

## Science in culture

## Science to a samba beat

Researchers and dancers joined hands in Rio in the name of Carnaval — and popularizing science.

**Roald Hoffmann**

For a week the city of Rio de Janeiro and its people put aside their class differences to craft an explosion of colour and music. A year of song-writing contests and work on costumes that cost months of wages lead up to informal block parades, parties, the incessant beat of samba, and a binge of popular culture. All in the middle of the Brazilian summer.

One of the high points of this festival is a competition between increasingly commercial samba 'schools', which parade down the Sambódromo, a structure like an elongated football stadium that seats 100,000. A billion more worldwide watch the performance on television.

The samba schools are judged by their theme, how well it is executed, and their spirit. And they are graded by their floats and their costumes (called *fantasias*), and on their song, the *samba enredo*, sung by a marching, walking and dancing throng of up to 5,000 people per school, and drummers playing the *bateria*. In a simpler time, some 50 years ago, Richard Feynman, dressed as a Greek, played a *frigideira* — a percussion instrument shaped like a frying pan — in a local parade.

Schools are upgraded or demoted on the basis of their ranking, and a neighbourhood's spirit depends on its team's placement. No wonder that the major samba schools hire a professional, known as a *carnavalesco*, to produce and direct their presentation. In Brazil this is considered a great profession.

For the first time, a major samba school, Unidos da Tijuca, chose a science theme for Carnaval — "The Dream of Creation and the Creation of the Dream: Art and Science in the Age of the Impossible". In elaborating on this theme, the *carnavalesco* and master alchemist Paulo Barros has worked closely over the past year with the team from the science centre at the Federal University of Rio de Janeiro, headed by Fátima Brito. This collective has much experience in popularizing science, but being asked to help in a Carnaval parade was something new. It's like asking scientists to advise on the half-time show at the Super Bowl — and the exposure of the human body on the floats in Rio is light years beyond Janet Jackson's flirtation with the risqué.

They took it on, the brave souls at the science centre, but not without trepidation. For there are doubters in Brazilian science who believe that the certifiably odd (I would say 'carnavalesque') representation of science in this Carnaval is but a distortion that adds to the public's misperception



Swayed by science? This striking float (above) — an allegory of human life — adds to the sound and colour of Rio's Carnaval.

ing chemistry, including what looked like orbitals to this theoretical chemist — who, incidentally, was there in a Santos Dumont costume, balloons coming out of my back like angel wings, diplomatically dodging questions on who first discovered flight.

The process — a group of people intent on popularizing science in dialogue with a great samba school — was worth it by itself. But would Carnaval value this unique inclusion of science in popular culture? Three days after the parade, the judges ranked Unidos da Tijuca second (out of 14), its highest ranking ever. An analysis of the ratings by category reveals that the theme, and its ingenious, coherent execution, were responsible. I bet we see more science at Carnaval.

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of science. Some in the samba community also doubted that such a complicated theme would fly.

So what did the millions see on that hot night of 22 February in Rio? A fantastic float made of clock faces, driven by a popular actor, Carlos Palma, dressed as Einstein. Another striking float with 273 men and women in blue body paint choreographed in a representation of human life. People decked out as Dolly the sheep. And androids doing the samba down the *avenida*.

There was even an allegory of alchemy becom-