

World of webs

Philip Ball finds himself caught up in artworks woven by thousands of South American spiders.

The famous warning never to work with animals or children seems not to have reached Tomás Saraceno. The Argentina-born, Berlin-based artist embraces the unpredictability and scene-stealing capacity of orb-weaving spiders. Thousands of the arachnids are his collaborators in a forthcoming exhibition at the Buenos Aires Museum of Modern Art.

Visitors will wander amid more than 190 square metres of webs woven by *Parawixia bistriata*, an orb-weaving spider native to several South American countries. A second space hosts an “arachno concert”. For this, the web of another indigenous orb-weaver, *Nephila clavipes*, is connected to sensors that pick up the movements of plucked threads. These vibrations are broadcast through loudspeakers, stimulating the spiders’ movements in a feedback loop. Meanwhile, acoustic waves from the loudspeakers propel “cosmic dust” — fine particles of chondrite meteorites — into the air, their dancing motions picked out by beams of light. Saraceno wants to suggest a conceptual link between spider webs and the “cosmic web” of matter — galaxies, nebulae, dust and dark matter — that permeates the Universe, a topic he has discussed with astrophysicists.

The social behaviour of *P. bistriata* is complex. The spiders live in a colony; during the day, they build a communal hive-like nest. At dusk, they add individual webs linked into a network, for capturing prey. As they mature, the spiders start to hunt alone. Thus Saraceno’s installation is very much a group project, built from an estimated 40 million or so individual threads. He calls each a “trace in the air”, like the trajectory of a grain of dust. As he explains, visitors first see “only faint details”. Then, “as they navigate

through interlacing, glittering web fibres, harbours of nebulae and hybrid clusters of galaxies appear, introducing microcosms of cooperation”. Visitors are encouraged to lie down and look up at this silken cosmos.

The *N. clavipes* installation, meanwhile, is an elaborate symphony. The tiny meteoritic particles — sourced in cooperation with the Berlin Museum for Natural History — mingle with dust in the air to become part of the sonic landscape. Their movements are tracked by video and magnified on a screen, while a custom-built algorithm translates the trajectories into low-frequency sound, sent through 24 loudspeakers. Dust, webs, spiders and visitors’ incidental sounds are woven into an acoustic tapestry.

Vibrations of web silk help spiders to locate prey using the sonic clues picked up by sensors in their feet (B. Mortimer *et al.* *J. R. Soc. Interface* **13**, 20160341; 2016). The web itself may be designed to enhance the directional information from these vibrations.

Saraceno has ambitions beyond the aesthetic. His studio in Berlin is equipped with a laboratory that houses 300 arachnids. For this exhibition, he is collaborating with two scientists — arachnologist Martín Ramírez at the Bernardino Rivadavia Argentinian Museum of Natural Sciences in Buenos Aires and biologist Alex Jordan from the Department of Collective Behaviour at the Max Planck Institute for Ornithology in Konstanz, Germany — to understand how the spiders make their

How to Entangle the Universe in a Spider’s Web

Buenos Aires Museum of Modern Art
Starting 6 April.

collective decisions. Saraceno and his studio have developed pioneering methods for visualizing complex 3D webs.

Saraceno has worked with many scientists and scientific institutions over the years. He has held residencies at the National Centre for Space Studies in Paris and the Massachusetts Institute of Technology’s Center for Art, Science and Technology in Cambridge. In 2015, at the Centre for Contemporary Art of the Nanyang Technological University in Singapore, he staged an installation called *Arachnid Orchestra Jam Sessions*. Web vibrations made by spiders were amplified into sound as human musicians improvised alongside. Saraceno regards each web as a kind of impromptu, unique string section played by spiders.

As well as creating an ethereal sonic landscape, that project exemplified Saraceno’s broader objective: exploring cohabitation between humans and other animals. Although the webs in his exhibitions are not necessarily like those that festoon gardens and houses, spiders make gossamer creations all around us, often unobserved. “The aesthetic operation here,” he says, is to bring spiders’ “presence to the foreground”. On visiting Saraceno’s studio, the French sociologist Bruno Latour declared that he would stop sweeping away the cobwebs in his own house. If Saraceno has his way, Latour won’t be alone in extending greater respect to these miniature universes of vibration, sound and light. ■

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Tomás Saraceno’s 2016 work *Arachno Concert, with Arachne (Nephila senegalensis), Cosmic Dust (Porus Chondrite) and the Breathing Ensemble*.

COURTESY THE ARTIST AND F. BERLIN. PHOTOGRAPHY: STUDIO TOMÁS SARACENO, 2016.

CLARIFICATION

After *Nature* went to press, the name of the exhibition reviewed in the Books & Arts article 'World of webs' by Philip Ball (*Nature* **543**, 314; 2017) was changed to How to Entangle the Universe in a Spider's Web.