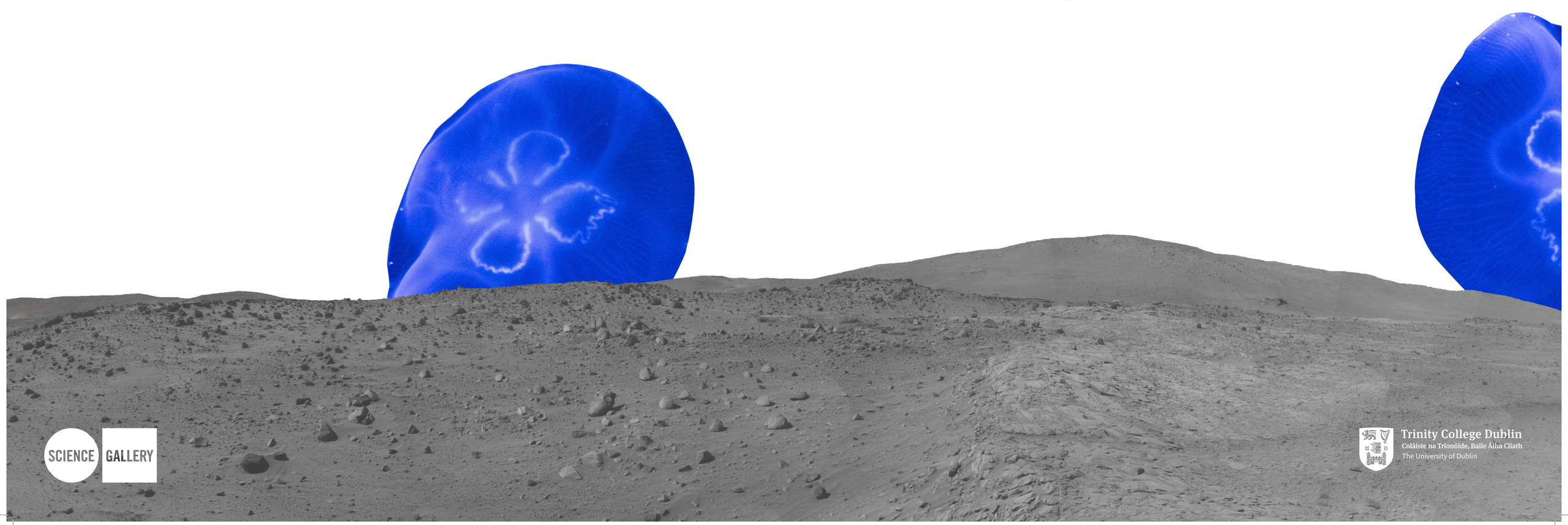
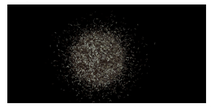
LIFE AT THE EDGES
22.06.18 – 30.09.18



SCIENCE GALLERY

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

A PLANET OF PEOPLE
A planet extra-terraformed entirely from human bodies, 2018
Julijonas Urbonas (LT)



A Planet of People is an artificial cosmic body extra-terraformed entirely of human bodies, created from scans of Science Gallery Dublin visitors. The exhibit sends these humans to L2, one of the Lagrangian points in space where the gravity is stable, and allows the frozen bodies float freely until weak gravities make them assemble into a blob: in this way, a new 'human' planet is formed.

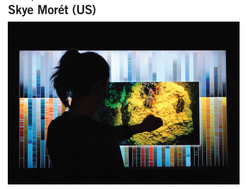
»A TOUCH OF HOME«
Visual photographic collage with vinyl quotation, 2014
WE COLONISED THE MOON — Hagen Betzwieser & Sue Corke (DE & UK)

We all know, from personal experience, what we think we need for a summer vacation far from home. Mostly, half of the stuff we pack comes back untouched, yet there are always a multitude of thingamybobs we forgot to bring with us that are determinedly essential. This idea, along with the Konstantin E. Tsiolkovsky quote "Earth is the cradle of humanity, but one cannot remain in the cradle forever," inspired this artwork. Thomas Austin, quoted in the exhibit, was an English settler who is generally noted for the introduction of 24 breeding rabbits to Australia in 1859. While his efforts were praised at the time, he has since been blamed for introducing a pest to the country.

ANALEMMA TOWER
Floating skyscraper suspended from an asteroid, 2017
Clouds Architecture Office (US)

In 2015, the European Space Agency sparked a new round of investment in asteroid mining concerns by proving, with its Rosetta mission, that it is possible to rendezvous and land on a spinning comet. NASA is planning an asteroid retrieval mission for 2021 that aims to prove the feasibility of capturing and relocating an asteroid. This process can be monetized for enormous private sector profits by placing a large asteroid into orbit over Earth, with a high-strength cable lowered towards the surface of the Earth to suspend a super tall tower from the asteroid. *Analemma Tower* is a proposal for this, which would be the world's tallest building.

ANTARCTICA: A CHROMATIC PARADOX
Juxtaposed Antarctic colours reveal surprising realms, 2016
Skye Morét (US)



Most people think of Antarctica as white, gray, and blue, but beneath the sea surface, colour is anything but subtle. To capture the diversity of vibrant life that she saw during her seasonal work with the US Antarctic Program, artist Skye Morét compared colour pixels from 100 photographs taken above and below the waves of the Antarctic Peninsula. Fifty upper bars represent images captured of the land and seascape above the sea surface, while fifty lower bars exemplify the vibrant and varied world beneath the waves. Underwater photographs taken by Paul North.

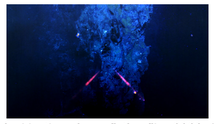
ANTICIPATING VANITY
A hair accessory for space tourists, 2015
Theresa Reimann-Dubbers (DE)

This exhibit explores a future scenario in which space hotels are visited by those few who can afford to do so. Although finding themselves in an entirely new environment with unusual conditions, the same earthly (specifically, western) beauty ideals apply. Unfamiliar situations, such as the aesthetically problematic effect of zero gravity on long hair, must be prevented. A body adornment, onto which long hair is styled and fastened, serves this purpose. It ensures that the wearer's hair continually 'falls' exactly as intended.

BIMGEC — BIO-INSPIRED MICRO GRAVITY EXERCISE CONCEPT
Zero-gravity exercise device, 2015
Moses Rowen (IE)

BIMGEC is a compact, lightweight workout machine, designed to offset the issues related to osteoporosis, muscular atrophy and negative psychological impact associated with long-term space travel. Nature inspired the exhibit's method of resistance generation in the form of a chameleon's tongue, which can store energy in a collagen spiral structure for release when required. The tongue is analogised here by spiral-form constant torque springs. The spring battery delivers a constant resistive torque, so the effective 'weight' that the user experiences is varied by changing the gear ratio between the input and output shafts.

BLACK PANORAMA
A dream meditation on underwater unknown, 2018
Louise Manifold with Andy Wheeler (IE)



Inspired by the science fiction film *2001: A Space Odyssey*, *Black Panorama* is a hybrid science film project based on the environment around a deep-sea volcanic hydrothermal vent, created from the footage recorded using a robotic investigation machine (ROV) designed to withstand this hostile environment and explore this deep, dark, hostile realm and its organisms.

CHIMPONAUTS & ASTROCATS
Animals that travelled in space, 2016
Eva Rust (CH)

Chimponauts & Astrocats is an illustrated zine about the history of the many animals who travelled to space. It tells the mostly sad but sometimes funny and absurd stories of some of them.

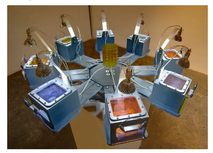
CREW 181
Like Mars but not really, 2017
Olly Burn (GB)

In 2017, after what seemed like a lifetime of careful planning, the members of Crew 181 finally embarked on their mission to discover new worlds. A crew of six total strangers, made up of people from every corner of the globe and under the orders of Commander Klos, were to experience the unknown first-hand and for the first time. These brave pioneers were to deal with long and challenging days, connected living spaces, dangerous terrain, an unpredictable climate and uncertainty that nobody could be prepared for.

CURIOSITY
The story of the Mars rover Curiosity, 2016
Marte Teigen & Margrethe Pedersen (NO)

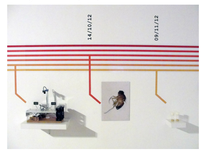
Curiosity is a zine about the fourth unmanned rover that NASA sent to explore the Gale Crater on Mars as part of the Mars Science Laboratory mission. The zine follows Curiosity's journey and tries to better understand this car-sized rover and its tremendous (yet short) journey across the red planet. The rover gathers samples, analyzing the soil and atmosphere and sending its results back to Earth, giving us a unique and groundbreaking insight into this mysterious planet.

DEEP DATA PROTOTYPES
Research connecting deep space exploration with the science of astrobiology, 2009-2016
Andy Gracie (GB)



Deep Data Prototypes is an arc of developmental work, prototypes and research connecting deep space exploration with terrestrial extremophiles and the science of astrobiology. The project uses data gathered from deep space probes and planetary explorers to recreate specific non-terrestrial conditions within cultures of microorganisms currently used in astrobiological and general space research.

DROSOPHILA TITANUS
Breeding fruit flies for life on Titan, 2011
Andy Gracie (GB)

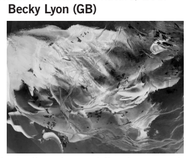


Drosophila titanus is an ongoing project which, through a process of experimentation and artificial selection, aims to develop a new species of the fruit fly *Drosophila melanogaster* that would be theoretically capable of living on Saturn's largest moon, Titan. While still being vastly different, Titan is currently the world most similar to Earth that we know of. Using *drosophila* and Titan as metaphors for the human species and Earth respectively, *Drosophila titanus* employs the methodologies of experimentation, simulation and artificial selection to explore themes of species, biological perfection, and the perception of and future of life.

»EARTH SEEN FROM SPACE«
Wall-based whole Earth simulation, 2014
WE COLONISED THE MOON — Hagen Betzwieser & Sue Corke (DE & UK)

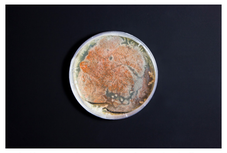
The pictures of Earth taken by the Apollo crews between 1968 and 1972 are still widely regarded as "the most influential environmental photograph[s] ever taken" (Galen Rowell, wildlife photographer) and became icons of a new global consciousness. For all of us who (as yet) lack the funds to buy a ticket to visit space, this spotless, glowing, super-economy LED light bulb is a temporary alternative. It is a simple but instructive simulation of how tiny we are, compared to the unknown unknown in which we float.

FRAGRANT / FUTURES
Smell the future of nature, 2017
Becky Lyon (GB)



Biologically-enhanced florals are evolved to adapt to the toxically-tinged atmosphere. Industrious and hungry bacteria catalyse plastic from the soil to return it to its earthly state. Sulphuric lava pools are a happy home to hardy species of extremophile organisms. Venture with us into the future, where such life systems exists. Through your nose, sample scented artefacts from an imagined excavation. What will you detect? What kind of environment is it from? And is this a planet you would be happy to inhabit?

GENESIS
An ongoing research project into the properties of extremophiles, 2016
Xandra van der Eijk (NL)



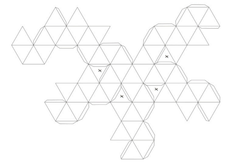
Through the ongoing research project *Genesis*, Xandra van der Eijk studies the colour properties of extremophiles: microbes that can survive or even thrive under extreme conditions. By sampling fluids from volcanic hot springs and high saline ponds during research trips to Iceland and France, the artist managed to isolate several strains that produce pigments. In collaboration with Arnold Driessen at the University of Groningen, the pigment production of the microbes is mastered and influenced, inducing colour change over time.

HEART OF THE MISSION
Habitat of a simulated Mars mission, inspired by the experiences of Crew 173, 2018
Niamh Shaw (IE)

In January 2017, Niamh participated in a simulated Mars mission as part of Crew 173 at the Mars Desert Research Station, a facility in the high Utah desert where you live as if you are on Mars. With little or no contact with the outside world, the crew began their simulation together, with all five living in a small eight metre diameter habitat, working off a rigorous fourteen-hour daily schedule, wearing spacesuits to venture outside, sleeping in cramped and dark 1m x 3m windowless quarters, and with rationed water, food, and energy.

This installation is an homage to that life and Niamh's reflection of all Mars habitats — the audio, the images, the reports, the daily routines, the safety checks, eating, sleeping, and all the tasks and experiments that have to be completed every day.

HUMANITY STAR
Geodesic sphere that reflects the sun's light back to Earth, 2018
Peter Beck (NZ)



This is a model of the *Humanity Star* created by Rocket Lab founder and CEO Peter Beck; the original was launched into space in January 2018. The sphere is designed to spin rapidly, reflecting the sun's rays back to Earth and creating a flashing light that can be seen against a backdrop of stars. The *Humanity Star* began its final descent to Earth in March. It burned up on reentry, leaving no trace.

MARSARIUM 9
Terrarium filled with simulated Martian environment, 2017
Clinton Freeman (AU)

Marsarium 9 is a terrarium that has been filled with a simulated Martian environment. The soil inside is a DIY blend concocted from dietary supplements and supplies found at a common hardware stores.

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This blend has been designed to closely mirror the findings gathered by NASA's Curiosity and Opportunity rovers. A fern is planted inside, and sent on a 'mission' to Mars. The air inside the marsarium made up of a composition similar to that of Mars (96% carbon dioxide, 2% argon and 2% nitrogen).

MDRS 188 MARS OLYMPIAD
Join a Martian expedition at the Mars Desert Research Station, 2018
Sarah Jane Pell & David G. Barnes (AU)

Explore the life of a Martian with a virtual visit to the Mars Desert Research Station. Observe cooperation, teamwork, coordination, community, competition and ritual spacewalks. Be a part of the sport and spectacle of an elite Martian crew. Watch good old-fashioned relay-racing in the round, long excursions in the mountains, and daily chorES INSIDE The Greenhab and Science Domes.

Plastivore
Picturesquely eroded styrofo*am eaten by worms, 2017*
Oliver Kellhammer (Homo sapiens) and a colony of superworms (*Zophobas morio*) (CA)

Styrofoam is a difficult-to-recycle component of the global waste stream. The common mealworm (*Tenebrio molitor*) and the Superworm (*Zophobas morio*) have the amazing ability to biodegrade styrofoam via symbiotic organisms in their gut, depolymerizing the plastic and turning it into compost. *Plastivore* showcases examples of partially degraded styrofoam objects the worms have been eaten through.

ROSCOSMOE
Why did the sea worm want to go to space? 2018
Xavier Bailly, Ewen Chardronnet, Spela Petric, Miha Tursic (FR & SI)

Roscosmoe aims to develop a series of experiments and habitat designs to examine the behaviour of the sea acoela flatworm *Symsagittifera roscoffensis* in various gravitational environments, including outer space. *Roscosmoe* methodology is based on frugal science and open-source design and was and put in motion by a multidisciplinary team composed of scientists, artists, makers and humanities researchers.

This exhibit was supported through a partnership with the French Embassy in Ireland.

SOUVENIRS OF THE CREATION
Lava sculpture and film, 2010
Danny & Geraldine Osborne (IE)

This installation is comprised of sculpture that was created from molten lava on an active volcano. Danny, the artist, is fascinated by this primordial material from which the surface of our planet is made. He is particularly inspired by this creative symbolism, along with the technical challenges of working with an unpredictable material. Using bronze moulds attached to metal poles, he successfully cast several different sculptures in Guatemala and Hawaii, and the process for making these has been captured on film by his wife, Geraldine.

SPACE CUP
Cup designed for drinking in space, 2014
IRPI LLC (US)

This coffee cup allows astronauts to drink in space much like they do on Earth. Here, we tip cups towards our mouths, relying on gravity to pour the liquid in. We regulate the flow with our lips and the tipping angle. The *Space Cup* accomplishes the same goal by replacing the role of gravity with the combined effects of surface tension, wetting, and cup geometry, such that the 'bottom' of the cup is actually the 'lip' of the cup. Touching one's lips to the cup completes the 'capillary connection' allowing liquid to first wick into the mouth spontaneously before drinking proceeds somewhat as normal.

SPACE STATION TRACKER
Track astronauts and space stations from the comfort of your home, 2018

Fifty years ago, a few minutes of blurry TV footage captivated the world as astronauts turned their cameras back on the Earth for the first time; nowadays, you can use simple devices like the unit displayed here to follow space stations and interstellar pioneers in real time as they work, play and explore in zero gravity. The *Space Station Tracker* utilises the latest technology to keep you informed of where these interstellar pioneers are and so you can even wave up at them as they pass overhead.

TERRA NULLIUS
Hypnotic journey to a digital landscape, 2016
Patxi Araujo (ES)

Imagine that you live in a near future. You're watching a planet from a space station, or looking through a microscope. What you see is somehow alive, but you do not know exactly what it is. *Terra Nullius* is the 'geological' activity of a software entity, in the disembodied and abstract nature of a computer system. This activity creates the variables of a topographic representation of mountains, whose movement you can see and listen to. Against the backdrop of a hypothetical but possible planetary collapse, *Terra Nullius* speculates about the possibility of creating the memory of the organic from the digital.

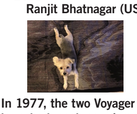
THE IRON RING
24kg of grass turned into an iron ring, 2013
Cecilia Jonsson (SE/NO)

The Iron Ring explores how contaminated mining grounds may benefit from the mining of metals. To create the exhibit, 24kg of iron-tainted grass was removed from contaminated mining grounds and transformed into a ring of metallic iron weighing 2g. The project elaborates on the possibilities of using the cleansing process of a naturalised, wild-growing grass called *Imperata cylindrica*. The result is a scenario for iron mining that, instead of furthering destruction, could actually contribute to the environmental rehabilitation of abandoned metal mines.

THE MARSSUIT PROJECT
A prototype concept of a spacesuit for Mars, 2017
Lawrence Kuznetz (US)

This exhibit showcases a design for a radically different spacesuit — targeted not for the Moon or ISS, but for Mars, an extraordinarily different place than any we've ever visited. The spacesuit was designed with engineers, scientists, students and inputs from the public.

THE TAPESTRY OF THE SEARCH FOR TERRESTRIAL INTELLIGENCE
Alien interpretation of transmissions from Earth, 2018
Ranjit Bhatnagar (US)



In 1977, the two Voyager space probes were launched, each carrying a golden record with music, sounds, and voices from Earth — just in case. The records also feature over a hundred digital images encoded as sounds. If an alien civilization picked up one of the Voyager probes a million years from now, what would they make of the information on the record? They might try to taste the disk, or try to find meaning in the way it feels when they rub their fingers on the grooves. Or they might try to decode the ancient, degraded images onto a forty-metre-long tapestry…

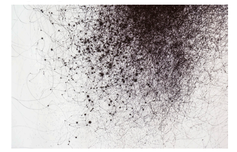
THE TRASH MAP
Mapping man-made objects on the Moon, 2016
Marte Teigen (NO)

In the late 1950s, the so-called 'space race' between the Soviet Union and USA began, and the number of space missions skyrocketed. During this period, these two Cold War rivals competed for dominance in spaceflight capability. The space race was not just about being the first nation to send a person to the Moon; it was about showing technological superiority. *The Trash Map* is an infographic mapping of objects left on the Moon from various space programmes between 1959 and 1972.

THRIVING IN THE EXTREME
Extremophile conference, 2018
Rachael Champion & Patrick Furness (US & GB)

Thriving in the Extreme is an academic conference bringing together a group of extremophiles to discuss the extreme physiological characteristics and environments they inhabit. The extremophiles include a yeti crab and Pompeii worm from hydrothermal vents in the depths of the Pacific Ocean; an Antarctic cryptoendolith who resides inside a rock; and *Deinococcus radiodurans*, a radiation resistant bacteria. The conference has been organised for the benefit of the human species who are researching methods for surviving on Earth in the face of climate change in the Age of the Anthropocene.

WIND WORKS
Wind art from an extreme environment, 2018
Meg Rodger (GB)



Wind Works explores Meg's relationship with the elemental qualities of the wind. She lives and work on a small island in the Outer Hebrides at the edge of the Atlantic Ocean. At 57° north, life is defined by the mercy of the wind. *Wind Works* is a collaboration between the wind, a simple apparatus and the artist. Every drawing is unique and collates wind data comparable to statistical scatter plots. It demonstrates the use of simple technology to generate quasi-scientific and intriguingly alternative artistic results. Each wind drawing is named after the BBC shipping forecast for the day on which it was created.

3.C.CITY: CLIMATE, CONVENTION, CRUISE
A floating city for collective interaction, 2015
WORKac and Ant Farm (US)

3.C.City is a floating city, unbound by any national allegiances and designed to facilitate dialogue and discussion — between people, as well as animals — on the pressing environmental, political and social issues associated with climate change. It is a vessel and a vehicle of dreams. It is a centre for discussion and debate. *3.C.City* challenges conventional ways of living and interacting and proposes a new symbiosis between ecology and infrastructure, public and private, the individual and the collective.

MORE INFORMATION
For more on LIFE AT THE EDGES, including details about the artists, exhibits and essays from the curatorial panel, visit dublin.sciencegallery.com/ledges.

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Science Gallery Dublin would like to thank Buddabag for their help with LIFE AT THE EDGES. We would also like to thank the extended Science Gallery Dublin team and mediators for their work on all aspects of LIFE AT THE EDGES.

For more details on the people behind the scenes, please visit dublin.sciencegallery.com/staff.

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