

# I N T R O D U C T I O N

**Unknown, incomprehensible, mysterious, un-illuminated, gloomy, bleak, catastrophic. All of these are implied by the word 'dark'. *The Dark Universe* takes its title from the fifteenth Sonic Acts festival, held in Amsterdam during the first two months of 2013. The lectures, works, films, events and performances at the festival explored a variety of aspects of our unknown universe and the state of our planet, and this collection of essays, interviews and images complements and extends the festival theme.**

The starting points for the theme 'The Dark Universe' are recent developments in science, which suggest that our universe and world are more unfamiliar and much weirder than we ever imagined. Because our senses are limited - our human senses only perceive a fraction of the electromagnetic spectrum - we have developed an array of instruments to extend our capabilities and detect radiation across the entire spectrum, from gamma to radio waves. Using the Planck Space Observatory, for instance, we are able to study cosmic background radiation at a very high resolution, looking back to the birth of the universe. In 2012 the Large Hadron Collider detected the 'missing' Higgs boson, a fundamental part of the Standard Model of particle physics. But what these immensely advanced instruments record is probably only a small part of what is there. Data from astronomical observations can only be explained by postulating the existence of large quantities of matter and energy that we are unable to see or hear, and that we have not been able to measure directly. In all likelihood only 5% of all the matter and energy in the universe is made of ordinary matter. The remaining 95% is completely dark to us - it is 'dark matter' and 'dark energy'.

Occupying ourselves with things we don't understand is a deep-rooted human characteristic. Both the arts and the sciences have always been at the core of our exploration of the unknown, the strange, and the unfamiliar. Artists and scientists repeatedly rethink reality and question the things we think we know. Hence Sonic Acts brought together scientists, artists, theorists and musicians to explore the boundaries of our knowledge. They

function as guides to a dark universe and a dark planet, and investigate how, in a metaphorical sense, a work of art can function as an instrument to translate the 'unperceivable', and can be an instrument to imagine 'dark matters'.

The book follows a trajectory from the unknown universe as explored by physics and astronomy, to the outlook for humanity and human society on our planet. Along the way artists tell how they investigate phenomenological reality and the dark spots in our sensory apparatus, and there are visual 'data essays' by Bitcaves revealing yet other aspects of the dark world we inhabit.

After the visual essay 'From the Darkroom', which uses stills from experimental films to sketch a portrait of a dark universe, the collection opens with an essay on current research in physics and astronomy by Michael Doser. The contribution by Anil Ananthaswamy about the 'edge' of physics, shows some of the instruments used to conduct research. This is followed by Roger Malina's essay about the advances in data collection in astronomy, and an extensive account of the early history of radio astronomy by David P.D. Munns. A more philosophical and critical stance towards the unknown is found in Andrew Pickering's essay on cybernetics and its 'ontology of the unknown'. Simon Ings contributes a short, sharp and almost burlesque text that touches on Lenin's and Stalin's short-sighted admiration for science.

The conversations with the artists, who all displayed works in the Sonic Acts *Dark Universe* exhibition or performed in the festival, provide insights into how they work with signals, soundwaves, radio waves, colour, vibrations and other electromagnetic phenomena. Raviv Ganchrow's essay delves deeply into the phenomenology of sound and the research underpinning his sound piece *Fray*. An older text by 'non-philosopher' François Laruelle poetically connects

the theme of colour perception (raised in several interviews) to the pitch black of outer space. George Dyson takes a radical non-human approach when he talks about the origin of the digital universe, its concept of time, and about how algorithms are ruling our world. Omar Muñoz-Cremers grapples with the question of where our future went, and the dilemma of retromania. Also included here is Geoff Manaugh's appraisal of the work of architect Lebbeus Woods and an interview with him.

The book then orbits towards our dark planet, and investigates some of the ominous aspects of our present society. Andrew Blackwell reports on his visit to Chernobyl. In an extensive interview Saskia Sassen explains how she uncovers dark realities that normally remain in the shadows of the global system, and how the financial system is bringing catastrophe to our society. Keller Easterling looks into the development of free economic zones and their impact. Another visual essay by Bitcaves explores this world of dark finance and shadow banking. Brigitte van der Sande focuses on Trevor Paglen's art and research methodologies, and zooms in on his work *The Last Pictures* and the view of the future of humanity that it embodies.

Can we reinvent or rediscover a future? And what will it look like?

Sonic Acts / Arie Altena