi presents this and other puzzles, with a few clues to how to go about solving them using only high-school mathematics. He explains all the necessary physics concepts in the appendix too.



Across the Board: The Mathematics of Chessboard Problems

by John J. Watkins

PRINCETON UNIV. PRESS: 2012. 272 PP. \$18.95/£12.95

This is not just about chess, but also the three centuries of 'recreational mathematics' that the game has inspired. From simple questions, such as whether it is possible for a knight to land on each square of the board on its path, Watkins wades into graph theory, the mathematics of three-dimensional chess and even chess on a torus.

rule-based movement generators. As he interacted with CERN scientists, other elements came to the fore: the passage of time and reference frames, the relative weakness of gravity, and an awareness of the vaporous nature of solid-state matter. The work that reflects these ideas is subtly different from his previous work, presumably as a result of his interactions at CERN.

Performances by the two artists-in-residence have been sited across CERN — in lightless rooms, in car parks or even in the central library. These interventions have mixed observers and the observed: scientists and performers no longer separable, but also not merged nor indistinguishable. Interacting and exchanging, they became aware of spaces that they usually inhabit without seeing, inducing a shift of perspective and a rediscovery of what was once very familiar. Feeling the weight of books about gravity, seeing the images produced by a brain starved of light — these are mundane experiences, yet it takes an artist to point a finger at them and investigate their nature.

The latest performance took place in the heart of CERN — its cafeteria. Four dancers weaved and rolled amid a stream of physicists in transit from office or laboratory to coffee break. They played a delicate swarm of laser lights over the body of one dancer, then roughly pushed and grabbed at arms and bodies. Pausing briefly for discussion, they



© GREGORY BARTADON

then dived back into what was, in fact, a rehearsal for a work that continues to evolve. It was this aspect that may have been the most captivating: the opportunity to see dancers

trying out small variations to an optimal path, dancing to a secret score.

But beyond the immediate pleasure, this performance may have had another, longer-term impact. Each summer, hundreds of students from around the world descend on CERN to hear lectures on a wide range of technical topics by experts in their field, to participate in experiments and to interact with their future colleagues. These students were among those passing by and stopping to watch Jobin's work with awe and fascination. The respect with which the audience treated the performers, in recognition of their seriousness and concentration, may have planted a seed — an awareness of the ideal partners that art and science can be. Perhaps more importantly, it fuels discussion on how they might hope to communicate: not by art becoming illustration, nor by science becoming a simple source of inspiration; but by an understanding that both art and science stem from a common human curiosity about the world.

And this too is a goal of the programme: not to produce artwork that can be exhibited then filed away, but to seed ideas that, even once the artists have gone away, leave lingering ripples in the minds of scientists and artists alike. □

REVIEWED BY MICHAEL DOSER

Michael Doser is at CERN in Geneva, Switzerland.
e-mail: michael.doser@cern.ch

Such stuff as dreams are made on

EXHIBITION

Writing between 1589 and 1613, the height of the English Renaissance, William Shakespeare lived in a world of rapidly expanding horizons, very literally in the geographical sense, but also culturally, politically and scientifically. Fellow playwright Ben Jonson called him “the soul of the age” — and how the age inspired and influenced Shakespeare's work is beautifully illustrated by the artefacts presented in *Shakespeare: Staging the World*, an exhibition at London's British Museum.

The Globe Theatre — so strongly associated with Shakespeare — was built on Bankside, on the south shore of the river Thames, in 1599. In the exhibition, the diary of astrologer and physician Simon Forman lies open on an entry for May 1611, which records his trip to the Globe to see *The Winter's Tale*. But theatre visits were hardly the genteel pursuit that they are today: Bankside was a rough, dangerous

area of brothels and bear-baiting — as a rapier and dagger of 1600 and the skull of a bear testify; all were unearthed there.

More edifying is the silver medal etched with a map of the world, commemorating Francis Drake's circumnavigation in 1580, and a weight-driven musical clock made in 1598: Shakespeare was fond of a striking clock as a dramatic device. All of the items on display — too numerous to mention — are brilliantly coupled with excerpts from Shakespeare's plays to paint a vivid picture of the Elizabethan age that would have fired the playwright's imagination.

The science of the day is best represented towards the end of the exhibition, in conjunction with *The Tempest* — the last play that Shakespeare wrote as sole author, around 1610. “The great globe itself,” named by Prospero in Act IV Scene i, is manifest in the Molyneux Globes, made in London in 1592: one based on Edward Wright's world map in Mercator's projection, the other a map of the stars as though they resided on a giant sphere around the Earth. An inscribed wax disc and

the eerie obsidian mirror used by magician and scientist John Dee, who may have been the model for Prospero, allude to the ‘secret studies’ of both men. But most beautiful of all is the Astronomical Compendium, about the size of a pocket watch, made for the Earl of Essex, a favourite of Elizabeth I. Inside is a perpetual calendar, a nocturnal compass and a lunar indicator — it is, as the exhibit label notes, “the Universe in a box”.

Whether Shakespeare was the true author of his plays is not considered here: in fact, it is not in question. This fascinating exhibition leaves little doubt that the fertile mind of a man from Stratford-upon-Avon, fed so richly with the wonders of the Renaissance world, could produce plays that are, in the words of Jonson again, “not of an age, but for all time”. □

REVIEWED BY ALISON WRIGHT

■ *Shakespeare: Staging the World* is at the British Museum, Great Russell Street, London WC1B 3DG, UK until 25 November 2012; www.britishmuseum.org.