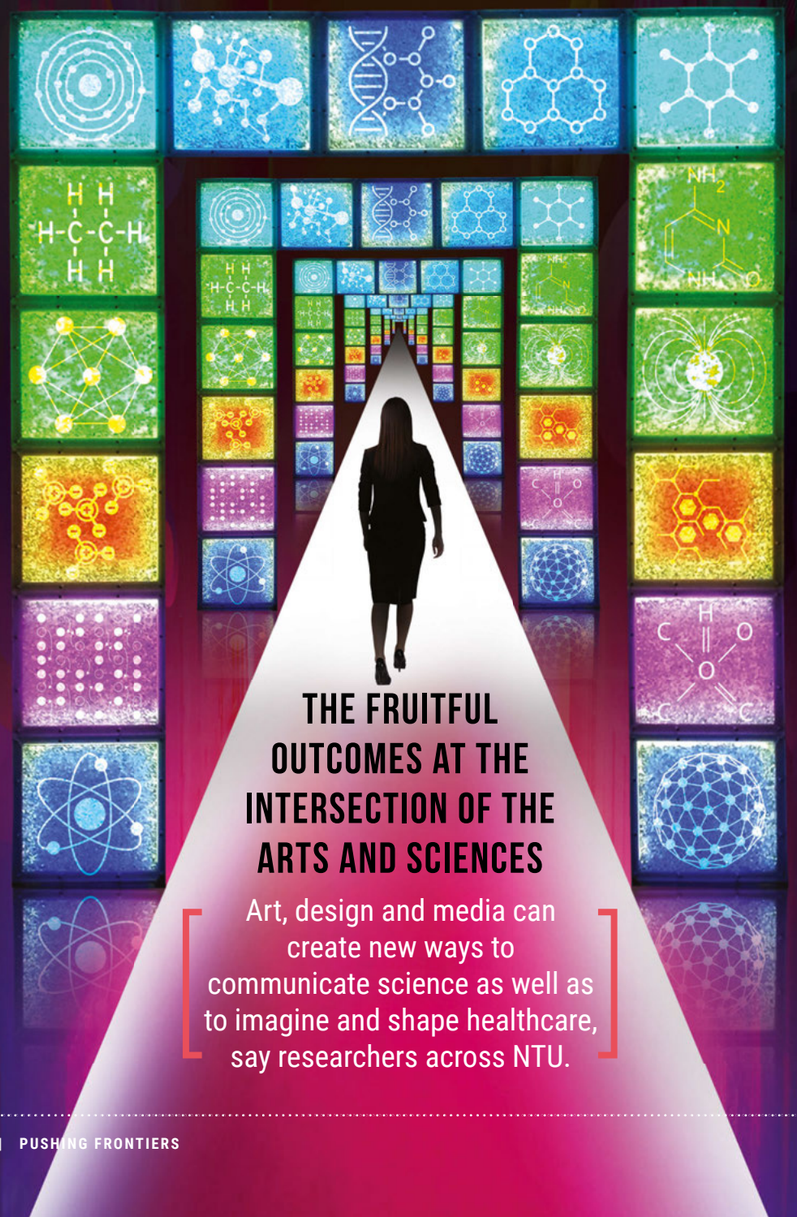
THE BEST OF BOTH WORLDS



THE FRUITFUL OUTCOMES AT THE INTERSECTION OF THE ARTS AND SCIENCES

Art, design and media can create new ways to communicate science as well as to imagine and shape healthcare, say researchers across NTU.

What do universities like Massachusetts Institute of Technology (MIT), California Institute of Technology and Princeton University have in common? Aside from being among the best places in the world to conduct scientific research and commercialise technology, these institutions stand out for the ways they have integrated the arts, design and media into the research process, often with remarkable results.

This fruitful relationship should hardly be surprising, considering that the terms "art" and "technology" share the same root word, says Prof Ute Meta Bauer, Founding Director of the NTU Centre for Contemporary Art Singapore (NTU CCA). "The word 'technology' comes from the Greek word *techne*, which means craftsmanship or art, so in that sense, technology comes out of art," she explains. "People sometimes think of art and technology as very separate things, but actually, they are not."

Founded in 2013 as a centre in NTU's College of Humanities, Arts, and Social Sciences, NTU CCA actively fosters cross-disciplinary dialogue and knowledge transfer through its exhibitions, outreach and educational programmes. "As an anchor institution located in Singapore's Gillman Barracks international arts precinct, we show how the arts is not purely about economic activity driven by the galleries, but also about knowledge production," Prof Bauer says. "We see our role in introducing artistic research and initiating collaborative projects with a variety of partners, the results of which we then share with the wider public."

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Prof Ute Meta Bauer
Director, NTU Centre for Contemporary Art Singapore

A SPACE FOR EXPERIMENTATION

Unlike museums, which have more of a collection and conservation mandate, NTU CCA functions as a living laboratory, providing the space for artists as well as curators to experiment and collaborate across fields of knowledge, Prof Bauer adds. In 2015, for example, the Centre hosted Berlin-based artist Tomás Saraceno, who presented a work exploring the possibilities of interspecies communication titled *Arachnid Orchestra. Jam Sessions*.

For this project, Saraceno worked with Singaporean arachnologist Joseph Koh to study the webs of Southeast Asian spiders such as *Psechrus singaporensis* and *Heteropoda davidbowie*. The spiders were encouraged to build webs that then got connected to specialised equipment like contact microphones and laser vibrometers, which turned the electromagnetic waves generated by the vibrations of the spider silk into auditory output. Local composers and musicians were then invited to engage with the spiders-turned-artists in three public performances that are now available online.

"One great outcome of that exhibition is that it gave us a different perspective on spiders, species that usually are not overly liked; not just as useful animals that eat insects but as creators of architectural forms that mirror the structure of galaxies," Prof Bauer says. "As Tomás says, nature has had so much more time than us to develop forms ideally suited for the conditions of this world. There is much we can learn from studying nature."

"Although Saraceno's artistic inquiries are not science, it is an important quality of scientists to be curious and have a speculative view to generate new hypotheses. That was what it was like at MIT, where students from different scientific disciplines signed up for classes to learn from artistic methodologies," says Prof Bauer, who was the Founding Director of the Programme in Art, Culture and Technology at MIT's School of Architecture and Planning.

While *Arachnid Orchestra. Jam Sessions* examined how spiders and humans could communicate with each other, *The Oceanic* exhibition delved into how the activities of humans have impacted the oceans—from seabed mining to nuclear tests— and how art could be used to communicate these findings to diverse audiences. Bringing together artists, anthropologists, marine biologists and policymakers, *The Oceanic* was a transdisciplinary exhibition at NTU CCA, designed to make abstract environmental consequences concrete and spur audiences into action.

"What is fantastic about the arts is its tangibility and capacity to communicate complex ideas in a non-textual way. As a university that engages in technology, we have so much knowledge about what can be done with regard to sustainability. But it takes a while for this knowledge to reach people and change habits and culture; I think we need more intermediary languages like film or art," Prof Bauer says.

The conversation first initiated with *The Oceanic* is being continued up to today as part of NTU CCA's overarching three-year research focus, CLIMATES. HABITATS. ENVIRONMENTS. The theme builds on the previous topic of PLACE. LABOUR. CAPITAL. and will culminate in the second edition of NTU CCA Ideas Fest, a platform for the exchange of ideas and potential solutions planned for February 2020.

"Ultimately, both the arts and sciences are about making the world a better place."

Prof Dorrit Vibeke Sorensen
Chair, School of Art, Design and Media

COMMUNICATING AND CARING

Apart from helping to communicate scientific research to the public, another way that the arts can contribute to science and technology is through its compressed research and development cycle, says Prof Dorrit Vibeke Sorensen, Chair of NTU's School of Art, Design and Media (ADM). "In the arts, you have to go from conception to presentation in a very short time. In the middle, there may be some deep, fundamental research, but artists very quickly have to apply it and make it into an artwork that is accessible to the stakeholders, be it the art community, general public or the scientific community as well."

But the benefits of interaction go both ways, particularly for an arts school located within one of Asia's leading technological universities, Prof Sorensen adds. "Collaborations we have across the University help to bring the latest information and knowledge from the constituent fields into our School at a very high level. Conversely, we bring a lot of the latest design concepts into engineering and science."

This two-way conversation is greatly facilitated by the uniquely interdisciplinary faculty at ADM, says Prof Sorensen, pointing out that ADM is not only interdisciplinary across NTU, but also within the School and even within individual faculty members. "Most of our faculty have training in more than one area; they may have great strengths in one field but more often than not they also have depth in another. This background allows them to collaborate on a deep level with other experts."

Take for example ADM's Asst Prof Michael Tan, who is also a member of the medical humanities cluster at NTU's School of Humanities. Asst Prof Tan, who holds a PhD in arts and health from Durham University, investigates how art and design can help to foster an inclusive society for those with chronic health conditions such as Alzheimer's disease and Parkinson's.

In a project supported by Singapore's Agency for Integrated Care and the National Arts Council, Asst Prof Tan spearheaded an artist-in-residency programme where artists were invited to conduct arts engagement activities with residents across ten nursing homes as a way to promote health and wellbeing. The project led to a public exhibition launched in 2018 by Singapore President Halimah Yacob that was attended by over 10,000 visitors.

"We found that the arts engagement programme benefitted the residents at both the individual and social levels. It not only gave them a sense of skills building and fulfilment, but also created a context that fostered socialising among residents as well as between residents and care staff while making their works," Asst Prof Tan says.

Importantly, the pilot project provided much-needed research evidence of how the arts can help to promote health and wellbeing. While there is growing recognition of the role of arts in health, conversations are scattered and not much is known about the range of practices and policies in place on the ground, Asst Prof Tan says. To address this need, he is collaborating with colleagues at the National University of Singapore's school of public health to explore the state of arts and health in Singapore and identify existing gaps and opportunities.

"Uniting my research and teaching is the goal of stimulating thinking about how the arts could play a caring role in society. It's no longer just arts for art's sake, but re-imagining the boundaries of what art can do in society," says Asst Prof Tan.

"I would also like to invite colleagues from science-based disciplines to think of new approaches to shape health and wellbeing," adds Asst Prof Tan, who teaches an innovative course on arts, ageing and wellbeing in NTU's interdisciplinary Master of Science in Applied Gerontology programme.

THE HUMANITIES FOR HEALERS

In the same vein, art plays a crucial role in the training of future doctors at the Lee Kong Chian School of Medicine. Artworks such as a large-scale ceramic-and-wood art installation titled *Apollo's Dream*—a collaborative piece between the inaugural batch of students in the School's Bachelor of Medicine and Bachelor of Surgery degree programme and students of Cultural Medallion winner and master ceramicist Iskandar Jalil—are displayed in the School's buildings as a reminder that medicine is ultimately about understanding the human condition in all its complexity.

Furthermore, medical humanities are integrated into the curriculum in the belief that the arts and culture should shape healthcare practices, an approach unique to NTU's medical school. Through medical humanities, students learn skills such as observation, critical analysis and interpretation, as well as how to accept differing viewpoints and tolerate ambiguity—skills required to practise medicine in a sensitive and holistic way.

"Ultimately, both the arts and sciences are about making the world a better place, whether you are trying to make new materials or improve the lives of the disabled," Prof Sorensen says. "The arts can really help to move things forward, especially the most urgent issues of our day, such as addressing climate change."